

Original Paper

Surgical management of pelvic floor prolapse in women using mesh

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Abstract

Objective: To evaluate surgical handling, prolapse correction and complication rate of polypropylene mesh.

Methods: A retrospective review of patients who had pelvic floor repair using polypropylene mesh (PPM) and intra-vaginal sling (IVS), between January 2003 and July 2005. All patients were followed-up for a period of 6 weeks to 12 months. The effectiveness and complications following PPM insertion were carefully documented.

Results: A total of 57 repairs of various types of prosthetic materials were carried out over the study period. 30 patients had polypropylene mesh inserted, while 27 had IVS. Of the patients who had PPM inserted 27 (90%) had successful repair after 12 months follow-up, while 3 (10%) had failed repair. Most of these patients had previous vaginal surgery. The main complication of PPM was vaginal erosion in 3 (10%) patients

Conclusion: Polypropylene mesh (Prolene) is a simple effective method of treatment of pelvic floor prolapse. It is associated with minimal complications.

Key words: Pelvic floor prolapse, mesh, erosion

Introduction

Up to 50% of parous women have some degree of urogenital prolapse, although only 10-20% are symptomatic. The lifetime risk of having an operation for prolapse in American population may be up to 11% and almost one-third of cases may require re-operation. In the African population no widely acceptable figures could be quoted, but a study in Gambia revealed a high overall prevalence rate of 46% among Gambian women¹². The survey's high participation rate among eligible women resident in the study area makes this an accurate assessment of the largest population of women studied to date¹⁰. While the community incidence of pelvic organ prolapse in the Nigerian population is difficult to ascertain, Okonkwo¹³ in Nnewi found 32.3% of their gynaecological admissions required pelvic reconstructive surgery over a 4 year period in their hospital.

Prolapse of the vagina is an uncommon complication of both vaginal and abdominal hysterectomy, occurring in less than 0.5% of all instances. The surgical correction is done to restore normal vaginal axis, maintain existing vaginal length and provide permanent cure. The aetiology of pelvic prolapse is not clearly defined, but high parity was found to be the single most important risk factor in both developed and under-developed countries¹⁰.

The pelvic floor musculature is considered to be an important factor in the maintenance of pelvic organ

support with the fascia and ligaments providing secondary support. Weakness of the pelvic musculature is known to be caused by disease, age, low estrogen state in the postmenopausal women, nerve damage and birth trauma.

Considering the pelvic organ descent as a hernia through the genital hiatus, prosthetic materials have been advocated in gynaecology deriving its use in general surgery for hernia repair as a reinforcement or a replacement of natural structures. These include external oblique fascia, fasci alata, polypropylene mesh (prolene), and Teflon (polytetrafluoroethylene). This article reviews our experience with polypropylene mesh in pelvic floor repair at the Southern General Hospital Glasgow. The objective was to determine the safety and effectiveness of the prolene mesh in the repair of pelvic floor and vault prolapse.

Materials and Methods

A retrospective review of all patients who attended the gynaecology clinic and underwent pelvic floor and vaginal vault repair using prolene mesh, between January 2003 and July 2005. Patients were identified from the computerised records maintained by the department. Medical records were reviewed for demographic data, including age, parity, prior gynaecological surgeries and intra-operative findings. All patients had a standard urogynaecological history,

examination and investigation performed before, and after the surgery, including data on urinary, bowel and coital function. Intra-operative and post operative complications were recorded. At subsequent clinic visits mesh erosion (which is defined as a defect or eroding of the vaginal walls due to the synthetic material) and recurrence of the prolapse were noted in the patients. Granulation tissue at the vaginal apex that responded to cauterisation or topical estrogen or antibiotics was not considered surgical complication. We use a basic descriptive statistics to analyse the results, while presentation is in tabular forms.

In describing the method for the posterior mesh repair: a midline incision from the perineum to the vaginal apex was made and the vagina detached from the rectum with sharp dissection; which was extended laterally and superiorly on to the sacrospinous ligament. The prolene mesh was fashioned a Y shape. The arms were placed on the sacrospinous ligaments bilaterally with the main body of the mesh over the rectovaginal fascia and the perineal body. The mesh was stabilised with vicryl sutures placed superiorly, laterally and onto the perineal body. Following the placement of the mesh, the vagina incision wound was closed and rectal examination performed to exclude any rectal injury. Additional procedures were carried out if indicated in the like of tension free vaginal tape(TVT) and trans obturator tape(TOT), for the treatment of genuine stress incontinence.

Results

Sixty patients that underwent gynaecological pelvic floor surgery were seen over the study period, 57 had complete records. 30(50%) had PPM, while 27 had IVS. Of the 30 patients who had PPM 27(90%) had successful repair at first insertion and 3(10%) failed. Six patients had previous pelvic floor repair, in addition 2 of the patients had sacrospinous fixation for vault prolapse in the past. They were all aged above 70 years. There was no mortality in this series and 3(10%) had mesh erosions. They all presented with vaginal discharge, and were cured after excision of the exposed mesh. Seven women had urodynamically confirmed stress incontinence. Two had tension-free vaginal tape(TVT) and five had trans-obturator tape(TOT) based on the surgeons preference. Their urinary symptoms significantly improved after the repairs.

Discussion

We confirmed previous report^{1,2} of the good efficacy of prolapse repair when a prosthetic material was used. Prolene mesh insertion is simple, effective and safe. There was no mortality recorded and the complications rate is small. In our patients we recorded average success rate of 90%.after the primary insertion. Six patients developed recurrence during the follow-up period three were in a different compartment,(anterior prolapse) while the other 3 were from the posterior compartment. The major morbidity in our patients was mesh erosion which luckily never resulted to rectovaginal fistula. In a case

reported by Dwyer, they had a patient with rectovaginal fistula following mesh erosion. Although fistula formation is a potential risk of mesh, we believe that this is an uncommon complication. Our mesh erosion rate of 10% is slightly higher than that reported from other centres. Milani⁹ recorded 6.5% risk of mesh erosion in their patients occurring after 12 months. In all our patients there was no further complication after excision of the exposed mesh in the vagina. The commonest presentation in our patients was vaginal discharge occasionally blood stained. One of the patients had a small granulation tissue which was treated with silver nitrate. The risk of mesh erosion varies depending on the type of mesh and its position. Other risk factors mentioned in the literature include menopausal status and use of prophylactic antibiotics. While we routinely use prophylactic antibiotics intra-operatively, we believe the low risk of erosion in this series was probably due to the type of mesh used (prolene), which current evidence^{6,8} suggested that, it has the lowest incidence of erosion and infection compared with other non absorbable meshes. Synthetic meshes have been used for abdominal wall surgery since 1950's. Nevertheless gynaecologists have been reluctant to use synthetic mesh in pelvic reconstructive surgery because of the risk of infection and erosion. The synthetic non-absorbable meshes most commonly used have been polypropylene(prolene), *malax*, polyethyleneterphthale ne(*merselene*) and polytetrafluoroethylene (PTFE)(*Gor-x*). Polypropylene mesh is a type 1 monofilament and currently the most widely used synthetic prosthesis in general surgery and gynaecology^{1,5,9}. Synthetic non-absorbable mesh has been used less frequently in the vaginal repair of posterior compartment prolapse compared to anterior prolapse¹. Iglesia and colleagues^{6,8} placed a strip of PPM (marlex) between rectum and the vagina for posterior compartment prolapse. After a mean of 29 months, eight of nine patients had improved defecation one had wound infection and one dyspareunia. Among our patients none of these complications was recorded. The positioning of the mesh as much as the type used, influences the anatomical and functional outcome. In this study the mesh was laid over the fascia layer and extended to the sacrospinous ligaments superiorly providing scaffold for fibrous tissue in-growth; extending from the pelvic floor ligaments and muscles through the rectovaginal septum on to the perineal body; thus mimicking the normal fascia support for the compartment. It is not uncommon to have recurrence of the prolapse after primary repair and six of our patients had to have the procedure repeated. One patient had 3 prior pelvic floor repairs before the primary mesh insertion, and on this occasion we combined both IVS and PPM. The second patient had previous pelvic floor repair and two previous sacrospinous fixations, while the third patient came with procidentia. She had vaginal hysterectomy in addition to repeating the mesh, all these three had their recurrence in another compartment. The 4th patient had the mesh completely expelled and

presented with a huge defect in the posterior vaginal wall, The other patients might have had recurrence due to their ages and menopausal status, as they were above 70 years. Age is an important factor in selecting patients for these procedures, as can be seen in our patients most failures occur in women above 70 years. In an African population however most recorded cases of prolapse are due to the high parity and they are relatively younger. There is need to have a randomised trial to compare the effectiveness, of the various synthetic materials in our centres in future. Cost is a prohibitive factor in purchasing the prolene mesh. It therefore implies in a low resource setting economy, especially the developing Nations will not be able to afford these prostheses for their practice. The first operation is the best operation; majority of these patients had previous repairs and using their natural tissue will not bring effective cure of their prolapse, the need to use prosthetic materials is therefore justified. The 20% repeat rate in our series compares favourably with Birch and Fynes who found from their studies, that 30% of their patients required

a repeat surgery. While Sullivan and colleagues recorded 10% re-operation rate with a comparable erosion rate of 5%. One of the weaknesses of this study is that it was retrospective small in number and descriptive. One area that we plan to look in future is the combine vaginal and laparoscopic approach in pelvic floor prolapse. In addition to the advantages of vaginal approach studies have shown that¹¹laparoscopic fixation of the mesh to the sacrum has several advantages. It avoids the risk of presacral vein laceration from the use of needle. It provides easy and quick fixation of the mesh to the first sacral vertebra, and gives fixation of extremely good quality. This will in future certainly provide a good alternative for the treatment of genital prolapse.

Conclusion

We conclude that posterior colporrhaphy with prolene is effective in treating posterior vaginal wall and vault prolapse. In addition to having a high success rate any selective surgical procedure must also have low morbidity.

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