Long-term Outcome of Synthetic Mesh Use in Iranian Women with Genital Prolapse

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**Purpose:** To evaluate the long-term outcome of synthetic mesh use in the treatment of women with Pelvic organ prolapse (POP).

**Materials and Methods:** We evaluated the outcome of synthetic mesh implantation by vaginal surgery method in 153 women (mean age of 9.31±53.66 years) with POP grade >2 in the anterior compartment. Demographic findings, baseline symptoms as well as subjective and objective outcome were recorded during the follow-up period of 11.33±36.89 months.

**Results:** POP relapse occurred in %3.3 indicative of %96.7 anatomical success rate. Patients’ common baseline findings were frequency (%72.5), stress and urge incontinence (%59.5 and %47.7). Subjective outcome were vaginal pain (%13.7), dyspareunia (%9.2) and tension feeling (%8.5), while objective outcomes were mesh exposure (%3.9), urge incontinence (%11.1) and vaginal infection (%1.3). Stress incontinence was completely treated following surgery. There was significant improvement in dyspareunia, vaginal pain, urge and stress incontinence (all p < 0.001) and fecal incontinence (p = 0.02). After surgery, %88.42 were satisfied of the surgery outcome.

**Conclusion:** POP surgery with synthetic mesh has acceptable results, considerable improvement in symptoms and high rate of satisfaction during follow-up; however, side effects are not uncommon but tolerable.

**Keywords:** prolapse; synthetic mesh; outcome; complications

**INTRODUCTION**

Pelvic organ prolapse (POP) including genital prolapse is common with incidence rate of 40 % of women aged 45-85 years in general population, but only 12% of them are symptomatic (1,2). Conservative and different surgical methods have been proposed for vaginal prolapse repair(3). However, there is an increased risk of recurrence regarding the surgery method and the type of materials used(4,5). Transvaginal meshes have been introduced to increase the surgery efficacy and reduce the recurrence rate(6). After using synthetic meshes, studies have reported increased success rate with lower morbidity in genital prolapse surgeries(7). Although previous studies have indicated that prolapse repair surgery with synthetic meshes are very effective with low prolapse and high patient’s satisfaction, there are several complications reported regarding mesh use including mesh exposure, pelvic pain, infection, bleeding, dyspareunia and with lower incidence, organ perforation(8). Studies evaluating the long-term outcome of synthetic mesh use in vaginal prolapse surgery are few. In this study, we aim to evaluate the outcome and rate of complications following vaginal prolapse surgery using synthetic mesh among Iranian women.

**PATIENTS AND METHODS**

In this cross-sectional study, 300 women with POP undergone vaginal surgery with synthetic meshes between 2011 and 2016 in Alzahra, Taleghani and Imam Reza tertiary hospitals, Tabriz, Iran were evaluated and among them 153 patients meeting inclusion criteria and not having exclusion criteria were included. Inclusion criteria were women between 40-80 years old, with POP stage 2-4 according to simplified POP-Q scoring scale undergone surgery with synthetic mesh implantation (Figure 1). Patients with genital malignancies, body mass index > 40 kg/m², infection, history of previous mesh implantation, collagen vascular disease and those with psychologic disease and no cooperation for maintaining mesh were excluded. Also, those patients not returning for follow-up visits were excluded. The surgeries were performed by two experienced urogynecologists (PB and SH). This study was approved by ethics committee of Tabriz University of Medical Sciences.

Mesh implantation was indicated when there was severe anterior prolapse stage >2 or accompanied with uterine or posterior prolapse. If there was concomitant

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apical prolapse, sacrospinous fixation was used. After surgery, patients were followed with routine visits every six months for at least one year. In each visit, full physical examination was performed. Before implanting the mesh, a vertical incision at the midline of the anterior vaginal wall was made from the point below the bladder neck to the lowermost part of the prolapse. Diluted vasopressin solution was applied subcutaneously to reduce bleeding. With the Allis forceps securing incision margins, full-thickness blunt dissection was done for the pubo-cervical fascia laterally until reaching the sacrospinous ligaments. Dissection with 1–2 finger breadths further down from the ischial spines allowed to reduce bleeding. With the Allis forceps securing incision margins, full-thickness blunt dissection was done for the pubo-cervical fascia laterally until reaching the sacrospinous ligaments. Dissection with 1–2 finger breadths further down from the ischial spines.

The grade of genitalia prolapse before Mesh Implantation in the study population

<table>
<thead>
<tr>
<th>Variables</th>
<th>Stage I</th>
<th>Stage II</th>
<th>Stage III</th>
<th>Stage IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>53.66 ± 9.61</td>
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<tr>
<td>Gravida</td>
<td>4.56 ± 1.94</td>
<td></td>
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<td></td>
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<tr>
<td>Parity</td>
<td>4.18 ± 1.80</td>
<td></td>
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<tr>
<td>Hypertension</td>
<td>8 (5.2%)</td>
<td></td>
<td></td>
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<tr>
<td>Diabetes mellitus</td>
<td>3 (20.3%)</td>
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</tbody>
</table>

Symptoms

- Urge incontinence: 73 (47.7%)
- Stress incontinence: 91 (59.5%)
- Urgency: 73 (47.7%)
- Frequency: 111 (72.5%)
- Urination problems: 37 (24.2%)
- Dyspareunia: 68 (44.4%)
- Vaginal pain: 56 (36.4%)
- Fecal incontinence: 5 (3.3%)

<table>
<thead>
<tr>
<th>Prostate type</th>
<th>Stage I</th>
<th>Stage II</th>
<th>Stage III</th>
<th>Stage IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterine</td>
<td>13 (8.5%)</td>
<td>88 (57.5%)</td>
<td>38 (25.18%)</td>
<td>14 (9.2%)</td>
</tr>
<tr>
<td>Anterior</td>
<td>11 (7.2%)</td>
<td>51 (33.3%)</td>
<td>91 (59.5%)</td>
<td>------</td>
</tr>
<tr>
<td>Posterior</td>
<td>29 (19%)</td>
<td>108 (70.6%)</td>
<td>16 (10.5%)</td>
<td>------</td>
</tr>
</tbody>
</table>

Data are presented as mean ± SD or number (percent).

RESULTS

Patients’ baseline findings are demonstrated in Table 1. The most common symptoms were frequency, urge and stress incontinence, and dyspareunia. Posterior and uterine prolapse were mainly stage II, while anterior prolapse was mainly stage III. Patients were followed for 36.89±11.33 months (range 12–60 months). All patients with fecal incontinence had posterior compartment prolapse and treated accordingly. During follow-up, prolapse recurrence occurred in 5 cases (3.3%), one treated with sacrocolpopexy; one with vaginal surgery and another mesh implantation and one with pessary. Two other patients were treated conservatively. In the case treated with pessary, in first surgery just small piece of mesh was used for anterior compartment repair but the relapse was related to com-
Objective outcomes were mesh exposure in 6 cases (3.9%), urge incontinency in 17 cases (11.1%) and infection in 2 cases (1.3%). Urge incontinency persisted in 9 cases and not improved following surgery, while 8 new de novo cases occurred after surgery. All stress incontinency cases were improved after surgery. Of 6 patients with mesh exposure, symptoms occurred between 13-27 months after surgery, four cases were mild exposure and treated with vaginal estrogen. Two cases returned with delay with complete mesh exposure, the extruded mesh part was removed and repaired. One of the cases with complete exposure had purulent vaginal discharges and treated with proper antibiotics.

At the final follow-up, all 6 patients were symptom free. Using a Likert scale, the patients reported their satisfaction of the surgery as excellent in 54 cases (35.2%), well in 81 cases (52.9%), moderate in 14 cases (9.2%) and poor in 4 cases (2.6%). Most patients had well to excellent satisfaction of surgery. Following surgery, there was significant improvement in dyspareunia, vaginal pain, urge and stress incontinence and fecal incontinence (Table 2).

DISCUSSION

In this study, we evaluated the long term outcome of using synthetic mesh in the vaginal surgery of genitalia prolapse in 153 women between 40-80 years old. There was significant improvement in prolapse stage after surgery with only 3.3% of recurrence indicative of 96.7% anatomical success rate. Prolapse severity, urinary symptoms and fecal incontinence was significantly improved after surgery.

In many studies, successful treatment was considered as POP grade ≤ 1 after surgery. The reported success rate are > 80% and in the recent studies are more than 90-95% (9,14). Similar to our findings, Hong and colleagues reported total anatomical success rate of 96.5% after 18 months follow-up (10). It is even noted that regardless of recurrence of POP in some patients, they are mostly satisfied with the treatment due to the considerable improvement in symptoms (9-14). Although some studies report that two years after mesh treatment, many women still report symptoms that negatively impact their quality of life (15).

Using synthetic meshes would accompany with some side effects which would limit its use. Recent guidelines has recommended mesh in patients after full risk evaluation and to be performed by an expert surgeon (16). Reported side effects of mesh use are mesh erosion, dyspareunia, hematoma, urinary incontinence, etc (17). Mesh exposure is a complication related to procedure, mesh type and atrophy after mesh implantation. Mesh exposure occurred in 3.9% of our patients. Four cases had mild exposure and treated with vaginal estrogen. Two cases with complete mesh exposure had the extruded part removed and repaired.

The reported rate of mesh exposure in short and long term follow-up are variable. Meyer and colleagues reported mesh exposure in 6% of patients in long term follow-up (9), which was higher than 2% in midterm follow-up (20). Other studies have reported mesh exposure rate of 1-24% and mostly below 15% (9,14-23). Fan and colleagues reported mesh exposure in 6 patients (13%) of which three meshes were removed (20). Meyer and colleagues also reported that mesh exposure usually occurred in women with vaginal atrophy who stopped using vaginal estrogen (18).

Transvaginal mesh implantation had conflicting effects on sexual function in previous studies. Meyer and colleagues observed that this surgery has no adverse effects on sexual function in long term (18). Dyspareunia occurred in 36% of their study patients. Alperin and colleagues also have reported dyspareunia in 28.9% of patients after surgery (9), while the reported rate in most studies are 2-20% (15-25). In our study, dyspareunia persisted in 2.7% and de novo dyspareunia occurred in 6.5%. The rate of dyspareunia after mesh implantation is not completely determined. The rate of new dyspareunia after surgery is reported to be between 4.4 to 20% (25-29). De novo dyspareunia could be due to mesh exposure or mesh shrinkage. Miani et al. evaluated 127 patients after mesh implantation with 61 of them sexually active and observed new dyspareunia in 2% of cases (28).

The main cause for this difference in the rate of dyspareunia could be due to the unwillingness of women to talk about their sexual relation in different areas, especially in religious countries such as ours. As in our study, older women did not like to talk about their sexual relations and it is possible that the real rate of new dyspareunia be higher. However, this low rate of dyspareunia is considerable and indicative of efficacy of treatment with mesh.

In our study, stress incontinence was completely improved after surgery. Vaginal pain persisted in 6.5% and newly occurred in 7.2% and urge incontinence was persistent regardless of surgery in 5.9% and de novo in 5.2%. Patients considered their symptoms not severe and tolerable. Alperin and colleagues reported pelvic pain in 4% (9). Fan and colleagues reported stress incontinence in 11% of patients that were mostly mild and treated conservatively (30).

We observed that 88.2% of patients were well to excellent satisfied of the treatment outcome. Fan and colleagues reported overall satisfaction of 91% (20). The satisfaction rate in Song et al. study was 84.7% (30). This study had also some limitations; One weakness of our study is that our data were collected partly retrospectively and so some data were not available. However, this study has the power of rather good sample size and long term follow-up.

CONCLUSIONS

Genitalia prolapse surgery with synthetic mesh has acceptable results, considerable improvement in symptoms and high rate of satisfaction during follow-up; however, side effects are not uncommon but tolerable.
CONFLICTS OF INTEREST
The authors declare that they have no conflict of interest.

REFERENCES


