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Burch Retropubic Urethropexy Compared With Midurethral Sling With Concurrent Sacrocolpopexy: A Randomized Controlled Trial

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Abstract

Objective—To compare efficacy and safety of retropubic Burch urethropexy and midurethral sling in women with SUI undergoing concomitant pelvic floor repair with sacrocolpopexy.

Methods—Women were randomly assigned to Burch retropubic urethropexy (n=56) or retropubic midurethral sling (n=57) through dynamic allocation balancing age, body mass index, history of prior incontinence surgery, intrinsic sphincter deficiency, preoperative incontinence diagnosis, and prolapse stage. Overall and stress-specific continence primary outcomes were ascertained with validated questionnaires and blinded cough stress test.

Results—Enrollment was June 1, 2009, through August 31, 2013. At 6 months, no difference was found in overall (29 midurethral sling [51%] vs 23 Burch [41%]; $P=.30$) (odds ratio [OR] [95% CI], 1.49 [0.71–3.13]) or stress-specific continence rates (42 midurethral sling [74%] vs 32 Burch [57%]; $P=.06$) (OR [95% CI], 2.10 [0.95–4.64]) between groups. However, the midurethral sling group reported greater satisfaction (78% vs 57%; $P=.04$) and were more likely to report successful surgery for SUI (71% vs 50%; $P=.04$), and to resolve preexisting urgency incontinence (72% vs 41%; $P=.03$). No difference was found in patient global impression of severity or symptom improvement, complication rates, or mesh exposures.

Conclusion—There was no difference in overall or stress-specific continence rates between midurethral sling and Burch urethropexy groups at 6 months. However, the midurethral sling group reported better patient-centered secondary outcomes.

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Introduction

Pelvic organ prolapse is a major health condition, affecting nearly one-half of women older than 50 years in Sweden (1) and approximately two-thirds of older women in Iowa (2). In the United States, an estimated 200,000 prolapse procedures are performed annually (3) at a societal cost exceeding \$1 billion (4,5). It has been estimated that by 2050, the number of annual prolapse procedures will increase by 47.2% to 310,050 (6).

Pelvic organ prolapse is often associated with urinary incontinence; up to 91% of women who present for sacrocolpopexy require a concomitant anti-incontinence procedure (7,8). Sacrocolpopexy, an abdominal procedure in which the vagina is suspended to the sacrum with a nonabsorbable mesh, is the gold standard operation for pelvic organ prolapse (9). Historically, the Burch urethropexy, an abdominal procedure where the periurethral vaginal tissue is suspended to Cooper ligament (pectineal ligament) bilaterally, has been considered the benchmark operation because it has been highly effective at treating stress urinary incontinence (SUI) (overall cure rates, 68.9%–88.9%) (10–12). Following its introduction in 1996, the midurethral sling has become the new gold standard incontinence surgery, since it is a minimally invasive vaginal option with similar efficacy to the Burch (13).

It remains unclear which urinary incontinence procedure should be performed concomitantly with a sacrocolpopexy—a Burch conveniently through the same laparotomy incision or a vaginal midurethral sling on closure of the abdominal prolapse repair. To address this question, we conducted a multicenter randomized trial comparing these incontinence procedures in women undergoing concomitant sacrocolpopexy.

Materials and Methods

This superiority trial was approved by the institutional review boards of the participating sites, was registered in clinicaltrial.gov (NCT00934999), and was reported in accordance with the modified Consolidated Standards of Reporting Trials Statement (14). Women 21 years of age or older were recruited from the urogynecology clinics at Mayo Clinic in Rochester, Minnesota, and University of Missouri, Kansas City, Missouri. Study-eligible women had symptomatic stage II or greater apical or anterior vaginal wall prolapse (Pelvic Organ Prolapse Quantification point Aa, Ba, or C at 1 cm) (15) and opted for an abdominal prolapse repair. Women with a uterus were eligible to participate. Additional eligibility criteria included 1) symptomatic stress or stress predominant mixed urinary incontinence symptoms (see Appendix 1, available online at <http://links.lww.com/xxx>, for definitions) (16) or occult SUI (ie, demonstrable urinary leakage on preoperative urodynamics with or without prolapse reduction in a patient without overt urinary incontinence symptoms); 2) cystometric capacity ≥ 200 cc; 3) a signed written consent; and 4) willingness to complete follow-up visits. Women with any of the following were excluded from the trial: known or suspected disease that affects bladder function (eg, multiple sclerosis, Parkinson disease); pregnancy; desired fertility; urethral diverticulum; history of radical pelvic surgery or pelvic radiation therapy; or current chemotherapy or radiation therapy for malignancy.

The anti-incontinence procedure was randomly selected through a dynamic allocation approach based on the Pocock-Simon method (17) to achieve balance between the intervention groups regarding age (<55 years vs ≥55 years), body mass index (<30 kg/m² vs ≥30 kg/m²), history of prior incontinence surgery (none vs 1), preoperative incontinence diagnosis (overt vs occult), intrinsic sphincter deficiency (defined as an abdominal leak point pressure <60 cm H₂O or a maximum urethral closure pressure <20 cm H₂O), and prolapse stage (<IV vs IV) using a Web-based application. The assigned patient allocation was placed in a sealed opaque envelope by the study coordinator and given to the surgical team the morning of surgery. This randomization strategy was chosen since it has been shown to be superior to a permuted block (especially when the trial has >3 variables of interest) and because it is less likely to result in group imbalances due to chance when fewer than 400 patients are randomized (18).

Treatment allocation was masked to patients and the research nurses, who performed the standardized stress tests. Although patient masking could not be ensured (the midurethral sling group had 2 suprapubic stab incisions and the Burch procedure group had none), a bandage was placed in the lower abdomen by a nurse not involved in the cough stress test assessment.

Two primary outcomes were assessed at 6 months: overall continence and stress-specific continence. Patients were considered overall continent if they met each of 3 criteria at follow-up:

1. Negative standardized stress test. This test consisted of retrograde filling of the bladder to 300 cc or the maximum bladder capacity (whichever was less) and asking the patient to cough and bear down in supine and standing positions. Any transurethral urine loss was considered a positive test (10)
2. No interim re-treatment of SUI
3. No self-reported urinary incontinence (ie, a 0 score on the International Consultation on Incontinence Questionnaire, Short Form (19)

Stress-specific continence was evaluated as another primary outcome. This continence required fulfilling criteria 1 and 2 and having no self-reported stress-related incontinence leakage of urine (a response of *never* or *rarely* to 6 questions from the stress incontinence subscale of the Medical, Epidemiological, and Social Aspects of Aging questionnaire) (20). Adverse events were classified on the basis of the Clavien-Dindo grading system of surgical complications (21). Complications of grade 3 or higher were considered serious.

All women underwent an abdominal sacrocolpopexy (Figure 1A) as described by Maher et al (22), with either a Burch modified Tanagho procedure (10) (Figure 1B) or a midurethral sling (Figure 1C) with a commercially available retropubic sling (Align urethral support system; C. R. Bard Inc) as described by Ulmsten et al (23). All surgeons were fellowship trained and had experience with both SUI surgical approaches, having performed greater than 20 of each procedure before enrolling. Concomitant posterior repairs were performed for the individual patient at the surgeon's discretion.

Participants completed validated questionnaires preoperatively and at each follow-up visit postoperatively. Patient satisfaction, voiding dysfunction, elevated postvoid residual, apical or anterior prolapse failure, de novo or resolution of urgency incontinence, and incontinence severity were assessed postoperatively as secondary outcomes (definitions are in Appendix 1, <http://links.lww.com/xxx>).

Assuming a 63% composite continence rate for the Burch procedure (24), the study had 80% power to detect a 25% difference in continence rates (eg, 63% vs 88%) with 46 women per group, based on a 2-sided χ^2 test with a type I error level of .05. Assuming a 20% drop-out rate, the plan was to recruit 115 trial participants. Because the loss to follow-up was considerably less than expected, recruitment was stopped at 113 participants.

Analyses were performed using an intention-to-treat principle. Two additional analyses of the primary outcomes were conducted with only the patients who had complete follow-up (within protocol analysis) and with a last value carry-forward method. Baseline characteristics and outcomes were compared between the 2 groups through the 2-sample t test for continuous variables, the Wilcoxon rank sum test for ordinal measures, and the χ^2 test or Fisher exact test for categorical variables. P values were 2-sided and considered significant when P was less than .05. Statistical analyses were performed in a statistical software package (SAS version 9.2; SAS Institute Inc).

Results

Of the 1,392 women presenting for evaluation of symptomatic pelvic organ prolapse at Mayo Clinic in Rochester, Minnesota, or the University of Missouri, Kansas City, Missouri, between June 1, 2009, and August 31, 2013, approximately two-thirds were excluded because they opted for vaginal prolapse repair. The other screened participants either declined participation or did not fulfill urinary incontinence inclusion criteria (Figure 2). Of the 113 patients who opted to participate, 56 were randomly assigned to the Burch group and 57 were randomly assigned to the midurethral sling group. All women received the assigned intervention. Outcome assessments at 6-month follow-up were available for 51 (91%) of the women assigned to Burch and for 53 women (93%) of those assigned to midurethral sling. Patient characteristics are shown in Table 1. Groups were similar in baseline demographic characteristics, including the dynamic allocation variables. Most participants were white, and the groups had similar preoperative urinary incontinence diagnosis (proportion with stress, mixed, or occult), incontinence and prolapse severity, history of prior incontinence surgery, and urodynamic findings.

Using the intention-to-treat principle, we found no difference in overall continence between the 2 groups at 6-month follow-up (29 [51%] for midurethral sling vs 23 [41%] for Burch; $P=.30$; odds ratio [OR] [95% CI], 1.49 [0.71–3.13]). A similar number of women met criteria for stress-specific continence in each group (42 midurethral sling [74%] vs 32 Burch [57%]; $P=.06$; OR [95% CI], 2.10 [0.95–4.64]). Similar findings were observed when only the patients who completed a 6-month follow-up were analyzed and when 6 weeks' results were carried forward for those missing a 6-month assessment (Table 2). In addition, there was no difference in the proportion of patients with apical or anterior prolapse failure,

patients who reported persistent voiding dysfunction symptoms, or patients who had increased postvoid residual volume between groups. Only 1 patient in the Burch group required urethrolisis, with no reported need for self-catheterization or indwelling catheter beyond 6 weeks in either group.

Most women were deemed incontinent because of a positive response to the International Consultation Incontinence Questionnaire question “Do you leak urine?” (Figure 3). There was no difference between the groups in the proportion of women who had an International Consultation on Incontinence Questionnaire score greater than 0, needed repeat operation for SUI, had positive stress test, or had an International Consultation on Incontinence Questionnaire score greater than zero and stress-specific symptoms. However, the direction of the association consistently favored the midurethral sling group, and fewer women in this group had failure for more than 1 reason (25% in Burch vs 9% in the sling; $P=.03$) (Figure 3).

No difference was found between the 2 groups in patient perception of symptom improvement or in incontinence severity (Table 3). However, at 6 months, women who had a midurethral sling were more likely to report a 10 for *very successful* (visual analog scale, 0–10) in response to the question, “In your opinion, how successful has your treatment for urinary leakage been?” than women who had a Burch (71% [34/48] vs 50% [23/46]; $P=.04$). In addition, patients who had a midurethral sling were more likely to report satisfaction than those who had a Burch (78% [38/49] vs 57% [27/47]; $P=.04$). Similar findings were observed when satisfaction was defined as a response of *somewhat* or *completely* (92% vs 72%; $P=.01$). No difference was found in the rate of de novo urge incontinence or rate of antimuscarinic medication use between the groups. However, women who had a midurethral sling were more likely to have resolution of preexisting urge incontinence at 6 months than women who had a Burch procedure (72% [18/25] vs 41% [9/22]; $P=.03$) (Table 3).

The proportion of patients with persistent voiding dysfunction symptoms was not significantly different between the groups at follow-up (27% [14/51] vs 18% [9/49]; $P=.28$). In addition, among those with voiding dysfunction symptoms at baseline, the proportion who were symptom free at follow-up was not significantly different between the groups (36% [12/33] vs 23% [8/35] for Burch vs midurethral sling; $P=.22$).

Serious adverse events were uncommon (Appendix 2, available online at <http://links.lww.com/xxx>), and no difference was found in the rate of serious adverse events between groups (9% in Burch group vs 11% in midurethral sling group; $P=.77$). Most of these events were related to the laparotomy rather than the incontinence part of the procedure (Appendix 1, <http://links.lww.com/xxx>). The proportion of women who needed surgical removal of mesh exposure did not differ between the 2 procedures (1/56 for Burch and 2/57 for midurethral sling). All the complications were related to sacrocolpopexy. One patient in the Burch group needed reoperation for incomplete bladder emptying. No bladder perforations occurred during midurethral sling trocar passage. The 1 death was unrelated to participation in the trial (the patient died of complications from drug overdose). The most common minor adverse event was urinary tract infection, with 30% (17/56) and 32% (18/57) having this complication in the Burch and midurethral sling groups.

Discussion

Our trial found no difference in overall or stress-specific continence rates between the Burch and midurethral sling groups when these procedures were performed concomitantly with a sacrocolpopexy at 6-month follow-up. However, women undergoing a midurethral sling had higher satisfaction (78% [38/49] vs 57% [27/47]; $P=.04$), were more likely to report “very successful” continence outcome (71% [34/48] vs 50% [23/46]; $P=.04$), and were more likely to have resolution of baseline urgency incontinence (72% [18/25] vs 41% [9/22]; $P=.03$). It is possible that the greater improvement in baseline urgency incontinence with the midurethral sling led to the observed group difference in secondary outcomes. Alternatively, our study was underpowered to detect a clinically relevant difference in stress-specific continence between the groups (79% [42/53] in midurethral sling vs 63% [32/51] in Burch; $P=.06$).

Both the current findings and those of a large multicenter trial comparing Burch with midurethral sling (13) found no statistically significant differences in continence rates between these procedures. Moreover, a randomized trial comparing Burch with autologous sling reported continence rates following a Burch (75%) (24), using comparable composite outcomes, that were similar to ours (63%). These results suggest that the Burch procedure continues to be a viable and effective SUI procedure for women undergoing laparotomy for other indications.

Comparing outcomes across trials is challenging because heterogeneous definitions of continence exist (13,24,25) and because of differences in the patient populations studied. The present study compared SUI procedures at the time of sacrocolpopexy in patients with both prolapse and urinary incontinence symptoms at baseline. However, previous robustly designed trials (13,24,25) included a mixed population of participants undergoing SUI procedure alone and combined with prolapse repairs (13,22,24–26). This distinction is particularly relevant because patients undergoing combined SUI and prolapse repairs achieve greater continence at follow-up than women who have isolated SUI surgery (25,27).

Although the rates of de novo urgency incontinence did not differ between the groups, a higher percentage of patients reported resolution of urgency incontinence following midurethral sling than Burch (72% vs 41%; $P=.03$). Other investigators have reported similar findings (28,29). Theoretically, reconstitution of the pubourethral ligament may lead to improved urethral coaptation (by stabilizing the posterior urethra) and more effective urge suppression. Alternatively, the opposing vaginal vectors of the Burch (eg, upward toward the anterior abdominal wall) and the sacrocolpopexy (eg, posteriorly toward the levators) may directly affect coaptation or may alter detrusor function, thereby limiting the improvement in urge incontinence. Future studies using magnetic resonance imaging or ultrasonography may prove helpful in differentiating between these hypotheses.

Of note, our population consisted of primarily white women from the US Midwest region who underwent abdominal sacrocolpopexy. Hence, our findings may not apply to more racially diverse populations, to patients undergoing robotic or laparoscopic prolapse repairs, or to women undergoing laparoscopic Burch. In addition, all participating surgeons received

their fellowship training at the same institution. This characteristic allowed for standardization of surgical approaches and postoperative care not typical in multicenter randomized trials. Even though it likely enhanced the internal validity of the trial, it limits the generalizability of our findings. Of note, primary outcome assessment is limited to 6 months and the result may differ with a longer follow-up. Finally, we did not use sham operations to ensure that the Burch procedure was masked to patients. Despite this limitation, 73% of the participants continued to have this detail blinded until their primary outcome assessment (data not shown).

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1.

Schematic of sacrocolpopexy and urinary incontinence procedures. **A.** In abdominal sacrocolpopexy, the vaginal apex is supported to the anterior longitudinal ligament of the sacrum with a polypropylene mesh. **B.** Retropubic view of the Burch procedure, in which the periurethral vaginal tissue is suspended to the Cooper ligament bilaterally with use of a suture bridge. **C.** Sagittal view of the midurethral sling. In this procedure, a piece of polypropylene mesh is placed at the midurethra in a tension-free manner. © 2014 Mayo. Used with permission of Mayo Foundation for Medical Education and Research.

Figure 2.

Flow diagram of enrollment, randomization, and analysis of trial participants. MUS, midurethral sling; ITT, intention to treat; SUI, stress urinary incontinence; WPA, within protocol analysis.

Figure 3.

Specific factors leading to surgical failure. Stress-specific incontinence includes the results for repeat incontinence surgery and positive standardized stress test. ICIQ, International Consultation on Incontinence Questionnaire, Short Form; MUS, midurethral sling; SUI, stress urinary incontinence.

Table 1

Baseline Demographic Characteristics, Clinical Characteristics, Urodynamic Findings, and Concomitant Procedures of the Trial Participants

Characteristics*	Burch (n=56)	Midurethral Sling (n=57)	P Value
Age at operation, mean±SD, y	56±10	56±11	.91
BMI, mean±SD, kg/m ²	28.3±4.8	28.1±5.3	.78
White race [†]	56 (100.0)	55 (96.5)	.50
Education level			.63
High school	15 (26.8)	17 (30.9)	
>High school	41 (73.2)	38 (69.1)	
Not documented	0	2	
Parity			.41
0	0 (0.0)	1 (1.8)	
1	4 (7.1)	2 (3.5)	
2	22 (39.3)	17 (29.8)	
3	30 (53.6)	37 (64.9)	
Menopausal	37 (66.1)	34 (59.6)	.48
Smoking history	13 (23.2)	11 (19.3)	.61
Prior incontinence surgery	4 (7.1)	4 (7.0)	.99
Preoperative diagnosis			.99
Occult	11 (19.6)	11 (19.3)	
SUI	13 (23.2)	14 (24.6)	
Mixed	32 (57.1)	32 (56.1)	
OABq, symptom severity, [‡] mean±SD	38±23	41±24	.51
OABq, HRQL [§] score, mean±SD	67±24	67±21	.92
Prolapse stage			.99
II	26 (46.4)	26 (45.6)	
III	21 (37.5)	22 (38.6)	
IV	4 (7.1)	5 (8.8)	
Unknown	5 (8.9)	4 (7.0)	
Type of urodynamics			.99
Not done	2 (3.6)	1 (1.8)	
Simple	10 (17.9)	11 (19.3)	
Complex	44 (78.6)	45 (78.9)	
ISD			.45
No	31 (75.6)	33 (82.5)	
Yes	10 (24.4)	7 (17.5)	
Unknown	3	5	
Detrusor contraction [¶]			.11
No	36 (81.8)	41 (93.2)	
Yes	8 (18.2)	3 (6.8)	

Characteristics*	Burch (n=56)	Midurethral Sling (n=57)	P Value
Unknown	0	1	
Additional procedure			.52
None	12 (21.4)	17 (29.8)	
Posterior repair	20 (35.7)	19 (33.3)	
TAH or SCH	11 (19.6)	13 (22.8)	
Posterior repair and TAH or SCH	13 (23.2)	8 (14.0)	
Estimated blood loss, median (IQR), mL	200 (150–300)	200 (150–300)	.73
Operative time, median (IQR), min	253 (219–284)	251 (218–281)	.70
Length of stay, median (IQR), d	3 (2–3)	3 (2–3)	.82
Voiding dysfunction [#]			.33
No	19 (33.9)	14 (25.5)	
Yes	37 (66.1)	41 (74.5)	
Unknown	0	2	

Abbreviations: BMI, body mass index; IQR, interquartile range; ISD, intrinsic sphincter deficiency; OABq, Overactive Bladder Questionnaire, Short Form; OABq, HRQL, health-related quality-of-life component of the bother component of the Overactive Bladder Questionnaire, Short Form; SCH, supracervical hysterectomy; TAH, total abdominal hysterectomy.

* Values are presented as number and percentage of patients unless specified otherwise.

[†] Race was based on patient self-report.

[‡] The OABq symptom severity, ranges from 0 to 100, with higher scores representing greater symptom severity or bother.

[§] The OABq, HRQL scores range from 0 to 100, with higher scores representing better health-related quality of life.

// ISD was defined as an abdominal leak point pressure <60 cm H₂O or a maximum urethral closure pressure <20 cm H₂O.

[¶] Detrusor contracting during the cystometry phase of the urodynamics examination. Results are based on those patients with complex urodynamics only.

[#] Please see Appendix 1 for definition.

Table 2

Primary Outcome Analysis at 6 Months Postoperatively

Outcome [*]	Burch (n=56)	Midurethral Sling (n=57)	Absolute Risk Difference (95% CI)	NNT	P Value
Overall continence [†]					
ITT [‡]	41.1 (23/56)	50.9 (29/57)	9.8 (8.5, 28.1)	10.2	.30
WPA [§]	45.1 (23/51)	54.7 (29/53)	9.6 (9.5, 28.8)	10.4	.33
Carry forward	41.8 (23/55)	54.5 (30/55)	12.7 (5.8, 31.3)	7.9	.18
Stress-specific continence [¶]					
ITT [‡]	57.1 (32/56)	73.7 (42/57)	16.5 (0.7, 33.8)	6.0	.06
WPA [§]	62.7 (32/51)	79.2 (42/53)	16.5 (0.7, 33.7)	6.1	.06
Carry forward	61.8 (34/55)	78.2 (43/55)	16.4 (0.5, 33.2)	6.1	.06

Abbreviations: ITT, intention-to-treat; NNT, number needed to treat; WPA, within protocol analysis.

^{*} Values are presented as number and percentage of patients.

[†] *Overall continence* was defined as an International Consultation on Incontinence Questionnaire, Short Form, score of 0, a negative cough stress test, and no reoperation for stress urinary incontinence.

[‡] All randomly assigned patients were included in the analysis, with those who did not return for follow-up considered not to be continent.

[§] For WPA, only patients with complete follow-up at 6 months.

^{||} For carry forward at 6 months, 6 of the 9 patients with incomplete follow-up had assessment at 6 weeks and were considered in the last value carry-forward approach.

[¶] *Stress-specific continence* was defined as a response of *never or rarely* to 6 questions from the stress-specific subdomain of the Medical, Epidemiological, and Social Aspects of Aging questionnaire, a negative cough stress test, and no reoperation for stress urinary incontinence.

Table 3

Secondary Outcomes at 6 Months

Characteristics*	Burch (n=51)	Midurethral Sling (n=53)	P Value
PGIS			.09
Normal/mild	39 (79.6)	44 (91.7)	
Moderate/severe	10 (20.4)	4 (8.3)	
Not reported	2	5	
Symptom improvement [†]			.15
0	3 (6.5)	0 (0)	
1	0 (0)	1 (2.0)	
2	1 (2.2)	1 (2.0)	
3	1 (2.2)	2 (4.0)	
4	1 (2.2)	0 (0)	
5	5 (10.9)	2 (4.0)	
6	0 (0)	2 (4.0)	
7	3 (6.5)	2 (4.0)	
8	3 (6.5)	2 (4.0)	
9	3 (6.5)	3 (6.0)	
10	26 (56.5)	35 (70.0)	
Not reported	5	3	
Median (IQR)	10 (7–10)	10 (9–10)	.15
Proportion reporting 10	26 (56.5)	35 (70.0)	.17
Not reported	5	3	
Treatment success [‡]			.03
0	5 (10.9)	2 (4.2)	
1	1 (2.2)	0 (0)	
2	1 (2.2)	1 (2.1)	
3	0 (0)	0 (0)	
4	3 (6.5)	0 (0)	
5	2 (4.3)	1 (2.1)	
6	1 (2.2)	2 (4.2)	
7	1 (2.2)	1 (2.1)	
8	2 (4.3)	2 (4.2)	
9	7 (15.2)	5 (10.4)	
10	23 (50.0)	34 (70.8)	
Not reported	5	5	
Median (IQR)	10 (5–10)	10 (9–10)	.03
Proportion reporting 10	23 (50.0)	34 (70.8)	.04
Not reported	5	5	
ICIQ [§] score			.13
None (score, 0)	24 (47.1)	31 (58.5)	

Characteristics*	Burch (n=51)	Midurethral Sling (n=53)	P Value
Slight (score, 1–5)	11 (21.6)	13 (24.5)	
Moderate (score, 6–12)	9 (17.6)	6 (11.3)	
Severe (score, 13–18)	5 (9.8)	1 (1.9)	
Very severe (score, 19–21)	2 (3.9)	2 (3.8)	
Patient satisfaction ^{//}	27 (57.4)	38 (77.6)	.04
Not reported	4	4	
Prolapse recurrence			
Anterior	2/49 (4.1)	3/50 (6.0)	.99
Apical	1/49 (2.0)	0/50 (0)	.49
Voiding dysfunction ^{//}	14/51 (27.5)	9/49 (18.4)	.28
Elevated postvoid residual ^{//}	1/47 (2.1)	0/50 (0)	.48
Urgency incontinence ^{//}			
De novo symptoms	2/27 (7.4)	3/28 (10.7)	.99
Resolution of baseline symptoms	9/22 (40.9)	18/25 (72.0)	.03
Antimuscarinic medication use	11 (21.6)	10 (18.9)	.73

Abbreviations: ICIQ, International Consultation on Incontinence Questionnaire, Short Form; IQR, interquartile range; PGIS, Patient Global Impression of Severity.

* Values are presented as number and percentage of patients unless specified otherwise.

[†] Symptom improvement assessed with the question “Compared to how you were before your recent surgery for urinary leakage, how are your urinary leakage symptoms now?” Responses ranged from 0 (much worse) to 10 (much better) in a visual analog scale.

[‡] Treatment success assessed using the question “In your opinion, how successful has your treatment for urinary leakage been?” Responses ranged from 0 (not at all successful) to 10 (very successful) in a visual analog scale.

[§] ICIQ scores ranged from 0 to 21, with higher scores representing more severe urinary leakage.

^{//} See Appendix 1 (<http://links.lww.com/xxx>) for definition.