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Original Article

Laparoscopic pelvic organ suspension with mesh: a modified technique and primary results



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ABSTRACT

Background: Pelvic organ prolapse recurrence rate is an important issue which impacts the patient's quality of life and results in a new surgical procedure. We use a new technique of laparoscopic pelvic organ suspension (rectal suspension) for pelvic organ prolapse treatment in our center. We evaluated the results of this technique, three months after surgery and at the time of study reporting.

Methods: All patients with pelvic organ prolapse for whom laparoscopic pelvic organ prolapse had been done were evaluated. Data were collected from the patient's charts and their short term follow up 3 months after the surgery and their last follow up visit. Demographic, history, physical examination, Wexner's fecal incontinence score and Altomare's Obstructed Defecation Syndrome score, post-operation complications and patient's satisfaction were analyzed, retrospectively.

Results: All patients were female with a mean age of 57 ± 11.43 years (range 32–86 years). Mean BMI was 26.1 ± 3.73 . Nine patients had rectal bleeding (31%), 18 had prolonged or difficult defecation (62%), 16 had rectal prolapse (55.2%), 11 had gas incontinence (37.9%), 9 had liquid stool incontinence (31%), 5 had stool incontinence (17.2%), 9 had vaginal prolapse (31%), 23 had constipation (79.3%), 9 complaint of pelvic pain (31%), 9 had urge or stress urinary incontinence (31%) and 13 had dyspareunia (44.8%).

Conclusions: In conclusion, we believe this procedure has good results in short term follow up (3 months after surgery), but a high recurrence rate in the middle term follow up. Therefore, this procedure is no longer recommended.

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Suspensão laparoscópica de órgão pélvico com malha: uma técnica modificada e resultados primários

R E S U M O

Palavras-chave:

Prolapso de órgãos pélvicos

Incontinência

Malha

Pontuação de Wexner

Escore da SDO de Altomare

Introdução: A taxa de recorrência do prolapso de órgãos pélvicos é uma questão importante que afeta a qualidade de vida do paciente, resultando em um novo procedimento cirúrgico. Os autores adotaram uma nova técnica de suspensão laparoscópica de órgãos pélvicos (suspensão retal) no tratamento de prolapso de órgãos pélvicos. Os resultados dessa técnica foram avaliados três meses após a cirurgia e no momento do relato do estudo.

Métodos: Todos os pacientes com prolapso de órgão pélvico submetidos a suspensão laparoscópica foram avaliados. Os dados foram coletados do prontuário do paciente, na visita de acompanhamento três meses após a cirurgia e na última visita de acompanhamento. Os dados demográficos, histórico médico, avaliação física, escore de incontinência fecal de Wexner, escore da síndrome da defecação obstruída de Altomare, complicações pós-operatórias e satisfação do paciente foram analisados retrospectivamente.

Resultados: Todos os pacientes eram do sexo feminino, com média de idade de $57 \pm 11,43$ anos (variação de 32 a 86 anos). O índice de massa corporal médio foi de $26,1 \pm 3,73$. Nove (31%) pacientes apresentaram sangramento retal; 18 (62%), defecação prolongada ou difícil; 16 (55,2%), prolapso retal; 11 (37,9%), incontinência gasosa; nove (31%), incontinência fecal líquida, cinco (17,2%), incontinência fecal; nove (31%), prolapso vaginal; 23 (79,3%), constipação; nove (31%), queixa de dor pélvica; nove (31%), incontinência urinária de urgência ou esforço e 13 (44,8%), dispareunia.

Conclusões: Os autores acreditam que este procedimento apresenta bons resultados no seguimento de curto prazo (três meses após a cirurgia), mas uma alta taxa de recorrência no acompanhamento a médio prazo. Portanto, esse procedimento não é mais recomendado.

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Introduction

Pelvic organ prolapse (POP) is an important problem in women, especially in the elderly. POP based upon vaginal examination has a prevalence up to 50%.¹ POP is defined as uncomfortable symptomatic descent of at least one compartment of pelvic organ.² It has important influences on the quality of life^{3–5} and influences the quality of life similar to other chronic medical conditions like stroke, DM and dementia.^{6,7} POP can cause urinary incontinence, fecal or gas incontinence. Also, it may cause vaginal prolapse or rectal prolapse and Obstructed Defecation Syndrome (ODS). ODS is defined as chronic constipation, painful defecation, or incomplete evacuation which need a perineal pressure, digitation of the vagina, or recurrent enema for defecation.⁸ There are many options to treat POP. Like other diseases, the first approach is conservative therapy and doing exercise (biofeedback). Surgery is reserved for failed medical treatment or treatment of severe symptoms in advanced stages.³ Approximately 11% of women need pelvic organ prolapse surgery.⁹ There are many options for pelvic organ prolapse surgery such as sacrocolpopexy, uterosacral ligament suspension and rectocolposacropexy, but none of them has excellent result, especially in long term follow up and in treating urinary and fecal incontinence.^{10,11} Following these procedures, the percentage of ODS is not acceptable. Persisted ODS causes increased straining during defecation, which will cause more

pressure on the pelvic organs and associated ligaments, resulting in higher recurrence rate.⁶ POP recurrence rate is an important issue which impacts the patients' quality of life and will result in new surgical procedure. We do a new technique of laparoscopic pelvic organ suspension (rectal suspension) for POP treatment in our center. We evaluated the results of this technique, three months after surgery and at the time of study reporting.

Materials and methods

During August 2016 and August 2018, all patients with pelvic organ prolapse for whom laparoscopic POPS had been done were evaluated. Data were collected from the patients' charts and their short term follow up 3 months after surgery and their last follow up visit. Demographic characteristics, history, physical examination, Wexner's fecal incontinence score and Altomare's Obstructed Defecation Syndrome (ODS) score, post-operation complications, and patient's satisfaction were analyzed retrospectively.

Age, BMI, defecation symptoms (e.g. incontinence to gas, liquid or solid stool, or rectal pain or protrusion), and rectal or vaginal prolapse were evaluated. Wexner's score and Altomare's ODS score were checked pre-operatively, 3 months after surgery and finally on October 2018. Patients' satisfaction of rectal and vaginal prolapse and fecal and gas incontinence were evaluated with one to ten scale.

Our patients were aware of the surgical procedure, risk and benefits and gave informed consent.

We statistically evaluated the data using one sample Kolmogorov-Smirnov test, parametric test such as Repeated Measures ANOVA test, also non-parametric Friedman test and Kruskal-Wallis test through version 18 of SPSS for.

Surgical technique

All patients received mechanical bowel prep, and IV antibiotic prophylaxis (first generation Cephalosporin or Clindamycin). Every procedure was performed under general anesthesia in Lloyd-Davies position with the right arm being fixed near the body. After appropriate preparing and draping, a nasogastric tube and Foley catheter were inserted. The pneumoperitoneum was performed via supra-umbilical incision. One 10mm Visiport was inserted through supra-umbilical incision. Then, the abdomen was evaluated with 30° laparoscope. Then, one 10mm trocar was inserted under vision in the right lower quadrant, one inch anterior and superior to the anterior superior Iliac spin. One 5mm trocar under vision was inserted in the right lateral side of the umbilicus, at least 8cm to the umbilicus. Another 5mm port was inserted under vision in the left lower quadrant for assisted exposure. The abdomen was explored in Trendelenburg (about 30°) and right tilted table. Vaginal and rectal manipulator was used for better exposure. If no hysterectomy had been done for the patient, the uterus was hung from the abdominal wall with 0 Nylon. Meticulous sharp dissection was performed in recto-vaginal septum. Care was taken not to injure the rectum or vagina. A V-shaped mesh with 25cm length and 2cm width was made from a 30 × 30cm mesh (Ethicon J&J). After inserting the mesh in the abdominal cavity, the apex of the mesh was fixed in the rectovaginal septum with 3-0 PDS with three simple stitches. Just anterior to right ASIS, a 2cm incision was made. After dissection of the external and internal oblique and transverse abdominus muscles, sub-peritoneum dissection was done with blunt atraumatic laparoscopic grasping forceps under direct laparoscopic vision till we reached the dissection site in the recto-vaginal septum. Then, the peritoneum was pierced with laparoscopic grasping of the forceps and the right limb of the mesh taken out through sub-peritoneal tunnel away from the site of ureter to reach the rectovaginal septum (site of mesh fixation). The same procedure was done for the left side. Peritoneal site of the rectovaginal dissection was closed with 3-0 PDS. Care must be taken, so that all the mesh passes the retro-peritoneal cavity and is not exposed to bowel. After deflation of the peritoneal cavity and trocar sites check, both limbs of the mesh were pulled symmetrically and fixed to the external oblique fascia with 0 Vicryl. The fascia of the site of 10mm trocars was closed with 0 Vicryl. All skin incisions were closed with 3-0 Nylon. NG tube was removed before extubation. All the patients received DVT prophylaxis during the post-operation period. Foley catheter was discontinued and the patients were discharged two or three days after the surgery.

Results

Laparoscopic pelvic organ suspension had been done for 31 patients between August 2016 and August 2018. We lost 2 patients during the follow up, and only 29 patients were evaluated in this study. All patients were female with a mean age of 57 ± 11.43 years (range 32–86 years). Mean BMI was 26.1 ± 3.73 . Nine patients had rectal bleeding (31%), 18 had prolonged or difficult defecation (62%), 16 had rectal prolapse (55.2%), 11 had gas incontinence (37.9%), 9 had liquid stool incontinence (31%), 5 had stool incontinence (17.2%), 9 had vaginal prolapse (31%), 13 patients used laxative for defecation (44.8%), 23 had constipation (79.3%), 9 complaint of pelvic pain (31%), 9 had urge or stress urinary incontinence (31%) and 13 had dyspareunia (44.8%).

Two patients had DM (6.9%), 4 had hypothyroidism (13.8%) and 2 had collagen vascular disease (6.9%). 24 patients had normal vaginal delivery before surgery (82.8%), 4 had Cesarean surgery prior to the surgery (13.8%) and 4 patients had no history of pregnancy (13.8%). Eight patients had undergone hysterectomy prior to surgery (27.6%) and 2 had other pelvic surgeries prior to surgery (6.9%). Four had PPH prior to surgery (13.8%) and 7 had vaginal surgery (AP repair) prior to operation (24.1%).

During the follow up, two patients developed post-operation complication; one developed with ureter occlusion and the other came with vaginal erosion with mesh about 50 days after the surgery. For the patients who developed ureter occlusion presented with flank pain on the second post-operation day. The patient was returned to the operation theater and ureteroneocystostomy was done. Recovery was excellent, but vaginal prolapse was not treated. Another patient who developed vaginal erosion referred with malodor discharge from the vagina; the mesh was seen in physical examination, brought to operation room, after laparotomy, removal of mesh, and repair of vagina was done. Recovery was good after surgery, but defecatory symptoms did not resolve.

In order to investigate the temporal variations of the quantitative variables, the normalization of the data distribution was investigated with one sample Kolmogorov-Simonov test, and the results of this study showed that only Altomare ODS score had a normal distribution ($p > 0.05$). Wexner fecal incontinence score, and patient's satisfaction of rectal and vaginal prolapse, fecal and gas incontinence with one to ten scales had no normal distribution ($p < 0.05$). Normal distribution variables were assessed using Repeated Measures ANOVA and non-normal distribution variables were assessed with Friedman test.

Using the Repeated Measures ANOVA test, time variations in the Altomare ODS score are statistically significant ($p < 0.001$). Mean pre-operation ODS score was 11.96 ± 1.38 , 3 months post-operation it was 4.44 ± 1.17 , and at the time of final data gathering it was 9.37 ± 1.38 . There was a statistically significant difference between pre-operation ODS score and 3 months post-operation ($p < 0.001$), also between 3 months post-operation ODS score and final ODS score ($p = 0.001$). However, there was no statistically significant difference between

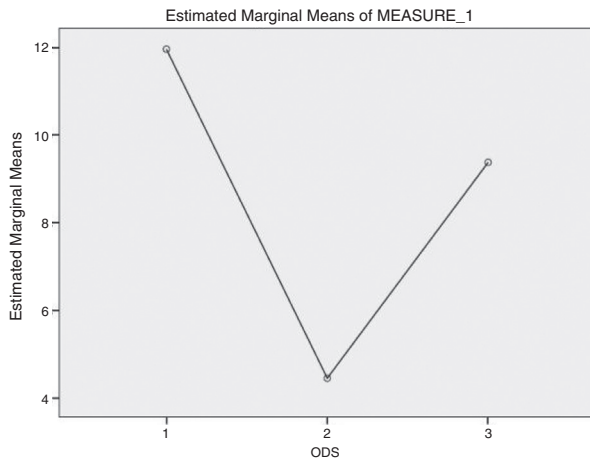


Fig. 1 – Altomare ODS score evaluated in three different times (1 – pre-operation; 2 – three months post operation and 3 – final score).

pre-operation ODS score and final ODS score ($p=0.07$). These changes are shown in Fig. 1.

Using non-parametric Friedman test, time variation in the Wexner fecal incontinence scores in three different time groups were statistically significant ($p=0.003$). Mean pre-operation Wexner fecal incontinence score was 4.9 ± 7.3 , 3 months after surgery it was 1.21 ± 3.88 , and final Wexner score was 3.45 ± 5.99 . We used Wilcoxon signed ranks test with adjusted α ($\alpha=0.017$) to assess the difference among these three Wexner scores. The difference between the median of pre-operation Wexner score and 3 months after surgery was statistically significant ($p=0.008$), but the difference between pre-operation Wexner score and final Wexner score, also 3 months after surgery Wexner score and final Wexner score was not statistically significant.

Using non-parametric Friedman test, time variation in the patient's satisfaction of anal prolapse treatment ($p<0.001$), vaginal prolapse treatment ($p=0.001$), fecal incontinence ($p<0.001$) and gas incontinence ($p=0.019$) was statistically significant.

We used Wilcoxon signed ranks test with adjusted α ($\alpha=0.017$) to assess the difference between the patient's satisfaction of anal prolapse, vaginal prolapse, fecal incontinence and gas incontinence in three time periods of pre-operation, 3 months after operation, and final result. The medians of the patient's satisfaction of anal prolapse treatment between pre-operation and 3 months after surgery ($p<0.001$), also pre-operation and final result ($p=0.001$) were statistically significant. The medians of the patient's satisfaction of vaginal prolapse treatment between pre-operation and 3 months after surgery ($p=0.017$), and also pre-operation and final result ($p=0.017$) were statistically significant. The median of patient's satisfaction of fecal incontinence between pre-operation and 3 months after operation was statistically significant ($p=0.007$). Moreover, the medians of the patient's satisfaction of gas incontinence among the three groups were not statistically significant in Wilcoxon signed ranks test.

After classifying the patients with BMI in three groups of normal (18–24.99), overweight (25–29.99), and obese (30 or

higher), the medians of Altomare ODS score or Wexner fecal incontinence score in these three classes of BMI, through three different times (pre-operation, 3 months after surgery, and final) were checked with non-parametric Kruskal–Wallis test. It was not significantly different.

Then, we classified the patients into two groups, with and without rectal prolapse. The results are shown in Table 1.

Discussion

Our retrospective study aimed to evaluate the outcome of the newly modified technique of laparoscopic pelvic organ suspension with mesh on Wexner fecal incontinence score and Altomare ODS score, also on patient's satisfaction 3 months after surgery and during the intermediate follow up.

POP is a disorder of pelvic floor. There are three organs in the pelvic floor. The uterus is one of the most important parts which reduce the chance of POP. Hysterectomy can cause pelvic floor instability which is a risk factor of Pop. Prolapse can affect a single compartment or all compartments of the pelvic floor.^{10–13} In our study, only 27.6% had performed hysterectomy before surgery, but in other studies about half of the patients with POP had performed hysterectomy.¹⁰

Age is a risk factor of POP. Normal vaginal delivery is another risk factor of POP. More than 80% of cases had NVD, and our data indicated that NVD was a predisposing factor of POP.^{14–19}

POP causes Obstructed Defecatory Syndrome (ODS).^{20,21} In our study, the mean ODS score was statistically significant between pre-operation and 3 months post-operation, also 3 months post-operation and at the time of data gathering, but there was no significant difference between pre-operation and at the time of data gathering, in mean follow up of 1 year. Thus, the ODS Altomare score was significantly improved 3 months after surgery. Primary post-operation result was perfect, but patients developed recurrence in the mean follow up of 1 year.

POP may cause gas, liquid or fecal incontinence.^{7,22} When we interpreted the results, we found that Wexner's fecal incontinence score changes were like ODS Altomare score. In the short time follow up, 3 months after surgery, the patients experienced very good results, but in the mean 1 year follow up, recurrence were very high.

We tested the patient's satisfaction of symptoms, rectal and vaginal prolapse, also gas and fecal incontinence, before and after surgery in short term follow up and intermediate term follow up in a scale of one to ten. The result was found to be very good in short term follow up and 3 months after surgery, but it was not good after the mean 1 year of follow up. It shows us that recurrence rate is high in symptoms in intermediate follow up.

Then, we classified the patients into three BMI group of normal, overweight and obese. We thought that results must be different in three BMI groups, due to operation difficulty in obese patients. There was no statistically significant difference among the three BMI groups in ODS Altomare score or Wexner fecal incontinence score changes. Therefore, our result did not show surgical difficulties of high BMI patients. Some studies also support our results indicating that BMI is not important in laparoscopic approach if it is done by an

Table 1 – Wexner and Altomare ODS score in patients with and without rectal prolapsed.

Groups	Wexner score (pre-operation)	Wexner score (3 months post operation)	Final Wexner score	ODS score (pre-operation)	ODS score (3 months post operation)	Final ODS score
Without rectal prolapse	1.85	0.54	0.31	11	7.62	11.62
With rectal prolapse	7.38	1.75	6	12.75	1.88	7.56

experienced surgeon.²³ Montenegro et al. reported a systematic review on the impact of bariatric surgery on the pelvic floor dysfunction, and concluded that bariatric surgery has no statistically significant impact on reducing fecal incontinence and POP.²⁴

Due to our results in ODS Altomare score, Wexner fecal incontinence score, patient's satisfaction of rectal and vaginal prolapse, also fecal and gas incontinence, our approach for laparoscopic pelvic organ prolapse has good short term results, but during intermediate follow up, recurrence rate was high.

It is suggested that anterior compartment of pelvis could be fixed in new procedure beside posterior compartment and we wants to find new method to pull up anterior and posterior compartment of pelvis together to resolve limitations of this study.

Conclusions

In conclusion, it was found that this procedure has good result in short term follow up (3 months after surgery), with high recurrence rate in middle term follow up. Thus, this procedure is no longer recommended.

Conflicts of interest

The authors declare no conflicts of interest.

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