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Procedure Choice in Primary Versus Recurrent Prolapse: A Study of Fellowship-Trained Surgeons

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Abstract

Objective—This retrospective study describes procedures of choice in management of patients with primary prolapse compared with recurrence prolapse patients by fellowship-trained surgeons.

Methods—Surgically managed primary and recurrent prolapse cases from 2012 to 2015 at Houston Methodist Hospital were reviewed. Baseline characteristics, compartment defects, and stage were compared. Mean interval from the index surgeries to management of prolapse recurrence was recorded. In recurrence cases, mesh complaints were noted if present. Primary outcome was the procedure type used to manage cases of recurrence and primary prolapse. Logistic regression was used to determine odds ratio (OR) for the procedure of choice in recurrence and primary repairs of prolapse.

Results—Of 386 cases reviewed, 379 met criteria for inclusion; 25.8% of repairs were for recurrence. Recurrence patients were significantly older than primary cases (mean, 63.6 vs 60.5; $P = 0.03$) and had been postmenopausal for longer ($P = 0.004$). Median time interval to surgical management of recurrence was 8 years. Thirty percent of recurrence patients treated previously by mesh had mesh complaints. There was no difference in the distribution of defects or stage. Sacrocolpopexy was more frequently used to manage recurrent prolapse (OR, 2.6334; $P < 0.0005$). Vaginal mesh repairs showed no difference in utilization. Uterosacral ligament fixation (OR, 0.347; $P = 0.002$) was used more often in primary prolapse. Anterior colporrhaphy (OR, 0.398; $P = 0.0005$) and uterosacral ligament fixation (OR, 0.347; $P = 0.002$) were performed less in recurrence cases.

Conclusion—Fellowship-trained urogynecologists at this institution utilize sacrocolpopexy mesh more frequently in recurrent prolapse, and uterosacral ligament fixation was used more frequently in primary prolapse cases.

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Keywords

recurrent prolapse; primary prolapse; fellowship trained

Pelvic organ prolapse (POP) is a common condition, with an associated 12.6% lifetime risk of operation in women by the age of 80 years.¹ Unfortunately, recurrence of POP after surgical management is common. When recurrent prolapse is defined by POP-Q stage II or higher developing 1 year postoperatively, recurrence rates range from 10% to 58%.²⁻⁴ A randomized controlled trial evaluating native tissue surgical management of prolapse cases noted that approximately 40% of patients had subjective or anatomic recurrence only 2 years postoperatively.⁵

Before the Food and Drug Administration public health safety communication regarding risks of vaginal mesh, synthetic mesh was increasingly used in the hope of achieving a decreased anatomic recurrence.⁶ Mesh augmentation reduces objective recurrence when compared with native tissue repairs; however, complications, such as mesh exposure, requiring medical treatment or reoperation are common.⁷ Despite reduced anatomic recurrence, no benefits to patient perception of recurrence or reduced reoperation rates have been established with utilization of mesh.⁸ Although surgical management of prolapse has increased substantially in recent years, use of transvaginal mesh has decreased steadily since the Food and Drug Administration public health advisory announcements in 2008 and 2011.^{6,9}

Expert opinions have surgeons maintain utilization of mesh for management of complex patients with increased perceived risk factors for recurrence.^{10,11} There is no consensus on whether mesh use should be for use in primary prolapse cases or recurrence cases.

The primary objective of this study was to determine the surgical procedures most commonly selected by both urologists and gynecologists who are fellowship-trained reconstructive pelvic surgeons at our institution in the management of recurrent prolapse. The secondary objectives were to determine the mean time interval from index procedure to management of recurrent prolapse and to determine the distribution of compartments most likely to require surgical intervention in both primary and recurrent prolapse cases with or without the use of mesh.

METHODS

This was a retrospective review of patients who underwent surgery for prolapse repair by fellowship-trained pelvic reconstructive surgeons. This study describes procedures of choice in the management of patients with primary prolapse compared with patients with recurrence prolapse by fellowship-trained surgeons. Cases were identified by review of current procedural terminology codes in case logs of 3 surgeons between January 2012 and December 2015. Cases were included for review if they included one or more current procedural terminology codes for anterior colporrhaphy, posterior colporrhaphy, enterocele repair, and colpopexy (laparoscopic, vaginal, and abdominal): all with or without mesh use. Surgeons included in the review were fellowship trained in female pelvic medicine and

reconstructive surgery ($n = 1$) and female urology ($n = 2$). Each of the 3 surgeons had been in practice for 2 to 3 years when the cases took place. All cases reviewed were performed at Houston Methodist Hospital.

Patients were included if they had one of the following procedures included in their surgery: anterior repair, anterior repair with synthetic mesh or biologic graft, posterior repair, posterior repair with synthetic mesh or biologic graft, colpopoiesis, uterosacral ligament fixation, sacrospinous ligament fixation, or sacrocolpopexy. Patients were excluded if they presented with recurrent prolapse but their surgery ultimately involved mesh removal without a concomitant prolapse repair. Baseline characteristics such as age, number of years postmenopausal, and body mass index (BMI) were recorded. The compartments (anterior, posterior, and apical) and stage of prolapse treated were recorded for both primary and recurrent cases. Concurrent procedures such as hysterectomy or a midurethral sling placed at the time of the surgery were recorded. The mean time interval from the index surgery to surgery for recurrence was noted.

Recurrence cases included patients who reported having prior surgery in the anterior, apical, or posterior vagina for the indication of treating prolapse. Data regarding index procedures of recurrence cases were obtained from operative reports where available. Cases that did not have prior operative reports available were categorized on the basis of available information from patient interview. If details regarding the stage of prolapse at the time of index procedure were not available, the data point was censored from analysis. In recurrent cases where vaginal mesh was used in the index prolapse surgery, specific complaints related to the mesh were noted if present.

Statistical analysis was performed using STATA Data Analysis and Statistical Software (StataCorp). Descriptive statistics were calculated for all continuous and categorical data. Continuous data were analyzed using paired t tests. Categorical data were analyzed using Mann-Whitney test. All tests had a significance level set at 0.05. Logistic regression was used to determine odds ratio for procedure of choice in recurrent repairs compared with primary repairs of prolapse.

RESULTS

From January 2012 to December 2015, a total of 386 subjects were reviewed who met inclusion criteria, and 379 cases were included. Seven were excluded because mesh complaints were the primary reason for their surgery. Patient characteristics are provided in Table 1. Of the 379 patients, 98 (26%) were recurrent prolapse cases. Operative reports of index prolapse procedures were available to review for 92 (94%) of 98 of recurrence patients. Patients with recurrent prolapse were significantly older than patients with primary prolapse (mean, 63.6 vs 60.5 years; $P = 0.03$) and had been postmenopausal for longer (mean, 15.4 vs 10.3 years; $P = 0.004$). There were no significant differences in the distribution of compartment defects or the stage of prolapse between primary prolapse cases and recurrence cases (Tables 1, 2).

Prolapse patients were more likely to have a concomitant hysterectomy performed at the time of a primary repair than at the time of a recurrent prolapse repair [odds ratio (OR), 0.5; confidence interval (CI), 0.3–0.8; $P < 0.0005$]. Similarly, midurethral slings were more likely to be placed at the time of a primary repair than at the time of a recurrent prolapse repair (OR, 0.3; CI, 0.2–0.6; $P < 0.005$).

The median time interval between primary repairs and subsequent surgical management of recurrence was 8 years. At the time of their index surgery, 34 (35%) of 98 patients were menopausal. Although the weight at the time of the index surgery was not known, 27 (28%) of 98 patients were obese (defined by BMI of 30 or greater) at the time they presented with recurrence. Patients with primary repairs augmented with graft or mesh (any compartment) presented with recurrence earlier (median, 5 years) than patients who had primary repairs with native tissue (median, 10 years) (Table 2).

Patients with recurrent prolapse with prior mesh augmented repairs were included only if recurrence of prolapse symptoms was their primary complaint. Furthermore, 8 (30.0%) of 27 cases with prior mesh augmented repairs had mesh-related complaints in addition to recurrence of prolapse symptoms. Although their primary complaint was recurrent prolapse symptoms, they also reported pain, persistent discomfort, discharge, or erosion that they or their physician attributed to the mesh.

Of the 8 patients with recurrence and a mesh-related complaint, 1 had prior mesh by sacrocolpopexy, and the other 7 had previously been treated with synthetic mesh in the anterior or posterior compartments. The patient with prior sacrocolpopexy had a small area of exposure at the cuff causing bothersome vaginal discharge; the entire mesh was excised before treatment of recurrent prolapse. Of patients with mesh in the anterior/posterior compartments, 2 had no mention of specific treatment, and 5 had treatment by complete or partial excision of the mesh, which accompanied their recurrent prolapse repair.

Sacrocolpopexy was more frequently used to manage recurrent prolapse than primary prolapse [primary 82/281 (29.2%) versus recurrent 51/98 (52.04%); OR, 2.6334; $P < 0.0005$]. Other procedures utilizing mesh (anterior and posterior repairs with biologic graft or synthetic mesh) showed no significant difference in utilization. Anterior repair (OR, 0.3977; $P = 0.0005$) and uterosacral ligament suspension (OR, 0.347; $P = 0.002$) were used less often in cases of recurrent prolapse than in cases of primary prolapse. We noted that midurethral slings (OR, 0.502; $P = 0.005$) and hysterectomy (OR, 0.3010; $P = 0.0005$) also were performed less frequently at the time of prolapse repairs for recurrence (Table 3).

DISCUSSION

Our study showed that mesh augmentation for prolapse repairs are more likely to be utilized on recurrent compared with primary cases, and 26% of all prolapse surgeries at this institution are performed for recurrent prolapse. Risk factors for prolapse recurrence after surgical correction remain debatable. Obesity, high-grade preoperative prolapse (POP-Q stage III–IV), and advanced age at index surgery (>60 years) have all been associated with increased risk of prolapse recurrence.^{2–4,12} The presence of advanced prolapse stage at the

time of the index procedure was the only risk factor for recurrence confirmed as significant by a systematic review.¹²

Data are lacking regarding optimal management of recurrent prolapse after prior surgical management. Although expert opinions suggest a benefit to the use of vaginal mesh or graft augmentation in the management of recurrence,^{11,13} few studies have evaluated outcomes after surgery for recurrent prolapse. Withagen et al¹³ performed a randomized controlled trial of treating patients with recurrent prolapse with either vaginal mesh or native tissue repair. At a 12-month follow-up, the vaginal mesh group had a 9.6% rate of recurrence, and the native tissue group had a 45.2% rate of recurrence. Although anatomic recurrence was significantly reduced with use of mesh, patient symptoms and quality of life metrics failed to demonstrate a significant difference between the 2 groups.¹³ A retrospective cohort study by Peterson et al¹⁴ demonstrated a greater anatomic failure rate when using native tissue repair to treat recurrent prolapse than when native tissue was used to treat primary prolapse cases. Despite a paucity of evidence supporting optimal management of recurrent cases, a retrospective study by Anand et al¹⁵ showed great surgeon preference for mesh use when treating recurrent vaginal vault prolapse. In the 512 cases included, there was significant surgeon preference for sacrocolpopexy over Mayo-McCall culdoplasty in the management of recurrent prolapse.¹⁵ This study cannot conclude the optimal procedure of choice in the management of recurrent prolapse cases. In this high-volume referral center, mesh augmentation is used in most recurrent prolapse cases. Mesh augmentation is used most often by treatment with sacrocolpopexy.

Patients with recurrent prolapse were statistically significantly older than patients presenting with primary prolapse; however, this difference of 3.4 years is unlikely clinically significant. The overall mean interval of 11.5 years between the index and recurrence procedures observed in our series is similar to another large retrospective study, which demonstrated an average interval of 12.5 years.¹

Our population showed a shorter interval to recurrence in patients who had a primary repair with mesh (median, 5 years) than primary repairs with native tissue (median, 10 years). We attribute this finding to 30% of patients with prior mesh repairs who also had mesh-related complaints such as pain and exposure. It is likely that additional bothersome symptoms led these patients to seek care earlier than patients with only recurrence symptoms.

In our series, sacrocolpopexy was more often selected to manage apical recurrence compared with primary apical defects (OR, 2.63; $P < 0.005$). Similarly, uterosacral ligament suspension was more often chosen for management of primary apical prolapse compared with recurrent apical defects (OR, 0.347; $P < 0.002$). There was no difference in utilization of sacrospinous ligament fixation between primary and recurrent cases. At this large-volume referral center, this demonstrates that there is surgeon preference for use of mesh (sacrocolpopexy) in the management of recurrent apical prolapse. There is one other published retrospective study demonstrating similar surgeon preference in the management of recurrent apical prolapse. Anand et al demonstrated surgeon preference for sacrocolpopexy over Mayo-McCall culdoplasty in recurrent apical prolapse.¹³

One weakness of this study is that it cannot conclude the optimal procedure of choice in the management of recurrent prolapse cases because we did not collect long-term POP-Q outcomes. Information on index procedures of patients presenting with recurrence is limited because not all had prior operative reports for review. Patient recall of their prior procedures is not as reliable as documentation by their past surgeon. Smoking status and chronic immunosuppression of patients were not accounted for in these cases, which may have confounded the type of procedure chosen for treatment. Also to be considered, procedure selection in surgical management of prolapse is determined not only by the surgeon but also by the patient. Patient counseling is inevitably influenced by surgeon experience and comfort with given procedures. The risks and benefits of all procedure options are explained to the patient, but the procedure ultimately chosen is based on patient preference.

This study demonstrates which procedures were chosen in cases of primary and in recurrent prolapse by fellowship-trained surgeons at this high-volume referral center. Mesh augmentation is used more often in cases of recurrent prolapse needing apical repairs. Uterosacral ligament suspension was used more often in primary repairs requiring apical support than in recurrent repairs. Although we do not know the outcomes after these choices of procedure, this study shows which procedures were chosen by fellowship-trained surgeons. This study gives a limited view of surgeon choice of management in primary versus recurrent prolapse cases; a multicenter review would increase the value of this information with a more diverse population.

CONCLUSION

Fellowship-trained surgeons utilize sacrocolpopexy more frequently in cases of recurrent prolapse than in primary prolapse. Uterosacral ligament suspension is used by fellowship-trained surgeons more frequently in cases of primary prolapse. Further studies from other centers would be helpful to demonstrate surgeon preference in procedure selection for primary and recurrent prolapse.

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TABLE 1

Patient Demographics and Perioperative Data

Patient Demographics	Primary Prolapse Repair (n = 281)	Recurrent Prolapse Repair (n = 98)	<i>P</i>
Age *, y	60.5	63.6	0.03
BMI *	28.7	27.7	0.18
Postmenopausal age *, y	10.25	15.38	0.004
Anterior defect, %	85.05	80.61	0.754
Posterior defect, %	76.16	76.53	0.754
Apical defect, %	64.77	68.37	0.577
POP-Q stage 1, %	4.63	6.12	0.406
POP-Q stage 2, %	43.06	36.73	0.406
POP-Q stage 3, %	35.59	45.92	0.962
POP-Q stage 4, %	8.19	4.08	0.183

* Mean value.

TABLE 2**Index Procedures of Recurrence Prolapse Cases**

Index Procedures Leading to Recurrence	Procedures* (n = 143)
Anterior colporrhaphy	61 (62%)
Anterior colporrhaphy—biologic graft	8 (8.2%)
Anterior colporrhaphy—mesh	10 (10%)
Posterior colporrhaphy	42 (43%)
Posterior colporrhaphy—mesh	1 (1.0%)
Sacrospinous ligament fixation	7 (7.1%)
Uterosacral ligament fixation	5 (5.1%)
Sacrocolpopexy	8 (8.2%)
Colpocleisis	1 (1.0%)

* N (%) = number of procedure type (number of procedure type/number of recurrence cases).

TABLE 3

Procedure Selection in Recurrent Prolapse Compared to Primary Prolapse

Procedure	Primary Prolapse Procedures (n = 497)*	Recurrent Prolapse Procedures (n = 154) [†]	Odds Ratio	95% CI	P
Anterior colporrhaphy	130 (27%)	25 (26%)	0.398	0.239–0.663	0.0005
Anterior colporrhaphy with biologic graft	5 (1.0%)	1 (1.0%)	0.569	0.066–4.931	0.609
Anterior colporrhaphy with synthetic mesh	0	1 (1.0%)	0.774	0.179–46.595	0.455
Colpocleisis	34 (6.8%)	8 (8.1%)	0.735	0.330–1.592	0.435
Posterior colporrhaphy	164 (33%)	51 (52%)	2.887	0.488–1.229	0.277
Posterior colporrhaphy with synthetic mesh	0	1 (1.0%)	0.774	0.179–46.595	0.455
Sacrocolpopexy	82 (16%)	51 (52%)	2.633	1.641–4.223	0.005
Sacrospinous ligament fixation	7 (1.4%)	5 (5.1%)	2.104	0.652–6.791	0.213
Uterosacral ligament fixation	75 (15%)	11 (11%)	0.347	0.176–0.686	0.002

* Number of procedures (%) = number of procedures/cases performed for primary POP).

[†] Number of procedures (%) = number of procedures/cases performed for recurrent POP).