



This is an open access article distributed in accordance with the Creative Commons Attribution (CC BY 4.0) license: <https://creativecommons.org/licenses/by/4.0/> which permits any use, Share — copy and redistribute the material in any medium or format, Adapt — remix, transform, and build upon the material for any purpose, as long as the authors and the original source are properly cited. © The Author(s)

# Uterine conservation surgery by using autologous rectus sheath for patients presenting with uterovaginal prolapse - an experience from Southern Punjab

Arif Siddiq<sup>1</sup>, Shazia Jang Sher<sup>1</sup>, Rabia Nafees<sup>2\*</sup>, Zahra Safdar<sup>3</sup>, Tanvir Jahan<sup>4</sup>, Javed Mirdad Tarar<sup>5</sup>

## ABSTRACT

**Background and Objective:** The use of autologous rectus sheath as a sling to correct uterovaginal prolapse in the younger age group has promising results. As this is an infrequently performed procedure in our country, hence this study aimed to assess the effectiveness of using autologous rectus sheath in young patients presenting with uterovaginal prolapse.

**Methods:** A prospective study was conducted at Bakhtawar Amin Trust Teaching Hospital in Multan, Pakistan in which 21 female patients who underwent uterine conservation surgery by using autologous rectus sheath during a period of 2 years were included. All these patients were followed up at 1 week and 6 months after surgery for any recurrence or other complications.

**Results:** The mean age of the patients was  $47.09 \pm 10.17$  years. According to the pelvic organ prolapse quantification classification, 38.1% of patients had first degree, while 61.9% of patients had second-degree prolapse. After surgical correction, only one patient presented with first-degree uterine prolapse during follow-up while no post-surgical complication was reported in the rest of the patients with success rate of the procedure being 97.5%.

**Conclusion:** Uterine conservation surgery using an autologous rectus sheath as a sling for uterovaginal prolapse is an effective method of surgery and cost-effective technique in women seeking uterine conservation in developing countries.

**Keywords:** Uterovaginal prolapse, autologous rectus sheath, sling procedure, uterine conversation surgery.

Received: 06 December 2021

Revised date: 04 February 2022

Accepted: 01 March 2022

Correspondence to: Rabia Nafees

\*Department of Obstetrics and Gynecology, Post Graduate Medical Institute, Ameer Ud Deen Medical College, Lahore General Hospital, Lahore, Pakistan.

Email: [rabia\\_nafees@hotmail.com](mailto:rabia_nafees@hotmail.com)

Full list of author information is available at the end of the article.

## Introduction

Prevalence of pelvic organ prolapse (POP) among young to middle-aged women in Pakistan and worldwide, shows similar risk factors, morbidity, and complications.<sup>1,2</sup> Previously, the females with uterovaginal prolapse were treated with ring pessary<sup>3,4</sup> or had been treated with traditional surgical treatment which is either vaginal hysterectomy or Manchester repair but both surgical options are complicated requiring prolonged surgical time and higher surgical expertise especially when the female wants to preserve her fertility in a childbearing age.<sup>5</sup>

The evolution in the surgical treatment of uterovaginal prolapse has resulted in the introduction of modern approaches for uterine conservation with minimal risk of complications or reoccurrence.<sup>6</sup>

The modernized trans-abdominal autologous rectus sheath sling is one of the newer techniques which is designed for any prolapse associated with cystocele, enterocele, and urethrocele of varying degrees. This approach is suitable even in patients with recurrence of prolapse after Manchester repair and/or vault prolapse after vaginal hysterectomy.<sup>7</sup> The use of autologous rectus sheath for the preservation of uterine prolapse is a ray of hope for females who want to retain their uterus within or beyond the childbearing age. This surgical procedure also has advantages over a vaginal hysterectomy in old frail patients or patients with previous surgeries having adhesions. Moreover, this surgical technique saves the patient from prolonged anesthesia and has minor reported complications.<sup>7,8</sup>

This study was designed to observe the effectiveness of using an autologous rectus sheath as a sling in uterine conservation

surgery for patients with uterine prolapse in a leading tertiary care Hospital of South Punjab, Pakistan.

## Methods

A prospective study was conducted at the Bakhtawar Amin Trust Teaching Hospital Multan from August 2019 to April 2021 in which 21 female patients who underwent uterine conservation surgery by using autologous rectus sheath sling repair, were included. The Institutional Ethical Review Board of Bakhtawar Amin Trust Teaching Hospital Multan approved the study vide Letter No. number 2212-21/E.C./BAM&DC.

Preoperative assessment of all patients was done by clinical examination and graded according to the POP quantification (-Q classification). Patients with chronic cough, asthma, and chronic constipation were excluded to alleviate aggravating factors that may increase the chance of recurrence. POP-Q system, stage II was taken as organ prolapse which needed to be surgically treated.

All patients were informed, and written consent was obtained explaining the surgical procedure to be performed. Out of 21 operations, 18 were performed under spinal anesthesia and the rest were performed under general anesthesia (GA).

A transverse suprapubic incision of 12 cm was made about 5 cm above the pubic symphysis. The skin and subcutaneous tissue were dissected. Rectus sheath flaps were raised bilaterally. Each flap was about 4 cm wide and 10 cm long. The created rectus flaps of the rectus sheath were pierced through the inguinal ring to enter into the peritoneal cavity and then into the avascular window of the broad ligament. The uterus was then taken out of the true pelvis, a vesicouterine fold of the peritoneum was opened and rectus flaps were buried in the cervix by prolene suture. Vesicouterine peritoneum was stitched back to its original position. The abdomen was closed in reverse order and the skin closed with a subcuticular stitch.

The patients were discharged 48 hours after the surgery with monitoring of complications. The follow-up was done 1 week after discharge and 6 months after the surgery with continuous telephonic and/or outdoor consultations for assessing any complications like urinary incontinence or retention and/or bowel symptoms like constipation. On follow-up visits, clinical examination was done to look for any uterine descends.

## Statistical analysis

The data was entered in Statistical Package for the Social Sciences software version 25.0. Descriptive analysis was done for categorical variables i.e., frequencies and percentages. Numerical data was represented in the form of mean and standard deviation. Pearson chi-square test was used to check the association between the variables. The level of significance was  $\leq 0.05$ .

## Results

A total of 21 patients were admitted for sling procedures using autologous rectus sheath. The mean age of the patients was  $47.09 \pm 10.17$  years ( $p = 0.032$ ) who presented typically with a symptom of "something coming out of the vagina." Most of the patient's age was above 40 years. The mean age of the last childbirth was  $13.57 \pm 8.84$  years. Regarding parity, most of the patients (17, 80.9%) had  $>4$  children ( $p = 0.001$ ). According to socioeconomic status, most of the patients (11, 52.4%) belonged to the middle-class category (Table 1).

Most of the patients had regular menstrual cycles, while 10 (47.6%) females had already developed menopause.

There were 8 (38.1%) patients who had a first degree of prolapse and 13 (61.9%) had a second degree of prolapse according to POP-Q classification. A total of 15 (71.4%) patients reported with urgency and incontinence ( $p = 0.04$ ) while majority of the patients (14, 66.7%) had cystocele (Table 2).

For the sling procedure, spinal anesthesia was given to 19 (90.5%) patients and GA was given to only 2 (9.5%) patients. There were no intraoperative complications like hemorrhage, damage to the surrounding organs and no patient required blood transfusion. All the patients stayed in the hospital for an average of 48 hours post-surgery. The post-operative time period remained uneventful in all 21 patients.

During 6 months follow-up, only one patient presented with first-degree uterine prolapse with the success rate of the procedure being 97.5%.

## Discussion

The treatment of POP particularly in the younger age group is quite challenging. Nowadays, several new techniques are

**Table 1.** Demographic characteristics of patients.

Variables	Mean $\pm$ SD	p-value
Age	47.09 $\pm$ 10.17	0.032*
Duration	25.42 $\pm$ 10.58	
Last childbirth	13.57 $\pm$ 8.84	
Parity	n (%)	
$\leq$ Para 3	04 (19.04)	0.001*
Para 4-5	11 (52.38)	
$\geq$ Para 5	06 (28.57)	
Profession	n (%)	
Working	2 (9.5)	0.144
Housewife	19 (90.5)	
Soci status	n (%)	
Poor	2 (9.5)	0.626
Average	8 (38.1)	
Middle	11 (52.4)	

\*Chi-square test ( $p$ -value  $\leq 0.05$  considered as significant).

**Table 2.** Pre- and Post-operative clinical parameters (n = 21).

Variables	[n (%)]	p-value
Pre-operative urinary tract symptoms		0.043*
Urinary incontinence	15 (71.4)	
Hesitancy	3 (14.3)	
No symptoms	3 (14.3)	
Anesthesia		NA
Spinal	19 (90.5)	
GA	2 (9.5)	
Prolapse		0.191
First degree	8 (38.1)	
Second degree	13 (61.9)	
Post-operative complications		0.913
Cystocele	14 (66.7)	
Rectocele	2 (9.5)	
Both (cystocele & rectocele)	1 (4.8)	
Nil	4 (19)	

NA = Not applicable.

\*Chi-square test ( $p$ -value  $\leq 0.05$  considered as significant).

under investigation to treat POP with uterine conservation. Our study is an attempt to assess the effectiveness of one of such techniques in our part of the world.

POP is one of the most common symptoms that can affect a woman as her age advances.<sup>9</sup> The mean age of our patients was  $47.09 \pm 10.17$  years which is comparable to the results of Chapman et al.<sup>10</sup> that had the same age group. Similarly, Nikjooy et al.<sup>11</sup> showed the mean age of  $43 \pm 10.23$  years, which is also comparable with the current study.

Regarding risk factors, multiparity is considered a major risk factor for the POP. In our study, multiparity especially para 4 or more had a significant correlation with the prolapse ( $p = 0.001$ ). Similar results were found in the study by Kurt et al.<sup>12</sup> In addition to multiple vaginal deliveries, predisposing factors also include excessive straining during childbirth, chronic increased intra-abdominal pressure because of neglected chronic cough, and constipation. Similarly, Gurjar and Kedar<sup>13</sup> explained in their study that POP can be multifactorial however, they mentioned pregnancy and childbirth as the main cause, which weakens the ligament and muscle resulting in sagging out of the uterus from normal anatomical position.

The patients with uterovaginal prolapse also have urinary symptoms as discussed by Pakbaz et al.<sup>14</sup> who reported that 11% of patients complained about urinary symptoms after surgery. While in the present study, urinary incontinence was observed in 71.4%, and hesitancy was seen in 14.3% of the patients before surgery, and only one patient (2.5%) presented with recurrence of symptoms along with uterine descend.

Uterine descend usually presents with anterior vaginal wall prolapse e.g., cystocele, and posterior vaginal wall prolapse e.g., rectocele. Out of total patients, 66.9% presented with cystocele, 9.5% rectocele, 4.8% with both and 4% had no anterior or posterior wall descend which is comparable with the study of Hendrix et al.<sup>15</sup> in which cystocele was more prevalent than rectocele.

The use of spinal anesthesia (90.5%) for pelvic surgery was more cost-effective than GA (9.5%) in terms of short hospital stay and post-operative recovery. These findings are consistence which a study conducted by Wodlin et al.<sup>16</sup>

There are many surgical and non-surgical options for the treatment of uterovaginal prolapse. Non-surgical techniques include placement of vaginal pessary into the vagina to correct the descend but pessary must be removed regularly for cleaning; it can also cause infection and recurrent vaginal discharge.<sup>17,18</sup> Among the surgical procedures, the available options are either minimally invasive (laparoscopic) or open surgery.<sup>19,20</sup> Laparoscopic surgery requires expertise and more resources with increased cost. Open surgical options are generally approached through the vagina but sometimes through the abdominal route. Uterine conserving surgery including uterosacropexy using mesh is being used but it is associated with morbidity, mesh erosion, infection, and tearing of organs.<sup>21</sup>

In the present study, we used uterine conserving surgery by using an autologous rectus sheath. It is a new surgical procedure, which has the benefit of requiring less expertise and resources. Using autologous rectus fascial strips in a sling for uterine conservation is not only simple, but also cheaper

and more effective method of treating uterovaginal prolapse than laparoscopic procedures.<sup>22</sup> Current study showed minimal side effects or complications of this procedure. None of the patients required blood transfusion or had major trauma. These findings correspond to the study of Liang et al.<sup>23</sup> In another study of Mahendru<sup>24</sup> similar results were reported suggesting this procedure to be a simple, cheap and effective technique to correct uterovaginal prolapse in young patients with the advantage of uterine conservation. These results are also analogous to the results of Khan et al.<sup>25</sup> The success rate of this procedure in our study was 97.5%, which is comparable to the results of Nisa and Perveen<sup>26</sup> that showed a 100% success rate.

### Conclusion

Uterine conservation surgery using an autologous rectus sheath as a sling for uterovaginal prolapse is an effective, safe and cost-effective technique in women seeking uterine conservation surgery at a younger age. This technique can be used in low-resource settings offering a short hospital stay and minimal risk of recurrence.

### Limitations of the study

The current study has some limitations. Firstly, it was single centered study, therefore multi-center studies recruiting more patients to validate the findings from this study need to be conducted. Secondly, the sample size was small because the patients who present with POP and fulfilling the criteria of sling procedure are lesser reported in our set-up as compared to the ones who require removal of uterus i.e., vaginal hysterectomy.

### Acknowledgement

The authors would like to acknowledge the staff and doctors of the Gynecology Unit of Bakhtawar Amin Trust Teaching Hospital Multan for their logistic and technical support during the execution of the study.

### List of Abbreviations

GA	General anesthesia
POP	Pelvic organ prolapse
POP-Q	Pelvic organ prolapse quantification

### Conflict of interest

None to declare.

### Grant support and financial disclosure

None to disclose.

### Ethical approval

The Institutional Ethical Review Board of Bakhtawar Amin Trust Teaching Hospital Multan approved the study with ethical approval number 2212-21/E.C./BAM&DC dated March 11, 2021.

### Authors' contribution

**AS:** Conception and design of the study, data collection and drafting of the manuscript.

**SJS:** Acquisition, analysis and interpretation of data.

**RN, ZS & TJ:** Analysis of data, important intellectual input and drafting of the manuscript.

**JMT:** Acquisition of data and important intellectual input.

**ALL AUTHORS:** Approval of the final version of the manuscript to be published.

### Authors' Details

Arif Siddiq<sup>1</sup>, Shazia Jang Sher<sup>1</sup>, Rabia Nafees<sup>2</sup>, Zahra Safdar<sup>3</sup>, Tanvir Jahan<sup>4</sup>, Javed Mirdad Tarar<sup>5</sup>

1. Department of Obstetrics and Gynecology, Bakhtawar Amin Trust Teaching Hospital, Multan, Pakistan
2. Department of Obstetrics and Gynecology, Post Graduate Medical Institute, Ameer ud Deen Medical College, Lahore General Hospital, Lahore, Pakistan
3. Department of Obstetrics and Gynecology, Central Park Medical College/Teaching Hospital, Lahore, Pakistan
4. Department of Obstetrics & Gynecology, Multan Medical and Dental College, Multan, Pakistan
5. Department of Surgery, Bakhtawar Amin Trust Teaching Hospital, Multan, Pakistan

### References

1. 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 Women's Health*. 2020;20(1):1–7. <https://doi.org/10.1186/s12905-020-00934-6>
2. Walker GJ, Gunasekera P. Pelvic organ prolapse and incontinence in developing countries: review of prevalence and risk factors. *Int Urogynecol J*. 2011;22(2):127–35. <https://doi.org/10.1007/s00192-010-1215-0>
3. Manchana T. Ring pessary for all pelvic organ prolapses. *Arch Gynecol Obstet*. 2011;284(2):391–5. <https://doi.org/10.1007/s00404-010-1675-y>
4. Deng M, Ding J, Ai F, Zhu L. Clinical use of ring with support pessary for advanced pelvic organ prolapse and predictors of its short-term successful use. *Menopause*. 2017;24(8):954–8. <https://doi.org/10.1097/GME.0000000000000859>
5. Tolstrup CK, Lose G, Klarskov N. The Manchester procedure versus vaginal hysterectomy in the treatment of uterine prolapse: a review. *Int Urogynecol J*. 2017;28(1):33–40. <https://doi.org/10.1007/s00192-016-3100-y>
6. Peker N, Aydın E, Yavuz M, Bademkiran MH, Ege S, Karaçor T, et al. Factors associated with complications of vaginal hysterectomy in patients with pelvic organ prolapse - a single centre's experience. *Ginekol Pol*. 2019;90(12):692–8. <https://doi.org/10.5603/GP.2019.0118>
7. Coolen AL, Bui BN, Dietz V, Wang R, van Montfoort AP, Mol BW, et al. The treatment of post-hysterectomy vaginal vault prolapse: a systematic review and meta-analysis. *Int Urogynecol J*. 2017;28(12):1767–83. <https://doi.org/10.1007/s00192-017-3493-2>
8. Iqbal S, Arif W, Noreen A. Autologous rectus sheath sling for treatment of uterovaginal prolapse. *Pak J Med Health Sci*. 2013;7(3):707–8. <https://doi.org/10.29309/TPMJ/2021.28.04.5939>
9. Iglesia C, Smithling KR. Pelvic organ prolapse. *Am Fam Physician*. 2017;96(3):179–85. PMID: 28762694.
10. Chapman GC, Sheyn D, Slopnick EA, Hijaz AK, Mahajan ST, Mangel J, et al. Perioperative safety of surgery for

- pelvic organ prolapse in elderly and frail patients. *Obstet Gynecol*. 2020;135(3):599–608. <https://doi.org/10.1097/aog.0000000000003682>
11. Nikjooy A, Mardanloo F, Vasaghi B, Mirzaei R. The frequency and performance quality of pelvic floor muscle exercises for pelvic organ prolapse in parous women. *J Res Rehabil Sci*. 2019;14(2):74–9. <https://doi.org/10.22122/jrrs.v14i2.3176>
  12. Kurt S, Canda MT, Bal M, Tasyurt A. Are there any preventable risk factors for women who had surgery for pelvic organ prolapse and stress urinary incontinence? *Pak J Med Sci*. 2018;34(4):874. <https://doi.org/10.12669/pjms.344.14944>
  13. Gurjar B, Kedar K. Pelvic organ prolapse a concern. *J Evol Med Dent Sci*. 2017;6(14):1080–4. <https://doi.org/10.14260/Jemds/2017/234>
  14. Pakbaz M, Mogren I, Löfgren M. Outcomes of vaginal hysterectomy for uterovaginal prolapse: a population-based, retrospective, cross-sectional study of patient perceptions of results including sexual activity, urinary symptoms, and provided care. *BMC Women's Health*. 2009;9(1):1–10. <https://doi.org/10.1186/1472-6874-9-9>
  15. Hendrix SL, Clark A, Nygaard I, Aragaki A, Barnabei V, McTiernan A. Pelvic organ prolapse in the women's health initiative: gravity and gravidity. *Am J Obstet Gynecol*. 2002;186(6):1160–6. <https://doi.org/10.1067/mob.2002.123819>
  16. Wodlin NB, Nilsson L, Carlsson P, Kjølhed P. Cost-effectiveness of general anesthesia vs spinal anesthesia in fast-track abdominal benign hysterectomy. *Am J Obstet Gynecol*. 2011;205(4):326–33. <https://doi.org/10.1016/j.ajog.2011.05.043>
  17. Wolff B, Williams K, Winkler A, Lind L, Shalom D. Pessary types and discontinuation rates in patients with advanced pelvic organ prolapse. *Int Urogynecol J*. 2017;28(7):993–7. <https://doi.org/10.1007/s00192-016-3228-9>
  18. Yakubu A, Pantii AA, Ladan AA, Burodo AT, Hassan MA, Nasir S. Pelvic organ prolapse managed at Usmanu Danfodiyo University Teaching Hospital, Sokoto: a 10-year review. *Sahel Med J*. 2017;20(1):26. <https://doi.org/10.4103/1118-8561.204335>
  19. Panman CM, Wiegersma M, Kollen BJ, Burger H, Berger MY, Dekker JH. Predictors of unsuccessful pessary fitting in women with prolapse: a cross-sectional study in general practice. *Int Urogynecol J*. 2017;28(2):307–13. <https://doi.org/10.1007/s00192-016-3107-4>
  20. Cutner A, Kearney R, Vashisht A. Laparoscopic uterine sling suspension: a new technique of uterine suspension in women desiring surgical management of uterine prolapse with uterine conservation. *BJOG*. 2007;114(9):1159–62. <https://doi.org/10.1111/j.1471-0528.2007.01416.x>
  21. Price N, Slack A, Jackson SR. Laparoscopic hysteropexy: the initial results of a uterine suspension procedure for uterovaginal prolapse. *BJOG*. 2010;117(1):62–8. <https://doi.org/10.1111/j.1471-0528.2009.02396.x>
  22. Meriwether KV, Balk EM, Antosh DD, Olivera CK, Kim-Fine S, Murphy M, et al. Uterine-preserving surgeries for the repair of pelvic organ prolapse: a systematic review with meta-analysis and clinical practice guidelines. *Int Urogynecol J*. 2019;30(4):505–22. <https://doi.org/10.1007/s00192-019-03876-2>
  23. Liang H, Chen G, Yu H, Sun A, Zhao W, Ling B. Sling suspension: a new technique of treating uterine prolapse. *Zhonghua Yi Xue Za Zhi*. 2014;94(21):1664–6. PMID: 25152294.
  24. Mahendru R. An effective and safe innovation for the management of vault prolapse. *Ann Surg Innov Res*. 2010;4(1):1–5. <https://doi.org/10.1186/1750-1164-4-6>
  25. Khan N, Fayyaz A, Iqbal R. Abdominal suspension operation for uterovaginal roll strip of rectus sheath as sling. *Pak J Med Health Sci*. 2020;14(3):714–5. <https://doi.org/10.1148/radiol.20200642>
  26. Nisa R, Perveen Z. Abdominal suspension operation for uterovaginal prolapse using autologous facial sling of rectus sheath. *J Ayub Med. Coll*. 2000;12(3):29–30. E-ISSN: 1819-2718.