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Asian Society of Endometriosis and Adenomyosis

Society of Endometriosis and Uterine Disorders

WORLD ENDOMETRIOSIS SOCIETY

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Endometriosis with Associated Adenomyosis: Consequences for Patients

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Abstract

Endometriosis, histologically defined as functional endometrial glands and stroma developing outside of the uterine cavity, is a common gynecologic disorder. Pathogenesis of endometriosis is enigmatic and remains controversial, even if retrograde menstruation seems the most probable mechanism for the development of the disease. Concerning the endometriotic lesions clinical appearance, there are three phenotypes; peritoneal superficial endometriosis (SUP), ovarian endometriosis (OMA), and deep infiltrating endometriosis (DIE).

Adenomyosis is also a common benign uterine pathology that is defined by the presence of islands of ectopic endometrial tissue within the myometrium, with adjacent smooth muscle hyperplasia. There are two types of adenomyosis depending on the extent of myometrial invasion; the diffuse adenomyosis (defined as the expansion of the junctional zone (JZ) along the length of the uterine cavity) and the focal adenomyosis (also called adenomyoma defined as localized circumscribed nodular aggregates of endometrial gland and stroma); sometimes associated with each other.

The objective of the presentation is to precisely define the relationship between endometriosis and adenomyosis; taking into account the different endometriosis phenotypes (SUP, OMA, and DIE) and the two forms of adenomyosis (focal and/or diffuse). We will also look at the consequences for the patients of an associated adenomyosis to endometriosis.

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How to Preserve the Ovarian Reserve in Women with Ovarian Endometrioma: From Surgery to Ovarian Tissue Transplantation

Jacques Donnez

Abstract

Endometriosis is one of the most frequently encountered benign diseases in gynecology. Complete resolution of endometriosis is not yet possible, but therapy has essentially three main objectives; (i) to preserve and improve fertility, (ii) to reduce pain, and (iii) to delay recurrence for as long as possible.

The present lecture aimed to focus on fertility preservation in women with severe endometriosis. In moderate and severe endometriosis, a medico-surgical approach remains the gold standard, but increasingly, papers are reporting a low ovarian reserve after laparoscopic cystectomy for endometriomas. Indeed, very frequently, normal ovarian tissue is excised together with the endometrioma wall. Ovarian surgery in endometriosis patients should, therefore, be performed by experienced surgeons in order to both preserve and improve fertility. Preservation of ovarian tissue or oocytes vitrification should be considered in all patients at serious risk of future fertility impairment, particularly before any treatment likely to result in ovarian endometriosis recurrence and/or premature ovarian failure.

Patient Centred Outcomes

L Hummelshoj[1,2,3], Deborah Bush[2,4], Neil Johnson[2,4,5,6], Stacey Missmer[2,3,7,8,9]

[1]Endometriosis.org, [2]World Endometriosis Society, [3]World Endometriosis Research Foundation, [4]Endometriosis New Zealand, [5]Robinson Research Institute, [6]Auckland Gynaecology Group and Repromed Auckland, [7]Boston Center for Endometriosis, [8]Harvard Medical School, [9]Mitchigan State University

Abstract

"Patient centred outcomes" was the topic of the World Endometriosis Society's 4th Consensus Workshop in May 2017. It involved 41 stakeholder organisations in our field, which came together to address the alignment of the views of women with endometriosis to that of clinicians; views that may be quite different when it comes to the vision and acceptance of the end point.

Informed consent, by the woman with endometriosis, is essential in all clinical decisions. This is the only way in which she can be truly involved in decisions regarding her health and to play an active role in the process towards getting better. Whereas care rests on the best available evidence of benefits and risks, it is clear that true evidence in the field of endometriosis is scarce, and often based on poorly powered studies with huge disparity in terms of actual outcomes. In endometriosis trials, 164 different outcomes and 113 different outcome measures have been reported by endometriosis trials resulting in research waste and outcome reporting bias; contributing to an overall lack of evidence.

Including women with endometriosis as part of research teams to decide, which outcomes are truly of importance, is essential in determining research policies and priorities. Utilising tools, such as WERF EPHect, to tease out these answers is crucial in moving the field of endometriosis forward in the spirit of global collaboration.

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Urinary Tract Endometriosis in Patients with Deep Infiltrating Endometriosis: Prevalence, Symptoms, and Management

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Abstract

Background: Endometriosis is one of the most common gynecological diseases among women mainly of reproductive age. Severe forms of infiltrative endometriosis occurring in 5% to 12%. Urinary system involvement in infiltrative process can be detected in 18-52% of cases. Key symptoms of urogenital endometriosis are constant pain syndrome, dysmenorrhoea, dyspareunia, infertility, inappropriate urination, and hematuria.

Laparoscopic and robot-assisted surgery for the treatment of urogenital endometriosis creates conditions for the most careful and adequate removal of involved tissues due to improved visualization, precision in movement, and ideal access to the diseased tissues.

Methods: During 2011-2017, 183 surgeries with different localization of infiltrative endometriosis were performed. The average age of the patients was 33.8 years. Urinary tract involvement was detected in 27 (14.75%) cases; ureter wall was involved in infiltrate in 15 cases (8.2%) and bladder wall was affected in 12 cases (6.55%). Most of the time, urogenital endometriosis goes together with retrocervical and rectovaginal localization of endometriotic infiltrative lesions.

Results: Among 183 procedures, laparoscopy were performed in 149 cases and laparotomy in 15 cases. During the past 2 years, 19 patients underwent surgery with robotic complex da Vinci SI. In 126 cases (68.85%) ureterolisis was performed, in 7 cases (3.82%) the resection and suturing of the bladder were carried out, and ureter stenting was conducted in 7 cases (3.82%). Among patients who desired conception after the surgery, the total conceive rate was 59% (IVF+spontaneously)

Conclusion: Gynecologists are still facing the problem of treatment for urinary tract affected by deep infiltrative endometriosis; it is diagnosed in 14.8% of cases. Early diagnostics, proper treatment, and the effectiveness of surgical procedures are very important for the treatment of urogenital endometriosis and show good reproductive outcomes.

Surgical Outcome of Laparoscopic Endometriosis Surgery: Highlighting Colorectal Endometriosis

Saeed Alborzi

Abstract

Background: The present study aimed to review 6-year experience on the surgical outcomes of laparoscopic endometriosis surgery.
Methods: A cohort study was performed in Shiraz University of Medical Sciences (Shiraz, Iran) using data from the medical records (during 2010-2016) of 1,315 patients with endometriosis undergoing laparoscopic surgery with a follow-up of 6-72 months.
Results: Among the patients, 1,086 (82.5%) were in stage III and IV, 968 (73.61%) had endometrioma (regardless of having DIE or peritoneal involvement), and 347 (26.39%) had either DIE or peritoneal involvement without endometrioma. Unilateral endometrioma was statistically significant in the left ovary (P=0.002). In total, 133 (10.7%) rectal wall, 7 (0.32%) sigmoid colon, 4 (0.18%) vagina, 125 (5.6%) ureter, and 33 (1.52%) bladder involvements were detected. Prior to operation, the pain VAS score was 8.23±2.03, which decreased to 4.46±2.47 in 93.07% of patients. Eventually, 53 patients (6.56%) needed reoperation, 66 (33.1%) infertile women had spontaneous pregnancy, and 15 (25%) became pregnant using IUI or ART postoperatively.
Conclusion: Surgical treatment of endometriosis seems to be an effective treatment. DIE can be presented in the absence of endometrioma. The rate of left endometrioma is higher due to pressure effect of the sigmoid colon. Nonetheless, if an expert surgeon performs this procedure, not only the rate of postoperative complications but also the possibility of recurrence diseases would decrease.

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Overview of Pelvic Nerve Anatomy and Techniques for Nerve Preservation in Pelvic Endometriosis Surgery

Shahin Khazali

Abstract

Over the past few decades, laparoscopic surgery has enabled us to perform more advanced procedures within the pelvis. This has been the result of a better knowledge of the laparoscopic anatomy, improved optics, and a quick progress in technology. As a result, we can now visualize and preserve even very small structures, such as fine pelvic nerves. Moreover, we can access the anatomical locations that are very challenging to access by open surgery. As an example, endometriosis of the sciatic nerve was first reported in the 1950s and is not a new phenomenon. However, until recently, adequate surgical treatment of this rare but debilitating condition has been extremely difficult. Neuropelveology (the study of and surgery on the pelvic nerves) seeks to push the frontiers to help patients who suffer from pathologies of the pelvic nerve. With the expanding knowledge of the function of pelvic nerves (both autonomic and somatic), we now understand the importance of preserving these nerves, however small, during surgery. Preserving the sexual, urinary and defecatory functions, particularly in a young woman cannot be overemphasised. Nerve-sparing radical surgery for cancer has been an established practice for many years, but till recently, applying the same principles to endometriosis surgery seemed out of reach. In this lecture, we will provide an overview of the pelvic nerve anatomy and provide an insight into the relevance and techniques of nerve preservation in pelvic endometriosis surgery. Moreover, we will touch on methods of surgery for accessing the larger nerves of the pelvis (sciatic and femoral for example).

Risk Management in Endometriosis Surgery

Yoke Fai-Fong

Abstract

There is no doubt that endometriosis, even if classified as a benign disease, can be one of the most difficult and challenging medical conditions to manage. The potential and propensity to involve and invade other organs, some distally, and the impact it can have on fertility, sexual and social/economic implications, ovarian reserve, cancer risk, and other organ function are important factors to consider in the holistic management of the condition.

The surgery itself is one aspect of this management. Endometriosis specialists will agree that it can be a high-risk surgery due to the above-mentioned factors. Doing too little may mean undertreatment of the disease and consequently inadequate resolution of symptoms. On the other hand, doing too much may mean a risk of damage to ovarian reserve, bowel, bladder, ureter, or even the innervation and blood supply of the pelvic organs.

Risk management is important to mitigate this. Preoperatively, it starts from the moment of the first consultation. A good and detailed history and examination with investigations to delineate the full extent of the disease, adequate patient information, and counseling followed by a multidisciplinary consultation (if necessary) is required for informed consent. Intraoperative planning is the next step. Knowledge of the pelvic spaces, careful dissection and haemostasis, good tissue handling, and involvement of urological/colorectal disciplines are important for an optimal outcome. Postoperatively, there is a need for vigilance for any complications and early intervention, if necessary. Longer term planning includes the use of hormonal suppression for suppression and consideration for assisted reproduction, if necessary.

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Lateral Pelvic Sidewall Endometriosis: A Hidden Area

Amphan Chalermchockcharoenkit

Abstract

Endometriosis is a common non-infectious inflammatory disease of female reproductive tract. It always causes adhesions and distortion of pelvic anatomy. Although it is asymptomatic in many patients, pelvic pain is a frequent complaint. The pain may be site-specific where deeply infiltrating endometriosis (DIE) implants. In addition to the posterior cul-de-sac and both ovaries, pelvic sidewall is a common location of DIE.

Lateral pelvic sidewall endometriosis is usually arisen by the extension of pelvic foci and ovarian endometriosis by ectopic implantation of endometrial cells along the lateral ovarian surface and ovarian fossa. Many gynecologists cannot recognize and identify pelvic sidewall endometriosis during their open surgery, even laparoscopy, especially when the ovary is embedded in the pelvic sidewall. Moreover, many of us do not focus on the depth of infiltration in this hidden area. This extension to deeper tissues causes dense fibrotic scar involving the US ligaments, ureters, blood vessels, nerves, lymph nodes, and leads to some specific pelvic pains such as leg pain, low back pain, and urinary symptoms.

Severe leg pain can be experienced during and around the times of menstruation. Patients also experience frequent urination (even at night), difficulty holding urine due to decreased bladder capacity and flank pain. Most patients with normal pelvic examination cannot exclude this condition. A recto-vaginal examination has to be performed to avoid misdiagnosis. In cases of thickening or nodularity of US ligaments and parametrium, rectovaginal involvement and frozen pelvis are the common coincidental finding of pelvic sidewall endometriosis. Ultrasonography is recommended to rule out ovarian endometriotic cyst and to see the status of kidney and ureter.

An expert endometriosis surgeon with experience and skill is imperative in order to treat this extreme condition. It is essential to keep the location of pelvic sidewall endometriosis in mind where lateral pelvic pain is concerned because one of the successes in the surgical procedure to relieve pain symptom depends on how radical the surgical removal in the correct location is.

Prophylactic Salpingectomy: To be or not to be

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Abstract

Background: At international conferences, debates do not cease on the advisability of prophylactic salpingectomy during hysterectomy. Some researchers suggest bilateral salpingectomy in cases of ovary preservation as a preventive strategy in a group of patients with a low-risk of ovarian cancer, but these suggestions still need full assessment of the effectiveness and possible complications of the procedure.

Methods: Since 2012, 54 patients were included in the study and after preliminary randomization. They underwent laparoscopic hysterectomy with ovarian preservation together with or without salpingectomy. Group I consisted of 29 patients with salpingectomy and group II consisted of 25 patients without salpingo-oophorectomy. The patients were checked twice (prehospital and 3-4 months after surgery) for AMH, LH, FSH, estradiol and testosterone level, ultrasound examination of the pelvic organs with Doppler, answered the SF-36 questionnaire, and used a visual analog pain scale to show the level of their pain.

Results: In both groups, there was no significant difference in patients' average age (P=0.572), average body mass index (P=0.140), operation time (P=0.263), average blood loss (P=0.176), hospital stay length (P=0.405). Also, there was no significant difference in the level of hormones AMH (P=0.835), FSH (P=0.322), estradiol (P=0.353), testosterone (P=0.882), and LH (P=0.521). No statistical difference was shown in assessing the volume of ovaries and peak systolic flow velocity (ΔPSF). In both groups, there was an improvement and no significant difference in physical and mental health (P=0.795 and P=0.808, respectively). Assessment of pain also revealed no significant difference in the groups (P=0.993).

Conclusion: There is no significant difference in indicators of hormonal ovarian function dopplerometric data, physical and mental health after laparoscopic hysterectomy with or without salpingectomy. The given data may signify the safety of salpingectomy during laparoscopic hysterectomy considering ovarian function.

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Possibilities for Diagnosing Endometriosis: A World Endometriosis Society Consensus

NP Johnson

Abstract

Background: The World Endometriosis Society has produced consensus statements on management and classification of endometriosis and this consensus relates to diagnosis. Laparoscopy (with or without confirmatory histology) has long been considered the gold standard method of diagnosis of endometriosis. Other possible diagnostic tests, including clinical assessment, radiological imaging (primarily involving ultrasound and magnetic resonance imaging), biomarkers (most notably in blood, urine and endometrium) and combinations of lower invasive tests (biomarkers and imaging) have been proposed as alternatives. Lower invasive tests have not to date been widely accepted as suitable alternatives to surgical diagnosis. However, laparoscopic diagnosis is unavailable to many women who might have endometriosis, so we have a duty to define the accuracy of the best low invasive diagnostic tests for this disease.

Methods: We undertook a consensus process through the World Endometriosis Society. A consensus meeting was held on 30 April 2014 in conjunction with the World Endometriosis Society's 12th World Congress on Endometriosis in Sao Paulo, Brazil. Rigorous pre- and post-meeting processes, involving 55 representatives of 29 national and international, medical and non-medical organisations (21 international medical organisations and companies, representatives from eight national endometriosis organisations) from a range of disciplines and from 19 countries, led to this consensus statement.

Results: A total of 36 consensus statements were made. These covered women's priorities, impact of low resources, accuracy of traditional diagnosis by laparoscopic visualisation, as well as the potential for low invasive diagnosis through clinical history and examination, genetic testing, imaging, biomarkers including urinary, blood, endometrial and non-traditional biomarkers, combinations of low invasive tests and predictive markers of disease recurrence.

Symptoms have limited diagnostic accuracy, although the best predictors of endometriosis were menstrual dyschezia and a history of presentation with benign ovarian cysts. Amongst imaging techniques, transvaginal ultrasound (TVUS) and magnetic resonance imaging (MRI) were the most studied modalities. No imaging showed high diagnostic accuracy for overall pelvic endometriosis; for endometrioma both MRI (3 studies, 179 women, sensitivity 0.95 [0.90-1.00], specificity 0.91 [0.86-0.97]) and TVUS (8 studies, 765 women, sensitivity 0.93 [0.87-0.99], specificity 0.96 [0.92-0.99]) were accurate; for deep endometriosis MRI (7 studies, 266 women, sensitivity 0.94 [0.90-0.97], specificity 0.77 [0.44-1.00]) and TVUS (12 studies, 934

women, sensitivity 0.79 [0.69-0.89], specificity 0.94 [0.88-1.00]) had limitations; for mapping deep endometriosis to specific anatomical sites, TVUS met the criteria for a SpIN triage test for endometriosis of the uterosacral ligament, recto-vaginal septum, vaginal wall, pouch of Douglas and rectum/sigmoid, whilst MRI met the criteria for a SpIN triage test for endometriosis of vaginal wall, pouch of Douglas and rectum/sigmoid. Multi-detector computerised tomography (CT) enema (MDCTe) showed the highest diagnostic performance for detecting recto-sigmoid endometriosis (3 studies, 389 women, sensitivity 0.98 [0.94-1.00] and specificity 0.99 [0.97-1.00]), but the studies were too few to provide meaningful results. For urinary biomarkers, none met the criteria for a replacement test or a triage test; urinary proteome may be of potential value, but standardization is needed. For blood biomarkers, limited meta-analyses were possible, but none of these biomarkers (anti-endometrial antibodies, IL-6, Ca-19.9 and Ca-125) reached the criteria for a replacement test or triage test; 97 blood biomarkers did not differentiate women with endometriosis from disease-free controls and have no diagnostic value in endometriosis. Meta-analysis was possible for only two endometrial biomarkers (PGP 9.5 and aromatase cytochrome P450 [CYP 19]), and although PGP 9.5 showed promise (7 studies, 361 women, sensitivity 0.96 [95% CI 0.91-1.00] and specificity 0.86 [0.70-1.00]), it was affected by study heterogeneity and difficulty with reproducibility; CYP 19 was insufficiently accurate; 77 endometrial biomarkers did not differentiate women with endometriosis from disease-free controls and have no diagnostic value in endometriosis. For combined low invasive diagnostic modalities, several combinations of tests met the criteria for a replacement test or a triage test, but each was assessed in small individual studies without the possibility of meta-analysis and with high-risk of bias.

Conclusion: There is a pressing need for the definition of a low invasive test (or combination of tests) for diagnosing endometriosis. Consensus was borderline regarding the adequacy of information about the accuracy of low invasive diagnostic tests to allow construction of models of combinations of low invasive tests with appropriate confidence intervals as a possible alternative to laparoscopic visualisation of endometriotic implants. We should now aim to frame accuracy around the main candidate lower invasive diagnostic tests for endometriosis.

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Advances in Medical Management of Endometriosis

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Abstract

Treatment of endometriosis may be surgical or medical. Surgical treatment, especially laparoscopic surgery, is the most effective method to control pain. However, a certain percentage of patients are refractory to surgery and high postoperative recurrence rates of pain symptoms and lesions are reported. Laparoscopic cystectomy has been the first-choice surgical treatment for chocolate cysts. Recently, it has been pointed out that cystectomy for chocolate cysts may have detrimental effects on ovarian reserve.

Medical treatment options for endometriosis, include NSAIDs, oral contraceptives, progestins, and gonadotropin-releasing hormone agonist (GnRHa). Although GnRHa exhibits considerable efficacy by reducing the serum estradiol concentration to postmenopausal levels, these agents are accompanied by a high incidence of hypoestrogenic symptoms and a substantial decrease in bone mineral density (BMD). Newer drugs that are highly effective and can be used over an extended period of time are thus required.

Dienogest (DNG), a progestin of 19-nortestosterone derivative, has a good oral bioavailability and is highly selective for progesterone receptors. Following its commercial availability in the Japanese market since 2008, good efficacy for severe pain and tolerability of DNG in patients with endometriosis has been demonstrated. Oral contraceptives are other agents to reduce pain symptoms and postoperative recurrence rate when used for a long period of time.

Therefore, our current strategy for the treatment of endometriosis is to minimize the number of operations and to control symptoms using safe drugs until patients desire for a child. This presentation will summarize the modern medical management of endometriosis and the newly developed agents for endometriosis.

Endometriosis as Wounds Undergoing Repeated Tissue Injury and Repair: Evidence and Clinical Implications

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Abstract

Despite the exponentially growing number of publications on endometriosis, the pathogenesis and pathophysiology of endometriosis still remain elusive. Consequently, there is no clinically useful staging system that correlates with the severity of symptoms or with prognosis. The progress in the development of non-hormonal drugs also has been painfully slow. In fact, we do not even know its natural history. As in eutopic endometrium, ectopic endometrium or lesions undergo cyclic bleeding, a common and defining feature shared by both endometriosis and adenomyosis. But bleeding is an indication of tissue injury, which is followed, compulsively, by tissue repair.

In this lecture, I shall present data to demonstrate that endometriotic lesions are fundamentally wounds undergoing repeated tissue injury and repair (ReTAIR). Viewing the lesions through this prism, we found that platelets play critical roles in the development of endometriosis and adenomyosis. In addition, women with endometriosis appear to be in a hypercoagulable state. Not only platelets drive smooth muscle metaplasia (SMM) and fibrogenesis in endometriosis, ectopic endometrium also secrete coagulant factors. Hence, lesions of ectopic endometrium and platelets engage active cross-talks, promoting the development of endometriosis. In particular, ovarian endometrioma and deep endometriosis, traditionally viewed as two separate disease entities, turn out to share the same ReTAIR process but only differ in the extent. Anti-coagulation therapy appears to be efficacious in treating the diseases in mouse, and many promising drugs tested pre-clinically turned out to be either anti-platelet or anti-thrombotic. Driven by factors secreted by platelets and other immune cells, endomeriotic lesions progress to fibrotic tissues through epithelial-mesenchymal transition (EMT), fibroblast-to-myofibroblast transdifferentiation (FMT), and SMM. With this, the natural history of endometriotic lesions becomes clear. This view also has important and immediate implications in the identification of novel biomarkers for endometriosis and in devising novel therapeutics.

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Long-term Management of Endometriosis

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Abstract

The primary goal of endometriosis treatment is the management of pain relief by medical and surgical treatments or ART in the case of infertility. Regarding the role of surgery, it is far from being completely defined since the recurrence of endometriosis after surgery is estimated at approximately 20% at two years and 40-50% at five years. The use of medical therapy, as the first-line treatment, is becoming the best choice for disease symptoms. However, the disease is now considered as a chronic inflammatory disorder and, therefore, a long-term management is required.

The GnRH analogs were considered as the gold standard treatment for a long time. Their effect is mediated by inhibiting the estrogen secretion; however, limitations include the high recurrence rate (50% of patients show a relapse of symptoms within 6 months of discontinuation of therapy) and side-effects associated with the transitory pharmacological menopause condition created.

The progestins are now considered as the primary drugs since they are safe in the long-term, less expensive, and usually well tolerated. Progesterone resistance is counteracted by progestins. Dienogest has the indication of endometriosis-related pain due to its anti-inflammatory effects (reduced prostaglandin E2, IL-6, IL-8, and monocyte chemoattractant protein-1) and its inhibitory effect on aromatase and neuroangiogenesis. The long-term treatment with dienogest reduces pain perception with bleeding irregularities in 3-7% of patients; nonetheless, pelvic pain reduction persists for at least 6 months after the treatment cessation. Other progestins can be administered with an intrauterine or intravaginal route. In particular, levonorgestrel-IUD or vaginal danazol is an effective treatment for rectovaginal endometriosis.

In terms of long-term management, the choice to opt for a medical or surgical treatment depends on the age, symptoms, phenotype of endometriosis (ovarian, peritoneal or deep infiltrating endometriosis), and multiple surgeries in the past. When the patient has a desire for pregnancy, ART may be considered as the primary approach. Personalized medicine suggests tailoring the treatment of endometriosis on a patient-specific and time-specific basis, with the preference of using a medical approach in young women allowing for a possible surgical approach at the most appropriate time.

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Deep Infiltrating Endometriosis and Infertility in Favor of ART

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Abstract

Endometriosis is a public health issue that bears an important social burden. Approximately 5-10% of reproductive-age women are affected by endometriosis, and at least one-third of these are infertile. Symptoms vary widely, including dysmenorrhea, non-cyclic chronic pelvic pain, dyspareunia, and infertility with a considerable negative impact on the quality of life. Deep infiltrating endometriosis (DIE) is a heterogeneous disease and constitute one of the most aggressive forms of endometriosis.

Best practice for treating DIE-related infertility is widely debated, and its management is controversial. Hormonal treatment, all types, are contraceptive and do not enhance pregnancy chances. Hence, the remaining choice for women wishing to conceive is between surgery and assisted reproductive technologies (ART). This choice should be guided by the following parameters: patient's wishes and pain symptoms, clinical presentation, disease stage (in particular the existence of associated endometriomas and/or adenomyosis), patient's age, history of previous surgery, duration of infertility, associated male or tubal factors, ovarian reserve, and availability of ART. ART was found effective in case of endometriosis, with no adverse impact on pain or quality of life scores. Neoadjuvant medical treatments as antigonadotropic drugs (OCuse or GnRHa) improve the outcome of ART. In addition, preliminary reports suggest that pregnancy rates are increased following a deferred frozen embryo transfer strategy in case of endometriosis.

Data, mostly uncontrolled, indicate that surgery at any stage of endometriosis enhances the chances of natural conception. However, in case of deep infiltrating endometriosis, especially in case of intestinal involvement, surgery is not harmless and the benefits of a spontaneous conception following surgery should be balanced with life-threatening surgical risk as fistula, peritonitis, bladder and intestinal dysfunctions, and risk of disease recurrence. In addition, in case of associated ovarian endometrioma, fears that surgery can alter ovarian function that is already compromised sparked a rule of no surgery before ART.

The respective advantages of surgery, medical treatment, and ART intertwine complexly in women with deep infiltrating endometriosis. This intricate medley mandates of a global approach to optimize every option. Indeed, only such a strategy can oppose a situation that still too often prevails, when the main reason for the choice of surgery or ART stems from the primary activity of the doctor who is first consulted.

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Endometriosis and Infertility

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Abstract

Endometriosis has always been attributed to infertility, although the association remains unclear. In the setting of intrauterine insemination (IUI), infertile women with endometriosis have decreased fecundity as compared to other diagnoses. Also, the prevalence of endometriosis is higher in women who have otherwise unexplained infertility. The influence of endometriosis in the clinical outcome of IVF remains controversial. At least some of the studies from in vitro fertilization (IVF) cycles have documented decreased pregnancy rates in endometriosis cases when compared with the other IVF indications. Studies on donor oocytes have suggested that the primary defect associated with endometriosis is mainly related to the oocyte quality, whereas some others have documented that defective implantation is also likely to be involved.

Nonhuman animal studies also support that endometriosis leads to implantation defects. Endometriosis as a well-known estrogen-dependent and systemic inflammatory condition alters endometrial function by causing progesterone resistance and estrogen dominance. Endometrial biomarkers are differentially expressed in the endometrium of women with endometriosis as demonstrated by microRNA arrays, proteomics, and other molecules. In contrast to what has been suggested, the results of ERA confirm that the endometrial receptivity gene signature during the window of implantation is similar between infertile woman with and without endometriosis, and is independent of endometriosis stage.

The systemic and local cytokine expression changes that disrupt normal endometrial function can be improved by surgical removal of endometriomas. Over-expression of p450 aromatase in endometrium changes the dynamic of progesterone/estrogen activity, also facilitates the growth of endometriotic lesions. Higher levels of local estrogen may be inhibiting the expression of several key molecules in implantation like integrins, cytokine leukemia inhibitory factor (LIF), HOXA10, glycodelin A, osteopontin, lysophosphatidic acid receptor, hepatocyte growth factor, 17-b-hydroxysteroid dehydrogenase, and matrix metalloproteinases. Estrogen dominance promotes inflammation, angiogenesis, cell proliferation, and immunosuppression. Progesterone resistance due to the absence of the b isoform of its receptor which leads to inadequate response to progesterone also contributes to increased cell proliferation and elevated levels of estrogen receptors in both eutopic and ectopic endometrial tissue.

Further studies are required to improve our knowledge of this enigmatic disease by investigating other factors involved in receptivity, such as epigenetic aberrations and pathologic proteomic profiles.

Dilemmas and Barriers in the Diagnosis of Endometriosis

By Angela G. Sison-Aguilar

Abstract

Endometriosis is a disease with an increasing prevalence during the last few decades. Lifestyle transformation has increasingly exposed many women to the risk factors of endometriosis. The challenge is to identify those at risk, limit invasive tests, and offer early intervention to mitigate the effects of the condition. The risk generally increases with age and exposure. Those with symptoms, such as pelvic pain and gastrointestinal symptoms coinciding with the menstrual cycle, are assumed to be at a greater risk of having the disease. Familial history points to a putative genetic predisposition. However, recent data point only to the presence of infertility as the singular factor that increases the odds of having endometriosis.

Risk assessment is necessary since universal screening is not cost-effective and, depending on invasiveness, can also be harmful; not only because of the complications, but also because of the potential to aggravate the disease or its consequences.

Despite easily identifiable risk factors, diagnosis is often delayed due to limitations in access to care. Sociocultural factors diminish health seeking behavior among young women even if highly symptomatic. Economic barriers also play a prominent role, especially in the developing countries. The experience and training of the physician are additional limiting factors in early diagnosis of the condition.

Screening and diagnosis of this disease are quite contentious. Imaging only helps to detect ovarian lesions, but it is practically inapplicable to identify peritoneal disease. Emerging techniques, such as CT scan and MRI to detect deep infiltrating phenotype are currently being tested for reliability and replicability. Biomarkers, such as CA 125, CA 19-9, IL-6, IL-8, and TNF alpha have variable specificity and sensitivity; clinicians are cautioned as to their interpretation. Resorting to invasive surgical techniques, to confirm the presence of endometriosis, should be used sparingly due to potential side effects. In addition, visualization and biopsy of lesions do not have high sensitivity, especially in women who have received prior medical treatment.

Empiric treatment of endometriosis based on risk, symptoms and non-invasive diagnostics is currently recommended. The impact of this strategy on the long-term health outcomes of women should be evaluated.

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Diet and Supplements for Endometriosis

Yutaka Osuga

Abstract

Endometriosis is a chronic inflammatory disease. The disease often recurs after medical and/or surgical treatment and tends to become resistant to the treatment. In addition, repeated medical and/or surgical treatment would be a big burden for the patients both physically and economically. Thus, it is now emerging as a new trend to prevent the disease and manage the disease in a human-body-friendly manner. In this context, the impact of nutritional aspects related to the pathogenesis and progression of endometriosis should be noticed. However, there are few solid evidence on the relation between nutrients and endometriosis. We thus examined the impact of omega-3 fatty acids, resveratrol, and vitamin D on endometriosis using in vitro culture of endometriotic cells and a mouse model of endometriosis.

Fat-1 mice (in which omega-6 can be converted to omega-3 polyunsaturated fatty acids) and wild-type mice (in which it cannot be) were used for the endometriosis model. In this model, the number and weight of endometriotic lesions in fat-1 mice two weeks after inoculation were less than half of those in the controls.

Resveratrol suppressed TNF-α-induced IL-8 release from endometriotic stromal cells. Resveratrol significantly reduced survivin mRNA expression and pretreatment with resveratrol significantly enhanced TRAIL-induced apoptosis in endometriotic stromal cells. These effects of resveratrol are suggested to inhibit the development of endometriosis.

1,25(OH)2D3 reduced IL-1β- or TNF-α-induced inflammatory responses, such as IL-8 expression and prostaglandin activity. 1,25(OH)2D3 also reduced viable numbers of endometriotic stromal cells and DNA synthesis. The serum 25-hydroxyvitamin D3 levels were significantly lower in women with severe endometriosis than in the controls and women with mild endometriosis.

Taken together, the demonstrated effects of vitamin D may contribute to the protection from endometriosis. In summary, diet and supplements would be novel strategies for the prevention and management of endometriosis.

MiRNAs as Diagnostic Biomarkers for Endometriosis: Privation and Promise

Xu

Abstract

Laparoscopy is the gold standard diagnostic test for EM; however, it is expensive and carries surgical risks. We often use non-invasive methods (e.g. blood test, imaging, urinary, endometrial, or combination tests) to assist diagnosis. Nonetheless, none of these methods, which can be considered as a replacement tests to surgical diagnosis in clinical practice, have been evaluated individually to assess their accuracy as a diagnostic tool for EM.

A number of studies have been conducted to evaluate whether the results of blood tests (blood biomarkers) could assist in detecting and diagnosing endometriosis noninvasively. Research studies have shown that the mean sensitivity and specificity of anti-endometrial antibodies (4 studies, 759 women) were 0.81 (95% CI: 0.76-0.87) and 0.75 (95% CI: 0.46-1.00). For IL-6, with a cut-off value of >1.90 to 2.00 pg/ml (3 studies, 309 women), the sensitivity was 0.63 (95% CI: 0.52-0.75) and the specificity was 0.69 (95% CI: 0.57-0.82). For CA-19.9, with a cut-off value of >37.0 IU/ml (3 studies, 330 women), the sensitivity was 0.36 (95% CI: 0.26-0.45) and the specificity was 0.87 (95% CI: 0.75-0.99). Few studies have assessed CA-125 at different thresholds, demonstrating diverse sensitivities and specificities. One study (62 participants, cycle phase not reported, rASRM III to IV, cut-off value >43.0 U/ml) was not confined to ovarian disease and included any type of endometriosis, demonstrating a sensitivity of 1.00 (95% CI: 0.92-1.00) and a specificity of 0.80 (95% CI: 56-0.94).

There were two eligible studies that evaluated the role of microRNAs (miRs) in detecting endometriosis. One study (85 participants, follicular or luteal cycle phase) assessed the diagnostic accuracy of six microRNAs in pelvic endometriosis and rASRM I to IV. Among them, miR-141* (sensitivity 0.72, 95% CI: 0.59-0.83 and specificity 0.96, 95% CI: 0.80-1.00) showed satisfactory result. The authors did not report the cut-off values for any of the tested biomarkers. Another group published data on the diagnostic performance of three microRNAs (40 participants, follicular or luteal cycle phase) in moderate-severe pelvic endometriosis, rASRM III to IV. The AUC value for miR-17-5×miR-20a×miR-22 was 0.90 (95% CI: 0.80-1.00). In conclusion, there were six microRNAs showing high sensitivity and specificity. Hence, microRNAs are promising as diagnostic biomarkers for endometriosis.

Twenty-seven studies evaluated the diagnostic performance of 22 endometrial biomarkers for endometriosis. These were angiogenesis and growth factors (PROK-1), cell-adhesion molecules (integrins α3β1, α4β1, β1, and α6), DNA-repair molecules (hTERT), endometrial and mitochondrial proteome,

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hormonal markers (CYP19, 17βHSD2, ER-α, ER-β), inflammatory markers (IL-1R2), myogenic markers (caldesmon, CALD-1), neural markers (PGP 9.5, VIP, CGRP, SP, NPY, NF), tumour markers (CA-125), and microRNAs. Our previous data also indicate the aberrant expression of CEBPB and miR-155 may involve cellular proliferation and cellular invasion of endometriosis. We are currently researching the expression of miR-155 and CEBPB in eutopic endometrium tissues of endometriosis patients, investigating the involvement of estrogen and miR-155/CEBPB in primary endometrial epithelial cells using gain/loss of function technics and ChIP-Seq, and revealing the role of miR-155/CEBPB pathway in vivo by using uterus specific miR-155 knockdown mouse. These studies would provide the foundation for additional functional studies to elucidate the potential and diagnostic role of miRNAs in endometriosis; we envisage a bright future. More high-quality research trials are necessary to accurately assess the diagnostic potential of microRNAs.

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Genetics of Endometriosis

Young Min Choi

Abstract

Endometriosis is a common gynecological disease of which prevalence approaches 5-15% in general population and up to 30% in subfertile women. Despite its commonness, there is a long way to go to understand its pathogenesis and potential future treatment pathway. Recently, some technological advances in genetic studies, however, have fuelled the interest in molecular polymorphisms and their influence on the susceptibility of complex trait diseases including endometriosis. For instance, the assumption that clarifying the genetic etiology of endometriosis would have implications for early diagnosis has driven some exploratory (hypothesis-generating) studies and validation (hypothesis-testing) studies of a limited number of genetic markers to be spotlighted. However, low reproducibility of the data published through validation studies makes the enthusiastic researchers confused and worn out. The hurdles to advance our understanding of genotype-phenotype relationship are known to be related to study design, sample size, and power issues. To overcome and bypass these obstacles, the latest genome-wide strategies are used to find the gene pathway contributing to endometriosis.

In this presentation, I would summarize data analysis performed on the Korean population with the noteworthy international data hereafter. Up to now, we have analyzed 66 polymorphisms in 46 genes as candidate genes in endometriosis. Among many genes studied, only a few polymorphisms have been found to be associated with the risk of endometriosis (GSTT1 null mutation with combination of AhRR genotype, ER-alpha TA dinucleotide, VEGF 405G>C, TNF-alpha, -1031T>C and -863C>T, eNOS Glu298Asp, PPARγ Pro12Ala, and INF-γ CA repeats). Following the publication of genome-wide linkage analysis that reported significant susceptibility loci on rs10965235 in CDKN2B-AS and rs12700677 in 7p15.2 in the Japanese and Australian people, we have found that rs10965235 in the CDKN2B-AS and rs16826658 near the WNT4 gene are also meaningful in the Korean populations.

Considering the possibility of gene-gene and/or gene-environment interactions, a single polymorphic site may not be sufficient to significantly change the risk of endometriosis per se. In addition, individual risk variants will not provide sufficient predictive value for diagnostic test (typical relative risks: 1.3-1.8). Following GWAS with the larger number case/controls, validation research studies with well-designed case-control build-up are required to confirm the hypothesis-generating data for the more consistency.

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Adenomyosis Uteri and Fertility: Surgical or Conservative Treatment

George Pistofidis

Abstract

The basis of choosing the correct treatment or operative modality stems from:

i. Standardizing techniques for maximizing the accuracy of preoperative diagnosis.
ii. Possessing an appropriate classification system on which to base the operability of each case.
iii. Being able to correlate the surgical outcome, as in postoperative organ function and symptomatology, with each type of adenomyosis lesion treated.
iv. Multi-center prospective studies with long-term post-treatment follow-up to support the above

Correct Diagnosis

In our experience, the correct diagnosis of diffused adenomyosis is enhanced by a vaginal ultrasound showing one or all of the following criteria: intra-myometrial cysts, junctional zone thickness over 8 mm, asymmetric uterine wall enlargement, abnormal echo imaging with heterogeneous myometrium, and irregular margins. We observed that by applying the above, we achieved a diagnostic accuracy of 95% for diffused adenomyosis and 77% for all lesions. In our experience, focal adenomyomata with sclerotic or nodular types are not that easy to diagnose in the same manner and are occasionally mistaken for uterine fibroids. In our practice, we do not routinely use MRI as a diagnostic tool and have found that it does not make a noticeable difference compared to a diagnosis based on sonography alone. However, color Doppler could additionally enhance preoperative diagnosis.

Adenomyosis Types

Over a period of 25 years, we classified adenomyosis lesions into four different categories, namely the diffused type (most common), and focal lesions that are subdivided into sclerotic, nodular, and cystic types. Focal types are more likely to be fully or almost fully excised compared with the diffused types. Anatomically speaking (table 1), the uterus could be spared in the majority of cases with focal lesions. Symptomatology, such as menstrual loss and dysmenorrheal, is also improved. Our observations were radically different for diffused type adenomyosis.

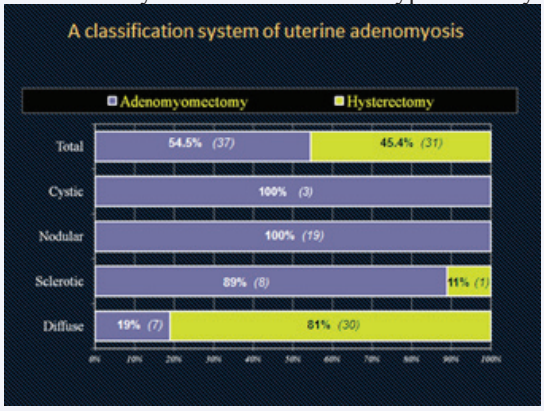

Table 1: A classification system of uterine adenomyosis

Most of our cases were referred to us from elsewhere and did not have an accurate follow-up. Thus, postoperative fertility was not consistent. In general, more follow-up data became available for women with sclerotic, nodular, and cystic lesions who also happened to belong to a younger age group (table 2).

Patient age distribution and adenomyosis types

Age

	Mean (yrs)	St Dev (yrs)	Range (yrs)
Total	41.2	6.7	[27 – 59]
Diffuse (orange)	44.4	6.0	[27 – 59]
Sclerotic (dark blue)	40.1	6.4	[30 – 47]
Nodular (yellow)	37.7	5.2	[27 – 45]
Cystic (light blue)	30.7	2.5	[28 – 33]

Table 2: Patient age distribution and adenomyosis types

Operative Methods and Fertility

Adenomyosis can be managed safely by laparoscopy as long as the surgical team has experience in this type of pathology. As mentioned above, correct diagnosis is essential for organizing a solid preoperative plan. Hemostasis can be achieved by injecting vasoconstrictive agents (vasopressin), which is our preferred method, or by temporarily clipping the uterine arteries. Often the adenomyotic mass protrudes from the serosal surface resembling a myoma. In cases where it is totally intramural, it can be palpated by gently probing the uterine surface with an atraumatic laparoscopic grasper. Once the abnormal area is defined, we divide the adenomyotic mass in two by cutting perpendicularly with monopolar current. Occasionally, although being careful, the uterine cavity was breached and in some cases, part of the endometrium had to be removed with the lesion. Subsequently, the abnormal tissue was grasped and demarcated by tunneling under the serosa. Often, the removal of more than one fibrosed myometrial section is needed before reaching a healthier area. Once the lesion is excised (all or almost all), the uterine wall is closed with interrupted sutures using monocril 0 or 1 in more than one layer. We always try to bury the serosal edge with continuous or interrupted introverting finer monocril 2.0 stitches. We try to avoid, as much as possible, the overlapping myometrial flaps, especially in women requesting fertility.

Fertility Outcome

Focal adenomyotic lesions (regardless of sclerotic, nodular, or cystic) offer the best pregnancy outcome as long as being single and less than 7 cm in size. During surgery, it is vital to reach and approximate healthy myometrium but not adenomyotic tissue since the latter leads to weak scar formation. However, deep endometriotic lesions frequently coincide with adenomyosis. Thus, fertility can be compromised in more than one way. In cases of diffused adenomyosis, various surgical methods have been described. In our surgery, we only had a small number of such cases and these were women in the older age groups not requesting fertility. In women with diffused lesions or focal lesions exceeding 7 cm and desiring pregnancy, we propose a 4-6 months course with GnRH suppression followed by IVF. To our knowledge, there were no cases of uterine rupture. All women following surgery had a delivery by cesarean section.

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COUP-TFII Regulates Lymphangiogenesis in Endometriosis

Jhao-Lin Fu[1], Wan-Ning Lee[1], Shih-Chieh Lin[1], Meng-Hsing Wu[2], Shaw-Jenq Tsai[1]

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Abstract

Chicken ovalbumin upstream promoter-transcription factor II (COUP-TFII, also known as NR2F2) is an orphan nuclear receptor that plays pivotal roles in cell fate determination and organ development. In female reproductive system, COUP-TFII was found to be indispensable for proper embryo implantation and placentation, indicating it is a critical regulator in uterine physiology. However, the function of COUP-TFII in endometriosis progression and the mechanism responsible for COUP-TFII downregulation in endometriotic cells remains incompletely elucidated. Herein, we demonstrate that the expression of COUP-TFII is significantly reduced in endometriotic stroma by microenvironmental factor (e.g. hypoxia) and proinflammatory cytokines (e.g. interleukin-1β, tumor necrosis factor-α, and transforming growth factor-β1).

Downregulation of COUP-TFII in endometrial stromal cells results in de-repression of cyclooxygenase-2 (COX-2), which catalyzes the biosynthesis of prostaglandin E_2. Overproduction of PGE_2 leads to the induction of angiogenic factor such as fibroblast growth factor-9. Besides, loss of function of COUP-TFII was found to induce the expression of other angiogenic/lymphogenic factors, including angiogenin and vascular endothelial growth factor-C (VEGF-C). As angiogenin is a potent angiogenic factor while VEGF-C is an angiogenic and lymphogenic factor, loss of COUP-TFII indeed leads to aberrant formation of microvessels in autotransplanted mouse model. Taken together, these pieces of information indicate that hypoxia and cytokine-mediated loss of COUP-TFII in endometriotic lesion is a critical factor that regulates blood and lymphatic vessels, which contribute to the pathogenesis of endometriosis.

History and Future of Endometriosis: A Lifelong Disease

Liselotte Mettler

Abstract

Historically, endometriosis was originally described more than 300 years ago. It is a chronic, estrogen-dependent, and inflammatory disease with a worldwide prevalence of 10-30% in women of reproductive age. Characterized by the growth of endometrium-like tissue at aberrant sites outside the uterus, it is responsible for symptoms that may include chronic pelvic pain, inflammation, dysmenorrhea, dyspareunia, and subfertility. Symptoms of this kind are known to significantly degrade the quality of life. In Germany, the direct and indirect economic costs of endometriosis are approximately €1.5 billion and in the United States $20 billion per year. The first histological description of this disease was in 1860 by Carl von Rokitansky, Vienna, Austria.

Based on 8 theories on the pathogenesis of endometriosis (table 1), the current possibilities of visualizing endometriosis with laparoscopy and hysteroscopy as well as the exact pathohistological diagnosis, endometriosis can be recognized and treated medically and surgically to a large extent. However, in many cases, patients must live with a certain acceptance of pain, continuous physiotherapy, rehabilitation, nutrition adjustment, and even psychological therapy.

Table 1: Eight theories on the pathogenesis of endometriosis

Theory	Mode of action
Retrograde menstruation	Transport of endometrial cells through the fallopian tubes into the lesser pelvis, allowing implantation of endometrial lesions
Metaplasia	Transformation of peritoneal tissue/cells into endometrial tissue through hormonal and/or immunological factors
Hormones	Proliferation of endometrial lesions in response to estrogens. Resistance to progesterone-mediated control of endometrial proliferation
Oxidative stress and inflammation	Activation of immune cells and cytokines to promote endometrial growth
Immune dysfunction	Hampers the elimination of menstrual debris and promotes the implantation of endometrial lesions
Apoptosis suppression	Supports the survival of endometrial cells and the down-regulation of apoptotic pathways
Genetics	Basis for the increased attachment of endometrial cells and their ability to evade immune clearance
Stem cells	Endometriotic deposits of undifferentiated cells with natural regenerative capacity

Theories on the etiology of endometriosis (Mettler et al., 2017, Endometriosis: A concise practical guide to current diagnosis and treatment, EndoPress, page 16) and different classifications of endometriosis helps to differentiate superficial/peritoneal endometriosis from ovarian endometriosis, deep infiltrating

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endometriosis, endometriosis lesions with pain, uterine and extrauterine adenomyosis, and extragenital endometriosis.

As medical treatment, in addition to surgical measures, patients should be treated either with GnRH analogues and add-back medication or progestogens, particularly in order to reduce pain and prevent recurrence. Nonsteroidal anti-inflammatory agents, oral contraceptives, and many of the progestogens available today have demonstrated a positive effect in patients faced with a recurrence of pain symptoms. The progestogen dienogest currently plays a central role in the medical treatment of endometriosis. In Germany, dienogest is the only progestogen medication available to date that is licensed for the treatment of endometriosis and suited for long-term use. Decision making regarding the most suitable treatment option should be based on the patient's compliance with the proposed regiment.

As surgical treatment, conventional laparoscopic and robotic-assisted laparoscopic surgery, in specific cases combined with a hysteroscopic approach dominate the field. In all forms of endometriosis, the surgical excision of the lesion must be attempted (of course, always with the patient's compliance and consent) as it currently gives the best results in the healing process of endometriosis, although we must be aware that these surgical attempts have limits too. In cooperation with general surgeons, gastrointestinal surgeons, and urologists most lesions can be excised. In the treatment of endometriosis, special conditions that require attention are infertility, pain situations, neuropelveology, and nerve-sparing surgery in relation to malignancies and adenomyosis. Bowel surgery can be broadly divided into conservative bowel surgery and segmental bowel surgery with resection. There is a wide range of conservative and advanced treatment option available to remove all endometriotic tissue and to restore the integrity of anatomical structures distorted by the disease.

In the future, more knowledge on the course of endometriosis, occurrence in special situations, post-surgical management, nerve-sparing surgery and pelvic floor reconstruction, treating the adolescent endometriosis, and pain management together with new medical targets should help us to improve the spectrum of therapeutical approaches for this disease.

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Adenomyosis: Current Understanding from Bench to Clinic

Khaleque N Khan

Abstract

Background: Adenomyosis is commonly believed to arise from the basalis endometrium. As an estromedin growth factor, hepatocyte growth factor (HGF) exhibits multiple functions in endometriosis, a disease arising from the functionalis endometrium. The present study aimed to investigate the involvement of epithelial-mesenchymal transition (EMT) in the pathogenesis of human adenomyosis. Information is still scarce on the possible association between adenomyosis and infertility. We proposed some biological evidence that might be related to adverse reproductive outcome in women with adenomyosis.

Methods: Full-thickness biopsy specimens from endometrium to myometrium were collected after hysterectomy from women with (n=15) and without (n=12) adenomyosis. The relationship between HGF and E-cadherin (epithelial cell marker) and N-cadherin (mesenchymal cell marker) was examined at the gene and protein levels using endometrial epithelial cells (EECs) in culture and tissues by quantitative RT-PCR and immunohistochemistry. Changes in inflammatory reaction, apoptosis, and cellular architecture in the endometria of women with and without adenomyosis were investigated.

Results: HGF down-regulated *E-cadherin* and up-regulated *N-cadherin* mRNA expression in EECs and an inverse relationship in protein expression between HGF and E-cadherin was observed in basalis endometria derived from women with adenomyosis. HGF induced morphological changes of EECs from cobblestone appearance to spindle-shaped cells and promoted migration of EECs. Tissue infiltration of macrophages and TUNEL-positive apoptotic cells were significantly higher in the endometria and myometria of women with adenomyosis than in control women. Our preliminary electron microscopic study indicates that the number of microvilli appears to decrease and the area of condensed chromatin appears to increase in the ipsilateral side and fundus compared with the contralateral side of endometria derived from women with focal adenomyosis.

Conclusion: A cascade of EMT at the endo-myometrial junction may be involved in the pathogenesis of adenomyosis. Increased tissue inflammatory reaction and abnormal architectural change of endometria may be associated with adverse reproductive outcome in women with adenomyosis.

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Laparoscopic Management for Various Types of Adenomyosis

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Abstract

Adenomyosis is characterized by the ectopic growth of endometrial glands and stroma. The vast majority of the conditions develop within the uterine myometrium, with adjacent myometrial hyperplasia presenting local or diffuse lesions. In addition, some cystic adenomyosis variations are occasionally found in a retroperitoneal space and occurred in young women. Along with the recent trend toward late marriage in Japan, conservative treatment including administrations of a gonadotropin-releasing hormone agonist, danazol, and oral contraceptives are well practiced. However, the effect of these hormonal treatments is temporary and shows insufficient improvement in quality of life and fertility outcome. Laparoscopic adenomyomectomy is a beneficial option for patients with adenomyosis uteri who desire childbearing in the future, though it has been a challenging issue. We developed a novel laparoscopic hysteroplasty with overlapping normal muscle layer on the serosal membrane above and below the incision line as serosal flap to the substantial loss in the muscle layer after adenomyomectomy. This procedure is favorable for patients with focal adenomyotic tissue in the uterus to provide promising postoperative outcomes, including lower postoperative adhesion formation, pain relief, and pregnancy. In addition, laparoscopic minimally invasive conservative surgery by applying our laparoscopic myomectomy technique for patients with juvenile cystic adenomyoma, which is a variant of adenomyosis, is feasible to achieve favorable outcomes concerning postoperative lower recurrence and pain relief. In this video presentation, laparoscopic strategy for patients with various types of adenomyosis is shown and the outcome is described.

Is Endometriosis a Preneoplastic Condition after the Age of 40?

Engin Oral

Abstract

Although it is a benign gynecologic condition, endometriosis shares pathophysiologic features with cancer. In recent years, the accumulated histologic and epidemiologic evidence suggest that ovarian endometriosis may give rise to malignant ovarian tumors, primarily those that are epithelial in origin. These are known as endometriosis-associated ovarian carcinoma (EAOC), including ovarian clear cell carcinoma, endometrioid carcinoma, and seromucinous (least common) tumors.

Most women with endometriosis do not develop ovarian cancer. Approximately 80% of all malignancies associated with endometriosis are identified in the ovary, of which 20% are extragenital.

- Occurrence at a younger age
- Diagnosis established at an earlier stage
- Low-grade
- Better overall survival
- Predominantly endometrioid and clear-cell type

Although the most common histologies are endometrioid and clear cell carcinomas, other histologies, such as carcinosarcomas and adenocarcinoma have also been reported.

Endometriosis and cancer share common antecedent mechanisms and/or predisposing factors (genetic susceptibility, immune/angiogenic dysregulation, and environmental toxin exposure). Some patients (e.g. women with a long-standing history of endometriosis, endometriosis diagnosed at an early age, endometriosis-associated infertility and/or history of infertility treatment, and patients with ovarian endometrioma) may be at an increased risk for ovarian cancer. Endometrioid tumors with adenomyosis are hormonally responsive, well differentiated, and more likely to be diagnosed earlier, while it would still be confined to the uterus.

- There is no recommended cancer screening for women with endometriosis.
- There is a theoretical rationale to believe that surgical and hormonal control of endometriosis may also decrease the risk of ovarian cancer.
- However, to date, there are no data to support such a conclusion.
- There are some data suggesting that human epididymal antigen (HEA) 4 is a better indicator than Ca-125 to distinguish epithelial ovarian cancers from pelvic endometriosis and pelvic inflammatory diseases, especially in premenopausal women.

It is difficult to ascertain whether a strong correlation with endometriosis and breast cancer exists. The fact that many studies find an association between the two conditions and that the association is lost after controlling for confounders supports the notion that the correlation may not be causative.

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The Impact of Endometriosis on Quality of Life: A Survey of Middle Eastern Women

Ghassan Lotfi

Abstract

Endometriosis is one of the most debilitating chronic diseases among female population in early and late reproductive age. Besides the impact of this disease on the economy of most countries in the world, the quality of life in women suffering from this disease is far from well-studied or properly measured.

In this presentation, the impact of endometriosis on the quality of life among female patients diagnosed with endometriosis is described. The survey covers women in different countries across the Middle East.

Peritoneal Environment in Endometriosis

Kyu-Sup Lee

Abstract

Endometriosis (ES), histologically defined as the presence of viable endometrial tissue outside the uterine cavity, is most commonly implanted over visceral and peritoneal surfaces within the female pelvis. ES has been known as a puzzling disorder affecting women of reproductive age with obscure pathogenesis, even if retrograde menstruation seems the most widely accepted hypothesis for the development of ES. It is now recognized that there are 3 distinct types of ES, namely peritoneal, ovarian, and deep ES; each of which is thought to have a different pathogenesis. Recent studies have revealed that the combination of genetic, hormonal, immunological and anatomical factors contributed to the formation and development of ES.

Local inflammatory responses are initiated by recruitment and activation of peritoneal macrophages and, although the number of macrophages in women with ES remains a topic of debate, there is good evidence of increases in macrophage-secreted pro-inflammatory cytokines and growth factors. These products, such as IL-1, 6, 8, TNFα, MCP-1, MCSF-1, and TGF-β1 are believed to play a central role throughout the initiation, establishment, and progression of ES.

The proinflammatory state of peritoneal fluid is an important mediator of ES. Activated lymphocytes, neutrophils, and macrophages are the hallmark of the inflammatory response induced by ES. The engagement of neutrophils in the pathogenesis of ES has not been thoroughly investigated. Activated neutrophils can produce and release proinflammatory mediators and chemokines. The results of recent studies have suggested that neutrophils play a role in angiogenesis, apoptosis, and cytokine production during the development of ES. Modulating the secretion of cytokines and angiogenic growth factors from neutrophils will be one of the potential methods for the treatment of inflammatory and angiogenic manifestation of ES.

The ability of ectopic endometrial cells to escape immune surveillance within the peritoneum is thought to be associated with an impaired scavenger response in the peritoneal membrane. Reduced NK cell numbers in the peritoneum may contribute to a defective clearance of retrograde menstrual tissue, augmented by shedding of sICAM-1 in response to inflammation, and further reducing NK cell activity. The mechanism by which the abnormal peritoneal environment causes infertility or chronic pelvic pain is speculative. Further research into the peritoneal fluid can lead to more insight into the pathogenesis of ES as well as to potential non-surgical diagnostic and treatment modalities.

The objective of this presentation is to review the involvement of peritoneal environment in the development of ES and its associated pathologies.

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Reserve in Laparoscopic Surgery and Hormonal Treatment

Akira Iwase

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Abstract

The impact of surgical treatment for endometriomas, such as cystectomy and vaporization, on the oocyte yield in assisted reproductive cycles, had been debated. Serum anti-Müllerian hormone (AMH) level, a reliable marker for ovarian reserve, generalized this issue beyond the assisted reproduction. We have already reported the decline of serum AMH levels after excision of endometriomas, especially in bilateral cases (Fertility and Sterility 2010), and severe endometriosis with higher r-ASRM scores (Human Reproduction 2011). Thereafter, factors that possibly cause a decrease in serum AMH levels have been explored. Excessive use of electrocoagulation and accidental loss of ovarian cortex are indisputable causes affecting ovarian reserve negatively. We found that serum AMH levels after cystectomy could recover or decline more toward one year after surgery (Fertility and Sterility 2013), and demonstrated the mesosalpinx involved in the adhesion as its hidden reason (Reproductive Biology and Endocrinology 2016).

Ovarian reserve in women with endometriosis should be discussed more often in association with their fertility. We reported that pregnant women after cystectomy tend to show higher serum AMH levels compared to non-pregnant women (Gynecologic Endocrinology 2016). We believe that our clinical research is helpful for a better understanding of the role of AMH for infertile women with endometriosis.

Hormonal treatment is important for endometriosis patients as well as surgery. Even though long-term hormonal treatment may not be an option for infertile women, short-term hormonal treatment can be applied in combination with surgery and assisted reproduction. We have started the RCT to evaluate ovarian reserve using AMH and antral follicle count in women undergoing surgery and hormonal treatment. In this presentation, I am going to review our clinical research including ongoing RCT.

Right Hemicolectomy

Martin K. Walz

Abstract

The laparoscopic right hemicolectomy is a challenging operation. In oncological cases, it needs a precise dissection of the anatomical structures, especially the central and segmental vessels. The presentation describes tips, tricks and pearls of this operation based on about 20 years of experience.

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Transanal Resection of Rectal Tumors

Marco Sailer

Abstract

Transanal endoscopic operation (TEO), also known as transanal endoscopic microsurgery (TEM), is a minimally invasive treatment option for certain rectal tumors. The transanal endoscopic microsurgery (TEM) technique was developed by G. Bueß. Apart from the excision of benign lesions, this method can also be applied in patients with low-risk T1-carcinoma if size and localization permit its complete resection (R0). Using such strict criteria for patient selection, one can expect an excellent oncological outcome. However, it must be stressed that local excision is always part of the diagnostic workup and that the definitive histology needs to be appreciated. In case of an unfavorable histology (i.e. high-risk or higher T-stage), salvage radical resection should be performed. Functional results and quality of life are very good following TEO or TEM procedures, especially when comparing the outcome with that of radical rectal resection or abdominoperineal excision.

Restorative or Non-Restorative Approach in the Management of Low-Lying Rectal Cancer

SV Hosseini

Abstract

A number of variables influence the choice of an appropriate surgery for rectal cancer. These include, the level of a tumor, macroscopic appearance (ulcerated, polypoid), the extent of circumferential involvement, fixity, the degree of differentiation (histologic appearance), endorectal ultrasound, CT scanning, magnetic resonance imaging, positron-emission tomography (PET) scanning, presacral adenopathy, body habitus, gender, age, and metastatic disease. In regards to low-lying rectal cancer, one should be concerned with items such as neoadjuvant therapy (which is indicated in), fixed tumor, evidence of ureteric obstruction, invasion of adjacent structures (e.g. bladder, seminal vesicles, vagina), presacral adenopathy, anal canal invasion, ultrasound uT3 or uT4 lesion, and poorly differentiated histology.

There are various options for the management of low rectal mass. The first option is local excision. The criteria that determine which tumors are suitable for transanal excision are size <4 cm, tumor confined to less than one quadrant, site <9 cm from the anal verge, mobility, well-differentiated appearance, absence of lymphovascular invasion, absence of nodal involvement, no lesion on ultrasonographic Tl and T2, and no metastases on CT scan. The second option is transanal endoscopic microsurgery (TEMS); first described by Buess et al. in 1984. It is a minimally invasive technique involving the intraluminal excision of rectal neoplasms with the use of instrumentation to maintain a stable pneumorectum, enabling a magnified view of the operating field. The potential benefits of TEMS over transanal excision are (i) intraluminal excision of the mid- and upper rectal lesions (up to 20 cm), (ii) abolishes the necessity for radical resection in selected cases, (iii) provides precise dissection and en bloc excision of tumors, (iv) the absence of specimen fragmentation permits full and accurate pathological assessment of disease stage, (v) easier to excise sessile lesions, and (vi) less mortality, morbidity, blood loss, and hospital stay.

Sphincter-saving operation is obviously superior to abdominoperineal resection in terms of quality of life, but surgical rules should be observed. Improvements in surgical technique, the clarification of an acceptable distal margin, and neoadjuvant CRT have dramatically changed the perspective of surgeons and broadened the inclusion criteria for sphincter-saving procedures. Large series have demonstrated that the length of the distal margin does not correlate with the risk of local failure. The realization that distal intramural spread and/or retrograde lymphatic extension of rectal cancer are rare events has consequently led to the acceptance of a 2 cm distal margin. Furthermore, the chance of the tumor spreading beyond even 1 cm is rare and only of concern in poorly differentiated tumors. From both surgical and pathologic standpoints, the deep, lateral, and radial margins are the determining factors for the recurrence and adequacy of resection. Sphincter-sparing is a low anterior resection. During a standard complete TME, the bowel is typically transected 1.5 to 2 cm above the dentate line at the anorectal ring. This can be done with a stapler or with cautery when a patient's deep and/or narrow pelvis does not accommodate the stapling device.

The sphincter can be preserved in patients with tumors (>2 cm above the dentate line) that are not clearly invading the external sphincter or the puborectalis muscles are commonly amenable to resection with sphincter preservation. However, this procedure is contraindicated in patients with morbid obesity, baseline incontinence, multiple comorbidities, lifestyles that will not permit potentially compromised bowel function, if there is no separation between the tumor and sphincter mechanism on DRE, if the tumor is frankly involved with the sphincter on imaging, if the tumor is fixed to the pelvic floor, and if a distal 2 cm margin cannot be obtained.

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Results of Pelvic Organs Prolapse Suspension for Descensus Perinei and Obstructed Defecation Syndrome

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Abstract

Background: Pelvic organ prolapse can occur in up to 50% of parous women with a variety of bowel, urinary, and sexual symptoms associated with the extension of the prolapse. The present study aimed to examine the effect of pelvic organ prolapse suspension operation (POPS.) in women with obstructed defecation syndrome (ODS) and a distinct descensus perinei.

Methods: The operation was performed as described by Antonio Longo with laparoscopic lateral suspension using a mesh, but without simultaneous STARR procedure. POPS operation was performed in 35 patients (64±12 years) during 2011-2017. The follow-up period was 1.395±565 days.

Results: All patients had descensus perinei, cystocele, rectocele, and an internal rectal prolapse with positive ROM criteria for outlet-obstipation. In all patients, the operation was performed without intraoperative complications; mean hospital stay 5±1 days. No major adverse events were observed during the follow-up. The reported pain without the evidence of abdominal infection was in 11 (31%) patients. Descensus perinei and cystocele improved in all patients. The mean ODS score decreased from 16±3 to 5±3. In 9 (25%) patients with persistent ODS, an additional STARR or Elevate operation was performed later. An improvement of urinary stress incontinence was noticed in 12 out of 18 patients (66%) with pre-existing urinary incontinence.

Conclusion: POPS seems to be a safe operation in this limited group of patients showing good results for ODS, descensus perinei, and cystocele. In case of a remaining outlet-obstipation, subsequent STARR procedure can be performed as a second sole operation. Further studies with a larger number of patients are required to examine the effect of POPS alone compared to a combined STARR procedure.

Laparoscopic Total Colectomy with Transanal Retrieval

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Abstract

Minimally invasive colorectal surgery began in the early 1990s. It has gained popularity due to its advantages over open surgery, such as lower morbidity rates and rapid patient convalescence.

Laparoscopic total colectomy and ileorectal anastomosis (TC-IRA) is a relatively less applied colorectal procedure. The procedure is challenging because of the requirement to work laparoscopically in all four quadrants of the abdomen. During laparoscopic TC-IRA, an abdominal mini-laparotomy is always required for specimen extraction and anastomosis. This mini-laparotomy might increase wound-related morbidities and has a negative influence on the postoperative quality of life. To avoid mini-laparotomy, natural orifice specimen extraction (NOSE) after laparoscopic TC-IRA has been recently introduced. Herein we describe our technique in laparoscopic total colectomy with transanal retrieval.

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A Novel Technique for the Resection of Rectal Wall Endometriosis Involvement: A Cohort of 14 Cases

Hosein Youseffam

Abstract

We have developed a novel surgical technique for the resection of rectal wall endometriotic nodules. Herein, we present the preliminary results of a series of 14 patients with large deep endometriosis lesions on both uterosacrals, rectovaginal septum, and anterior wall of the rectum. The mean age of the patients was 30±6 years, mean dysmenorrhea score was 7, mean dyspareunia score was 7, mean dyschesia score was 7, and the mean diameter of these lesions was 2±0.4 cm.

All endometriotic nodules with a diameter of less than 3 cm and single involvement were a candidate for this procedure. Then, anterior mesorectum was separated from the rectal wall and the nodule. The nodule was marked by a stitched suture before introducing newly invented blunt plastic tube into the rectum with a wrapped facial needle to prevent facial needle injuries. The rectal wall was perforated by the fascial needle, near endometriotic nodule. The nodule was then removed by pulling the proximal part of the string of the stitch through the circular stapler. We prevented the posterior wall of the rectum to come into the stapler by firing the stapler and taking the endometriotic nodule transanally. The final staple line was inspected for bleeding and air leak and secured with an interrupted absorbable suture as required. Eight months follow-up of our cohort did not show any anastomosis leak nor rectal stenosis. Bowel habit was not changed after the surgery.

This novel technique has a shorter operation time, requires a shorter hospital stay, and prevents rectal stenosis.

Laparoscopic Rectovaginal Fistula Repair

F. Bahrami

Abstract

Rectovaginal fistula (RVF) is an abnormal epithelium-lined tract, extending between the rectum and vagina. It allows involuntary passage of stool and gas into the vaginal vault. RVF is a subtype of female urogenital fistula that includes vesicovaginal fistula, rectovaginal fistula, urethrovaginal fistula, ureterovaginal fistula, vesicouterine fistula. It can occur due to several conditions, such as trauma (obstetric, traumatic and operative iatrogenic injuries), infectious process, inflammatory bowel disease (specifically Crohn's disease), diverticulitis, carcinoma, and radiation. In general, most RVFs are acquired, and the main causes (up to 88%) are obstetrical trauma and factors such as forceps delivery, prolonged labor, midline episiotomy, and third-degree perineal lacerations.

RVFs are classified into low and high types. Fistulas between the lower third of the rectum and the lower half of the vagina considered low type. High type fistulas are communications between posterior vaginal fornix and middle third of the rectum. The small-sized fistulas are <0.5 cm in diameter, large-sized fistulas >2.5 cm, and medium-sized fistulas are 0.5-2.5 cm.

The management of RVF differs depending on the cause, location, size, anal sphincter function, and overall patient's health and medical condition. Treatment of established RVFs is surgical approach. According to the quote "the best chance is the first chance", any treatment must be tailored to the individual fistula. In this regard, several surgical techniques have been described. The perineal approach, including transvaginal, transperineal, and transanal is the standard surgical approach for the management of low RVFs. The transabdominal approach is the choice for treating high type fistulas. This approach is generally warranted for the high type when the fistula originates from cancer, irradiation, IBD, or complicated diverticulitis. Fistulous tract division and closure with or without resection of the affected bowel as well as the use of a variety of musculocutaneous and muscle flaps for repair of large defects may be performed. Diversion ostomy is sometimes used for protecting the anastomosis.

Nezhat reported the first successful laparoscopic repair of a rectovaginal fistula in 1998. Since then, a lot of reports on laparoscopic RVFs repairs have been published. According to the literature, the overall success rate is approximately 93.5% which is similar to the outcomes of the transabdominal open approaches (94-100%). Laparoscopic resection with the primary intracorporeal closure of simple high RVFs should be considered after proper assessment of the patient and the fistulous tract. As a minimal access surgery, it is associated with advantages of less postoperative pain, lower wound complications, faster recovery, and shorter hospital stay. It also provides a clear view, magnifies the fine structures, and better exposure of the fistulous tract in a narrow space for surgeons.

Although further studies are required to obtain long-term results, it seems that total laparoscopic repair of high type RVF is a safe and effective way if advanced laparoscopic skills and adequate experience with proper identification of the tissue planes, the fistulous tract, and meticulous surgical technique is provided.

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Debating Splenic Flexure Mobilization and its Importance

Hamid Zamani

Abstract

Traditionally, splenic flexure mobilization accompanied by ligation of the inferior mesenteric artery at its origin is mandatory to achieve a satisfactory outcome. This is judged not only in the short-term by patient recovery but also in the long-term by oncological results. As with all aspects of surgery, the logic behind this teaching needs reappraisal with clinical evidence rather than based on personal experiences. The rationale behind splenic flexure mobilization is to get a tension-free anastomosis with good vascularity, but is it always necessary?

Laparoscopic Cholecystectomy during Pregnancy

H. Kalbasi

Abstract

Gallbladder dilatation and stasis occur during pregnancy due to physiological changes such as increasing progesterone secretion. Symptomatic gallbladder disease is the second most common reason for non-gynecological operations during pregnancy. Such patients are conventionally managed with medical measures, but more than one-third fail conservative management and require cholecystectomy. By increasing trimesters of pregnancy, the risk of symptom recurrence is reduced. Hence, the need for a surgical management would definitely arise once the medical treatment fails or symptoms recur significantly. In the first trimester, due to a higher risk of abortion, carefully monitored endoscopic procedure should be performed. The second trimester is the safest time for the operation. Second trimester or early third trimester is generally considered suitable for cholecystectomy if the clinical situation demands.

In the last two decades, technical refinements in laparoscopy have led to improved safety levels in its application during pregnancy. A lesser degree of uterine manipulation, adequate exposure of the surgical field, and reduced adverse obstetric events are some advantages of the laparoscopic technique. Strict preoperative fetal monitoring, intraoperative maternal oxi-capnography, uterine protection with a lead shield, open access pneumoperitoneum, working pressures between 8-12 mmHg, and pneumatic compression of the lower extremities are recommended. The role of prophylactic tocolysis is not certain. Left lateral decubitus is the ideal position with left lateral tilt (20-30°)

In conclusion, laparoscopic cholecystectomy is a safe procedure during pregnancy. A careful surgical technique in a specialized center is recommended for the optimum result. To reduce the risk of surgical complications during pregnancy, it is recommended that all women of childbearing age undergo ultrasonography for gallbladder disease prior to pregnancy.

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Difficult Laparoscopic Inguinal Hernia Repair

Hossein Saeedi Motahar

Abstract

Laparoscopic hernia repair was introduced in 1992 after laparoscopic cholecystectomy. However, it could not be standardized in the same manner as cholecystectomy due to the cumbersome learning curve, different anatomical views, and abdominal approach; except in recurrence or bilateral cases. Therefore, incarcerated, scrotal (large cases), and strangulated hernia were contraindicated by laparoscopic approach.

Recently, due to the improved skills and experiences, these types of complicated hernias can be operated by laparoscopic surgery with an acceptable outcome. We would like to present and discuss our findings and experiences regarding complicated inguinal hernia cases.

Tips and Tricks in Laparoscopic Sleeve Gastrectomy: Video Presentation

Babek Tabandeh

Abstract

The present video clip will describe important points that deserve attention during sleeve gastrectomy procedure. The aim is to focus on points that could prevent early and late complications and improve the outcome of the procedure.

Main steps of the operation:

1. Positioning of the patient: Advanced reverse Trendelenburg, preferably in French position.
2. Trochar insertion: Using Visiport instead of Veress.
3. Insufflation: Avoid overinsufflation in patients with low body wall compliance.
4. Aspiration of the gastric content would help better positioning before transection.
5. Entering the lesser sac at the level just between the two gastroepiploic arteries.
6. Skeletisation of the greater curvature: Stay close to the gastric wall.
7. Dissection at the upper level of splenic hilum: Lower the tidal volume transiently and use thin tipped energy devices.
8. Dissection of the crura: Try to see the whole left crus as well as the upper and lower tips of the right, but do not dissect the esophagus from it.
9. Posterior dissection of the gastric fundus: Dissect and transect the posterior fundic veins and use clips if needed.
10. Calibrating tube placing: Maximize relaxation of the patient and stay close to the lesser curvature.
11. Gastric transection: Use appropriate staple size and pay attention in redo cases.
12. Using different trochars: Choose the best angle for each staple firing.
13. Avoid the narrowing at the level of incisura angularis, mostly the second staple firing will cause this problem.
14. Avoid the twist: Camera assistant is very important. Check the position of the stapling device from the anterior and posterior sites before firing, avoid very narrow sleeves.
15. Leak test (methylene blue/air bubble): I always do.
16. Glue, stitch or buttressing: BioGlue for hemorrhage could be useful; stitches can prevent twist, omentopexies (think to redo surgery); buttressing (use longer stapler needles).
17. Drain: Keep in mind that even small blood cloths or seromas can cause an abscess, which can fistulate the stapler line and cause late leaks.

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Prevention of Reflux Secondary to Bariatric Surgery

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Abstract

One of the most important issues secondary to bariatric surgery is reflux. This is more common secondary to restrictive operations, including banding, gastric partitioning, plication, and sleeve. The present study aimed to demonstrate the pressures at LES secondary to different bariatric operations and to show different procedures for each to decrease such side effect.

The applied method was to show the pressure at the middle of the esophagus, LES, and intragastric space by manometry after one month. The comparison methods were sleeve, banding, partitioning, plication, mini-gastric bypass, and R-Y gastric bypass. The procedures used to decrease the risk of reflux were crura suturing in all restrictive operations, special anti-reflux suture in gastric plication, Nissen fundoplication with plication, and Nissen with sleeve. All cases recruited in the present study were volunteers and aware of their corresponding method. Each group consisted of 5 cases and the results are described in detail. In short, the results showed that the best ratio between LES and intragastric pressures was seen in mini-gastric bypass, R-Y gastric bypass, anti-reflux suture and plication, sleeve, banding, and partitioning. Nissen with plication or sleeve stopped during the study due to dramatic reports of leakage at the site of Nissen. However, a primary study showed that the above ratio in these cases was less than the gastric bypass.

Laparoscopic Treatment of Intra-Abdominal Hydatid Cysts

Ali Jangjoo

Abstract

Background: Surgery is the treatment of choice in hydatid cysts of the liver and other intra-abdominal organs. The present study aimed to evaluate the early outcomes of open and laparoscopic surgeries of abdominal hydatidosis.

Methods: In total, 75 patients with uncomplicated liver hydatid cyst were assigned prospectively into two groups of laparoscopic surgery (37, 50.68%) and open procedure (36, 49.32%) during 2009-2014. In the laparoscopic group, there were 4 intra-abdominal, 2 splenic, and 1 pancreatic cyst, simultaneously. In the laparoscopic group, conversion to open surgery was required in 2 patients (2.67%) who were excluded from the study. Patients were followed up for 17.86 months.

Results: Participants included 73 patients comprising of 49 (67.12%) females and 24 (32.88%) males with the mean age of 38.97 years. No significant difference was found between the groups regarding the sex, occupation, and the mean diameter of the cysts. Bilious staining of the cyst content was observed in 23 (35.94%) patients during surgery and a maximum diameter of 91 mm was considered as a cut point for predicting postoperative fistula with 69.2% sensitivity and 41.1% specificity. The mean operative time, postoperative pain, hospital stay, and the time to return to work were significantly lower in the laparoscopic group. Postoperative biliary fistula, cyst cavity infection, and wound infection were not different between the groups.

Conclusion: Laparoscopic surgery seems to be effective and safe, with low morbidity rates for uncomplicated cysts in accessible segments of the liver. We can also retrieve the cysts of the other intra-abdominal organs with the same trocars or at most an extra trocar.

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Minimally Invasive Adrenalectomy

Martin K. Walz

Abstract

Adrenalectomy is one of the best indications to use minimally invasive surgical techniques. In principle, adrenal glands can be removed by the transabdominal laparoscopic route or by a retroperitoneoscopic approach. Based on more than 2,000 operations, the presentation describes the pros and cons, options, and results of endoscopic adrenalectomy. It clearly shows the superiority of the extraperitoneal access.

Criteria for Abdominal Wall Hernia Repair: Before, During, or After

A Zandi

Abstract

Abdominal wall hernia and obesity are closely associated. Many patients being considered for bariatric surgery have an abdominal wall hernia; either a primary umbilical hernia or an incisional hernia after previous abdominal operations.

Optimum repair in this setting has been under debate, however, laparoscopic repairs performed by surgeons skilled in laparoscopic ventral hernia repair have had better outcomes. With laparoscopic approaches, there has been a decrease in recurrent hernias, infection risk, and the potential for a shorter hospital stay.

Each year, there are a significant number of patients undergoing bariatric surgery who have either a ventral or incisional hernia identified at the time of surgery. In the past, if a hernia was not amenable to primary repair, the repair was deferred until a later time.

There are times that a hernia will be exposed during the course of an operation that will mandate attention. A hernia with characteristics such as smaller necked, deeper hernias, with higher potential for incarceration, may be repaired primarily, accepting a higher recurrence rate to offset the risk of a mesh infection. However, large and shallow defects can be deferred for later repair, while monitoring the patient for clinical symptoms related to the hernia.

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The Effect of Bariatric Surgery on Nonalcoholic Fatty Liver Disease

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Abstract

Nonalcoholic fatty liver disease (NAFLD) is now becoming the most common liver disease in many parts of the world, including Iran. NAFLD is considered as the hepatic manifestation of obesity and metabolic syndrome. However, there is growing evidence of the occurrence of this disease in lean persons without obesity.

As bariatric surgery is considered the most effective treatment for obesity, its associated insulin resistance and metabolic syndrome, there are concerns regarding the use of this modality in the treatment of NAFLD. Despite many reports on the improvement of NAFLD after bariatric surgery, none of the current guidelines has proposed this surgery as a modality for treating NAFLD. There are even concerns about the deterioration of fibrosis and development of complications in those who are cirrhotic. However, most studies have shown that bariatric surgery is safe when patients have not progressed to the stage of clinically apparent cirrhosis. In this review, we present the most recent data on progression and prognosis of NAFLD after bariatric surgery.

Laparoscopic Incisional and Ventral Hernia Repair: A Literature Review

Nader Mianji[1], Ali Mianji[2], Mahdi Mianji[3]

Abstract

Background: Ventral hernias, whether naturally occurring or the complication of previous abdominal surgery, comprise one of the most common problems confronting general surgeons. Incisional hernias occur in 5-25% of laparotomy incisions over a long-term follow-up. Its repair has always been a problem for surgeons due to the high recurrence rate for primary repair (25-51%) and mesh repair (12-20%). Laparoscopic approach is a new method for ventral hernia repair. Based on a literature review, the present study aimed to analyze the surgical approach, postoperative complications, and recurrence rate after laparoscopic ventral hernia repair in comparison with open ventral hernia repair.

Methods: Scientific studies have indicated that the laparoscopic approach has improved over the last decade and is the recommended technique for ventral hernia repair. The main steps in laparoscopic surgery are intra-abdominal adhesiolysis, reduction of hernia contents, minimal soft tissue dissection, closure of defect (especially in hernia defect diameter bigger than 5-7 cm), polytetrafluoroethylene dual mesh placement (with 5 cm circumferential coverage of hernia defect), full-thickness abdominal wall transfascial nonabsorbable sutures in at least four quadrants of mesh, one suture in the center of mesh, and double crown fixation with tacker device. Care should be taken regarding patient selection, operative technique, mesh size, and correct securing of the mesh to ensure adequate repair of a hernia and thereby preventing recurrence.

Results: The literature review revealed that many of the ventral and incisional hernias, especially recurrent cases, can be successfully repaired laparoscopically. Peri- and post-operative complications and recurrence rates were lower in the laparoscopic approach, but it carries a higher risk of bowel injury than the open approach. However, the risk can be avoided by meticulous technique and sharp dissection to avoid thermal injury. Current evidence suggests that laparoscopic technique may be the optimal surgical treatment for a ventral hernia. The conversion rate of laparoscopic method is 2.4%, enterotomy rate is 1.8%, and the recurrence rate is 3-5%.

Conclusion: Most reports on this topic advocate laparoscopic incisional and ventral hernia repair as a safe alternative to open repair method. The main advantages are minimal postoperative pain, earlier recovery, less wound and mesh infection, lower recurrence rate, shorten operation time, and greater patient acceptance. With more experiences and more follow-up, the laparoscopic approach may become the preferred technique for ventral hernia repair in difficult cases, recurrent hernias, and obese patients. However, additional long-term studies are required to further evaluate the true effectiveness of this technique.

Keywords ● Hernia ● Ventral hernia ● Incisional hernia ● Laparoscopy

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Laparoscopic Appendectomy in Complicated Appendicitis in Children

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Mohsen Rouzrokh

Abstract

Background: Laparoscopy for complicated appendicitis in children is not accepted as an appropriate procedure by most pediatric surgeons. This is related to a higher incidence of postoperative abdominal abscess, as reported in various studies. Laparoscopic appendectomy has been routinely performed at Mofid Children's Hospital (Tehran, Iran) in all cases of uncomplicated and complicated appendicitis, including perforated appendicitis, localized or generalized peritonitis based on operative findings, and pathological reports.

The present study aimed to investigate the security, efficacy, and complications of laparoscopy in children with complicated appendicitis.

Methods: Laparoscopic appendectomy was performed on 123 children (77 boys and 46 girls) during April 2010 to January 2013. The children were aged 2-14 years with the mean age of 8 years. Primary outcome measures were the incidence of complications, intra-abdominal abscess, and wound infection. Secondary outcomes were the length of operation, length of hospital stay, resumption of diet, incidence of bowel obstruction, duration of antibiotic use, and readmission. Laparoscopy appendectomy was performed using two working ports.

Results: In total, 34 cases were complicated appendicitis (either localized or generalized peritonitis). There was one conversion to open in a patient with appendicular abscess with a mass which was excluded from the analysis. There were 6 patients with generalized peritonitis, 26 patients with localized abscess, and 2 patients with appendicular mass. The average duration of symptoms was 4 days (range: 3-6), the mean length of operation was 52 minutes (range: 40-80), and the average length of hospital stay was 4.4 days (range: 4-7). The patients could restart oral intake from 16 to 48 hours after the operation. Two patients (5%) had postoperative complications; one patient with an intra-abdominal abscess that underwent reoperation (first patient of complicated appendicitis), and the other patient had umbilical wound infection which was resolved with antibiotic therapy. The average follow-up was 14 months (range: 4-36).

Conclusion: Laparoscopic approach is recommended for all children presenting with complicated appendicitis as an initial procedure of choice.

Keywords ● Laparoscopic appendectomy ● Complicated appendicitis ● Children

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Laparoscopic Adrenalectomy and its Modifications: A Case Report

Seyed Mojtaba Moussavi-khoshdel,
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Abstract

Laparoscopic surgery is a well-defined method for adrenalectomy. This procedure is routinely performed through 4 or 5 ports located in the subcostal region without an umbilical port. One of these ports must be large enough to pass a removal bag. In this surgery, the minimum incisional length is 30 mm. The surgery described in the present case report involved only two 5-mm ports and two stab incisions; resulting in a better cosmetic appearance and less postoperative pain.

An 8-year-old girl was referred to the endocrinology clinic because of polyuria and polydipsia. Ultrasonography and MRI evaluations revealed a mass measuring 4 cm in the right adrenal gland. Her 24-hour cumulative urine volume was 14 liters with high normetanephrine (3,984 µg/24h). Based on these findings, the diagnosis of pheochromocytoma was confirmed. Upon hospital admission and after 2 weeks of treatment by phenoxybenzamine, the patient was scheduled for laparoscopic adrenalectomy under general anesthesia. During the operation, besides full routine monitoring, arterial line for continuous blood pressure measurement was used. After lateral positioning, preparation, and draping, the depth of umbilicus was deliberately opened and a 5-mm camera port was inserted through the incision. Another 5-mm port was inserted for instruments at the subcostal region at midclavicular line. Then, a grasping forceps and a liver retractor were inserted through two stab incisions without any port insertion. Surgical dissection was started on the medial side of the mass and completed by a harmonic scalpel. The vessels of the mass were thin and safely cut with a harmonic scalpel without any ligation. At the end of the surgery, the camera insertion site was changed to the subcostal port and the umbilical port was removed. A 10-mm removal bag was inserted from the umbilical incision without a port. The excised mass fragmented in the bag and removed under direct laparoscopic vision. Then, the umbilical port site was repaired under direct laparoscopic view. There were no problems during the surgery as well as the 2-day observation period till discharge.

The laparoscopic adrenalectomy described in the present case report involves three modifications. Firstly, the main port site was changed from subcostal region to a surgical opening in the depth of the umbilicus. Secondly, two ports were omitted from the procedure by the insertion of the instruments through two stab incisions. Finally, as the third modification, 5-mm port was used instead of 10-mm port and the removal bag was inserted through the umbilical incision without port insertion.

The above-mentioned modifications result in a better cosmetic appearance and thus justifies further investigations.

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Laparoscopic Management of Acute Small Bowel and Colonic Obstruction: Case Series and Experience

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Abstract

Based on certain guidelines, laparoscopy is contraindicated in acute small bowel and colonic obstruction; however, it is controversial. In this lecture, we present and discuss our experience in laparoscopic management of intestinal obstruction. Our preliminary experience indicated that a two-stage management might be safer with fewer complications. Case and procedure selections could help to perform the management of the lower gastrointestinal (GI) obstruction laparoscopically.

In the present lecture, we would like to discuss laparoscopic methods in the management of the lower GI obstruction.

Minimally Invasive Mindset in Treating Idiopathic Hypertrophic Pyloric Stenosis

Reza Shojaeian, Mehran Hiradfar, Reza Nazarzadeh, Alireza Sabzevari, Ali Azadmand, Mahdi Parvizi

Abstract

Background: For decades, the Ramstedt pyloromyotomy procedure was the most acknowledged method for the treatment of IHPS. The first successful endoscopic pyloromyotomy was performed in 1991. Recently, the single-port endoscopic repair has been introduced in this field. In Iran, the first endoscopic treatment of IHPS was performed in May 2010 at Mashhad University of Medical Sciences (Mashhad, Iran).

The present article aimed to describe the timeline for our minimally invasive approach in treating IHPS, the gained experience, and the current status.

Methods: In total, 75 cases were included in the present study within the span of seven years (May 2010 to February 2017). The diagnosis was based on ultrasonography. The timeline for our minimally invasive mindset to treat IHPS begun by performing circumumbilical skin incision, skin flap, vertical mini-laparotomy, and intra-abdominal (16 cases). Thereafter, we used laparoscopic pyloromyotomy by inserting a supraumbilical 5-mm port for the camera and 2 stab wounds for instruments. Intra-abdominal pressure was maintained in the range of 3-6 mmHg. Superficial electrocautery followed by cold knife incision and dissecting the hypertrophic segment by grasping forceps and dissection using laparoscopic Maryland (17 cases). Thereafter, we applied laparoscopic Ramstedt dissector and start using it for dissection (32 cases). Then, we began to use a nephroscope with a straight working channel for grasping that avoided one of the stab wounds (5 cases) and finally, we started using 3.

Results: In all laparoscopic cases, the procedure was completed by endoscopy. There was no need for conversion. In 49 cases, feeding was tolerated a day after the operation while 21 cases tolerated later. In one case, the omentum protruded through the 3-mm stab wound site, which was excised and returned into the abdominal cavity under sedation. Inadvertent enterotomy occurred in 3 cases. Redo operation was required only in two cases. No other complications occurred during the hospital stay.

Conclusion: MIS in the management of IHPS is an acceptable method with a good result and at least with a better cosmetic outcome. The first step to apply this method is a minimally invasive mindset in IHPS treatment.

Keywords ● IHPS ● MIS ● MIT

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Initial Experience in Thoracoscopic Congenital Diaphragmatic Hernia Repair in Neonate

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Abstract

Background: Thoracoscopic repair of CDH was performed for the first time in Mashhad University of Medical Sciences (Mashhad, Iran) in April 2011. Since then, 14 cases have been operated according to the thoracoscopic approach. Cardiopulmonary stabilization was initially performed in NICU by ventilatory support in neonates. All newborns were hemodynamically stable and their median age was 5 days (range: 3 days to 7 months) with the male/female ratio of 10:4.

Methods: Under general anesthesia in the lateral position, a 5-mm port was inserted for the camera and two 3-mm yellow ports were used for the instrument insertion. The intrathoracic gas pressure was 6 mmHg. Primary repair was done using 3-0 prolene material (6 cases), thoracic wall (5 cases), and prosthetic material (3 cases). A chest tube was inserted in all cases. The operation time was 135±27.8 minutes.

Results: In 12 cases, the defect was located on the left side. Due to preoperative iatrogenic trauma to the stomach caused by the chest tube insertion, the thoracic cavity was contaminated in one case. Nonetheless, thoracoscopic repair of the stomach was performed successfully. In one case, due to insufficient space in the abdominal cavity, laparoscopic iatrogenic eventration was created before the thoracoscopic approach.

Early in-hospital recurrence occurred in one case (7.7%) and was managed by open prosthetic repair. During the follow-up period (mean: 181 days), no recurrence, mortality, or morbidity occurred.

Conclusion: For the first time in Iran, thoracoscopic repair of CDH in neonates is reported. Evidently, thoracoscopic repair of congenital diaphragmatic hernia is feasible with an acceptable outcome. However, the cost is higher compared to the conventional methods.

Thoracoscopic Esophageal Atresia with Tracheoesophageal Fistula Repair: Beyond the Learning Curve

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Abstract

Background: Treatment of esophageal atresia and tracheoesophageal fistula (EA+TEF) is accepted as a superior technique; at least from the cosmetic point of view. However, it is considered as an advanced endoscopic procedure that requires a meticulous learning period. This is the first report from a group of Iranian pediatric surgeons on the thoracoscopic approach to EA.

Methods: Since 2010, 24 cases with EA+TEF underwent thoracoscopic surgery in Sarvar Children Hospital (Mashhad, Iran). During the first 6 months, thoracoscopic approach on 6 cases of EA+TEF was converted to open procedure because of technical and instrumental issues. The first case of successful thoracoscopic EA repair was accomplished in 2010. Since then, 10 cases of EA+TEF among 18 patients have been treated successfully with the thoracoscopic approach.

Results: The overall conversion rate was 58.3%, but the conversion rate after the primary learning curve period was 35.7%. The main causes of conversion were difficulties in esophageal anastomosis, limited exposure, and deterioration of the patient's condition. Anastomotic leak and stenosis were observed in 20% and 40%, respectively. The overall mortality rate was 4.2%.

Conclusion: Thoracoscopic repair of esophageal atresia seems feasible and safe. It is considerably superior compared to the conventional methods. However, acceptable results require a prolonged learning curve and advanced endoscopic surgical skills. With respect to the cosmetic and functional outcomes, further studies are required to draw an accurate judgment on the best surgical intervention for EA.

Keywords ● Esophageal atresia ● Tracheoesophageal fistula ● Thoracoscopy ● Neonate ● Minimally invasive

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Laparoscopic Repair of Hernia in Children with Single Port and Extracorporeal Knotting

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Abstract

Background: The superiority of laparoscopic repair of inguinal hernia in children with less tissue handling and easy exploration of contralateral side is accepted by many paediatric surgeons. The present study aimed to report a simplified technique of extracorporeal knotting with a single working port for the repair of inguinal hernia.

Methods: In total, 111 inguinal hernia repairs were performed on 90 patients from April 2006 to June 2013. Our simplified technique involves a single 3-mm working trocar at the right pararectal line, and purse-string closure of the internal ring by 4-0 Vicryl suture entering through a small stab incision on either side, and out the same incision and extracorporeal knotting. A 5-mm telescope through umbilical trocar by open technique.

Results: A total of 90 cases (65 males and 25 females) underwent the operation by this technique. In total, 111 hernia repairs (52 right, 17 left, and 21 bilateral) were performed. Three cases of unilateral were the recurrence of previous open repair. The mean age was 10 months (range: 4 months to 6 years). The mean operative time was 20 minutes in unilateral and 34 minutes in bilateral. There was no operative complication or conversion. All patients were followed up for at least 6 months to one year. There were 3 recurrences (1 girl and 2 boys) that repaired by open technique. The cosmesis of scars was excellent.

Conclusion: The modified single working port laparoscopic repair of hernia with extracorporeal knotting makes the repair very simple with excellent cosmesis. The long-term result should be evaluated with a larger group and longer follow-up.

Preoperative Predictors of Diabetes Remission after Bariatric Surgery

M. Mahmudieh

Abstract

Bariatric surgical procedures are particularly effective interventions for treating type 2 diabetes. Improvement in metabolic control is often evident within days to weeks following bariatric surgery, most likely reflecting an alteration in metabolism that is independent of weight loss. A glucagon-like peptide-1 (GLP-1) mediated mechanism has been implicated. The present study aimed to clarify the features of complete type 2 diabetes mellitus (T2DM) remission in patients who undergo bariatric surgery and to better determine factors affecting the outcome of T2DM surgery.

The meta-analysis results demonstrated that fasting C-peptide values were significantly associated with increased remission (C-peptide: 95% CI = 0.2 to1.0) whereas T2DM duration, patient age, preoperative insulin use, preoperative fasting blood glucose values, and preoperative glycosylated haemoglobin values were significantly associated with reduced remission (T2DM duration: 95% CI = -1.2 to -0.7; age: 95% CI = -0.5 to -0.1; percentage of preoperative insulin users: odds ratio = 0.10, 95% CI = 0.07 to 0.15; preoperative fasting blood glucose: 95% CI = -0.9 to -0.5; preoperative glycosylated haemoglobin: 95% CI = -1.1 to -0.4). However, the results demonstrated that body mass index was not statistically different (body mass index: 95% CI = -0.2 to -0.6). The results of the systematic review demonstrated that smaller waist circumference as well as lower total cholesterol, triglycerides, and low-density lipoprotein levels increased higher high-density lipoprotein levels, shorter cardiovascular disease history, and less preoperative prevalence of hypertension contribute to the increased postoperative remission rate. Better results are obtained in younger patients with less severe diabetes, a smaller waist circumference, higher preoperative high-density lipoprotein, lower preoperative total cholesterol, triglycerides, and low-density lipoprotein levels and fewer other complications of shorter durations.

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Transgastric Endoscopic Resection

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Abstract

Background: Nonepithelial tumors of the stomach characteristically are observed endoscopically as circumscribed masses and may be confused with carcinoma. Gastroscopy supplemented by biopsy may lead to an accurate diagnosis in a majority of such cases. Wedge resection is the optimal treatment for these nonepithelial, submucosal gastric tumors.

Methods: Transgastric endoscopic resection (TER) with conventional laparoscopic instruments were used to treat gastric lesions, such as polyps, carcinoma in situ, and nonepithelial gastric tumors.

Results: Successful outcome was achieved in 10 cases during the timeframe of June 2012 to July 2017. There were no intra- or postoperative complications. The technique reproduces that used in conventional surgery but with a transgastric approach, and the advantages of minimally invasive surgery are maintained. This laparoscopic approach may be considered an alternative strategy for surgical treatment of benign tumors of the stomach. In all patients, there was no recurrence during the follow-up period (up to 3 years). The important points of this approach are (i) confirmation of the location of the tumor by both gastroendoscopy and laparoscopy, (ii) proper selection of the trocar site for insertion of the instruments, (iii) and secure grasping and lifting of the gastric wall, including of the tumor.

Conclusion: It is concluded that this procedure is technically feasible, safe, and useful for benign lesions and nonepithelial gastric tumors.

Myoma and Infertility

H. Asefjah

Abstract

Uterine fibroids, myomas, or leiomyomata are smooth muscle cell tumours and the most common benign gynaecologic tumour in women of reproductive age. They are often found as part of the investigation of infertile couples. These tumours are rarely found before menarche and usually regress after menopause. They are hormonally responsive, and estrogens appear to promote their growth. Local estrogen concentrations have been shown to be higher in myomas than in the surrounding myometrium, possibly because of a higher concentration of aromatase. Hormonal responsiveness appears to be greater in submucosal than subserosal myomas.

The prevalence of fibroids in the infertile population of women is controversial. According to Donnez, approximately 5-10% of women presenting with infertility are found to have one or multiple fibroids. However, when all other causes of infertility are excluded, fibroids are found in only 1-2% of the remaining women. There have been no appropriately designed studies to demonstrate a direct causal relationship between the presence of fibroids and infertility. Six systematic reviews or meta-analyses published during 2001-2010 assessed whether fibroids have an impact on fertility. On the whole, it appears that women with fibroids have decreased fertility. The impact of fibroid number and size on fertility has not been clearly elucidated. Reproductive success does seem to be related to fibroid location.

Subserosal fibroids do not appear to have an impact on fertility; all systematic reviews and meta-analyses agreed on this point. Submucosal fibroids have been shown uniformly to have a negative impact on rates of implantation, clinical pregnancy, miscarriage, and live birth/ongoing pregnancy. The greatest debate remains on the impact and treatment of intramural fibroids. Ultrasound has been shown to be an adequate, rapid, safe, and cost-effective means of evaluating the size, number, and location of fibroids. Ultrasound may, however, be suboptimal for multiple fibroids, because of acoustic shadowing, and for the proper evaluation of endometrial impingement. Interobserver variation has also been found to be greater with this technique than with MRI. MRI has been well studied in the evaluation of fibroid uteruses, especially for fibroid mapping and submucosal penetration. It is shown to be the most reliable method of evaluation when compared with vaginal ultrasound, hysterosonography, and hysteroscopy, with 100% sensitivity and 91% specificity (gold standard was pathological examination). The main drawbacks of MRI evaluation are lack of accessibility and high-cost. Submucosal fibroids are managed hysteroscopically. The fibroid size should be <5 cm, although larger fibroids have been managed hysteroscopically but repeat procedures are often necessary (III-B).

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The first lesson physicians must learn is that if the patient is asymptomatic, no treatment is necessary. The presence of an abdominal mass is not an indication for hysterectomy or myomectomy unless it is of significant concern to the patient.

There are no universally accepted criteria regarding the number and size of myoma to be removed laparoscopically, but as our techniques advance, especially suturing techniques and instruments for laparoscopy, our ability to do more complicated cases of laparoscopic myomectomy increase as well. Before laparoscopic myomectomy, uterine mapping is mandatory because the surgeon does not have a sense of palpation during the procedure. In order to have a successful laparoscopic myomectomy, the surgeon should answer the following questions before surgery:

- How many myomas are there?
- Where are the exact locations of myomas?
- How is the distance of myoma from cavity?
- Is uterine cavity distorted?
- Are we able to perform the operation?

Laparoscopic myomectomy is a challenging procedure and the most challenging part of this procedure is suturing. The goal of suturing is to restore myometrial integrity, prevent hematoma formation, prevention of defect and dehiscence in myometrium, and adhesion prevention. If any one of these goals is not met during the procedure, future pregnancy would be in danger. The skill of the surgeon is the most important factor for successful operation.

In this video clip, baseball myometrial closure will be demonstrated.

Safety and Outcome of Incisional Hernia Defect Closure in Laparoscopic Approach

M.H. Hashemizadeh, M.Amini

Abstract

Background: The high incidence of incisional hernia represents a public health issue throughout the world. The ideal technique for its repair is unclear. The present study aimed to analyze postoperative complications and possible recurrence after the closure of incisional hernia defect by laparoscopy repair.

Methods: In a retrospective study, the records of 50 patients (30 females and 20 males) who underwent laparoscopic incisional hernia repair during 2015-2016 were evaluated. In each case, primary closure of the defect was performed by transfascial sutures or laparoscopic suture. Outcome measures included complications at 1-12 months follow-up.

Results: The median hernia size was 8 cm. No complication was reported intraoperatively and the average hospital stay was 2 days. None of the patients developed seroma, mesh eventration, or hernia recurrence. Two patients had residual pain at 3 weeks and none at 8 weeks. Due to the smaller mesh size and number of tackers, the cost of operation was significantly lower in those with the closure of the defect compared to those without.

Conclusion: Primary closure of the defect by laparoscopy is safe and conduces less seroma formation, mesh or tissue eventration, hernia recurrence, and cost of operation.

Keywords ● Incisional hernia ● Closure of defect ● Laparoscopy

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Safety & Outcome of Closure of Incisional Hernia Defect in Laparoscopic Approach

M.H. Hashemizadeh, M. Amini

Abstract

Background: The high incidence of incisional hernia , represents a public health problem throughout the world. The ideal technique for repair of it, is unclear. The purpose of this study is to analyze the postoperative complications & possible recurrence after closure of defect of incisional hernia by laparoscopy repair.

Methods: A retrospective study of 50 patient , records each patient underwent laparoscopic incisional hernia repair between 2015 & 2016 in each case primary closure of defect was done by trans fascial sutures or laparoscopy suture. Outcome measures , included complications at 1-12 months follow up.

Results: The registry included 50 patients (30 female & 20 male). Median hernia size was 8 cm. No complication was reported intraoperatively. The average hospital stay was 2 days. No patient developed Seroma , mesh eventration , hernia recurrence. Two patients had residual pain at 3 weeks & none at 8 weeks. Cost of operation with closure of defect , significantly lower than without closure of defect. Due to decreased the size of mesh & numbers of Tackers.

Conclusion: Primary closure of the defect by laparoscopy is safe & conduces lower Seroma formation , mesh or tissue eventration, hernia recurrence & cost.

Keywords ● Incisional hernia ● Closure of defect ● laparoscopy

Functional Outcomes in Hirschsprung Disease: 12-year Experience from a Single Institution

HS Thakkar, C Bassett, A Hsu, R Manuele, D Kufeji, CA Richards, M Agrawal, AS Keshtgar

Abstract

Background: Hirschsprung disease (HD) is a chronic condition associated with long-term morbidity. The present study aimed to share the experience gained from a single institution during a 12-year period on the short- and long-term functional outcomes of the operated patients.

Methods: A retrospective review of all children operated for HD during 2002-2014 was conducted. Postoperative functional outcomes were assessed using the Rintala bowel function score (BFS, 0-20, 20=best score). We assessed hospital admissions, complications including Hirschsprung associated enterocolitis (HAEC) and the need for further surgical procedures.

Results: From a total of 72 (52 male) patients, 6 (8%) had a positive family history, 5 (7%) had Trisomy 21, and 5 (7%) had total colonic HD. The median age at diagnosis was 6.5 days (range: 2 days to 6.7 years) and the median follow-up was 6 years (range: 1-12). All patients, except two, underwent a Duhamel pull-through procedure. The median age at surgery was 4 months (range: 6 days to 90 months). In total, 37 (51%) procedures were performed in single-stage and 7 (10%) were laparoscopically assisted. The early complication rate was 15%; 11 (15%) patients were treated for HAEC and 43 (60%) did not require further surgery. Twelve (17%) patients underwent injection of botulinum toxin, 7 (10%) needed residual spur division, and 4 (5%) required an unplanned, post pull-through enterostomy for obstructive defecation symptoms and HAEC. Two (3%) patients underwent an antegrade colonic enema (ACE) stoma. The median BFS was 17 (range: 5-20). There were two deaths, both out of the hospital.

Conclusion: Long-term functional outcome following Duhamel pull-through surgery is satisfactory, although 40% of the patients required some form of further surgical intervention. The management of anal sphincter achalasia has improved with the use of botulinum toxin and we advocate aggressive and early management of this condition for symptoms of obstructive defecation and HAEC.

Keywords • Duhamel operation • Functional outcomes • Hirschsprung disease

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Long-Term Outcome of Antegrade Colonic Enemas Stoma for Constipation and Faecal Incontinence

L Nellihela, H Wright, AS Keshtgar

Abstract

Background: The present study aimed to determine the outcome of the antegrade colonic enema (ACE) stoma to treat chronic constipation, soiling, and megarectum.

Methods: A prospective review of patients who underwent the formation of ACE appendicostomy was conducted from September 2008 to October 2016. Parents were requested to complete a validated symptom severity (SS) questionnaire pre-operatively, at 3 months, and 12 months follow-up. The scores included eight domains with the sum of the scores ranging from 0 (best) to 65 (worst).

Results: In total, 37 patients had laparoscopic formation of the ACE stoma, except for one conversion to open surgery. The main indications for the ACE were chronic functional constipation (n=30), anorectal malformation (n=5), and Hirschsprung disease (n=2). Anorectal manometry showed weak recto-anal inhibitory reflex (RAIR) in 15 (40%) patients and normal RAIR in 19 (51%) patients. Twenty-four (65%) patients had thickened internal anal sphincter on endosonography, suggestive of megarectum. Thirty-two (91%) patients had botulinum toxin injection into the external anal sphincter muscles. However, there was no significant improvement in their SS score. There was no conversion to open surgery. The median follow-up was 42 months (range: 3-72). Preoperative symptom score improved from median 34/65 (range: 26-47) to median 8/65 (range: 4-12) at 12 months and median 5/65 (range: 2-11) at 24 months follow-up, $P \leq 0.05$. Thirty-two (91%) patients were continent of stool within 3 months post-operatively. Complications included peristomal pain (n=2), granulation tissue (n=3), infection (n=5), prolapsed stoma requiring revision (n=2), and abscess formation and fistulous tract requiring drainage and excision (n=1). Five patients had closure of the stoma because of the resolution of symptoms at median 37 months (range: 32-46).

Conclusion: There is a low morbidity and significant improvement of constipation, soiling, and general health of patients following the formation of the ACE stoma.

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Right Colectomy using Laparoscopic and Robotic Techniques: Cumulative Experience at a Single Centre

JL Mégevand, M Amboldi, E Lillo, L Lenisa, A Rusconi

Abstract

Background: Robotic-assisted resection has proven to be beneficial in overcoming the potential limitations of laparoscopy. However, clear evidence of its benefits for patients is lacking. The present study aimed to share the experience gained on right colectomy with both robotic surgery (RS) and laparoscopic surgery (LS).

Methods: In total, 100 consecutive patients were enrolled and allocated to LS or RS right colectomy, according to a closed enveloped randomization scheme of two blocks of 50. Data such as ASA score, age, operative time, conversion rate, re-operation rate, early complications, length of stay, and pathological results were collected prospectively.

Results: The median total operative time was 160 minutes in the LS group (IQR: 140-180) and 204 minutes in the RS group (IQR: 180-230). The median time to first flatus was 2.5 days in the LS group (IQR: 2-3) and 2 days in the RS group (IQR: 1-2). The median length of stay was 8 days in the LS group (IQR: 6-10) and 5 days in the RS group (IQR: 5-7). The analysis of the number of harvested nodes, anastomotic leakage, and postoperative bleeding showed no statistically significant difference between the two groups. The 30-day mortality rate was 0% in both the LS and RS groups. The conversion rate for patients in the LS group was 14% (7:50) and 0% (0:50) for the RS group.

Conclusion: Robotic-assisted surgery may overcome the technical limitations of laparoscopic surgery. In our experience, it is a safe and feasible technique as it delivers the same oncological results compared to LS although with higher costs. The lower conversion rate allows achieving better clinical outcomes and fewer complications. RS for right colonic malignancy can be used to perform CME routinely; as done in our surgical department.

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TME of Rectal Cancer using Laparoscopic and Robotic Techniques: Cumulative Experience at a Single Centre

JL Megevand, A Rusconi, E Lillo, L Lenisa. M Amboldi

Abstract

Background: During the last two decades, minimally invasive surgery has gained popularity in curative colorectal cancer surgery. It is reaching the comparative rates compared to the open surgery in our country. Moreover, robot-assisted resection has proven to be beneficial in overcoming the potential limitation of laparoscopy. However, clear evidence of its benefits for patients is lacking. The present study aimed to share the experience gained on TME with either the two surgical options.

Methods: In total, 75 consecutive patients underwent either the laparoscopic surgery (LS) or robotic surgery (RS) for total mesorectal excision (TME) malignancy. Data were collected prospectively and recorded in a dedicated local database. Recorded data included the ASA score, age, operative time, conversion rate, re-operation rate, early complications, length of stay, and pathological results.

Results: From a total of 75 consecutive patients, 50 treated with LS (27 males and 23 females) and 35 treated with RS (31 males and 19 females). The median total operative time was 225 minutes in the LS group (IQR: 194-255) and 252.5 minutes in the RS group (IQR: 214-300). The median first flatus time was 2 days in the LS group (IQR: 1-3) and 1 day in the RS group (IQR: 1-2). The median stool discharge time was 4 days in the LS group (IQR: 2-5) and 2 days in the RS group (IQR: 1-3). The median length of stay was 8 days in the LS group (IQR:7-10) and 7 days in the RS group (IQR: 5-8). The analysis of the number of harvested nodes and postoperative complications showed no statistically significant difference between the two groups. The 30-day mortality rate was 0% in both groups. The conversion rate for patients in the LS group was 22% (12:50) and 0% (0:50) for the RS group.

Conclusion: Robotic-assisted surgery may overcome the technical limitations of laparoscopic surgery. In our experience, it is a safe and feasible technique as it achieves better clinical outcomes and delivers the same oncological results compared to LS although with higher costs. The lower conversion rate allows achieving better clinical outcomes and fewer complications.

Postnatal Surgical Management of Infants Following Fetal Interventions for Lower Urinary Tract Obstructions

Mohammadreza Vahdad

Abstract

Background: Fetal lower urinary tract obstruction (LUTO) is associated with a high perinatal and long-term morbidity and mortality. Assumed advantages of fetal interventions regarding the prevention of kidney function (decompression of the urinary tract) and avoidance of lung hypoplasia (prevention of oligohydramnion) are not proven yet. Nevertheless, those fetal interventions are conducted by several national and international centers and regularly require postnatal surgical interventions. The present study aimed to evaluate postnatal interventions as well as the outcome of patients following fetal surgery for LUTO.

Methods: Between May 2016 and September 2017, 9 male LUTO patients were treated postnatally after fetal interventions, including vesicoaminiotic shunt (VAS) and amniotic infusions. Mean gestational age was 34.5 weeks (range: 32-39) and mean birth weight was 2,654±626 grams. One to six fetal interventions were carried out between the 14 and 25 weeks of gestation. Five patients received repeated amniotic infusions. Creatinine clearance was estimated using the Schwartz formula. Postnatal surgery was performed in all patients.

Results: The median follow-up was 6.89±3.8 months. Five patients had a stable postnatal renal function and four patients required peritoneal dialysis (glomerular filtration rate <15 ml/min stage V according to the national kidney foundation kidney disease outcomes quality initiative, NKF KDOQI). Fifteen complications of the fetal interventions were observed after birth; dislocation of the VAS (n=8), abdominal wall defects with the incarceration of the omentum majus (n=2), uretho-abdominal fistula (n=1), bowel perforation (n=1), perforation of the ureter (n=2), and vesico-abdominal fistula (n=3). Laparoscopic removal of the foreign bodies was carried out in 3 patients and in 5 patients a laparotomy was necessary due to ingrown mesh stents. Reconstructive procedures were performed in 8 patients (bladder: n=3, ureter: n=2, small bowel: n=1, and abdominal wall defect: n=2). Placement of peritoneal dialysis catheters was done in 4 patients. Laser ablation of the urethral valves was carried out in 8 patients. In one patient with urethral agenesia, a vesicostomy was necessary. All patients are alive.

Conclusion: Fetal surgery in patients with LUTO is associated with a high complication rate, requiring advanced postnatal pediatric surgical interventions. Despite challenging reconstructive procedures, the urinary tract of these children can be reconstructed without long-term deficiency. The benefit of fetal interventions regarding survival and kidney function remains unclear.

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Twin-to-Twin Transfusion Syndrome

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Abstract

Twin-to-twin transfusion syndrome (TTTs), also called 3Ts, is one of the most serious complications that occur in monochorionic multiple pregnancy. Without prompt management, TTTs can result in mortality or severe morbidity of one or both twins. The exact incidence of TTTs is unknown because of many fetal deaths in the early stage of pregnancy. However, based on data of live births, one-third of all twin pregnancies is monozygotic and two-thirds of them are monochorionic. TTTs occurs in about 9-15% of monochorionic diamniotic (MCDA) and 6% of monochorionic monoamniotic (MCMA) twin pregnancies.

The etiology is unbalanced blood flow through vascular atrioventricular (AV) anastomosis in a shared placenta. In terms of pathophysiology, one fetus (i.e. donor) suffers from hypovolemia that appears as oligohydramnios with a maximum vertical pocket <2 cm. The other fetus (i.e. recipient) suffers from hypervolemia and high cardiac output states that appears as polyhydramnios with a maximum vertical pocket of >8 cm and >10 cm after and before 20 weeks gestational age, respectively. The main diagnostic ultrasound findings are monochorionic twin pregnancy, oligohydramnios in one fetus (donor), and polyhydramnios in the other (recipient).

The most common classification used nowadays is based on Quintero classification which was introduced by Dr. Ruben Quintero in 1999. This classification is based on sonographic findings with the following staging system:

Stage I: Bladders of both fetuses are visible.

Stage II: The bladder of the donor fetus is not visible.

Stage III: Abnormal Doppler of the umbilical artery or ductus venosus of either fetus.

Stage IV: Signs of hydrops fetalis in either fetus (usually recipient)

Stage V: Death of one or both fetuses

So far, there is no prevention method for TTTs. However, early diagnosis is possible by performing serial sonography starting from 16 weeks gestation until delivery. Clearly, a prompt management would reduce complications. The management is based on the gestational age, staging at the time of diagnosis, and the maternal symptoms due to polyhydramnios. This management covers the entire spectrum, from conservative management to invasive modalities, such as amnioreduction to fetoscopic laser ablation of the placental anastomosis, and finally prompt delivery.

Fetal Cardiac Interventions: Therapeutic Options and Experience

Hamid Amoozgar, Hamidreza Forotan, Homeira Vafaii, Kasraian

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Abstract

Herein, therapeutic options for fetal congenital heart diseases are updated and the experience gained on fetal cardiac intervention in Shiraz (Iran) is reviewed.

The first successful balloon valvuloplasty of a fetus with critical pulmonary stenosis was performed in 2013. One patient with pulmonary atresia intact septum also had successful balloon valvuloplasty but expired due to congenital rubella syndrome. A successful aortic valvuloplasty was also performed. Four cases could not be done due to the unacceptable position. Two patients with borderline HLHS received hyperoxygenation therapy. Treatment of fetal arrhythmias was performed in 18 fetuses. Heart failure management was performed in 5 patients and treatment of heart block in 5 patients.

It is concluded that fetal cardiac interventions are feasible at midgestation with gradually improved technical success and fetal survival.

Keywords ● Fetal heart ● Heart defects ● Congenital ● Prognosis

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Fetal MRI: An Introduction

Sepideh Sefidbakht

Abstract

While ultrasound is the standard modality for fetus evaluation, especially in early pregnancy, fetal MRI is increasingly used as a complementary modality for secondary evaluation of certain anomalies. Currently, early pregnancy remains the domain of ultrasound given the current inferior spatial resolution of MRI. In late pregnancy and especially in case of CNS anomalies, MRI has a well-established added value. In this presentation, major indications an added value of MRI for fetus evaluation via a case-based approach is briefly reviewed.

Posterior Approach to the Rectum: A New Method for Treating Rectal Involvement in Deep Infiltrating Endometriosis

Tadayon, Izadi, Hosseini

Abstract

Endometriosis is the presence of endometrial glands and stroma at extrauterine sites throughout the pelvis and beyond. Endometriotic lesion situated more than 5 mm below the peritoneum is called deep infiltrating endometriosis (DIE). Endometriotic lesions that invade the rectovaginal space and/or bowel are forms of deep infiltrating endometriosis. The invasive nature of these implants causes dysmenorrhea, dyspareunia, infertility, and/or CI symptoms (painful defecation, dyschezia, rectal bleeding, constipation and/or bloating).

Surgical management of severe DIE with rectal involvement is difficult and challenging. Sever DIE with the involvement of the rectum is treated by segmental resection, anastomosis, discoid bowel resection (full thickness disc excision), and superficial surgery. In our practice, for a better visualization and handling of the posterior cul-de-sac and pushing up of both ovaries and uterus, at first, we choose posterior approach to the rectum to dissect posterior and last part of the rectum. With this approach, better handling of DIE is attainable. When rectal involvement is identified and confirmed by Endo-Sono and MRI, such posterior approach is recommended for rectal resection.

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Introducing a New Technique for the Excision of Endometriotic Nodule in the Bowel

Roya Padmehr, Hossien Yoseffem, Khadijeh Shadjo, Atefeh Gorgin, Roxana Kargar, Shaheen Khazali

Avicenna Endometriosis Center

Abstract

Background: The present study aimed to report an innovative technique for disc excision of deep endometriosis lesion of the bowel. The procedure involves initial dissection and exposure of both ureters, ararectal, and rectovaginal septum. Then, applying suture on the bowel lesion up to 3 cm on the anterior part of the rectum, followed by using PPH stapler transrectally to excise the lesion completely.

Methods: The present case series study was performed in a private endometriosis referral center. The intervention involved discoid resection of the rectal endometriotic nodule with the guide of one stitch and through one circular stapler transanally. The procedure was performed on 18 patients with large deep endometriosis lesions on both uterosacrals, rectovaginal septum, and the anterior wall of the rectum. The mean age of the patients was 30±6, mean dysmenorrhea score was 7, mean dyspareunia score was 7, and mean dyschesia score was 7. There was one endometriotic nodule on the anterior rectal wall with the mean diameter of 2±0.4 cm.

The first step was to release the rectal nodule from peripheral adhesions to the rectum. Then, the middle of the rectal endometriotic nodule was signed with one stitch suture. The rectum was entered with the guide of a newly devised blunt plastic tube that wrapped the surface of a facial needle, except for the head of the needle to prevent facial needle injuries to the rectum. Progressing from the anus to the nearest part of the rectum to endometriotic nodule, the needle was pushed to perforate the rectum at exactly the size of the head of the facial needle. Then, taking the proximal part of the string, the stitch was taken and pulled through the circular stapler. The stapler was then pushed through the rectum simultaneously. This movement pulls the endometriotic nodule completely to the circular stapler. We performed this special method not to get to the posterior wall of the rectum, then fire the stapler and take the endometriotic nodule transanally. The final staple line was inspected for bleeding and secured with an interrupted resorbable suture as required.

Results: Immediate postoperative outcomes were uneventful and bowel movements were normal after 2-3 days. The procedure was successfully performed on 7 women with one approximately 2-3 cm deep endometriotic nodule of the mid- and lower rectum with favorable rectal functional outcomes. We did not have any complications.

Conclusion: Based on our experience, the described conservative technique is feasible in one low rectal endometriotic nodule and avoids the risk of unfavorable outcomes related to low colorectal resection.

Laparoscopic Excision of Large and Stony Uterosacral Endometriosis: A Case Report

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Endometriosis and Pelvic Pain Clinic

Abstract

Surgical treatment is usually required in symptomatic patients to complete the medical treatment of endometriosis. A 31-year-old G1 P1 (c/s) was presented with dysmenorrhea pain score (10/10), dyspareunia (7/10), and painful defecation (7/10).

Physical examination revealed fixed uterus, thickened uterosacrals, and a large stony nodule in the rectovaginal septum and left uterosacral. Transvaginal sonography report revealed adenomyotic uterus with 38 mm hematosalpinx in the left adnexa, severe adhesion of ovaries to the uterus and USLs, and severe cul-de-sac adhesion. Both uterosacrals thickening as right USL nodule 11 mm and left USL nodule 12 mm and retrocervix 9 mm nodule with severe adhesion to rectosigmoid and malrotation of the right kidney.

In the laparoscopic view, frozen pelvis was observed. There was a large and stony endometriosis nodule on the left uterosacral ligament and a 2 cm nodule on the anterior surface of the rectum. After extensive adhesiolysis and suspension of the uterus and ovaries, double-J stent was inserted to the ureters. Ureterolysis was performed and then the pararectal and rectovaginal space were dissected. Left salpingectomy and resection of all deep infiltrating endometriosis (DIE) lesions and disc resection of the bowel was performed. Pelvic irrigation and drain placement were done at the end of the surgery.

It is concluded that multidisciplinary laparoscopic treatment of extensive endometriosis is safe with a good outcome.

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Superficial Low Rectal Endometriosis: Video Presentation

Zohreh Tavana

Abstract

Bowel endometriosis opens a new frontier for gynecologists. Although some women with bowel endometriosis may be asymptomatic, the majority develop a variety of gastrointestinal complaints. No clear guideline exists for the evaluation of patients with suspected bowel endometriosis. Given the fact that, besides rectal nodules, bowel endometriosis cannot be diagnosed by physical examination, imaging techniques should be used. Several techniques have been proposed for the diagnosis of bowel endometriosis, including double-contrast barium enema, transvaginal ultrasonography, rectal endoscopic ultrasonography, magnetic resonance imaging, and multislice computed tomography. The management of bowel endometriosis should be carefully balanced with the severity of symptoms and the feasibility of prolonged follow-up. Bowel endometriotic nodules can be removed by various techniques such as mucosal skinning, nodulectomy, full thickness disc resection, and segmental resection. Although the indications for colorectal resection are controversial, recent data suggest that aggressive surgery improves symptoms and quality of life.

A 33-year-old woman G2P2 (NVD) with regular menses and a history of dyspareunia, dysmenorrhea, and dyschezia since ten months was evaluated. The primary care physician revealed normal blood tests, stool blood, and parasitosis. Abdominopelvic ultrasonography showed bilateral ovarian cyst with acoustic enhancement and diffuse homogeneous ground-glass echoes as a result of the hemorrhagic debris; suspicious of bilateral endometrioma. Findings from imaging techniques were bilateral OMA (6 cm), bilateral uterosacral ligaments involvement by endometriotic lesion, mild hydroureter in the right side, and 25 mm superficial low rectal endometriotic lesion (AMH=2.5). The patient was operated and lesion of the rectum was resected by laparoscopic shaving method.

Currently, superficial endometriosis is considered a normal phenomenon in women at the childbearing age, whereas deep infiltrative endometriosis (DIE) is the severe and painful manifestations of the condition. Pelvic pain, infertility, and dyspareunia are the characteristic symptoms of the disease, but the clinical presentation is often non-specific. It is difficult to establish a preoperative diagnosis of GI endometriosis because GI tract symptoms can mimic a wide spectrum of diseases, including irritable bowel syndrome, infectious diseases, ischemic enteritis/colitis, inflammatory bowel disease and neoplasm. GI endometriosis patients present with relapsing bouts of abdominal pain, abdominal distention, tenesmus, constipation and diarrhea rectal bleeding, and pain during defecation may also occur.

Magnetic resonance imaging (MRI) has a high sensitivity (77-93%) in the diagnosis of bowel endometriosis, but the depth of rectal wall infiltration by endometriosis is poorly defined by MRI. A combination of MRI and rectovaginal ultrasonography has recently been proposed. Surgical treatment should be indicated for women with pain, bleeding, changes in bowel habits, and intestinal obstruction. Intestinal endometriosis may be active in the peri- and post-menopausal years and even surgery may be necessary for these patients.

Footnote: *Partial excerpt from studies by Remorgida et al. (2007) and Ceglie et al. (2008) is acknowledged.*

Video Laparoscopy Excision of Bilateral Endometrioma and Deep Infiltrating Endometriosis Lesion of both Uterosacral Ligaments

Atefeh Gorgin

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Abstract

Laparoscopy excision of deep infiltrating endometriosis (DIE) lesions should be performed in symptomatic patients. Entry into the abdominal cavity was performed via open (Hasson) technique. For a better exposure, adhesiolysis and suspension of the uterus and both ovaries were performed. Bilateral endometriomas was excised and sutured after hemostasis. Before the excision of uterosacral DIE, bilateral ureterolysis and pararectal space dissection were carried out. DIE of both uterosacral ligaments and bilateral pelvic side wall were excised. Pelvis irrigation with warm saline was done and a drain was placed in the posterior cul de sac.

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Plasma Osteopontin Level is a Promising Biomarker for Endometriosis

Xishi Liu, Yunlei Cao, Sun-Wei Guo

Abstract

Background: So far, all attempts to identify blood biomarkers for endometriosis have been failed. The reasons for such an abject failure are many. Chief among them is firstly the tacit assumption that the biomarkers can be identified based on the differential measurements between women with and without endometriosis. Secondly, there is no requirement on the putative biomarker that it must be changed after surgical removal of all visible endometriotic lesions. In the present study, aside from the differential between women with and without endometriosis, we impose two additional requirements: (i) the putative biomarker must change 3 months after the surgical removal of all visible lesions, and (ii) animal experiments have shown that the levels change as endometriosis progresses.

Osteopontin (OPN), a calcium-binding glycophosphoprotein of the small integrin binding ligand N-linked glycoprotein family, is involved in many cell functions, in particular, fibrogenesis. In this regard, we hypothesized that OPN is a biomarker that satisfies all our requirements as a biomarker.

Methods: Twenty-four female BALB/c mice were randomly divided into three groups of equal sizes, namely the ENDO2 and ENDO5 groups (both of which received an endometriosis-induction procedure), and the control (CTL) group which did not have induction. For mice with induced endometriosis, ENDO2 mice were sacrificed 2 weeks after induction while those in ENDO5 group, 5 weeks after induction. The CTL mice were sacrificed 5 weeks after induction. Before sacrifice, blood samples were collected from all mice, which were subjected to the measurement of plasma levels of OPN by ELISA. In addition, endometrial tissue samples from CTL mice and endometriotic tissues from both ENDO2 and ENDO5 mice were subjected to OPN immunostaining as well as Masson trichrome staining to evaluate the extent of fibrosis. Moreover, peripheral blood samples were collected from 20 women without endometriosis and 30 patients with histologically confirmed ovarian endometriomas before and 3 months after the surgical removal of endometriometic lesions. Their plasma OPN levels were quantified and analyzed.

Results: The average lesion weight in the ENDO5 group was nearly tripled as compared with that of the ENDO2 group ($P<0.001$), while the extent of lesional fibrosis increased by 4.6-fold ($P<0.001$). Lesional OPN expression was significantly higher in the ENDO5 group than that of the ENDO2 group ($P<0.001$), which in turn was higher than that of control endometrium ($P<0.001$). Similarly, plasma OPN levels were significantly higher in the ENDO5 group than that of the ENDO2 group ($P<0.001$), which in turn was higher than that of the CTL group ($P<0.05$). The extent of fibrosis was positively correlated with the plasma OPN levels ($r=0.83$, $P<0.001$) and lesional OPN expression levels correlated closely with the plasma OPN levels ($r=0.997$, $P<0.001$). The plasma OPN levels were significantly higher in women with ovarian endometriomas (before surgery) as compared with normal controls ($P<0.001$). However, 3 months after surgical removal of all visible lesions, the plasma OPN levels were reduced significantly ($P<0.001$) to the level that was indistinguishable from that of the controls ($P>0.05$).

Conclusion: By imposing additional requirements, OPN should stand a better chance to be a genuine biomarker for endometriosis that may reflect the stage of lesional progression.

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Video Laparoscopy
Video of Laparoscopic Surgery for Severe Endometriosis

Roxana Kargar

Abstract

The patient was a 33-year-old nulligravid woman with a chief complaint of dysmenorrhea, dyspareunia, and primary infertility. She had a history of one laparoscopy and had a right tubal ligation with clips in regards to hydrosalpinx. She also had done IVF and frozen embryos. On vaginal examination, she had nodules in the posterior of cul-de-sac and her sonography showed right endometrioma with adhesion of both ovaries to the posterior of uterus and nodule of sigmoid with muscular layer interfere.

At surgery, we found frozen pelvis and performed the suspension of the uterus and both ovaries. The adhesion of right ovary was released from the pelvic floor and posterior of the uterus. Additionally, rectosigmoid adhesion to the posterior of the uterus was released. Then, bilateral uretrolysis was done and dissected bilateral pararectal fossa and rectovaginal septa. All DIE lesions were resected from both the uterosacral ligaments and posterior of the cervix. Right salpingectomy and right cystectomy were performed and the colorectal surgeon also resected the bowel nodule using PPH stapler.

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Estrogen is an Important Mediator of Mast Cell Activation in Ovarian Endometriomas

Tian-Hong Zhu

Abstract

Endometriosis is an estrogen-dependent disease. Previous research has shown that abnormal enzymes are associated with estrogen (E2) metabolism and an increased number of mast cells (MCs) in endometriomas are implicated in the pathogenesis of endometriosis. However, it remains unclear how MCs mediate the role of E2 in endometriosis. Accordingly, we investigated whether E2 was associated with the number of MCs, and the rate of degranulation in local ovarian endometriomas, as well as the role of E2 on MCs during the pathogenesis of endometriosis. Using enzyme-linked immunosorbent assay and immunohistochemistry, we found that concentrations of E2 and the number and activity of MCs were significantly higher in ovarian endometriomas than in controls. Moreover, these parameters were correlated with the severity of endometriosis-associated dysmenorrhea. By measuring the release of hexosaminidase, we found that the rate of RBL2H3 cell degranulation increased after E2 treatment. Furthermore, activation of RBL2H3 cells by E2 was found to trigger the release of biologically active nerve growth factor, which promotes neurite outgrowth in PC12 cells and also sensitizes dorsal root ganglion cells via up-regulation of Nav1.8 and transient receptor potential cation channel (subfamily V member 1) expression levels. When treated with E2, endometriotic cells could promote RBL2H3 cell recruitment by up-regulating expression levels of stem cell factor, transforming growth factor-β, and monocyte chemoattractant protein-1; these observations were not evident with control endometrial cells. Thus, elevated E2 concentrations may be a key factor for degranulation and recruitment of MCs in ovarian endometriomas, which play a key role in endometriosis-associated dysmenorrhea.

Identification of Biomarkers for Endometriosis in Plasma from Patients with Endometriosis using a Proteomics Approach

K.S. Lee[1], H.G. Kim[2], C.W. Kim[3], M.S. Jo[1]

Abstract

Background: The present study aimed to examine potential biomarkers for the diagnosis of endometriosis. A plasma-based proteomic approach, including 2-dimensional electrophoresis and mass spectrometry, was used.

Methods: Samples were obtained from patients with (n=15) and without (n=15) endometriosis, or from mice with surgically induced endometriosis. Seven spots corresponding to 6 differentially expressed proteins were identified in the human plasma samples. However, only haptoglobin (Hp) was identified to be significantly decreased in the plasma levels of patients with endometriosis ($P<0.05$) and in mice with surgically induced endometriosis ($P<0.05$).

Results: *Proteomic Analysis of Plasma Proteins in Females with Endometriosis*

Twenty spots in the endometriosis samples had lower densities, whereas five spots were detected only in the control. Seven spots were then selected after the density comparison followed the clinical stage of endometriosis (stage I=1, stage II=1, stage III=3, stage IV=10).

Validation of Biomarkers by Western Blotting

The relative densities of Hp, ApoL-1, and LRG in the endometriosis group were decreased compared to those in the control group. In particular, quantitation of the Hp expression was reduced 3.05-fold compared to that of the control ($P<0.05$). The results of early (stages I and II) and advanced (stages III and IV) stage groups were compared with the control, in patients with and without endometriosis. The relative densities of Hp were reduced in early and advanced stages compared with the control ($P<0.05$).

Verification of Biomarkers of Endometriosis in Mouse Plasma

Histological examination revealed that uterine tissue samples at 14 days following transplantation into the peritoneal cavity had developed into endometriotic lesions with a typical histological appearance.

Conclusion: Hp was downregulated in females with endometriosis, and therefore, it may be a useful diagnostic tool as a biomarker of endometriosis.

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ATP and P2X3 Receptors Induced Neuropathic Hyperalgesia in a Rat Model of Endometriosis

Shaojie Ding

Abstract

In view of the inflammatory and nerve infiltration in endometriosis lesions, endometriosis pain is considered as a kind of inflammatory and neuropathic pain. However, its detailed mechanism remains unclear. Our previous study has found that the levels of P2X3 protein expression in endometriosis lesions and endometriosis endometrium were higher compared with control endometrium and have a positive relationship with pain.

In the present study, a rat model of endometriosis was established. Allodynia and thermal hyperalgesia of rats induced by surgery were measured. Then, endogenous adenosine triphosphate (ATP) contents, as well as P2X3 expression levels in endometriosis lesions and dorsal root ganglia (DRG) tissues from the endometriosis or control rats were determined and analyzed with hyperalgesia. We found that both endogenous ATP contents and P2X3 expression levels were significant in endometriosis lesions and DRG tissues from endometriosis rats compared with controls, and were positively related with hyperalgesia. Moreover, ATP enhanced mRNA and protein levels of P2X3 via MAPK signaling pathway in a rat DRG cell line (F11) in vitro. This process was derived from the action of ATP on anther receptor P2Y1. These results suggested that ATP could be a transmitter in the pathology of pain formation and P2X3 might be involved in endometriosis pain.

Diagnostic Accuracy of Magnetic Resonance Imaging, Transvaginal and Transrectal Ultrasonography in Deep Infiltrating Endometriosis

S Alborzi, A Rasekhi, Z Shomali, G Madadi, M Alborzi, M Kazemi, A Hosseini Nohandani, T Poordast

Abstract

Background: The present study aimed to determine the diagnostic accuracy of pelvic magnetic resonance imaging (MRI), transvaginal sonography (TVS), and transrectal sonography (TRS) in the diagnosis of deep infiltrating endometriosis (DIE).
Methods: The present diagnostic accuracy study was conducted during a 2-year period, including a total of 317 patients with signs and symptoms of endometriosis. All patients were evaluated by pelvic MRI, TVS, and TRS in the same center. The gold standard was considered as laparoscopy and histopathologic examination.
Results: Of the 317 patients, 252 tested positive for DIE. The sensitivity, specificity, PPV, and NPV of TVS was found to be 83.3%, 46.1%, 85.7%, and 41.6%, respectively. These variables were 80.5%, 18.6%, 79.3%, and 19.7% for TRS and 90.4%, 66.1%, 91.2%, and 64.1% for MRI, respectively. MRI had the highest accuracy (85.4%) when compared to TVS (75.7%) and TRS (67.8%). The sensitivity of TRS, TVS, and MRI in uterosacral ligament DIE was 82.8%, 70.9%, and 63.6%, respectively. On the other hand, specificity had a reverse trend favoring MRI (93.9%, 92.8%, and 89.8% for TVS and TRS, respectively).
Conclusion: The results of the current study demonstrated that TVS and TRS have appropriate diagnostic accuracy in that diagnosis of DIE and are comparable to MRI.

Keywords ● Deep infiltrating endometriosis (DIE) ● Magnetic resonance imaging (MRI) ● Transrectal sonography (TRS) ● Transvaginal sonography (TVS) ● Laparoscopy

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Cystic Adenomyoma of the Uterus: Case Reports and Literature Review

Qiuju Li, Guoyun Wang

Abstract

Cystic adenomyoma of the uterus is a rare condition with approximately 30 cases reported to date. To the best of our knowledge, juvenile cystic adenomyoma characterized by sexual activity and uterine lumen procedures has not been reported. Herein, we report two cases of cystic adenomyoma.

The first case is regarding an 18-year-old healthy juvenile girl who had no sexual activity, uterine lumen procedures (with an acoustic area in myometrium in color Doppler ultrasonography; CDU), or cyst (in magnetic resonance imaging; MRI). Based on a tentative diagnosis of a cystic adenomyoma of the uterus or rudimentary horn, a laparoscopy was performed. Histopathologic examination indicated endometrial glands and surrounding endometrial-type stroma in the fractured myometrium.

The second case is regarding a 42-year-old woman (gravida 5, para 1, and abortion 4) who complained of pain in the right hypogastrium. The CDU showed an acoustic area with strong echo in the right myometrium and the MRI showed a cyst on the same site. After laparoscopic surgery, histopathologic examination confirmed the diagnosis of cystic adenomyoma.

In this report, the symptoms and signs, the diagnosis and differential diagnosis, the imageologic and histopathologic features, and the pathogenesis are described. The information would provide recommendations for clinical diagnosis and therapy.

Keywords ● Cystic adenomyoma ● Diagnosis ● Therapy ● Pathogenesis

Benefits of Laparoscopy in Tissue Dissection to Reduce Complications in Advanced Endometriosis

Elham Akbari

OB-GYN-Laparascopist Surgeon

Abstract

Tissue dissection without any damage is of paramount importance in the surgical management of advanced pelvic endometriosis. In this regard, we use traction and counter-traction for dissection. Co2 gas also helps in dissection and a new generation of laparoscopic system and tools are necessary.

We start from normal tissues far from the endometriotic lesion. The ureter, uterine arteries, IP and round ligaments, bladder, rectum, and colon must be dissected by fine hand movements to reduce tissue damage. The use of harmonic scalpel also helps. In this video presentation, this process is demonstrated.

The above-mentioned process results in fewer adhesions, hemorrhage, operation time, and recurrence because of a better surgical technique. It is concluded that the knowledge of excellent dissection is necessary in advanced pelvic laparoscopic surgery.

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Association of ABO and Rh Blood Groups with Endometriosis Symptoms among Iranian Women

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Abstract

Background: Endometriosis is a chronic gynecological disorder which severely affects the quality of life of the affected women. The most common symptoms of endometriosis are dysmenorrhea, infertility, dyspareunia, and heavy menstrual bleeding. The present study aimed to explore a possible association between ABO and Rh blood groups and the symptoms of endometriosis among the Iranian women.

Methods: Women referring to Royan Institute and Arash Women's Hospital (Tehran, Iran) for diagnostic laparoscopy were assessed during 2013-2014. Women with endometriosis were recruited based on laparoscopy findings. A questionnaire was completed for each woman, including the symptoms of endometriosis and ABO and Rh blood groups. Chi-square and logistic regression tests were used for data analysis. P values less than 0.05 were considered statistically significant.

Results: In total, 213 patients that suffered from endometriosis were assessed. The mean age and mean body mass index (BMI) of the endometriosis women were 30.43±5.82 years and 23.48±3.38 kg/m2, respectively. The most frequent ABO and Rh blood groups were O (35.7%) and Rh positive (89.2%), respectively. The least blood group was AB (6.6%). The most frequent symptoms of endometriosis were dysmenorrhea (73.7%) and infertility (56.3%). Logistic regression analysis indicated that dysmenorrhea was significantly more frequent in the B (Odds ratio=7, P=0.003), O (Odds ratio=3.733, P=0.028), and A (Odds ratio=3.533, P=0.036) blood groups compared to the AB blood group.

Conclusion: Physicians should pay more attention to dysmenorrhea as the most frequent symptoms of endometriosis, especially in women with B, O, and A blood groups.

Keywords ● Endometriosis ● ABO blood groups ● Rh blood group ● Symptoms

Estimation of the Prevalence and Incidence of Endometriosis with Administrative Data in Korean Women: A National Population-Based Study

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Abstract

Background: The present study aimed to estimate the overall prevalence and incidence of endometriosis in Korea during 2002-2013 and to describe the different trends of the incidence rate of endometriosis according to time and age group.

Methods: Women in their reproductive age (range: 15-54 years) were selected from the Korean National Health Insurance Service (KNHIS) sample cohort dataset which was collected during 2002-2013. Patients with endometriosis were identified by ICD-10 and intervention codes for the Korean health insurance. The overall prevalence of endometriosis and the age-specific prevalence rate, which is categorized by 5-year age interval was evaluated. The overall incidence rates of endometriosis, as well as incidence rates by patient age group and year of diagnosis, were calculated.

Results: Among women aged 15-54, a total of 8,765 women were diagnosed with endometriosis. The overall prevalence of endometriosis was increased from 1.2 per 1,000 people in 2002 to 3.5 per 1,000 people in 2013. The age-specific prevalence was increased sharply in the twenties and highest in the 30-34 age group with 3.6 per 1000 people. It decreased as the age increased. The cumulated incidence rate was highest in 25-29 age group at 2.44%. Age-specific incidence in 2012 was higher in all age groups compared with those in 2002; except for the age group 50-54 years. In addition, the peak of incidence rate in 2002 was in the age group 30-35 years at 0.19%, while the peak in 2012 was in the age group 25-29 years.

Conclusion: The results indicated a significant trend towards an increase in diagnosis of endometriosis in Korean women with respect to time. Particularly, it is found that endometriosis is most often diagnosed in younger reproductive age group among the Korean women.

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Endometriosis and Breast Cancer Risk Factors

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Abstract

Background: Endometriosis is a common chronic, inflammatory, and estrogen-dependent disease with a prevalence rate of 12-45%. Endometriosis has characteristics similar to cancer, such as cell invasion and unrestrained growth. The results of epidemiological studies of the association between endometriosis and breast cancer are inconsistent. The present study aimed to evaluate the breast cancer risk factors in women with endometriosis.

Methods: The present case-control study was conducted on 444 women who referred to Arash Women's Hospital (Tehran, Iran). In total, 222 cases were selected among women who were diagnosed with endometriosis. A similar number (n=222) was selected as the control group among women who came for a routine check-up and pap smear, without any symptoms of the current gynecological disease. Basic information and breast cancer risk factors (gravidity, age, age at first pregnancy, age at menarche, history of breastfeeding, history of oral contraceptive use, history of abortion, history of breast cancer in first relatives, and duration of physical activity in a week) were acquired by a trained midwife.

Results: Final multivariate logistic regression model manifested an association between the history of breastfeeding (OR=0.18, 95% CI: 0.07-0.44; P<0.001), history of oral contraceptive use (OR=4.21, 95% CI: 2.64-6.70; P<0.001), gravidity (OR=0.51, 95% CI: 0.32-0.79; P=0.003), and age at first pregnancy (OR=1.05, 95% CI: 1.01-1.08; P=0.003) with endometriosis.

Conclusion: A number of breast cancer risk factors were found in the history of endometriosis patients. However, further studies with different designs are required to confirm the association between endometriosis and breast cancer.

Keywords ● Endometriosis ● Breast cancer ● Risk factor

Transversus Abdominis Plane Block under Laparoscopic Guide versus Local Infiltration for Postoperative Analgesia after Elective Laparoscopic Excision of Endometriosis

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Abstract

Background: Transversus abdominis plane (TAP) block and local anesthetic infiltration (LAI) have both been shown to be effective in reducing postoperative pain in various laparoscopic procedures. The present study aimed to evaluate the effectiveness of TAP block under laparoscopic guide in comparison to LAI and placebo in patients undergoing laparoscopic endometriosis excision.

Methods: A double-blind randomized placebo-controlled trial of 75 women was conducted. The patients were randomly allocated to three groups. Group I (LAI) received local anesthetic infiltration of bupivacaine 0.25% at trocar sites and the same volume of normal saline at TAP block sites after general anesthesia. Group II (LTAP) received normal saline at trocar sites and bilateral laparoscopic-guided TAP block by bupivacaine. Group III (placebo) received placebo at trocar sites and TAP block sites.

Results: There were no differences in patient characteristics between the groups. In comparison with placebo, both LTAP had LAI groups had significantly less pain at 2-4, 6-8, 10-12, and 24 hours (median VNRS 3,3,3,3 vs. 3,6,4,4 vs. 8,8,7,6 for LTAP, LAI, and placebo, respectively; P: <0.001, <0.001, 0.001, 0.003). The LTAP group had a trend towards lower postoperative pain scores in comparison to LAI, but this did not reach statistical significance (P=0.216, 0.059, 1 and 0.814 at 2-4, 6-8, 10-12, and 24h, respectively). The cumulative number of doses of diclofenac and morphine were not significantly different between the LTAP and LAI groups (P=0.629). This was significantly lower in the LTAP group in comparison with the placebo (median diclofenac 150 vs. 400 mg, P<0.001).

Conclusion: Laparoscopic-guided TAP block and port site local anesthetic infiltration both reduce pain and analgesic consumption compared with placebo in patients undergoing laparoscopic excision of endometriosis. There was a trend towards a better pain relief and less analgesic consumption in the LTAP block group compared to the LAI group but this superiority was not statistically significant.

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Total Laparoscopic Radical Hysterectomy with Pelvic Lymphadenectomy: Video Presentation

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Abstract

Radical hysterectomy refers to the excision of the uterus en bloc with the parametrium and upper part of the vagina. Surgeons usually perform a bilateral pelvic lymphadenectomy. The use of laparoscopic approach offers the benefits of less blood loss and shorter recovery period.

Three patients (mean age 42 years) underwent total laparoscopic radical hysterectomy type 3 and pelvic lymphadenectomy between September 2015 and December 2016. These patients were referred for re-staging. According to the imaging studies and primary clinical staging, they were stage 2b1 cervical cancer. However, our clinical FIGO staging included 1b1, SCC. One of the patients had unilateral kidney agenesis. Another case was endometrial villo-glandular carcinoma with 2% prevalence, that underwent total laparoscopic hysterectomy and lymadenectomy.

It is concluded that total laparoscopic radical hysterectomy can be considered a safe and effective therapeutic procedure for early-stage cervical and endometrial cancers with a low morbidity.

Keywords ● Cervical cancer ● Endometrial cancer ● Hysterectomy ● Laparoscopy ● Lymphadenectomy

A New Method for of Bowel Involvement with Endometriosis: A Case Report

S Alborzi, T Poordast

Abstract

A 26-year-old virgin woman referred to the Endometriosis Clinic of Infertility Research Centre, Shiraz University of Medical Sciences (Shiraz, Iran) with complaints of constipation, dyschesia, and cyclic rectorhagia. Colonoscopy findings indicated a severe narrowing of the rectal canal with an impression of endometriosis. A diagnosis by an expert gynecologist, based on trance rectal sonography, indicated a large rectal DIE. The patient was considered as a candidate for segmental bowel resection by the natural orifice specimen extraction (NOSE) method. A laparoscopy procedure was initiated. After rectal dissection, the distal part of the rectum (bellow the DIE) was cut; the proximal part of the rectum exited from the anal canal. About 4 to 5 cm of the rectum was resected and anvil applied to the proximal part of the rectum. Then, the rectum was returned to the abdominal cavity. After closing the distal part of the rectum with a linear stapler, a circular stapler was inserted transrectally and anastomosis was performed.

Herein, we report on a new technique for segmental resection after laparoscopic surgery for endometriosis. In the traditional method, mini-laparotomy is needed to excise the lesion and apply the anvil. However, in the NOSE method, due to anal approach, we managed to prevent the need for mini-laparotomy and the patient had minimum postoperative pain and better cosmetic result.

Keywords ● Rectorhagia ● Endometriosis ● DIE ● NOSE method

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The Potential of Transvaginal Elastography in Diagnosing and Dating of Deep Infiltrating Endometriosis

Li Sun, Ding Ding, Xishi Liu, Sun-Wei Guo, Jing Zhu

Abstract

Background: There is an emerging evidence that endometriotic lesions are wounds that undergo repeated tissue injury and repair, and ultimately progress to fibrosis. Additionally, based on some findings, the transvaginal elastographic (TVEG) measurement of lesional stiffness correlates with the extent of fibrosis and hormonal receptor expression in adenomyosis.

In view of the above, the present study aimed to investigate whether TVEG measurement of lesional stiffness correlates with the extent of fibrosis and hormonal receptor expression in deep infiltrating endometriosis (DIE).

Methods: Four endometriosis patients who underwent laparoscopic surgeries and were histologically diagnosed with DIE were recruited. These patients referred to the Shanghai OB-GYN Hospital, Fudan University (Shanghai, China) from April to June 2017. TVUS and TVEG were performed for all patients before surgery to measure the stiffness of DIE lesions. Their medical records, including clinical symptoms, features, and pathological reports were carefully reviewed. The Masson trichrome staining and immunohistochemistry staining of E-cadherin, α-smooth muscle actin (α-SMA), estrogen receptor β (ER-β), and progesterone receptor (PR) in the lesional tissue samples of DIE were performed.

Results: Overall, in false color mode, the TVEG provided a clear view of the structures and tissue stiffness in the DIE lesion. In all samples, tissue stiffness correlated positively with the fibrotic content ($P<0.05$). The lesion with the lowest tissue stiffness contained more chocolate-like fluid inside the lesion, while the lesion with the highest tissue stiffness contained more fibers inside. In addition, the extent of fibrosis correlated positively with the staining levels of α-SMA and ER-β ($P<0.05$), but negatively with that of E-cadherin and PR ($P<0.05$). Concomitantly, the tissue stiffness in AL correlated positively with the staining levels of α-SMA and ER-β ($P<0.05$), but negatively with that of E-cadherin and PR ($P<0.05$).

Conclusion: TVEG is superior to the conventional ultrasonography in the differential diagnosis of DIE. The close relationship between tissue stiffness and the fibrotic content, along with markers of cellular differentiation and hormonal responsiveness, suggests that TVEG has the potential for diagnosing and dating of DIE as well as guiding physicians to choose the best treatment modality.

Keywords ● Deep infiltrating endometriosis ● Transvaginal elastography ● Fibrosis ● Hormonal receptors

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Evaluating the Usefulness of Measuring CA-125 and RDW in Stage III and IV Endometriosis for Operative Planning

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Abstract

Background: The role of serum level of biomarkers in predicting endometriosis and preoperative planning associated with disease severity is uncertain. The present study aimed to assess the expression of CA-125 (cancer antigen-125) and RDW (red cell distribution width) levels in patients with endometriosis and to compare these biomarkers in stage III and IV of the disease in preparing operative planning.

Methods: A retrospective study was conducted on a sample of women with the surgical diagnosis of endometriosis. Pelvic examination, ultrasound, and laboratory tests, including CBC (complete blood count) and CA-125 were recorded from their medical files. Based on the American society for reproductive medicine (ASRM), patients were divided into two groups, namely stage III and stage IV. Preoperative serum levels of CA-125 and RDW were recorded. Then, the data were analyzed using logistic regression analysis to assess association between the disease stage and biomarkers.

Results: In total, the data for 183 patients (stage III: 96, stage IV: 87) were used in the analysis. The comparison between patients with stage III and IV showed that the mean levels of CA-125 and RDW were significantly lower in stages III patients (58.16 vs. 95.86, $P<0.0001$ and 13.11 vs. 13.78, $P=0.007$, respectively). The association between stage and biomarkers, as assessed by performing logistic regression analysis, indicated that patients with stage IV were more likely to present with elevated levels of CA-125 (OR=1.01, 95% CI: 1.00-1.02) and RDW (OR=1.37, 95% CI: 1.09-1.74).

Conclusion: The findings suggest that CA-125 and RDW can predict the severity of endometriosis. Clinicians are recommended to use these biomarkers, in addition to physical examination and ultrasound, for operative planning.

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Neutrophil-to-Lymphocyte Ratio and Endometriosis Score

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Abstract

Background: The present study aimed to investigate the correlation between neutrophil-to-lymphocyte ratio (NLR) and endometriosis score in order to indicate the disease stage. The finding of this investigation would assist the process of patient selection for surgery and disease management.

Methods: A retrospective study was conducted on 233 women with the surgical diagnosis of endometriosis. Pelvic examination, ultrasound, and laboratory tests including CBC were recorded from their medical files. The correlation between endometriosis score and NLR was evaluated using the Spearman's rho test.

Results: The mean NLR and endometriosis score was 1.95±0.69 and 47.7±25.6, respectively. The correlation between endometriosis score and the NLR was very low and did not indicate any significant relationship (Spearman's rho=0.023, P=0.73).

Conclusion: The findings of the present study did not show any correlation between neutrophil-to-lymphocyte ratio (NLR) and endometriosis score.

Clinical Outcome of Laparoscopic Treatment of Endometriosis Patients: An Observational Study

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Abstract

Background: Laparoscopic excision of all visible endometriosis lesions is the choice treatments for symptomatic endometriosis. The present study aimed to evaluate the surgical outcomes in women undergoing laparoscopic excision of deeply infiltrating pelvic endometriosis.

Methods: In a prospective cohort study, 244 female patients who underwent laparoscopic excision of pelvic endometriosis lesions in Avicenna Infertility Center (Tehran, Iran) were considered. Clinical and surgical data were retrieved and assessed according to the extent of surgery performed. Intra- and postoperative complications were assessed.

Results: The mean age of the women was 31.84±6.42 years. Among the 244 patients, 80.3% were in stage 4 of endometriosis. Segmental bowel resection was performed in 34 (13.9%) of the cases, RV (rectovaginal) disc resection in 7 (2.9%), and RV (rectovaginal) shave in 53 (21.7%). Deep pelvic endometriosis infiltrating lesions, such as uterosacral ligament, were removed. We performed deep Infiltrating endometriosis of uterosacral ligaments (USL DIE) excision in 97 (39.8%) cases, butterfly DIE excision in 99 (40.6%) cases, pelvic side wall (PSW) DIE excision in 9 (3.7%) cases, other location DIE in 43 (17.6%) cases, endometrioma excision in 170 (69.7%) cases, and the excision of rectovaginal septum in 155 (63.5%) cases. Ureterolysis in 222 (88.8%) cases and pararectal dissection in 186 (74.4%) cases were performed. The mean operation time was 223.81±80.66 minutes (range: 60-440). The overall mean hospital stay was 2.91±1.49 days and the complication rate was 3.6%. Histological examination confirmed endometriosis in 236 (96%) of the cases. The median follow-up time was 7 months (range: 1-31), the follow-up rate was 85.7%, and the median delay diagnosed duration was one year (mean 2.46±3.47 years).

Conclusion: The present study confirms that excisional laparoscopic surgery for deeply infiltrating pelvic endometriosis will be safe and the short-term complication will be lower if performed in a referral center with a multidisciplinary set-up. Patients with deeply infiltrating endometriosis of the bowel may be associated with highly morbid conditions and it should be performed in a multidisciplinary set-up.

Keywords ● Endometriosis ● Laparoscopy ● Outcome ● Complication ● Deep endometriosis

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Effect of Melatonin on the Outcome of Assisted Reproductive Technique Cycles in Women with Diminished Ovarian Reserve

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Abstract

Diminished ovarian reserve (DOR) significantly decreases the success rate of the assisted reproductive technique (ART). The present study aimed to assess the effect of melatonin on the ART outcomes in women with DOR.

A double-blinded, randomized, clinical trial was performed on 80 women with DOR as a pilot study at Shiraz University of Medical Sciences (Shiraz, Iran) during 2014-2015. DOR was defined as the presence of at least two of the following criteria, namely (i) anti-Müllerian hormone ≤1, (ii) follicle-stimulating hormone ≥10, and (iii) bilateral antral follicle count ≤6. The women received 3 mg/d melatonin or a placebo from the 5th day of one cycle prior to gonadotropin stimulation, and continued the treatment up to the time of ovum pick up. The ART outcomes were compared between the groups using the SPSS software. Finally, there were 32 women in the case and 34 in the placebo groups. The mean age and basal ovarian reserve test were the same between the groups. The serum estradiol level on the triggering day was significantly higher in the case group (P=0.005). The mean number of MII oocytes was higher in the case group, but the difference did not reach statistical significance. The number of patients who had mature MII oocytes (P=0.014), top-quality embryos with grade 1 (P=0.049), and embryos with grades 1 and 2 (P=0.014) was higher among the women who received melatonin. However, the other ART outcomes were not different between the groups. The serum estradiol level was higher and more women with DOR had good-quality oocytes and embryos after receiving melatonin. However, no other outcome was different between the case and control groups.

Keywords ● Assisted reproductive techniques ● Embryo ● Melatonin ● Oocytes ● Ovarian reserve

Tanshinone IIa is Efficacious in Treating Induced Endometriosis in Mouse

Ding Ding, Xishi Liu, Sun-Wei Guo

Abstract

Background: Tanshinone IIa is a lipophilic diterpene purified from the Chinese herb Danshen, which exhibits potent antioxidant, antiplatelet, and anti-inflammatory properties. Recent evidence has indicated that platelets play an important role in the development of endometriosis. Hence, it can be deduced that Tanshinone IIa antiplatelet therapy might be a potential therapeutic option for endometriosis. The present study aimed to investigate the therapeutic effect of Tanshinone IIa in a mouse model of endometriosis on hot-plate latency, lesion growth, platelet activation of the peripheral blood, and immunoreactivity to CD41, PCNA, VEGF, Collagen I, α-SMA, and LOX in the ectopic lesion.

Methods: BALB/c adult female mice were used in an endometrium intraperitoneal injection induced model and divided into three groups which received different treatment for two weeks. The groups were namely HT or LT (for high or low dosage Tanshinone IIa treatment) and UT (control or untreated group). The hot-plate test was measured before endometriosis induction and before/after treatment. The platelets activation rate of the peripheral blood was assessed by FACS before being sacrificed. Lesion sizes along with the immunoreactivity of objective molecules in endometriotic lesion were detected. Masson trichrome staining was also used for the detection of collagen fibers in tissues.

Results: Mice receiving Tanshinone IIa had a significantly reduced average lesion size compared with the untreated mice, as well as a significant improvement of hyperalgesia. Tanshinone IIa treatment also reduced the percentage of activated platelets in the peripheral blood and stromal tissue component of the lesion. Besides, the treatment also resulted in a significantly lower immunoreactivity to CD41, PCNA, VEGF, Collagen I, α-SMA and LOX, and lower collagen fiber contents in the endometriotic lesion.

Conclusion: Platelets play an important role in the development of endometriosis. Tanshinone IIa antiplatelet therapy is efficacious in treating endometriosis in vivo by inhibiting angiogenesis, inflammation, and tissue fibrosis. It also results in an improved sensitivity to noxious thermal stimulus. The therapy has the potential therapeutic compound to treat endometriosis.

Keywords ● Endometriosis ● Tanshinone IIa ● Platelet activation ● Hyperalgesia ● Mouse model ● Tissue fibrosis

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The Relationship between IL-10-592 A/C Polymorphism and Endometriosis in an Iranian Population

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Abstract

Background: Endometriosis is a chronic disease which endometrial tissue is found outside the uterine cavity. It is a polygenic and multifactorial disease that has a strong genetic base. IL-10 responses in the control of innate immune play a role in cellular immunity. This protein limits inflammatory reactions and regulates proliferation and differentiation of immune cells and contributes to the development of endometriosis. The present study aimed to investigate a possible association between IL-10-592A/C polymorphism and susceptibility to endometriosis in an Iranian population.

Methods: Seventy-eight unrelated premenopausal women with endometriosis and 94 unrelated healthy premenopausal women without endometriosis were enrolled in the study. Genomic DNA was extracted from peripheral blood in all subjects. After extracting DNA, IL-10-592 A/C polymorphism was analyzed by PCR-RFLP.

Results: There was no significant difference between the frequencies of IL-10-592A/C polymorphism in the case and control groups (P=0.932). Hence, this polymorphism was not associated with endometriosis in our sample.

Conclusion: Further studies involving gene-environment and gene-gene interactions, particularly the combination of IL-10-592A/C polymorphism and other IL-10 gene family polymorphisms, are required.

Keywords ● Endometriosis ● IL-10-592A/C polymorphism

SR-16234 SERM Represses the Development of Endometriosis-Like Lesions in a Murine Model

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Abstract

Background: Selective estrogen receptor modulators (SERM) have tissue-selective actions. SR-16234 is a newly developed SERM by Nobelpharma Co., Ltd. It has an estrogen receptor (ER) α pure antagonist and ER β partial agonist activity. The present study aimed to investigate the efficacy of SR-16234 for the treatment of endometriosis in a murine model.

Methods: Ovariectomized, estradiol replaced, 6-week-old BALB/c mice with surgically-induced endometriosis (n=24) were injected with lipopolysaccharide (LPS) with or without SR (1 mg/kg/day) treatment or vehicle, over a period of 4 weeks. Upon treatment completion, the endometriosis-like lesions developed in the abdominal cavity of mice were counted, measured, and collected. Gene expression of inflammatory cytokines in the lesions was assessed by real-time PCR. Immunohistochemical analysis was used to evaluate the effect of SR on cell proliferation, angiogenic activity, and inflammation.

Results: Treatment with SR significantly reduced the total number, weight, and surface area of lesions per mouse. In addition, SR downregulated LPS enhanced VEGF, IL-6, PTGS-2, and CCL2 mRNA expression in endometriosis-like lesions. Immunohistochemical analysis demonstrated a decrease in the percentage of Ki67-positive cells and the intensity and rate of positive cells of CD3, F4/80, and PECAM by SR treatment.

Conclusion: SR-16234 had a regressive effect on the development of murine endometriosis-like lesions. It may be used as a novel agent for the treatment of endometriosis.

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Endometriosis and Femininity: A Qualitative Study

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Abstract

Background: Endometriosis is a chronic and debilitating disease, which affects all aspects of a woman's life. The present study aimed to explore the perception and experiences of endometriosis patients on femininity.

Methods: A qualitative research was conducted to obtain data from 25 purposely selected endometriosis patients referring to a teaching hospital in Isfahan, Iran. Data were collected through detailed interviews and were analyzed using a conventional content analysis.

Results: Seven categories and three main themes emerged from the participants' experiences. The themes were:

Feeling gynecologic disorders; with categories (i) menstrual disturbances, (ii) complaint of irritating cyst, (iii) pelvic infection problems.

Disruption in marital life; with categories (i) dyspareunia, (ii) infertility.

Disrupted social life; with categories (i) emotional and communication disturbances, (ii) impairment in daily activities.

Conclusion: The findings of the present study showed that endometriosis affects femininity, which may have devastating consequences for the individual, family, and social life of the affected person.

Keywords ● Endometriosis ● Femininity role ● Qualitative research

Spontaneous Rupture of Uterine Adenomyoma During Pregnancy: A Case Report

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Abstract

Spontaneous rupture of uterine adenomyoma during pregnancy is rare. Herein, we reported an emergency case of this condition.

A 42-year-old female (gravida 4, para 1) at 30-week of gestation presented to the emergency department with severe lower abdominal pain for 5 hours. She reported a history of adenomyosis without surgery treatment and cesarean section in 2015. Because of slight contraction of the uterus and light vaginal bleeding for 18 days, Magnesium sulphate and ritodrine hydrochloride were managed to suppress contraction in the local hospital, but the treatment was ineffective. Upon transfer to our hospital, the ultrasonography revealed a massive intraperitoneal free effusion, anterior wall placental abruption, and fetal distress. Emergency laparotomy was conducted immediately through the previous midline incision. A female fetus weighing 1,500 g was born with Apgar scores of 2 and 7 points at 1 and 5 minutes, respectively. The amniotic fluid was clear. The anterior wall placenta abruption was confirmed with 1/3 area of clot impression. The rupture of adenomyoma with a length of 6 cm and active hemorrhage was found in the posterior uterine wall. The cleft was not connected to the uterus. After resection of the adenomyoma, the uterine wall was closed in 2 layers with a total blood loss of 2,500 ml. Transfusion of 2 packed cells and 1 units of fresh frozen plasma were given. The patient recovered gradually after the operation.

It is concluded that, in patients with a history of uterine adenomyoma, it is important to consider the rupture of adenomyoma when the lower abdominal pain occurs during pregnancy.

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Chronic Pelvic Pain Associated with Minimal Endometriosis: An Unsolved Issue

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Abstract

Background: The present study aimed to evaluate pelvic peritoneum in patients with chronic pelvic pain (CPP) associated with subtle endometriosis. The evaluation was performed under chromoendoscopy by scanning electron microscopy (SEM), light microscopy with hematoxylin and eosin staining, and immunohistochemistry (IHC) assays.

Methods: The study was conducted at a referral academic community tertiary medical center. Three women aged 29 to 37 years were referred to the obstetrics and gynecology clinic of the tertiary university hospital with CPP. The patients were suspicious for endometriosis, not responding to medical treatments, and had undergone previous pelvic laparoscopy. The latter aimed to determine the stage of endometriosis and preparation of peritoneal samples under the guidance of staining with methylene blue in 0.25% dilution. A comparison of stained and unstained pelvic peritoneal samples after the instillation of 0.25% methylene blue into the pelvic cavity was made.

Results: In all patients, laparoscopic examination showed minimal endometriosis. In total, 18 samples (9 stained and 9 unstained) were prepared for SEM. Among the samples, 10 (55.6%) showed microstructural peritoneal destruction in which 7 (77.7%) were stained samples and 3 (33.4%) unstained samples. Additionally, 18 samples (9 stained and 9 unstained) from all patients were prepared for IHC. Among these, 6 (33.3%) samples were S100-positive in which 4 (44.4%) were stained samples and 2 (22.2%) unstained samples.

Conclusion: In general, in the context of CPP and endometriosis, there is no established relationship between the severity of pain and the stage of endometriosis. In the pathophysiology of CPP associated with endometriosis, ultrastructural changes can play a significant role. Under methylene blue staining, some destroyed areas were detected, but the stained areas do not necessarily correlate with increased microstructural peritoneal destruction.

The full text available in Journal of Minimally Invasive Gynecology (JMIG-AAGL) Volume 24, Issue 1, 1 January 2017, Pages 114-123

Keywords ● Chronic pelvic pain ● Minimal endometriosis ● Peritoneum ● Scanning electron microscopy

The Role and Clinical Significance of Changes in Blood Components in Advanced Endometriosis

Lin Qiao, Ding Shaojie, Zhu Tianhong, Li Tiantian, Huang Xiufeng, Zhang Xinmei

Abstract

Background: The present study aimed to determine parameters related to coagulation and inflammation in women with advanced endometriosis. The outcome of this investigation would clarify a possible role of changes in blood components in the pathogenesis, diagnosis, and treatment of the disease.

Methods: The clinical data of 366 patients with pathologically diagnosed advanced ovarian endometriosis (case group) and 244 patients with pathologically diagnosed benign ovarian cysts (control group) were retrospectively analyzed. The investigation covered the period 2015-2017 and was conducted in the Women's Hospital affiliated with Zhejiang University School of Medicine (China).

Results: The levels of plasma prothrombin time (PT) and thrombin time (TT) (12.8±0.6 and 15.5±0.6 seconds, respectively) were significantly shorter in patients with advanced ovarian endometriosis compared to those with benign ovarian cysts (13.0±0.6 and 15.7±0.7 seconds, respectively; P<0.01). The levels of plasma fibrinogen (FIB) and D-dimers (D-D) (3.2±0.6 g/l and 1.5±1.6 mg/l, respectively) were significantly higher in patients with advanced ovarian endometriosis compared to those with benign ovarian cysts (2.9±0.5 g/l and 1.0±1.2 mg/l, respectively; P=0.00). The levels of neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), high sensitive C reactive protein (CRP), and erythrocyte sedimentation rate (ESR) (2.6±1.2, 150.3±48.3, 1.4±3.1 mg/l and 11.4±7.6 mm/h, respectively) were significantly higher in patients with advanced ovarian endometriosis compared to those with benign ovarian cysts (2.3±1.0, 137.6±48.8, 0.8±1.0mg/l, and 9.4±5.2 mm/h, respectively; P<0.01). Furthermore, in patients with advanced ovarian endometriosis, the levels of PT were significantly shorter in stage IV endometriosis than those in stage III endometriosis (P<0.01). The levels of FIB, PLR, and CRP were significantly higher in stage IV endometriosis than those in stage III endometriosis (P<0.01). The cut-off value of CA125 was 27.2 U/ml with a sensitivity of 83.6%, the cut-off value of FIB was 3.1 g/l, and the sensitivity of the combined index (FIB×CA125) was 84.9%.

Conclusion: Changes in blood components of patients with advanced ovarian endometriosis may be involved in the pathogenesis of this disease. The detection of coagulation and inflammatory associated parameters has important clinical significance for the diagnosis and treatment of endometriosis.

Keywords ● Endometriosis ● Coagulation ● Inflammation ● Diagnosis, Treatment, CA125, Benign Ovarian Cyst

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Laparoscopic Management of Ureteral Endometriosis: Video Presentation

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Abstract

Endometriosis predominantly affects the pelvic reproductive organs, but can also affect the urinary tract. Ureteral endometriosis is rare and usually asymptomatic that can lead to renal failure due to silent obstruction of the ureter. Endometriotic lesions can be found on both the ureter and bladder, and the optimal therapeutic approach depends on the extent, depth, and location of these lesions. Medical approaches tend to be a temporary measure, useful in a preoperative setting, or if the patient is unsuitable for surgery and as a postoperative treatment. For surgical treatment, ureterolysis should be considered as the first surgical step, but some cases require ureteral resection and ureteroneocystostomy.

The video presentation describes laparoscopic approach for ureter endometriosis on a 37-year-old woman with the complaint of severe dysmenorrhea, dyspareunia, and infertility. The patient was referred to our clinic for endometrioma evaluation. Transvaginal sonography revealed hydroureter and hydronephrosis as well as endometrioma and DIE lesions, despite no urinary complaint. Ureteral resection and ureteroneocystostomy were performed by laparoscopy.

It is concluded that routine ultrasound scanning of the upper urinary tract for severe stages of endometriosis is very important in order to detect any potential ureteral lesions. This procedure is reliable, non-invasive, and inexpensive. Surgical management of ureteral endometriosis ureterolysis is sufficient and safe in most cases, but an extensive approach is required in rare cases.

Imaging Findings of Adenomyosis on Hysterosalpingography

Firoozeh Ahmadi, Fereshteh Hosseyyni

Abstract

Background: Adenomyosis is a gynecologic disorder characterized by the abnormal presence of the endometrial tissue within the myometrium. It is most often diagnosed with non-invasive imaging techniques such as transvaginal ultrasonography (TVUS) and magnetic resonance imaging (MRI). But it can be also diagnosed by hysterosalpingography (HSG). The present study aimed to discuss the imaging findings of adenomyosis based on the HSG technique.

Methods: To identify all related published studies, we searched PubMed, Elsevier, Google Scholar, and EBSCO databases dated 2000-2016. Moreover, original textbooks were also explored. The keywords used were adenomyosis, hysterosalpingography, sonography, and hysterosonography. Additionally, many unique high-quality sonograms, hysterosonograms, and hysterosalpingograms were obtained from the archive of patients who referred to the Imaging Department of Royan Institute, Tehran, Iran.

Results: Some characteristic findings on HSG (e.g. fine channels extended perpendicularly from the border of the uterine cavity and ending in a small rounded or oval diverticulum-like structures) would be helpful to radiologists. The diverticula may be localized to one area or involve the uterine wall diffusely. Another characteristic is a local accumulation of contrast media in the myometrium which sometimes appeared like a honeycomb. Most often, the uterine cavity has a normal size, but sometimes it is shown slightly enlarged. Localized intravasation of contrast media into myometrial vascular channels is seen, but contrast media rapidly cleared from the veins whereas it persists within adenomyotic diverticula or sinuses.

Conclusion: HSG is a less invasive imaging modality for the diagnosis of adenomyosis.

Keywords ● Adenomyosis ● Sonography ● Hysterosonography ● Hysterosalpingography

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Laparoscopic Management of Patients with Infiltrating Endometriosis of the Bladder: Video Presentation

Elham Askary

Abstract

The video presentation aims to demonstrate the laparoscopic management of patients with infiltrative bladder wall endometriosis.

A 32-year-old women with endometriosis involving the full thickness of the bladder wall, 3 years after the first cesarean section, experienced catamenial nature of bladder symptoms (frequency, urgency, and dysuria). She did not respond to previous conservative medical therapy. Laparoscopic evaluation confirmed that the endometriotic lesions which were penetrating through the bladder wall were located in the dome of the bladder. Ultrasonography revealed an endo-luminal vegetation and ruled out an anterior uterine leiomyoma, whereas magnetic resonance imaging did not add further information. Partial cystectomy appears to cure the urinary disturbances.

In conclusion, we suggest a high index of suspicion of vesical endometriosis in all premenopausal women complaining of catamenial bladder symptoms with negative urine cultures. Surgical excision of deeply infiltrating endometriosis of the bladder wall can be performed laparoscopically. We obtained good results following laparoscopic segmental resection.

The Effectiveness of High-Intensity Focused Ultrasound in Reducing Dysmenorrhea in Adenomyosis Patients

Aili Aixingzi, Polyanna Randy, Neil Roberts , Xinhua Yang , JinPing Gu

Abstract

Background: The present study aimed to assess the effectiveness of high-intensity focused ultrasound (HIFU) ablation on dysmenorrhea in patients with adenomyosis.

Methods: One hundred consecutive patients with adenomyosis were evaluated for inclusion. The patients referred to Shanghai First Maternity and Infant Hospital (Shanghai, China) for a possible treatment with HIFU to preserve the uterus and support a potential pregnancy. Among the patients, 81 fulfilled the inclusion criteria and received HIFU ablation of the adenomyosis lesion under conscious sedation. The volume of the uterus was measured before and after the treatment using magnetic resonance imaging (MRI). A blood test was carried out to measure the level of the tumour biomarker CA125 before and immediately after the treatment and at 3 and 6 months follow-up. To assess the severity of dysmenorrhea, in each visit, a visual analogue visual score (VAS) system and verbal rating scale (VRS) were used to assess the pain level and its effect on quality of life, respectively.

Results: All patients with dysmenorrhea completed HIFU without severe complications. On average, the size of the uterus was reduced by 49.8 cm^3 (45.9%) after 3 months and 37.9 cm^3 (54.7%) after 6 months. In 75 out of 81 patients, with various degrees of dysmenorrhea before treatment, symptom scores decreased significantly after 6 months of treatment ($P<0.001$). VAS scores showed that the clinical effectiveness of HIFU in reducing dysmenorrhea is 96.5% after 1 month, 95.0% after 3 months, and 92.6% after 6 months. Only 6 patients showed no changes in dysmenorrhea 6 months after the procedure.

Conclusion: HIFU is a modern treatment for adenomyosis, which has the major advantage of preserving the uterus. Not only it reduces the lesion size significantly, but also has a significant role in reducing dysmenorrhea.

Keywords ● High-intensity focused ultrasound ● Adenomyosis ● Dysmenorrhea ● Ultrasound ablation

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MTHFR Gene Polymorphisms in Women with Endometriosis

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Abstract

Background: The association between MTHFR (A1298C and C677T) polymorphisms with endometriosis remains obscure. The present study aimed to investigate the possible association between both MTHFR gene polymorphisms and endometriosis, with a specific focus on examining any association with the severity of endometriosis.

Methods: The present case-control study was conducted on 351 patients with surgically diagnosed endometriosis, including stage III/IV endometriosis. The control group included 426 healthy women. Detection of MTHFR genotyping was performed using TaqMan PCR assays for the MTHFR C677T and MTHFR A1298C polymorphisms.

Results: Our investigation revealed that bilateral endometrioma was associated with only A1298C polymorphism (P=0.023). In the analysis of the haplotypes of the MTHFR gene, there was a significant difference between women with bilateral endometrioma and the control group (P=0.01). Stage III and IV endometriosis did not show any association with MTHFR gene polymorphism and there was no difference in the distribution of haplotypes between women with stage III endometriosis and those with stage IV.

Conclusion: Advanced stage endometriosis such as bilateral endometrioma was associated with MTHFR A1298C polymorphism. The haplotype of the C677T/A1298C MTHFR gene showed significant association with severe endometriosis. Therefore, MTHFR gene might contribute to the development of severe endometriosis.

Keywords ● MTHFR ● Polymorphism ● Endometriosis

Colorectal Endometriosis: A Retrospective Study

S Alborzi, T Poordast, P Jamshidi, F Najib

Abstract

Background: Treatment of GI endometriosis and laparoscopic surgery have been performed at the Laparoscopy Subdivision of Shiraz University of Medical Sciences (Shiraz, Iran) during the past five years. The present study aimed to share the gained experience and to report the outcomes of laparoscopic surgery for deep infiltrating endometriosis of the bowel.

Methods: A retrospective study using data from the medical chart and follow-up of the patients was conducted. During 2012-2017, a total of 1,008 patients (mean age: 34±6) underwent GI endometriosis and laparoscopic surgery. The follow-up observation period ranged from 3 to 36 months. The main interventions were rectal peeling, disc or segmental resection, or appendectomy.

Results: From the total of 1,008 patients with endometriosis, 219 (21.7%) patients had GI involvement. Among these, 211 (92.2%) had large bowel involvement (rectosigmoid or cecum), 17 (7.8%) had appendix involvement alone, and 33 (15.1%) had combined rectal and appendix involvement.

The treatment was determined according to nodule size. Nodules that were between 1-3 cm (discoid resection), <1 cm (peeling), and >3 cm in diameter (segmental resection) were found in 107 (49.9%), 77 (47,8%), and 62 (28.3%) of the cases, respectively. Seventeen patients (7.8%) had appendix with endometriosis involvement for which appendectomy was performed. Cases that developed complication were 92 (42%) patients while 127 (58%) patients had a good postoperative period. The majority of complications were fever 50 (22.8%) and blood transfusion 68 (31.1%). Other complications were ileostomy, peritonitis, and rectovaginal fistula (less than 2%).

Conclusion: The data indicated that GI endometriosis requires an advanced surgery with major complications. However, if an expert surgeon performs the procedure, a low rate of postoperative complications and good improvement in digestive function could be achieved.

Keywords ● Colorectal endometriosis ● Colorectal resection ● Rectal endometriosis

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The Pattern of Medical Treatment after Endometriosis Operation

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Abstract

Background: The present study aimed to analyze the pattern of medical treatment after endometriosis operation in Busan area hospital and to provide guidelines for postoperative medical treatment.

Methods: In total, 224 women were recruited from 4 hospitals across the city of Busan, Korea. All patients underwent surgery for endometriosis among which 41 patients (18.3%) had laparotomy and 183 patients (81.7%) had laparoscopy. After surgery, 211 patients (94.2%) underwent postoperative medical treatment in which 106 patients had a second line postoperative medical treatment.

Results: The operations were performed by laparoscopy and laparotomy. According to postoperative biopsy, 17.4% was adenomyosis and 54.0% was peritoneal endometriosis. Among endometriosis, the ASRM score of stages III and IV was 55.5% and 33.4%, respectively. Almost all patients (n=224) underwent postoperative medical treatment. GnRH agonist is the most commonly prescribed medication. Second line postoperative medical treatment was performed on 106 patients and combined oral contraceptive (60.1%) was most commonly prescribed. The second most prescribed medication was progestins (33%).

Conclusion: Visanne and GnRH agonist are the most commonly used medical treatment after surgery for endometriosis. However, the proportion of choice varies widely. Nevertheless, due to the effectiveness of Visanne, it seems to be a good choice as the first line treatment after endometriosis surgery.

The Predictive Value of Endometriosis Fertility Index for IVF Outcome in Women with Endometriosis

KS Lee[1], MS Jo[1], CW Kim[2], BS Kwon[1]

Abstract

Background: Endometriosis is a common disease that occurs in 6-10% of women of reproductive age. It is one of the main causes of infertility. Approximately 25-50% of infertile women have endometriosis, among which 30-50% are infertile. The most widely used staging system for endometriosis is the revised American fertility society (r-AFS) classification. However, it has limited predictive ability for pregnancy after surgery. Recently, a new scoring system known as endometriosis fertility index (EFI) has been developed. The present study aimed to evaluate the predictive value of the EFI score on ART outcome for surgically treated patients with endometriosis.

Methods: Fifty-two women with endometriosis receiving IVF treatment after surgery were analyzed during 2009-2013 at Pusan National University Hospital (Pusan, Korea). The EFI score and r-AFS classification were compared with the same population. The cases were divided into two groups according to the EFI score (≤5 and ≥6).

Results: According to the standards of r-AFS classification (1985 and 1996), the lesion score and total score were calculated based on a retrospective analysis of the surgery report from the hospital medical records. The endometriosis stage of each patient was classified. The approval of the Institutional Review Board was obtained to retrieve the laparoscopic surgery records and the IVF data.

The EFI score was calculated according to the EFI developed by Adamson and Pasta. It includes the clinical and surgical factors such as age, duration of infertility (years), pregnancy history, least-function (LF) score (including fallopian tubes, tubal fimbriae, and ovaries), r-AFS score of the lesion, and total r-AFS score. The EFI score shows the rating scale of the least-function score and the endometriosis fertility index. Comparison between the two EFI groups and between the two r-AFS groups was performed with the Chi-square test for categorical variables or the *t* test for continuous and ordinal variables. All tests were two-tailed and $P<0.05$ was considered statistically significant.

Conclusion: It appears that the EFI score has more predictive power for IVF outcomes in endometriosis patients than the r-AFS classification. The clinical pregnancy rate was higher in patients with EFI (≥6) than those with EFI (≤5).

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Caulis Sargentodoxae Prescription has Multiple Efficacy to Decrease Inflammatory and Angiogenesis Related Cytokines in a Rat Endometriosis Model

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Abstract

Caulis Sargentodoxae prescription is an empirical formula of Chinese herbs which has definite curative effects on endometriosis. To explain the multiple efficacies of the formula, the effects of Caulis Sargentodoxae prescription on the growth of ectopic endometria were studied in a rat endometriosis (EMs) model. The EMs model was established by autoplastic transplantation and rats were randomly divided into 9 groups. The groups were namely the normal group, model control group, ovarietomized group, gestrinone group, Caulis Sargentodoxae prescription group, celecoxib group, apatinib group, and two combination groups. After administration for 21 days, the growth inhibitory rates of ectopic endometria in the treatment groups were significantly higher compared with the model group, except for the celecoxib group ($P<0.05$). In the Caulis Sargentodoxae prescription group, the levels of inflammatory cytokines (IL-1, IL-2, IL-6, TNF-α, and PGE2) and of angiogenesis-related factors (VEGF and VEGFR2) reduced in serum and peritoneal fluid compared with the model group ($P<0.05$). In addition, the positive expression of PTGS2 and VEGF/VEGFR2 in ectopic endometria was significantly decreased in the Caulis Sargentodoxae prescription group, both at mRNA and protein levels. Hence, it is suggested that Caulis Sargentodoxae prescription has reliable multiple effects on EMs for its multi-targets actions to decrease inflammation and angiogenesis.

Keywords ● Caulis sargentodoxae prescription ● Inflammation ● Angiogenesis ● Endometriosis ● Rat model

The Mechanism of Cold and Heat Blood Stasis Syndrome of Endometriosis

Yang Cao, Xiao-ying Wu, Chun-hui Shen, Chen Du , Fei Hang, Ting-ting Zhang

Abstract

Background: The present study aimed to provide a better understanding of the differences in endometriosis in terms of damp-heat and damp-cold blood stasis syndrome. Additionally, an objective evaluation method is provided for the diagnosis of endometriosis with respect to both syndromes.

To explore the relationship between clinical manifestations and commonly used indicators of endometriosis, in addition to clinical investigation and research, we used the Chinese pulse and tongue diagnosis methods. In turn, this would improve the dialectical approach and provide clear guidance on the use of Chinese patent medicine.

Methods: A total of 105 patients aged 18-45 years with endometriosis were enrolled in Yueyang Hospital, Shanghai University of Traditional Chinese Medicine (Shanghai, China). Among the patients, 48 cases had damp-heat and 57 cases had damp-cold blood stasis syndrome. A questionnaire and clinical test methods were used to collect patient information, including the main symptoms, related laboratories, imaging examination as well as tongue and pulse diagnosis. The data were initially verified and analyzed using the SPSS software.

Results: The damp-cold blood stasis syndrome was significantly higher ($P<0.05$) than the damp-heat blood stasis syndrome in terms of dysmenorrheal proportion, dysmenorrhea symptom score, the VAS score, quality of life in physical function, and body pain. Whereas, in terms of pelvic pain, painful sexual intercourse, and anus pain the damp-heat blood stasis syndrome was significant ($P<0.05$). There was no significant difference between the two syndrome types ($P>0.05$) in terms of infertility and menstrual condition scores.

Based on laboratory examination, the difference in Ca125 content and positive rate between the two syndrome types was statistically significant ($P<0.05$). The was no statistically significant difference between Ca199 and blood viscosity ($P>0.05$). Based on imaging examination, there was no significant difference between both types of lesions and the lesion size ($P>0.05$).

A comparative study of the pulse parameter showed that the damp-cold and damp-heat groups had a long period of cardiac ejection, arterial wall tension, and increased peripheral resistance compared to the control group. It suggests that blood circulation in both groups was weak; possibly due to the common pathological basis of blood stasis. A comparative study of the tongue parameter showed a statistically significant difference between tongue manifestation of both pathological groups and the control group. In detail, the tongue texture of the damp-cold

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group was more delicate and the tongue color coating texture was brighter and visibly pale. The tongue texture of the damp-heat group was redder, less bright, and the coating was rougher, brighter, and redness and yellowness. These results are in line with the traditional understanding of TCM on damp-cold and damp-heat syndromes. In comparison with the damp-heat group, the tongue texture of the damp-cold group was brighter, less red, and with more delicate coating. This is also consistent with the TCM knowledge of the difference between the damp-heat and damp-cold syndromes. There was no statistically significant difference between the two groups in terms of pulse parameters, which may be due to the common blood stasis as the pathological features of both groups.

Conclusion: In terms of various parameters (dysmenorrhea proportion, dysmenorrhea symptom score, the VAS score, quality of life, the proportion of pelvic pain, painful sexual intercourse, and anus pain), there are significant differences between the two syndrome types regarding the Ca125 content and positive rate. There is certainly secondary significance for the objectives of TCM syndrome types to distinguish these items. Compared to damp-cold blood stasis syndrome, menorrhagia and menostaxis risk factors could be one of the causes of damp-heat blood stasis syndrome. Hence, treating irregular menstruation is required and should be considered.

When dealing with damp-cold blood stasis syndrome patients, it is recommended to pay attention to pain management during treatment, reduce the impact of disease on the quality of life, and boost their confidence level. The objective diagnosis instruments support the damp-heat and damp-cold blood stasis syndromes as well as blood stasis as the basic pathological features of endometriosis.

Keywords ● Endometriosis ● Cold and heat blood stasis syndrome ● Tongue and pulse manifestations

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Laparoscopic Incisional and Ventral Hernia Repair: A Literature Review

Mianji Nader[1], Mianji Ali[2], Mianji Mahdi[3]

Abstract

Background: Ventral hernias, whether naturally occurring or the complication of previous abdominal surgery, comprise one of the most common problems confronting general surgeons. Incisional hernias occur in 5-25% of laparotomy incisions over a long-term follow-up. Its repair has always been a problem for surgeons due to the high recurrence rate for primary repair (25-51%) and mesh repair (12-20%). Laparoscopic approach is a new method for ventral hernia repair. Based on a literature review, the present study aimed to analyze the surgical approach, postoperative complications, and recurrence rate after laparoscopic ventral hernia repair in comparison with open ventral hernia repair.

Methods: Scientific studies have indicated that the laparoscopic approach has improved over the last decade and is the recommended technique for ventral hernia repair. The main steps in laparoscopic surgery are intra-abdominal adhesiolysis, reduction of hernia contents, minimal soft tissue dissection, closure of defect (especially in hernia defect diameter bigger than 5-7 cm), polytetrafluoroethylene dual mesh placement (with 5 cm circumferential coverage of hernia defect), full-thickness abdominal wall transfascial nonabsorbable sutures in at least four quadrants of mesh, one suture in the center of mesh, and double crown fixation with tacker device. Care should be taken regarding patient selection, operative technique, mesh size, and correct securing of the mesh to ensure adequate repair of a hernia and thereby preventing recurrence.

Results: The literature review revealed that many of the ventral and incisional hernias, especially recurrent cases, can be successfully repaired laparoscopically. Peri- and post-operative complications and recurrence rates were lower in the laparoscopic approach, but it carries a higher risk of bowel injury than the open approach. However, the risk can be avoided by meticulous technique and sharp dissection to avoid thermal injury. Current evidence suggests that laparoscopic technique may be the optimal surgical treatment for a ventral hernia. The conversion rate of laparoscopic method is 2.4%, enterotomy rate is 1.8%, and the recurrence rate is 3-5%.

Conclusion: Most reports on this topic advocate laparoscopic incisional and ventral hernia repair as a safe alternative to open repair method. The main advantages are minimal postoperative pain, earlier recovery, less wound and mesh infection, lower recurrence rate, shorten operation time, and greater patient acceptance. With more experiences and more follow-up, the laparoscopic approach may become the preferred technique for ventral hernia repair in difficult cases, recurrent hernias, and obese patients. However, additional long-term studies are required to further evaluate the true effectiveness of this technique.

Keywords ● Hernia ● Ventral hernia ● Incisional hernia ● Laparoscopy

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First Iranian Experience with Minimal Invasive Nuss Procedure for Pectus Excavatum Repair

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Abstract

Background: Pectus excavatum (PE) is the most frequent congenital anomaly of the chest wall. The first breakthrough in its management came in 1949 when Ravitch described costochondral resection to repair this anomaly. In 1998, Nuss introduced minimally invasive repair through temporary implantation of a metal bar to alter the curvature of the anterior chest wall. This procedure has gained popularity throughout the last 2 decades. Herein, the first Iranian experience with the Nuss procedure with or without concurrent open heart surgery is described.

Methods: From September 2016 to April 2017, 9 patients with PE underwent the repair procedure using the modified Nuss procedure. The age range of the patients was 13-48 years. All patients had a low self-esteem and one complained of low exercise capacity and occasional chest pain. Six patients had only pectus repair. With single lung ventilation and sternal elevation, introducer was entered in the right thoracic cavity and under thoracoscopic vision retrosternal tunneling was made. Introducer was passed to the left thoracic cavity and exit on the left thoracic wall. A titanium plate bar was implanted and fixed with stabilizers. Two patients with Marfan syndrome after subsequent MVR and Bentall operations and one patient with complicated previous Ravitch repair with right coronary artery fistula to right ventricle outflow tract were repaired with the modified Nuss procedure.

Results: There was no mortality and all patients were discharged after 2 weeks. We had one case of pneumothorax early in the post-operative period. Popping out at the site of bar fixation was a complaint in two patients.

Conclusion: Over the last 2 decades, the Nuss procedure has become more popular for pectus repair. By using professional thoracoscpy and expertise in chest wall surgery and open pectus repair, with or without attending at least one workshop, Nuss procedure can be performed safely without previous self-experience. The results are acceptable; however, more experience is required in complex or redo surgery.

Keywords ● Pectus excavatum ● Nuss ● Minimal invasive ● Repair

Modified Ileocolic Conduit and Colojejunal Roux-en-Y for Esophagus and Stomach Replacement after Two Subsequent Laparoscopic Bariatric Surgery Complications: A Case Report

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Abstract

Nowadays, more patients undergo bariatric surgery. Postoperative complications are common and managed by a thoracic surgeon.

A 46-year-old female was referred for esophagus replacement. 5 years prior to admission, the patient had her first laparoscopic gastric banding (LGB) with late ring erosion complication. She underwent the second laparoscopic sleeve gastrectomy (LSG). During 3 months post-op, she had occasional nausea, vomiting, and tachycardia. CT-scan with contrast study showed hiatal herniation. She had left thoracotomy which showed confined mediastinal leakage and para-esophageal hiatal herniation. She had esophagectomy, extended proximal gastrectomy, splenectomy, repair of the diaphragm, cervical esophagostomy, and tube jejunostomy. After 2 months of jejunal feeding and build up, midline laparotomy was performed. The right and left colon were accessed and found splenic flexure severely adhered in left upper quadrant. She also had accessory middle colic artery. An ileocolic conduit based on left colic artery and accessory middle colic artery was prepared. Through retrosternal approach and left hemimanubrectomy, ileocolic conduit was anastomosed to cervical esophagus. Distal anastomosis was completed by colojejunal Roux-en-Y anastomosis. Distal ileum anastomosed to left colon and a new jejunostomy tube was established.

Results: The operation was uneventful. Jejunostomy tube feeding was started on day 3. She had barium swallowing and no evidence of leakage on day 10.

Conclusion: Bariatric surgery requires expertise and performing the right operation for the right patient. Early detection and treatment remain pivotal principles in the management of GI leaks and reducing subsequent morbidity and mortality.

Keywords ● Bariatric surgery ● Leakage ● Management

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Adequacy of Fundectomy of Stomach for Weight Loss Similar to Sleeve Gastrectomy

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Abstract

Background: It is well documented that surgical removal of the acid-producing part of the stomach (fundectomy) or the whole stomach (gastrectomy) results in weight loss. The present study aimed to measure weight loss and endocrine changes in rabbits, 12 weeks after fundectomy.

Methods: Rabbits weighing 2.5-3.5 kg at the start of the experiment were used during the 12 weeks of the experiment. The animals were housed in standard laboratory conditions, 1-2 rabbits in each cage, with free access to standard rabbit feed pellets and tap water ad libitum. The experiment was approved by the Research Ethics Committee of Shiraz University of Medical Sciences (Shiraz, Iran). The rabbits received cow milk and multivitamin drop, instead of the standard food, for 5 days after the surgery. The animals were divided into three groups, namely the sleeve gastrectomy (n=5), fundectomised (n=5), and sham (n=5) groups. The rabbits subjected to fundectomy were anaesthetized by an intravenous injection of ketamine (50 mg/kg) and xylazine (12 mg/kg).

The ELISA test kit was used to determine the total ghrelin and leptin levels in plasma before and after the surgery. Concentrations in serum were expressed as pg/ml. A group of rabbits was subjected to sleeve gastrectomy and the sham group was subjected to open-chest and gastric manipulation. The results obtained from the three groups were then compared. The weight of the rabbits was recorded weekly after the surgery and compared with the corresponding weight prior to surgery. Statistical analyses were performed using Wilcoxon test and $P \leq 0.05$ was considered statistically significant.

Results: Weight loss in both groups of rabbits that had fundectomy and sleeve gastrectomy was significant ($P<0.05$). However, a significant difference in ghrelin or leptin levels after these surgeries was not found.

Conclusion: Fundectomy is recommended as a new bariatric surgery with no significant endocrine changes.

Keywords ● Rabbit ● Fundectomy ● Leptin ● Ghrelin

Quality of Life after Laparoscopic Sleeve Gastrectomy in Shiraz

Hajar Khazraei, Mozhdeh Zamani

Abstract

Background: Laparoscopic sleeve gastrectomy (LSG) has recently become a familiar procedure. It appears that patients perceive this procedure to have lower risks compared to other bariatric surgeries. Due to lack of any assessments, the present study aimed to evaluate the quality-of-life after LSG surgery.

Methods: A retrospective study was conducted to evaluate the outcome of obesity-specific quality-of-life questionnaires, such as Moorehead-Ardelt questionnaire II (MAII) and medical outcomes survey short form 36 (SF-36) health surveys. A total of 120 patients who underwent LSG surgery between January 2010 to July 2014 in Shiraz (Iran) were evaluated. The outcome of this evaluation was compared with those scheduled for the surgery. $P<0.05$ was considered as statistically significant difference between the two groups.

Results: Initial mean BMI of the patients was 48.87±1.38 kg/m^2. The weight loss was 36.15±3.9 kg after six months. The mean MAII score was not significantly different in comparison with pre-operation; however, the SF-36 score was statistically different in all parameters except for the "mental health" and "role limitations attributed to emotional problems."

Conclusion: The outcome of LSG operations indicated the surgery as satisfactory and an effective bariatric procedure. In addition, the resolution of comorbidity is an important criterion and comparable with other reports.

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Keywords ● Quality of life ● Obesity ● Laparoscopic sleeve gastrectomy ● Long-term results

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Anticoagulants as a Selective Factor for Deep Vein Thrombosis and Pulmonary Embolism

Masood Amini, Ebrahim Kheradmand

Abstract

Background: Pulmonary thromboembolism (PE) is the second leading cause of death following a leak in patients undergoing bariatric surgery. PE is responsible for approximately 40-50% of fatalities. Pulmonary embolism and deep vein thrombosis (DVT) vary between 0.2% and 3.5%. Up to 97% of patients have a predicted risk factor of <1% for developing venous thromboembolism (VTE), but identifying the other 3% of the patients who are at higher risk is essential. These patients typically have BMI more than 55, male gender, operative time more than 3 hours, older age (>50 years), previous Hx of DVT, and hypercoagulation state. The present study aimed to determine selective anticoagulative usage based on the above-mentioned risk factors rather than routinely.

Methods: During 1.5 years, 355 sleeve and bypass surgeries were performed in Shiraz Ghadir Mother and Child Subspecialty Hospital (Shiraz, Iran). One patient with high-risk criteria (old age, high BMI, lengthy operations, Hx of DVT) received DVT prophylaxis. Only one patient (0.28 %) developed PE and recovered without any long-term morbidity or mortality.

Results: In the literature, it is stated that the use of anticoagulation has no effect on post-op bleeding, especially low molecular weight subgroups. Nevertheless, still, a subgroup of the patients developed bleeding and required re-operation. The use of the selective approach had only 0.28% chance of PE in the present study.

Conclusion: The use of anticoagulants as a selective approach is safe with very low chance for DVT and PE.

Keywords ● Laparoscopy ● Thromboembolism ● DVT ● PE ● Anticoagulation ● Bariatric surgery

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Single-Incision versus Multi-Incision Laparoscopic Right Hemicolectomy in Colon Cancer: Early Complications and Consequences

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Abstract

Background: Single-incision laparoscopic colectomy (SILC) is a new surgical technique for the treatment of colorectal diseases. So far, several studies have been conducted to compare SILC with standard multi-incision laparoscopic colectomy (MILC). However, heterogeneity results were obtained from these studies, which indicate the necessity for further research. To identify more accurate results, the present study aimed to compare early complications and consequences of these techniques in colon cancer patients.

Methods: Colon cancer patients were divided into two groups containing 37 and 39 cases undergoing SILC or MILC, respectively. Patient demographics and surgical complications were retrospectively assessed, including age, gender, body mass index (BMI), duration of operation, length of stay in the hospital, intra-operative bleeding, and internal organ injury. Six-month follow-up was performed for all patients. Data were analyzed by the SPSS statistical software. Student's *t* test, Chi-square test, or Fisher's exact test were applied based on variable types.

Results: All investigated factors were similar in the MILC and SILC groups ($P>0.05$), except for the duration of operation, which was significantly lower in SILC ($P=0.003$).

Conclusion: Considering the results of the present and other previous studies, it can be concluded that complications and quality-of-life are generally similar between the MILC and SILC techniques. It seems that contradictory results obtained by various studies for the duration of operation and hospital stay are due to differences in some factors such as surgeon's experience, types of the colorectal diseases, and types of the colon resection.

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Impact of Bariatric Surgery on Clinical Depression and Self-Esteem

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Abstract

Background: Bariatric surgery is the only procedure that has a significant outcome in weight loss and improvements in medical comorbidities in morbidly obese patients. Severely obese patients are also associated with a higher prevalence of psychiatric disorders and poor self-esteem. The present study aimed to evaluate the clinical depression and self-esteem in patients before and after bariatric surgery.

Methods: The design of the present semi-experimental study was pre-test and post-test without a control group. We conducted a prospective longitudinal study of 40 patients undergoing bariatric surgery in Shiraz Ghadir Mother and Child Subspecialty Hospital (Shiraz, Iran). The data were obtained by surveying the patients before and after the procedure, using Beck depression inventory and self-esteem questionnaire.

Results: Data were analyzed using MANOVA with SPSS (version 19.0). The results were presented as mean±SD and $P<0.05$ was considered statistically significant. We observed the reduction in clinical depression as well as improved self-esteem after the surgical treatment of obesity.

Conclusion: Careful preoperative assessment and close monitoring of post-surgery are recommended. Overall, the participation of a multidisciplinary team, including psychiatrists, psychologists, and other mental health professionals is vital to optimize patient care for depression and to improve the self-esteem of obese bariatric surgery patients.

Keywords ● Bariatric surgery ● Depression ● Self-esteem

Single Anastomosis Sleeve Ileostomy Bypass versus Sleeve Gastrectomy

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Abstract

Obesity is known as a major worldwide public health problem. Over the past two decades, it has been indicated that bariatric surgeries are very effective in the management of patients with morbid obesity. Sleeve gastrectomy is a restrictive procedure in which the size of the stomach is reduced by removing its large portion. Despite the efficacy and safety of this technique, it has certain drawbacks such as possible bleeding, leakage, gastro-oesophageal reflux, and weight regain. Therefore, a long-term evaluation is necessary for more detailed analysis. In order to reduce the disadvantages and enhance the efficacy of the available bariatric surgery methods, new surgical techniques such as single anastomosis sleeve ileostomy (SASI) bypass have emerged. This technique is a novel metabolic bariatric surgery in which a sleeve gastrectomy is performed, followed by a side-to-side gastroileal anastomosis.

It is concluded that the SASI technique is safe, simple, and effective. It has fewer disadvantages while retaining the advantages of other bariatric surgery methods.

In a short video clip, details of the procedure are described.

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Debating Splenic Flexure Mobilization and its Importance

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Abstract

Traditionally, splenic flexure mobilization accompanied by ligation of the inferior mesenteric artery at its origin is mandatory to achieve a satisfactory outcome. This is judged not only in the short-term by patient recovery but also in the long-term by oncological results. As with all aspects of surgery, the logic behind this teaching needs reappraisal with clinical evidence rather than based on personal experiences. The rationale behind splenic flexure mobilization is to get a tension-free anastomosis with good vascularity, but is it always necessary?

Laparoscopic Excision of Large and Stony Uterosacral Endometriosis: A Case Report

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Abstract

Surgical treatment is usually required in symptomatic patients to complete the medical treatment of endometriosis. A 31-year-old G1 P1 (c/s) was presented with dysmenorrhea pain score (10/10), dyspareunia (7/10), and painful defecation (7/10).

Physical examination revealed fixed uterus, thickened uterosacrals, and a large stony nodule in the rectovaginal septum and left uterosacral. Transvaginal sonography report revealed adenomyotic uterus with 38 mm hematosalpinx in the left adnexa, severe adhesion of ovaries to the uterus and USLs, and severe cul-de-sac adhesion. Both uterosacrals thickening as right USL nodule 11 mm and left USL nodule 12 mm and retrocervix 9 mm nodule with severe adhesion to rectosigmoid and malrotation of the right kidney.

In the laparoscopic view, frozen pelvis was observed. There was a large and stony endometriosis nodule on the left uterosacral ligament and a 2 cm nodule on the anterior surface of the rectum. After extensive adhesiolysis and suspension of the uterus and ovaries, double-J stent was inserted to the ureters. Ureterolysis was performed and then the pararectal and rectovaginal space were dissected. Left salpingectomy and resection of all deep infiltrating endometriosis (DIE) lesions and disc resection of the bowel was performed. Pelvic irrigation and drain placement were done at the end of the surgery.

It is concluded that multidisciplinary laparoscopic treatment of extensive endometriosis is safe with a good outcome.

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Diagnostic Accuracy of Magnetic Resonance Imaging, Transvaginal and Transrectal Ultrasonography in Deep Infiltrating Endometriosis

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Abstract

Background: The present study aimed to determine the diagnostic accuracy of pelvic magnetic resonance imaging (MRI), transvaginal sonography (TVS), and transrectal sonography (TRS) in the diagnosis of deep infiltrating endometriosis (DIE).
Methods: The present diagnostic accuracy study was conducted during a 2-year period, including a total of 317 patients with signs and symptoms of endometriosis. All patients were evaluated by pelvic MRI, TVS, and TRS in the same center. The gold standard was considered as laparoscopy and histopathologic examination.
Results: Of the 317 patients, 252 tested positive for DIE. The sensitivity, specificity, PPV, and NPV of TVS was found to be 83.3%, 46.1%, 85.7%, and 41.6%, respectively. These variables were 80.5%, 18.6%, 79.3%, and 19.7% for TRS and 90.4%, 66.1%, 91.2%, and 64.1% for MRI, respectively. MRI had the highest accuracy (85.4%) when compared to TVS (75.7%) and TRS (67.8%). The sensitivity of TRS, TVS, and MRI in uterosacral ligament DIE was 82.8%, 70.9%, and 63.6%, respectively. On the other hand, specificity had a reverse trend favoring MRI (93.9%, 92.8%, and 89.8% for TVS and TRS, respectively).
Conclusion: The results of the current study demonstrated that TVS and TRS have appropriate diagnostic accuracy in that diagnosis of DIE and are comparable to MRI.

Keywords ● Deep infiltrating endometriosis (DIE) ● Magnetic resonance imaging (MRI) ● Transrectal sonography (TRS) ● Transvaginal sonography (TVS) ● Laparoscopy

Safety and Outcome of Incisional Hernia Defect Closure in Laparoscopic Approach

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Abstract

Background: The high incidence of incisional hernia represents a public health issue throughout the world. The ideal technique for its repair is unclear. The present study aimed to analyze postoperative complications and possible recurrence after the closure of incisional hernia defect by laparoscopy repair.

Methods: In a retrospective study, the records of 50 patients (30 females and 20 males) who underwent laparoscopic incisional hernia repair during 2015-2016 were evaluated. In each case, primary closure of the defect was performed by transfascial sutures or laparoscopic suture. Outcome measures included complications at 1-12 months follow-up.

Results: The median hernia size was 8 cm. No complication was reported intraoperatively and the average hospital stay was 2 days. None of the patients developed seroma, mesh eventration, or hernia recurrence. Two patients had residual pain at 3 weeks and none at 8 weeks. Due to the smaller mesh size and number of tackers, the cost of operation was significantly lower in those with the closure of the defect compared to those without.

Conclusion: Primary closure of the defect by laparoscopy is safe and conduces less seroma formation, mesh or tissue eventration, hernia recurrence, and cost of operation.

Keywords ● Incisional hernia ● Closure of defect ● Laparoscopy