

Outcomes of Uterus-Preserving Sling Surgery in Young Women with Uterovaginal Prolapse: A Prospective Observational Study

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Abstract: Background: Uterovaginal prolapse in young women presents a therapeutic challenge because treatment must provide durable pelvic support while preserving the uterus and reproductive potential. This study evaluated the clinical outcomes, safety, recurrence and fertility outcomes of uterus-preserving sling surgery in young women with uterovaginal prolapse. Methods: This prospective observational study included 30 women aged 21–40 years with symptomatic uterovaginal prolapse who desired uterine preservation. Patients underwent anterior or posterior sling surgery according to clinical and anatomical considerations and were followed postoperatively for symptom relief, complications and recurrence. Fertility outcomes were assessed in women who had presented with infertility. Data were summarized using descriptive statistics. Results: The mean age was 30.27 ± 5.46 years. Second-degree prolapse was present in 26 (86.7%) women and third-degree prolapse in 4 (13.3%). Posterior sling surgery was performed in 20 (66.7%) and anterior sling surgery in 10 (33.3%). No intraoperative complications were recorded. Postoperative complications occurred in 8 (26.7%) patients and were predominantly minor. Twenty-six (86.7%) patients were discharged within 7 days. All 30 women reported complete initial symptomatic relief. Recurrence occurred in 4 (13.4%) patients within 12 months. Among five nulligravid women with infertility, three (60%) conceived after surgery. Conclusion: Uterus-preserving sling surgery was associated with high initial symptomatic success and low perioperative morbidity in this cohort. Recurrence occurred in a minority during the first year, supporting continued surveillance. The observed pregnancies suggest preservation of reproductive potential in appropriately selected women. Larger comparative studies with longer follow-up are required.

Keywords: uterovaginal prolapse; uterine preservation; sling surgery; uterine suspension; young women; fertility; recurrence

1. Introduction

Uterovaginal prolapse is traditionally managed according to the patient's age, severity of prolapse, symptoms, reproductive wishes and associated pelvic floor defects. In young women who desire future fertility, hysterectomy may not be acceptable, making uterus-preserving procedures particularly relevant.

Sling operations provide dynamic support to the uterus while retaining the uterus and, in selected patients, reproductive function. Different techniques have been described, including anterior and posterior sling procedures and modifications of the original conservative uterine suspension operations. Despite their potential value, contemporary evidence on sling surgery specifically in young women with uterovaginal prolapse remains limited.

The present study was undertaken to evaluate the clinical profile, surgical safety, postoperative outcomes, recurrence and fertility outcomes of young women undergoing sling surgery for uterovaginal prolapse at a tertiary care centre.

2. Materials and Methods

Study design and setting

This was a prospective observational study conducted in the Department of Obstetrics and Gynaecology at Dr. Shankarrao Chavan Government Medical College, Nanded, Maharashtra, India. The study period described in the dissertation was 18 months, from January 2023 to June 2024. Patients were followed postoperatively at predefined intervals, including 1 week, 1 month, 6 months and 1 year.

Participants

Women aged 20–40 years with symptomatic uterovaginal prolapse who desired fertility preservation and elected uterus-preserving surgery were eligible. Women with age >40 years, procidentia, abnormal uterine bleeding, significant cystocele or rectocele requiring additional reconstructive surgery, major comorbidity affecting surgical eligibility, or inability/ unwillingness to provide consent were excluded.

Surgical procedure and follow-up

Patients underwent detailed clinical assessment and relevant investigations before surgery. The type of sling- anterior or posterior- was selected according to the clinical presentation and pelvic anatomy. Anterior sling surgery involved cervical suspension toward the anterior abdominal wall, whereas posterior sling surgery provided posterior/sacral suspension. Procedures were performed by experienced gynaecologists. Intraoperative events and postoperative complications were recorded. Follow-up assessed symptom relief, recurrence and reproductive outcomes.

Outcomes and statistical analysis

The main outcomes were postoperative symptomatic relief, perioperative complications, recurrence at 6 and 12 months, and fertility outcomes among women who attempted conception. Continuous variables were summarized using mean and standard deviation; categorical variables were summarized as frequencies and percentages. The dissertation protocol specified chi-square testing for categorical variables and paired t-testing for pre- and postoperative measurements, with $p < 0.05$ considered statistically significant. The present manuscript focuses on descriptive

outcome data because no powered comparative analysis between sling techniques was undertaken.

Ethics

Institutional Ethics Committee approval was obtained before initiation of the study. Written informed consent was obtained from all participants. Confidentiality was maintained using coded study data without personal identifiers, and participants retained the right to withdraw from the study.

3. Results

Thirty women underwent sling surgery. The mean age was 30.27 ± 5.46 years, with an age range of 21–40 years. The largest age group was 25–29 years (13/30, 43.3%). Five women (16.7%) were nulliparous, 15 (50.0%) were multiparous and 10 (33.3%) were grand multiparous. Second-degree prolapse was present in 26 (86.7%) women and third-degree prolapse in 4 (13.3%).

The most frequent presenting complaint was a sensation of something coming out of the introitus (12/30, 40.0%), followed by urinary symptoms (6/30, 20.0%), infertility (5/30, 16.7%) and low backache (4/30, 13.3%). Cystocele was identified in 6 (20.0%) women and rectocele in 1 (3.3%); no compartment defect was detected in 22 (76.7%).

Posterior sling surgery was performed in 20 (66.7%) women and anterior sling surgery in 10 (33.3%). No intraoperative complications were recorded. Postoperative complications were documented in 8 women (26.7%); individual events included wound discharge (2, 6.7%), wound gape (2, 6.7%), dyspareunia (1, 3.3%), fever (1, 3.3%), vaginal discharge (1, 3.3%) and post-dural puncture symptoms (1, 3.3%). Twenty-two women (73.3%) had no recorded postoperative complication. Twenty-six patients (86.7%) were discharged within 7 days.

All 30 women reported complete symptomatic relief initially. At follow-up, 26 (86.6%) had no documented recurrence, while 4 (13.4%) developed recurrent prolapse: 2 (6.7%) by 6 months and a further 2 (6.7%) by 12 months. Among five nulligravid women who had presented with infertility, three (60.0%) conceived after surgery and two (40.0%) did not conceive during the observed follow-up.

Table 1: Baseline clinical characteristics

Characteristic	n	%
Age 25–29 years	13	43.3
Nulliparous	5	16.7
Multiparous	15	50.0
Grand multiparous	10	33.3
Second-degree prolapse	26	86.7
Third-degree prolapse	4	13.3

Table 2: Type of sling surgery

Procedure	n	%
Anterior sling	10	33.3
Posterior sling	20	66.7
Total	30	100.0

Table 3: Postoperative complications

Complication	n	%
No complication	22	73.3
Wound discharge	2	6.7
Wound gape	2	6.7
Dyspareunia	1	3.3
Fever	1	3.3
Vaginal discharge	1	3.3
Post-dural puncture symptoms	1	3.3

Table 4: Follow-up outcomes

Outcome	n	%
Initial symptomatic success	30	100.0
No recurrence	26	86.6
Recurrence by 6 months	2	6.7
Recurrence by 12 months	2	6.7
Conceived among infertile nulligravida women	3/5	60.0

4. Discussion

The principal finding of this prospective cohort was a high initial symptomatic success rate following uterus-preserving sling surgery. All 30 women reported complete symptomatic relief, and no intraoperative complication was recorded. The postoperative adverse events were predominantly minor, with wound-related problems being the most frequent individual complications.

The predominance of second-degree prolapse and the relatively young age of the cohort are clinically relevant. In women who wish to preserve reproductive potential, uterine-preserving surgery can be an attractive alternative to definitive hysterectomy-based treatment when appropriate selection criteria are met. Reviews of uterine preservation similarly emphasize the importance of individualized counselling and careful assessment of associated pelvic floor defects.

In this study, posterior sling surgery was used in two-thirds of the cohort. However, because the study was observational and the choice of procedure was based on clinical and anatomical considerations, the data do not establish superiority of posterior over anterior sling surgery. This distinction is important because differences in patient selection may influence apparent outcomes.

The recurrence rate was 13.4% during the first year, comprising two recurrences by 6 months and two additional recurrences by 12 months. This finding supports continued postoperative surveillance even after successful initial correction. Existing literature on uterine-preserving procedures demonstrates that durability varies with procedure, prolapse stage, associated compartment defects and follow-up duration.

An important secondary observation was the reproductive outcome. Three of five nulligravid women who had presented with infertility conceived following surgery. This should not be interpreted as proof that sling surgery improves fertility, because the subgroup was very small and infertility has multiple causes. Nevertheless, the pregnancies observed in this cohort support the feasibility of preserving reproductive potential after selected uterus-sparing prolapse surgery.

The study has several limitations. The sample size was small and based on available cases rather than a formal power calculation. There was no randomized or matched comparator group, and the two sling techniques were not evaluated through a powered head-to-head comparison. Follow-up was limited to one year for the primary cohort, which may underestimate later recurrence. Patient-reported symptom relief was used as an important outcome, but validated pelvic-floor quality-of-life instruments were not consistently available in the dissertation dataset. Larger multicentre studies with standardized POP-Q assessment, validated quality-of-life measures and longer follow-up are needed.

5. Conclusion

In this prospective cohort of young women with uterovaginal prolapse, uterus-preserving sling surgery was associated with complete initial symptomatic relief, no recorded intraoperative complications and predominantly minor postoperative morbidity. Recurrence occurred in 13.4% within 12 months. Conception after surgery was observed in 3 of 5 previously infertile nulligravid women. These findings support sling surgery as a potentially useful uterus-preserving option in carefully selected young women who desire fertility preservation, while emphasizing the need for long-term follow-up and further comparative research.

Declarations

Ethics approval and consent: Institutional Ethics Committee approval was obtained. Written informed consent was obtained from all participants.

Consent for publication: Not applicable; no individually identifiable patient information is included in this manuscript.

Funding: No external funding was reported for this study.

Conflict of interest: The authors declare no conflict of interest.

Data availability: The underlying study data are available from the corresponding author subject to institutional and ethical restrictions.

Author contributions: Apurva Shankarrao Patil: study conception, data collection, analysis, manuscript drafting. Shamrao Ramji Wakode: supervision, methodological guidance and critical review. Both authors approved the final manuscript.

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