Risk factors in the failure of surgical repair of pelvic organ prolapse


Servicio Urología, Hospital Clínico Universitario de Valencia, Spain

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Introduction: Pelvic organ prolapse (POP) surgery has variable results of recurrence and complications. We have aimed to analyze our outcomes in order to know the factors associated with anatomical and functional failures after POP surgery.

Materials and methods: A retrospective study of 69 patients who underwent POP surgery at our hospital was performed. Registered variables were age, BMI, number of deliveries, previous pelvic surgery, menopause, quality of life, urinary incontinence, associated frequency-urgency symptoms, high POP stage, vaginal compartments repaired, type of mesh, urethro-suspension and vaginal hysterectomy during POP surgery and its complications. Patients were evaluated at 1, 6 and 12 months post-surgery. The technique was considered as failed when relapse or mesh erosion occurred and when the patient is not satisfied or there was relapse. The sample is described, analyzing the relationship of the variables studied by univariate analysis (Chi square and Mann-Whitney U tests) and a study was made; of which variables may have predictive value in the failure of the repair (multiple logistic regression).

Results: Surgery failed in 17 patients during the follow-up at one year. BMI (29.6 ± 2.03 vs. 27.1 ± 3.32), delivery number (3.4 ± 0.71 vs. 2.8 ± 1.88), menopause, frequency-urgency symptoms and number of vaginal compartments repaired were associated with treatment failure although only BMI, delivery number and frequency-urgency symptoms were defined as independent predictive variables when the logistic regression was carried out.

Conclusions: Overweight/obesity, previous delivery number and frequency-urgency symptoms before surgery are factors associated to anatomical and functional failure after POP repair.

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Introduction

Pelvic organ prolapse (POP) is a common pathology and it is observed in about 50% of women who have had children. The accumulated annual rate of surgery is in the range of 10–30 in every 10,000 women. According to the affected pelvic compartment, these may be of the anterior–middle and posterior vaginal wall, and one or more of these compartments may be involved.

Several publications discuss the possible risk factors in the genesis of this entity. Ragni mentions not only the patients’ obstetric history (pregnancies and number of deliveries, birth weight greater than 4 kg, use of instruments during delivery) but also those related to the patients themselves (menopause, previous pelvic surgery, chronic coughers, degree of pelvic floor exercise, and obesity).

Surgery is the most used treatment, but there is a diversity of techniques given that none has achieved a fully satisfactory result, with variable figures of recurrence and complications.

In the cystocele surgery, the classical results have a high percentage of recurrence, dyspareunia, de novo voiding dysfunction (stress urinary incontinence [UI], urgency, UI, blockage) or no correction of the pre-existing one. The introduction of meshes in the vagina has tried to solve this situation, since there is no need to fold or cut the vagina, or to use healthy tissues for their anchorage. Nevertheless, new problems have appeared such as extrusion, pain, inflammation and shrinkage, so some authors do not consider the use of meshes as an improvement with respect to the standard.

Another problem is the concept of anatomical and functional correction that for many years has been dissenting. Today, it has been agreed that the aim of the correction of a prolapse must be that this does not reach the hymen and that it does not cause discomfort, allowing for an adequate function of the related organs.

In 1997, Olsen et al. showed that 11.1% of women who reached 80 years had been operated on for prolapse and/or UI, 29.2% of them requiring reoperation due to recurrence. This situation has conditioned the search for new surgical alternatives to achieve the best results with the lowest possible morbidity and recurrence. For such purpose, Diez Itza points out a recurrence around 5.4% using conventional repair techniques, similar to mesh techniques, and these results agree with those published by Pessarrodona and Weber et al.

In contrast to previous results, other studies show superiority in the use of meshes during the intervention with regard to anatomical, functional results and recurrence of the prolapse. Recently, the Cochrane Collaboration conducted a systematic review to clarify the above. The results are for mesh procedures; however, the diversity of studies and the lack of homogeneity make it difficult to determine which is the most suitable.

Despite the diversity, there is a clear improvement in surgical techniques over time, making it necessary to take into account those factors that may be involved in failure. The aim of our work is to assess the results of our series and the factors that are associated with anatomical and functional failure after surgical correction of the POP by placing meshes in the vagina.
Material and methods

Retrospective study of patients operated on for POP in our center (2003–June 2007) who met the full clinical follow-up at 1, 6, and 12 months after surgery (n = 69).

The patients were admitted on the day of the surgery; a dose of antibiotic was being administered 30 min before it (1 g amoxicillin–clavulanic acid intravenous, unless they were allergic, in which case 200 mg ciprofloxacin was used). Surgery was performed vaginally in all the cases. In nearly the whole sample (97%), urethro-suspension was also associated in the same surgical time.

Preoperative variables assessed were age, body mass index (BMI), number of deliveries, previous pelvic surgery, menopause and years of evolution of this, quality of life altered by the prolapse, urinary incontinence, associated urgency–frequency component, and the presence of high-grade pelvic prolapse (grades III and IV).

The intraoperative variables assessed were number of pelvic compartments repaired, number of meshes used, associated urethro-suspension, and vaginal hysterectomy performed during the correction of the prolapse. In turn, the patients were classified according to the repaired pelvic compartment in anterior, anterior–middle, and finally the repair of the posterior compartment, including or not other compartments.

We have included as postoperative variables those concerning the perioperative period (postoperative complications and type of complication). Others were obtained in the structured clinical interview conducted during the follow-up in outpatient consultations at 1, 6, and 12 months after surgery. The results are collected at 6 and 12 months to obtain the variables. In this interview, the following aspects were assessed: pain after surgery, altered voiding function (poor urine stream quality and/or feeling of incomplete emptying), frequency, urgency, nocturia, urinary infections (measured by urine culture), dyspareunia, and constipation.

By means of a direct question to the patients, collected at 6 months and 1 year, we assessed whether they were satisfied with the result of the correction of the prolapse (no/yes). In order to identify the anatomical recurrence of the prolapse after surgery, vaginal examination was performed. We also collected the existence of the mesh extrusion. It was considered unsatisfactory correction of the pelvic prolapse at 12 months (failure) if there was mesh extrusion, if the patient was not satisfied because of presenting more than one postoperative variable altered or a symptomatic anatomical recurrence of the prolapse.

Regarding the statistical handling, first of all, the description of the sample was performed followed by univariate analysis of the variables under study (Chi-square and Mann–Whitney U tests). Subsequently, multivariate logistic regression was performed to determine which variables could be independent predictors of the failure in the correction of POP. p < 0.05 was considered statistical significance.

Results

The clinical characteristics of the patients prior to surgery are described in Table 1. The mean surgery time was 80 min (±21). The mean postoperative hospital stay was 2.6 days (±1.3) receiving the same antibiotic used before surgery during their hospital stay. The bladder catheter was removed after 48 h of surgery.

Of all the patients operated on for prolapse, 45% (n = 31) underwent correction of anterior and middle compartments. In 38% (n = 26) repair was performed only in the anterior compartment. In 9% (n = 9) the anterior and posterior compartments were repaired together. Only in one patient the posterior compartment was corrected in isolation. The repair of the three compartments was carried out in 7% of the patients (n = 5).

The mean number of meshes used was 2 (1–3). In 97% of the patients, urethro-suspension (n = 67) was conducted.
12.9% (n = 9) of the patients had complications in the perioperative period (immediate intraoperative–postoperative), meaning as immediate postoperative the first 48 h after surgery. Table 2 summarizes the types of complications.

During surgery, different techniques for prolapse repair were used: levator myorrhaphy plus free mesh round patch, levator myorrhaphy plus free mesh patch with wings, perigee, prolift A; dome suspension with mesh attached to sacrospinous ligament (Sparc alteration for later anchoring); and for stress urinary or associated mixed incontinence: mesh strip suspended with needle techniques to abdominal fascia with mesh support, TVT, Sparc, TOT (Monarc and TVT in out), and miniarc.

After surgery and follow-up of the patients, pain and constipation were the most representative symptoms observed, as shown in Fig. 1. Pain, voiding function, and constipation had reductions in absolute frequency at 6 and 12 months of follow-up, unlike the variable frequency–urgency. With respect to the rate of dyspareunia, it was observed that a large percentage of patients did not have sexual relations during the follow-up (37.6% at 6 months and 42% at 12 months). In the remaining group, 55.1% denied the presence of dyspareunia 6 months after surgery, and 40.5% at 12 months. Only a small group of patients reported dyspareunia (7.2%) at 6 months of the correction of the prolapse, a figure that remained unchanged at one year of follow-up.

Overall satisfaction was quite high, reaching 79.7% 6 months after surgery and 87% at 12 months. In 13% of the sample there was symptomatic recurrence of the prolapse (n = 9) and in 7.2% (n = 5) extrusion of the mesh. In 24.6% (n = 17) of the patients, the correction of the prolapse was not satisfactory, defined as failure.

In the univariate analysis, the BMI, number of deliveries, menopause, presence of frequency–urgency, and the number of meshes used in surgery are variables that influence the unsatisfactory correction of POP. The independent variables predictive of failure following completion of the multivariate logistic regression analysis were BMI, number of deliveries, and the presence of urgency-incontinence (Table 3).

Discussion

Pelvic organ prolapse is a relatively common multifactorial entity in women throughout their life. Surgery represents the cornerstone in its correction. The rate of recurrence...
and complications after surgery is variable depending on the series analyzed (3–15%).

It is important to have the perspective that this is not a homogeneous series in terms of procedures or types of mesh, but a description and temporal analysis of our casuistry of meshes in vagina. This situation has allowed us to study meshes separately, given the variety used. The high rate of overall satisfaction is surprising, regardless of the types of mesh used.

We believe that failure should be defined as the anatomical lack of correction or recurrence, as well as the overcorrection of the same, including persistence or development of bothersome symptoms associated with functional impairment of the organs involved. That is why, in order to assess the success of the intervention, variables that measure the symptoms of the patients must be included; as this is being a functional surgery, we cannot consider only anatomical repair as a success.

After surgery, the associated symptoms improved in a high percentage in relation to pain, constipation, and urinary flow. The frequency-urgency syndrome, for its part, we reported higher figures for longer follow-up, which we believe is related to the de novo postsurgical voiding dysfunction seen in other series studied. 13,14

The de novo dyspareunia was present in 15%. This fact is usually associated with the surgical procedure and the introduction of meshes in the vagina. However, it is a high percentage of patients with menopause and with a median age of 65 years in whom, because of their conditions, the sexual sphere loses prominence. Similar figures are observed in the series studied by De Tayrac et al. 15 and Sivaslioglu et al. 16

There are several factors that may promote the anatomical and functional failure of these repairs. In our study, obesity, the number of deliveries prior to surgery, and presence of incontinence-urgency symptoms are the major risk factors for such failure; of which the only one of them which is modifiable is obesity. As for the symptoms of incontinence-urgency, although not related to anatomical failure, its non-detection and/or previous correction will increase the dissatisfaction rate after surgery, in some cases worsening the preexisting symptomatology.

In a recent article published by Washington et al., 17 they attempted to better define the correlation of obesity and prolapse variables, taking into account its severity according to the degree. They found no statistical association between obesity and prolapse greater than or equal to grade 2, in spite of the greater impact described in terms of related symptoms in obese patients. For their part, Whitcomb et al., 18 in a multicenter study of prevalence, show a greater tendency for genital prolapse, stress UI and overactive bladder in obese patients, the percentage being higher the greater the degree of obesity.

Another prospective study, 19 with 16,608 postmenopausal women between 50 and 79 years, in which patients with POP were followed for 5 years, and the weight variable was modified, found that obese patients had a marked progression of prolapse, unlike those who lost weight; in whom although the degree of prolapse did not improve, at least it did not progress.

Diez-Itza et al. 20 published a prospective study at 5 years with 134 patients operated on for POP. The anatomical relapse was observed in 31.3%, and 7.4% had symptoms associated with prolapse, showing a poor correlation between anatomical and symptomatic relapses.

In our analysis, the risk of failure also increased with the number of deliveries. In biological terms, the vaginal delivery produces a considerable dilation of the tissue of the pelvic floor and a pudendal nerve injury in most women, being able to cause laxity of the pelvic ligaments. 21 It is likely that the denervation of the pelvic floor and damage to muscle fibers are the beginning of a path leading to prolapse and stress incontinence. 22

Another factor involved in the recurrence is menopause and the years of evolution of the same. The progressive atrophy of the vaginal epithelium and the laxity of the tissues generated by estrogen cessation are important factors in the genesis of this defect, as well as the failure of its repair. Ahn et al. 23 suggest that the greater the number of years of menopause to prolapse surgery, the lower the patients’ satisfaction. In our study, this variable was not significant, probably because most of the patients followed in the study were menopausal (85.5%), no comparison of two numerically similar groups being performed, besides, this study being retrospective with a not very high sample of patients.

Other variables have attempted to identify themselves in other studies to see which could define long-term recurrence of prolapse. In one of them, 24 360 patients operated on for POP for 26 months followed, observing a relapse of around 10%. The existence of a grade III prolapse was the only preoperative predictive factor for relapse. For its part, the menopause project study group, using a cross-sectional multicenter study with 21,449 non-hysterectomized women near menopause, concludes that the number of deliveries and obesity are the two most important factors to consider. 25

In summary, in our experience, overweight/obesity, the number of deliveries previous to surgery, and the symptomatology of preexisting incontinence-urgency are the main factors associated with anatomical and functional failure after pelvic prolapse repair.

Conflict of interest

The authors declare that they have no conflict of interest.

References