

## ORIGINAL ARTICLE

RECTUS SHEATH SLING PROCEDURE: A NEW HORIZON IN  
UTEROVAGINAL PROLAPSE TREATMENTSadia Nazir, Amna Aziz\*, Rashida Parveen\*, Amna Bibi\*, Abdul Rehman Qaisrani\*\*,  
Syeda Hina Fatima

Department of Obstetrics and Gynaecology, DG Khan Medical College, Dera Ghazi Khan, \*Nishtar Medical University, Multan,

\*\*Department of Pathology, DG Khan Medical College, Dera Ghazi Khan, Pakistan

**Background:** Abdominal sacrocolpopexy offers a durable solution for pelvic organ prolapse through mesh suspension techniques. This study assessed the outcome of rectus fascial sling procedure. **Methods:** This single-arm interventional study was done on 50 patients with uterovaginal prolapse, in Department of Obstetrics and Gynaecology, DG Khan Medical College, DG Khan and Nishtar Medical University, Multan. PFDI-20 (Pelvic Floor Disability Index) was measured preoperatively to assess severity of symptoms. Rectus sheath sling procedure was performed. Surgical outcome was measured one year after surgery. Difference in mean PFDI-20 score before and after surgery was calculated. **Results:** Mean age of the patients was  $27.9 \pm 11.5$  years; 46 (92%) women had 2<sup>nd</sup> degree uterovaginal descent and 4 (8%) women had 1<sup>st</sup> degree prolapse. Mean time of operation was <1 hour in 46 (92%) and >1 hour in 4 (8%) of patients. Sixteen (32%) women had hospital stay of 1–2 days after the surgery and 34 (68%) women stayed for 3–4 days in the hospital. Surgical outcome was measured post operatively one year after surgery with PFDI-20. Ninety-two percent women reported no symptoms post procedure. Mean PFDI-20 score after surgery was  $11.6 \pm 5.61$ .  $\Delta$ Mean PFDI-20 score was  $43.4 \pm 9.4$  showing substantial improvement in the symptoms after surgery. PFDI-20 score after surgery was found to be significantly associated with age ( $p < 0.001$ ). **Conclusion:** Rectus sheath sling operation for uterovaginal descent is effective, minimally invasive, and less time consuming. It can be recommended for women desiring to preserve their fertility.

**Keywords:** Rectus sheath sling, Uterovaginal descent, Uterovaginal prolapse

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## INTRODUCTION

The most frequent concerns among women who visit outpatient gynaecology clinics, particularly in developing nations, is uterovaginal prolapse.<sup>1</sup> Pelvic organ prolapse (POP) is a bulge of a pelvic organ that protrudes beyond the introitus.<sup>2</sup> It is reported in around 10.3% women in Pakistan.<sup>3</sup> Malnutrition, low income level, and deliveries by inexperienced birth attendants are the primary drivers of this condition's widespread prevalence in developing countries.<sup>4</sup> Pelvic organ prolapse causes a variety of symptoms, including frequent micturition, urinary incontinence, sexual dysfunction, voiding difficulty, faecal incontinence, pelvic pain, low backache, and pelvic heaviness.<sup>5</sup> Purandare<sup>6</sup> derived a newer technique for the management of uterovaginal prolapse in young women in 1965. The prolapsed uterus was held up through a rectus fascial strip, which was attached to the cervix anteriorly at isthmus level. Later on several modifications of the procedure were done. Autologous fascia is frequently used during pelvic reconstructive surgeries and for stress urinary incontinence. It is a safe material for POP repair.<sup>7</sup>

Women with pelvic organ prolapse have a variety of treatment choices, but subjective symptoms are crucial because the patients' suffering determines the course of treatment rather than the severity of

physical examination.<sup>8</sup> Basic connective tissue dysfunction is most likely the main underlying condition that predisposes women to uterine prolapse. The possibility of inherited weakness in connective tissue strength as an aetiological factor is suggested by racial differences in incidence, the familial tendency for pelvic relaxation and the frequent concurrent finding of hiatal hernia in prolapse patients.<sup>8</sup>

The traditional wisdom regarding the most suitable surgical repair has changed over the last three decades, moving from native tissue regeneration to grafts, to synthetic materials, and back again.<sup>7</sup> In young women, the aim is not only to treat the prolapsed but also conserve the fertility.<sup>9</sup> Uterus preserving surgeries are getting common day by day. They are typically less intrusive, resulting in less problems, a quicker recovery, and minimal blood loss. Some uterus-sparing procedures are sacrospinous ligament hysteropexy, uterosacral ligament hysteropexy, rectus fascia hysteropexy and Manchester repair. The best surgical technique is still to be proven.<sup>5</sup>

Most of the research on abdominal suspension procedures focuses on mesh-based methods, and there is little data regarding the results of autologous rectus fascial slings.

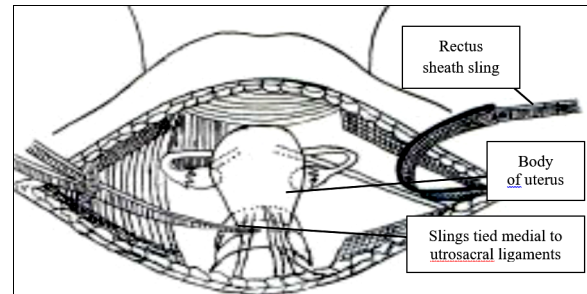
This study aims to evaluate the surgical results, complications, and quality of life in women who have undergone rectus fascial sling surgery for uterovaginal descent. This prospective study will give important information regarding the effectiveness of autologous fascial sling suspension for uterovaginal descent. It will help in creation of evidence-based guidelines and surgical breakthroughs.

## METHODOLOGY

This prospective single-arm interventional study was done simultaneously in two centres: Gynaecology Department, DG Khan Medical College, DG Khan and Nishtar Medical University, Multan. Approval from ethical committee was taken vide ERB No. 252/DME/DGKMC, dated 1 Aug 2023. A total of 50 participants were included, 25 from each centre during one year from 1 Sep 2023 to 1 Sep 2024. Sample size was calculated with formula  $n = [(Z \alpha/2 + Z 1-\beta)^2 \times \sigma^2] / \Delta^2$ , where  $\alpha=0.05$ ,  $1-\beta=0.8$ ,  $Z \alpha/2$  (Z score corresponding to significance level  $\alpha=1.96$ ,  $Z 1-\beta$  (Z score corresponding to power  $1-\beta)=0.842$ ,  $\sigma$ =standard deviation of the outcome variable (13.4%) (standard deviation of surgical duration of uterine conservative surgery of prolapsed)<sup>5</sup> and  $\Delta$  (minimum detectable change from baseline outcome)=3.83%.

Women aged 18–50 years diagnosed with uterovaginal prolapsed were included. Written informed consent was taken. Prolapse was classified in degree according to Beecham classification. Women having pelvic floor surgery previously, history of medical morbidities like diabetes and chronic obstructive lung disease were excluded. Data was collected from patient health records for demographic variables, surgical notes and pelvic floor disability index (PFDI-20) before surgery to check the severity of condition. Demographic data included age, body mass index and parity of women. Detailed history was taken to review the risk factors.

Surgery was performed after written informed consent and preoperative preparation. Through a pfannenstiel incision, the abdomen was opened till rectus sheath. A horizontal incision, about 15 Cm long, was made in the rectus sheath. A 2 Cm broad sleeve was retrieved. Incision was extended laterally up to the rectus muscle's lateral border, exposing internal inguinal rings on both sides. Both strips were clamped separately. The peritoneal cavity was opened. Slings were tied to the cervix posteriorly, medial to the uterosacral ligaments, using a Prolene No. 1 suture. The uterus was pulled upward following sling attachment. The rectus sheath was thoroughly sutured, focusing on the inguinal rings. Abdomen was closed in layers in reverse order. (Figure-1).



**Figure-1: Diagrammatic representation of rectus sheath sling procedure (Rahat-un-Nisa and Parveen Z)<sup>10</sup>**

Postoperative coughing and constipation were avoided. Duration of surgery, mean hospital stay, mean blood loss and postoperative complications were recorded. Primary outcome was improvement in symptoms of uterovaginal prolapse. It was measured as PFDI-20 score. The questions were asked if woman had certain symptoms related to bowel, bladder or pelvic organ prolapse and if there were no symptoms, score was 0 and how much symptoms were bothering her on a response scale from 1 to 4; 1= not bothering at all, 2= somewhat bothering, 3= moderately and 4= quite a bit. Score 21–40 was considered as mild, 41–60 as moderate, 61–80 as severe, and 81–100 as very severe.

Patients were called back again 4 times for follow-up after the surgery, 1<sup>st</sup> at 2<sup>nd</sup> week, 2<sup>nd</sup> at 3 months, 3<sup>rd</sup> follow-up at 6 months, and 4<sup>th</sup> at one year. Surgical outcome was measured postoperatively one year after surgery in terms of PFDI-20. Difference in mean ( $\Delta$  Mean) PFDI-20 score was calculated.  $\Delta$  Mean PFDI-20 score >10 means patients had substantial improvements in their symptoms after surgery.

The data was analysed using SPSS-27. Frequencies and percentages were calculated for categorical variables. Effect modifiers like age, and parity was controlled by stratification and Chi-square test was applied to see their effect on outcome and  $p \leq 0.05$  was taken as statistically significant.

## RESULTS

Fifty patients were included in our research. Mean age was  $27.9 \pm 11.5$  years; 22 (44%) were <30 years, 22 (44%) were 30–40 years and 6 (12%) were aged 41–50 years. Four (8%) women were nulliparous, 30 (60%) were having less than 3 children and 16 (32%) were having 3 or more children. Difference in means ( $\Delta$  Mean PFDI-20) was  $43.4 \pm 9.4$ . Outcome after surgery in terms of PFDI-20 was significantly associated with age ( $p < 0.001$ ). (Table-1).

Twenty (40%) women had no rectocele and 30 (60%) had mild rectocele. Thirty (60%) women had mild cystocele and 20 (40%) had moderate cystocele. Thirteen (26%) women had chronic

cough, 13 (26%) had chronic constipation, 15 (30%) had history of difficult delivery, and 9 (18%) women had history of heavy weight lifting.

Operations were completed in <1 hour in 46 (92%) and >1 hour in 4 (8%) patients. Sixteen (32%) women stayed in hospital for 1–2 days after the surgery and 34 (68%) women stayed for 3–4 days in the hospital. Postoperative complications like fever, urinary tract infection, wound infection and voiding dysfunction were documented. Most common complication was urinary tract infection in 10 (20%) women. (Table-2).

Mean PFDI-20 score before surgery was 55±15.01. It was 11.6±5.61 after surgery. Forty-six (92%) patients reported no symptoms (PFDI score 0–20) and 4 (8%) had mild symptoms (PFDI score 21–40) after surgery. (Table-3).

The cervix was noticed at or above the level of the ischial spines on examination at the time of discharge in all the patients. At one year follow up, 46 (92%) patients were symptom free. Only 4 (8%) were having mild symptoms. Eight patients conceived during the subsequent one year follow-up.

**Table-1: Demographics and their association with postoperative success rate measured as PFDI-20 after surgery (n=50)**

Variables	PFDI-20 score			Total	p
	0–20	21–40	50		
<b>Age Groups</b>					<b>&lt;0.001</b>
<30 years	22	0	22 (44%)		
30–40 years	21	1	22 (44%)		
41–50 years	3	3	6 (12%)		
<b>Parity</b>					<b>0.37</b>
Nulliparous	4	0	4 (8%)		
<3	27	3	30 (60%)		
≥3	15	1	16 (32%)		
<b>Body mass index (Kg/m<sup>2</sup>)</b>					<b>0.34</b>
18.5–24.9	3	1	4 (8%)		
25–29.9	40	0	40 (80%)		
≥30	3	3	6 (12%)		
<b>Prolapse classification</b>					<b>0.19</b>
1 <sup>st</sup> degree	3	1	4 (8%)		
2 <sup>nd</sup> degree	43	3	46 (92%)		

**Table-2: Postoperative complications (n=50)**

Complications	Frequency	Percentage
No complications observed	33	66
Urinary tract infection	10	20
Wound infection	3	6
Fever	2	4
Voiding dysfunction	1	2
Recurrence of prolapse	1	2

**Table-3: Pelvic floor disability index score (PFDI-20) among participants**

PFDI-20	Before surgery	After surgery
Mean Score	55±15.01	11.6±5.61
No Symptoms	0	46 (92%)
Score 21–40 (mild symptoms)	8 (16%)	4 (8%)
Score 41–60 (moderate symptoms)	22 (44%)	0
Score 61–80 (severe symptoms)	19 (38%)	0
Score 81–100 (very severe symptoms)	1 (2%)	0

## DISCUSSION

The technique hasn't been widely reported in the literature. Some studies exist in which rectus sheath slings were utilized for urinary incontinence and uterovaginal prolapse. A study by Rahat-un-Nisa and Zahida Perveen<sup>10</sup> from Abbottabad also revealed comparable outcomes. Some studies showed 95% success rate with abdominal sacrohysteropexy, however, in many cases, women would undergo reoperations within the first year following the treatment.<sup>11–13</sup> Mesh erosion and infection were also reported as complications. We used the posterior approach to attach of the sling, and the advantages of this technique are as following:

- It is a simple approach
- It is less time-consuming, takes ~40 minutes
- It causes minimal blood loss and poses no danger of bladder injury

Patients who have had previous pelvic surgery, such as a Caesarean section or anterior and posterior vaginal repair, anterior approach will be more challenging. In these circumstances, a posterior strategy seems to be suitable. We observed that modified sling method yields favourable outcomes with fewer problems. We have used PFDI-20 score for assessment and this distinguishes our study from previous work.

In our study 44% women were under 30 years of age and 44% women fell in 30–40 years age group. Zulfiqar S *et al*<sup>4</sup> showed that 55% women were under 30 years of age and 45% of women were under 40 years of age in their study. Mean age of our patients was 27.9±11.5 years in our study. Khan N *et al*<sup>14</sup> have reported mean age of their patients as 43.23±8.29 years in their patients, and in Abid S *et al*<sup>15</sup> study, the mean age of the patients was 30±4.12 years showing quite wide range of the patients' age.

Presentation of prolapse, its severity and degree correlate with parity of the women along with other factors. Sixty percent of our patients had less than 3 children while in study done by Zulfiqar S *et al*<sup>4</sup>, 55% women were having less than 3 children. In the study by Khan N *et al*<sup>14</sup> 8.5% were nulliparous, 20% were para 1 while 71.4% were multiparous. In our study, 92% women had 2<sup>nd</sup> degree uterovaginal prolapse while in Khan N *et al*<sup>14</sup> study 51.4% women had 2<sup>nd</sup> degree prolapse, and 45% women had 2<sup>nd</sup> degree prolapsed in study by Zulfiqar S *et al*<sup>4</sup>. Abid S *et al*<sup>15</sup> reported 1<sup>st</sup> degree prolapse in 60% patients while 2<sup>nd</sup> degree prolapse was observed in 40% patients. We observed that 92% of women were asymptomatic at 1 year post-surgery. Other 8% of our patient reported mild symptoms. Success rate was reported as 100% by Abid S *et al*<sup>15</sup>, and 95% by Zulfiqar S *et al*<sup>4</sup>. The difference in success rate may be due to large sample size in our study. Zulfiqar *et al*<sup>4</sup> included only 20 women while Abid S *et al*<sup>15</sup>, included 30 women.

Postoperatively, fever was reported in 4% of women and recurrence was reported in 2% of women. In the study by Zulfiqar *et al*<sup>4</sup>, postoperative fever was reported in 5% and recurrence reported in 5% of patients while postoperative fever and recurrence were noted in 2 (6.67%) and 2 (6.67%) patients respectively in study done by Abid S *et al*<sup>15</sup>.

## CONCLUSION

Rectus sheath sling operation is highly effective, minimally invasive and has fewer complications. These complications can be avoided with judicious use of antibiotics and proper wound care. It is an excellent choice for women wishing to preserve their fertility and for those who cannot endure prolonged anaesthesia. Use of PFDI-20 score can help to understand the true benefits of the procedure in terms of symptomatic improvement and quality of life.

## REFERENCES

1. Choi KH, Hong JY. Management of pelvic organ prolapse. *Korean J Urol* 2014;55(11):693–702.
2. Tso C, Lee W, Austin-Ketch T, Winkler H, Zitkus B. Nonsurgical treatment options for women with pelvic organ prolapse. *Nursing Womens Health* 2018;22(3):228–39.
3. Jokhio AH, Rizvi RM, MacArthur C. Prevalence of pelvic organ prolapse in women, associated factors and impact on quality of life in rural Pakistan: population-based study. *BMC Womens Health* 2020;20(1):82.
4. Zulfiqar S, Karim S, Zulfiqar S. Modified sling procedure for

- treatment of uterovaginal prolapse. *J Shaikh Zayed Medical Coll* 2018;9(3):1467–9.
5. Sarwar I, Khan AB, Khurshid W, Islam A, Bibi S. Management of uterine prolapse: vaginal hysterectomy versus uterus preserving procedures. *J Rehman Med Inst* 2023;9(2):10–3.
6. Rameshkumar R, Kamat L, Tungal S, Moni S. Modified purandare's cervicopexy—a conservative surgery for genital prolapse: a retrospective study. *Int J Reprod Contracept Obstet Gynecol* 2017;6(5):1777–81.
7. Lin FC, Gilleran JP, Powell CR, Atiemo HO. To mesh or not mesh 'apical prolapse', that is the question! *Neurourol Urodyn* 2024;43(7):1626–30.
8. Banu LF. Synthetic sling for genital prolapse in young women. *Int J Gynaecol Obstet* 1997;57(1):57–64.
9. Dietz V, Schraffordt Koops SE, van der Vaart CH. Vaginal surgery for uterine descent; which options do we have? A review of the literature. *Int Urogynecol J Pelvic Floor Dysfunct* 2009;20(3):349–56.
10. Rahat-un-Nisa, Parveen Z. Abdominal suspension operation for utero-vaginal prolapse using autologous facial sling of rectus sheath. *J Ayub Med Coll Abbottabad* 2000;12(3):29–30.
11. Wu JM, Matthews CA, Conover MM, Pate V, Funk MJ. Lifetime risk of stress urinary incontinence or pelvic organ prolapse surgery. *Obstet Gynecol* 2014;123(6):1201–6.
12. Gutman R, Maher C. Uterine-preserving POP surgery. *Int Urogynecol J* 2013;24:1803–13.
13. Roovers JP, van der Vaart CH, van der Bom JG, van Leeuwen JH, Scholten PC, Heintz AP. A randomised controlled trial comparing abdominal and vaginal prolapse surgery: effects on urogenital function. *BJOG* 2004;111(1):50–6.
14. Khan NA, Fayyaz A, Iqbal R, Attaullah H. Abdominal suspension operation for uterovaginal roll strip of rectus sheath as sling. *Pak J Med Health Sci* 2020;14(3):714–5.
15. Abid S, Ashraf A. Effectiveness of autologous rectus sheath sling abdominal procedure for utero-vaginal prolapse. *J Akhtar Saeed Med Dent Coll* 2023;5(3):125–30.

## Address for Correspondence:

**Dr Amna Aziz**, Department of Obstetrics and Gynaecology, Nishtar Medical University, Multan, Pakistan. **Cell:** +92-334-6046432

**Email:** dramna14@gmail.com

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**SN:** Drafting the work

**AA:** Conception and data analysis

**RP:** Final approval of work to be published

**AB:** Interpretation of data and drafting of work

**ARQ:** Data analysis

**SHF:** Data collection and analysis

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