Research Article

Kite-Bridge Native Tissue Repair versus Conventional Anterior Colporrhaphy: Functional and Anatomic Outcomes in Cystocele Patients

Shakila Yasmin[1], Shams-un-Nisa[1], Khiaynat Sarwar Hashmi[2,*]

[1]*Department of Obstetrics and Gynaecology, Bahawal Victoria Hospital/ Quaid-e-Azam Medical College, Bahawalpur, Pakistan.*
[2]*Department of Obstetrics and Gynaecology, Tertiary Care Hospital Nishtar-II, Multan, Pakistan.*

Abstract: Background: A cystocele is the most widespread anterior compartment defect in women with symptomatic pelvic floor disorders (POP) and contributes to a poor quality of life both in physical and psychological aspect. Most of the women who reported with symptomatic pelvic floor disorders have an increased risk of anterior vaginal wall prolapse. Risk Factors seen in these women are multiparity, increasing age, connective tissue frailty, and repetitive vaginal childbirth trauma.

Objective: To compare the anatomical and functional results of a modified Kite Bridge native tissue repair against conventional anterior Colporrhaphy in patients who had a cystocele repair.

Materials and Methods: A prospective and comparative cohort study that was carried out across 18 months in the Department of Obstetrics and Gynaecology, Bahawal Victoria Hospital, Bahawalpur, between 23rd January 2024 and 30th June 2025. Sixty women with symptomatic anterior vaginal wall prolapse were assigned to the Kite-Bridge (n=30) or conventional anterior colporrhaphy (n=30). Outcomes included anatomic success (POP-Q Ba ≤ –1 at 6 months), functional improvement, perioperative complications, dyspareunia, and patient satisfaction.

Result: Both techniques showed marked anatomic success at 6 months. Functional improvement and patient satisfaction were numerically higher in the Kite-Bridge group, with a lesser dyspareunia; however, these differences weren't statistically significant. Operative time was slightly longer in the Kite-Bridge group. Minimal perioperative complications were seen in both groups.

Conclusion: Kite-Bridge native tissue repair was as anatomically successful in women with anterior vaginal wall prolapse as traditional anterior colporrhaphy. However the two techniques differed in the number of functional outcomes of the techniques, dyspareunia rates and patient satisfaction. The Kite-Bridge technique is a procedure that is good and non-aggressive native tissue solution particularly in the sections that the mesh is used sparingly.

Keywords: Anterior vaginal wall prolapse, Native tissue repair, Kite-Bridge technique, Anterior colporrhaphy, Pelvic floor reconstruction, Functional outcomes.

INTRODUCTION

A cystocele is the most widespread anterior compartment defect in women with symptomatic pelvic floor disorders (POP) and contributes to a poor quality of life both in physical and psychological aspects. Most of the women who reported with symptomatic pelvic floor disorders have an increased risk of anterior vaginal wall prolapse. Risk Factors seen in these women are multiparity, increasing age, connective tissue frailty, and repetitive vaginal childbirth trauma [1-3].

The most common surgery used in cystocele repair is anterior colporrhaphy (AC), incorporating the use of attenuated pubocervical fascia in the midline. Although AC has been the management option for past many years but it was found to have a relatively high rate of failure and recurrence [4-7].

Mesh Repair has also been used as another treatment option. This was associated with high complication rates. Subsequent to this, the international regulatory bodies have expressed safety warnings and bans on the use of Transvaginal mesh, which have since prompted a fresh focus on modification and strengthening of native tissue

* Address correspondence to this author at the Department of Obstetrics and Gynaecology, Tertiary Care Hospital Nishtar-II, Multan, Pakistan.
Email: ksarwar061@gmail.com

repair methods [8-13]. Recently, weaving-like techniques of repair or structured suture forms have been formulated in order to provide better short-term anatomical support of the anterior vaginal wall.[13] There are early clinical reports of superior short-term anatomical outcomes of weaving-type repair over conventional anterior colporrhaphy [14].

Data on the outcomes of native tissue repair on cystocele are limited in the South Asian countries especially in Pakistan. Pakistan published literature has mostly covered the prevalence, risk factors, and quality-of-life impact of the pelvic organ prolapse, and very little data has been generated on modified native tissue surgical techniques [15]. The cultural, socioeconomic, and healthcare resource disparities necessitate the need to produce region-specific evidence. Bahawalpur and other Southern Punjab areas have a big population of women who present late with highly developed prolapse of pelvic organs [16].

The resource-constrained environment demands safe, economical, and effective surgical procedures independent of the use of expensive implants. No randomized controlled trial has as yet compared native tissue weaving repair with conventional anterior colporrhaphy in Pakistani population. Thus, this was a prospective comparative cohort study that aimed to compare the anatomical and functional results of a modified Kite Bridge native tissue repair against conventional anterior colporrhaphy in patients who had a cystocele repair.

MATERIALS AND METHODS

This was a prospective and comparative cohort study that was carried in the Department of Obstetrics and Gynaecology, Bahawal Victoria Hospital, Bahawalpur, between 23rd January 2024 and 30th June 2025. The primary aim of the research was the comparison of the results of traditional native-tissue anterior colporrhaphy and a modified version of the Kite-Bridge pubocervical fascial reinforcement method carried out in the unit.

This study was approved by the Ethical Review Committee of Bahawal Victoria Hospital, No. (2352/DME/QAMC Bhawalpur), Dated: 22-01-2024.

This research is viewed as an exploratory comparative research because of the small sample size and the anticipated comparator sample success rate (65%). Because of the above limitations, only large differences (~28% absolute improvement) can be detected by the study. This sample size was selected through an evaluation of the number of cases per year and the possibility of recruiting the sample.

The sample population consisted of women aged 30 to 70 years with symptomatic isolated anterior vaginal wall prolapse (POP-Q stage II-III) that was fit to undergo vaginal surgery and gave a written informed consent. The patients were not included who had multi-compartment prolapse, recurrence after mesh repair, anti-incontinence surgery in the recent past, pregnancy, malignancy of the pelvis, tuberculosis, and severe comorbidity. Patients with significant stress urinary incontinence requiring concomitant anti-incontinence surgery were excluded. Baseline urinary symptoms including urgency and incontinence were assessed during clinical evaluation. Patients with severe chronic conditions associated with increased intra-abdominal pressure, such as advanced chronic obstructive pulmonary disease or chronic debilitating illness, were not included in the study. Patients were recruited by consecutive non-probability sampling to determine the eligible. The technique that was to be used by the attending consultant was grouped and Group A was allocated the technique modified version of Kite-Bridge and Group B was allocated the conventional native tissue repair.

In Group A, patients had the Modified Kite-Bridge Pubocervical Fascial Reinforcement Technique, which is a new procedure that aims at supplementing the anterior wall support using multi-layered reinforcement. The process started by making a kite-shaped opening on the anterior vaginal wall, which runs longitudinally starting just below the bladder neck to the mid-cervical point. The length of this incision was about 5-6 cm, and its greatest width was 3-3.5 cm as it was determined by the principles of native-tissue reinforcement in recent sources on fascia-preserving methods.

One of the main differences with the usual dissection, which contributed to the novelty of this technique, was the control of the mucosal flap. Instead of removing the kite-shaped flap completely off the underlying pubocervical fascia, a light curettage with low-power cautery was performed on the epithelial surface. Low-power cautery was applied superficially to the epithelial surface to create a controlled raw area that facilitates fibrosis and tissue integration during healing, thereby reinforcing the fascial bridge. This method also resulted in rough surface area which was meant to foster controlled fibrosis and tissue integration, as per the known principles of tissue

healing. After this surface preparation, the raw central segment was plicated into structural "bridge" with one or two continuous layers of delayed-absorbable sutures, e.g. 2-0 polyglactin. This bridge was a buttress at the centre and enhanced support under the bladder base.

In order to enhance the repair, the lateral pubocervical fascial leaves were pulled together and anchored over this central bridge with several interrupted sutures forming a multi-layer fascial repair. The operation was completed by the redraping and midline stitching of the vaginal mucosa with continuous absorbable sutures and any surplus was excised as necessary. The postoperative care was delivered in accordance with a standard perioperative protocol, which comprised of antibiotic prophylaxis, 72 hours of urinary catheterization and regular postoperative care.

In group B group, a longitudinal incision was made on the anterior vaginal wall. Lateral dissection of the vaginal epithelium was done to reveal the pubocervical fascia. In the midline plastics of the fascia were done with delayed-absorbable interrupted sutures, which restored medial support. The superfluous mucosa was excised and vaginal epithelium sewn with continuous absorbent suture. A Foley catheter was retained in 72 hours.

The main outcome measures were anatomic success in 6 months, which was POP-Q point Ba ≤ -1 and functional success, which was the disappearance of vaginal bulge symptoms. Secondary outcomes were the time of operation, intraoperative blood loss, complications, dyspareunia, recurrence, and patient satisfaction. The evaluations that were done included postoperative evaluations at 1 week, 6 weeks, 3 months, and 6 months. A senior registrar, who had no knowledge of the surgical method, conducted anatomic examinations, and urinary symptom questionnaires were given at every follow-up.

STATISTICAL ANALYSIS

The information was documented using a structured proforma. The SPSS version 26 was used to perform analysis. Continuous variables were reported as the mean SD and compared with independent t-test or Mann Whitney U as necessary. Fisher exact test was used to compare categorical variables because of small sample. A p-value <0.05 was considered statistically significant. The results were presented as means, standard deviations, and percentages, as appropriate.

All participants had their informed consent written. Confidentiality on patients was upheld.

RESULT

The number of women with anterior vaginal wall prolapse was 60, and 30 patients were in each group. Follow-ups of all patients after 6 months were done. Baseline demographic characteristics including age, parity and body mass index were comparable between the two groups and are presented in Table **1**.

Table 1. Baseline Characteristics of the Study Participants.

Variable	Category	Group 1	Group 2
	30–40	5	4
	41–50	7	6
	51–60	15	13
	61–70	3	7
BMI (kg/m²) (mean)		28	27.5
		Number of samples (n)	
Parity	Para 2	4	
	Para 3	8	
	Para 4	30	
	Para 5	8	
	Para 6	9	
	Para 10	1	

A total of 60 women with anterior vaginal wall prolapse were included, with 30 patients in each group. Follow-up at 6 months was completed for all participants.

The group mainly comprised of multiparous; para 4 (50%), para 6 (15%) and para 3 and para 5 (13.3% each). The parity distribution across groups was not much different (Fig. **1**).

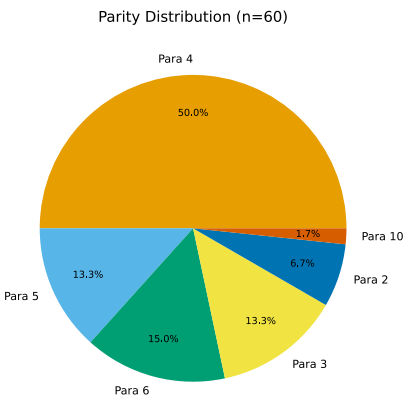

Fig. (1). Parity Distribution n=60.

Primary Outcomes

At 6 months, anatomic achievement (POP-Q Ba ≤ –1) was achieved in 100% (30/30) in the Kite-Bridge group and 96.7% (29/30) of the conventional group (p = 1.000). Group 1 had functional success in 93.3 percent patients and functional success in Group 2 of 83.3 percent (p = 0.27) (Table **2**).

Table 2. Primary Anatomic & Functional Outcomes at 6 Months.

Outcome	Group 1: Kite Bridge (n=30)	Group 2: Conventional (n=30)	p-value
Anatomic Success (Ba ≤ –1)	30/30 (100%)	29/30 (96.7%)	1.000
Functional/Subjective Success	28/30 (93.3%)	25/30 (83.3%)	0.27
Persistent/Residual Symptoms	2/30 (6.7%)	5/30 (16.7%)	0.41

Secondary Outcomes

Mean operative time was observed to be a little bit more in the Kite-Bridge group (42+/ -3 min) than the conventional group (39 +/-2 min) , p < 0.001). In Group 1, one of the patients suffered intraoperative injury to the bladder, but this was repaired during the operation; Group 2 did not experience any intraoperative injury.

The early postoperative complications were few. Section 1 witnessed a patient in the Group 1 that developed a temporary urinary retention and in Section 2 a patient that developed a wound hematoma and each was handled through a conservative approach. Group 1 and Group 2 (6 months) 10% and 23.3% of the patients respectively reported dyspareunia (p = 0.29). Both groups did not have a patient requiring re-intervention because of recurrence.

The patient satisfaction among the patients in the Kite-Bridge group was also high (93.3 vs. 76.7 in the conventional group) (p = 0.09) (Table **3**).

Table 3. Secondary Outcomes.

Secondary Outcome	Group 1: Kite-Bridge	Group 2: Conventional	p-value
Operative Time (mean ± SD)	42 ± 3 min	39 ± 2 min	<0.001 (significant)
Intraoperative Bladder Injury	1/30 (3.3%)	0/30 (0%)	1.000
Early Urinary Retention	1/30 (3.3%)	0/30 (0%)	1.000
Post-operative Hematoma	0/30	1/30 (3.3%)	1.000
Overall Early Complications	2/30 (6.7%)	1/30 (3.3%)	1.000
Dyspareunia at 6 months	3/30 (10%)	7/30 (23.3%)	0.29
De novo SUI	0	1	1.000
Recurrence (Re-intervention)	0/30	0/30	—
Patient Satisfaction (Satisfied/Highly satisfied)	28/30 (93.3%)	23/30 (76.7%)	0.09

DISCUSSION

Native tissue repair remains an important aspect of operative management of vaginal wall prolapse particularly in the post-Mesh period. The anterior colporrhaphy is a widely practised procedure but researches conducted over the ages have cast doubts on the recurrence rates and the postoperative functional symptoms like dyspareunia and thus, procedures are currently undergoing revisions in an attempt to provide more support to the tissues and to better the results of the symptoms without disrupting the anatomy of the vagina [17, 18].

The Kite- Bridge method and the conventional anterior colporrhaphy were identified to be offering good outcome in short-term regarding anatomy in the current comparative study and no significant difference between the anatomic outcomes of the 2 methods in terms of 6 months follow up. Available literature can be used to substantiate the same finding and the hypothesis is that native tissue anterior repair is normally accompanied by high initial anatomic success at least during the first year of postoperative period regardless of the plication procedure implemented [19, 20]. The second sign of the success of native tissue repair in an appropriately chosen patient in the short-term follow-up is that none of the groups had to be re-intervented or re-intervented within the time frame of the research.

Even though the equality of anatomic success existed, the tendency of the practical result and patient satisfaction was in favour of the Kite-Bridge method. More women would have shown improvement in the symptoms of the vaginal bulge and overall satisfaction, and the dyspareu-

nia observed was lower at the follow-up. This is also clinically relevant since previous studies have already determined that anatomic correction does not necessarily have to be accompanied by reduction of the symptoms or a sense of success experienced by the patient [21, 22]. Greater concern with patient-reported outcomes as a measure of success of priority is now used on modern pelvic floor surgery.

Kite- Bridge is a conceptually different approach of traditional anterior colporrhaphy. It is an incision which is kite-shaped and preservation of the vaginal mucosa to create an area of controlled superficial raw area to improve fibrosis and multilayer reinforcement at the midline bridge using both sides of pubocervical fascia. The purpose of this technique is to support the base of the bladder with minimum tissue trauma, vaginal shortening and excess tension. The architecture of the incisions, the little amounts of dissection and bridge-based reinforcement, which were part of the Kite-Bridge technique have not been previously documented in indexed literature, and that is why the given technique can be deemed as new. The Kite-Bridge technique has been used as modification of combination of various native tissue techniques, such as darn of the anterior vaginal wall, lattice or rug-weaving plication and others instead of the standard colporrhaphy [23].

The small increment in time of surgery calculated using Kite-Bridge repair was within the scope of the reported operative procedures involving the anterior native tissue repair, and it did not cause an increase in blood loss and postoperative morbidity [24]. The complications were minimal in the two groups. During operation, it was found out that there was one incidence of the Kite-Bridge group having one incidence of bladder trauma and this was repaired with no sequelae which is consistent with the profile of complications associated with anterior compartment surgery as reported [25].

It has to be mentioned that the subsequent reduced cases of dyspareunia that followed the Kite-Bridge surgery may have been caused by the reduced scarring of the vagina and necessity to avoid the global excision of the mucosa. Past research studies have explained sexual dysfunction post-surgery and vaginal constriction to aggressive resection of anterior vaginal wall and high tension closures [21, 25]. It means that those processes that do not result in the loss of vaginal elasticity and shortening may be given functional values particularly among sexually active women.

Overall, this paper supports the use of the Kite-Bridge technique because it is a safe, effective and functionally favourable native tissue that can be used in the repair of anterior vaginal wall prolapse. It is particularly attracted to the low resource setting because it utilizes the native tissue, no foreign material is being used, and the surgical procedures can be repeated, but it can also be applied to the situation in which the utilization of mesh is contraindicated or it is unacceptable.

LIMITATIONS

The present study has several limitations. One important limitation is the relatively small sample size, which may limit the statistical power to detect small differences between the two surgical techniques. In addition, the follow-up period of six months reflects early postoperative outcomes. Pelvic organ prolapse recurrence may occur later, often within 1–3 years after surgery, and therefore longer follow-up studies are required to evaluate long-term durability of the repair.

Furthermore, this was a single-centre, non-randomized study. Patients were not randomized to the surgical groups, and allocation depended on the operating consultant's clinical decision, which may introduce potential selection bias.

RECOMMENDATIONS

Among the alternative measures that can be taken to replace the conventional anterior colporrhaphy, it might be named Kite-Bridge approach in particular when it comes to women who are sexually active and where the usage of mesh cannot and should not be an option.

Multicentre and follow up will be justified by the larger size of the research in the future to determine the sustainability and functional outcomes.

CONCLUSION

Kite-Bridge native tissue repair demonstrated anatomical outcomes comparable to conventional anterior colporrhaphy, with a trend toward improved functional outcomes and patient satisfaction. Larger studies with longer follow-up are required to confirm the long-term durability of this technique.

ABBREVIATIONS

AC: Anterior colporrhaphy.

IRB: Institutional Review Board.

POP: Pelvic organ prolapse.

POP-Q: Pelvic Organ Prolapse Quantification.

SUI: Stress urinary incontinence.

AUTHORS' CONTRIBUTION

Shakila Yasmin: Conceptualization, Methodology, Data analysis and interpretation, Critical review and revision of the manuscript and Final approval, final proof to be published.

Shams-un-Nisa and **Khiaynat Sarwar Hashmi**: Methodology, Data analysis and interpretation, Writing draft and Critical review and revision of the manuscript.

ACKNOWLEDGEMENTS

Declared none.

ETHICAL DECLARATIONS

Data Availability Statement

Data will be available from the corresponding author upon a reasonable request.

Ethical Approval

This study was approved by the Ethical Review Committee of Bahawal Victoria Hospital, No. (2352/DME/QAMC Bhawalpur), Dated: 22-01-2024.

Consent to Participate

Written informed consent was obtained from all participants.

Consent for Publication

All authors provided consent for the publication.

Conflict of Interest

Declared none.

Competing Interest/Funding

Declared none.

Use of AI-Assisted Technologies

Language editing was performed by using QuillBot software. The authors retain full responsibility for all intellectual content, interpretation and conclusions.

REFERENCES

[1] Barber MD, Maher C. Epidemiology and outcome assessment of pelvic organ prolapse. Int Urogynecol J 2013; 24(11): 1783-90. Doi: 10.1007/s00192-013-2169-9. PMID: 24142054.

[2] Hunskaar S, Arnold EP, Burgio KL, Diokno AC, Herzog AR, Mallett VT. Epidemiology and natural history of urinary incontinence. Int Urogynecol J Pelvic Floor Dysfunct 2000; 11: 301-19. http://dx.doi.org/10.1007/s001920070021

[3] 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. Doi: 10.1067/mob.2002.123819. PMID: 12066091.

[4] Weber AM, Walters MD, Piedmonte MR, Ballard LA. Anterior colporrhaphy: A randomized trial of three surgical techniques. Am J Obstet Gynecol 2001; 185(6): 1299-304; discussion 1304-6. Doi: 10.1067/mob.2001.119081. PMID: 11744900.

[5] Cai Y, Su K, Bian A. Comparing combined paravaginal repair with pubocervical fascia plication versus standard anterior colporrhaphy for the treatment of stress urinary incontinence in women with anterior vaginal wall prolapse: A randomised controlled trial. Arch Gynecol Obstet 2025; 311(1): 163-73. Doi: 10.1007/s00404-024-07864-w. Epub 2024 Dec 29. PMID: 39733374.

[6] Olsen AL, Smith VJ, Bergstrom JO, Colling JC, Clark AL. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. Obstet Gynecol 1997; 89(4): 501-6. Doi: 10.1016/S0029-7844(97)00058-6. PMID: 9083302.

[7] Maher C, Feiner B, Baessler K, Schmid C. Surgical management of pelvic organ prolapse in women. Cochrane Database Syst Rev 2013; (4): CD004014. Doi: 10.1002/14651858.CD004014.pub5. Update in: Cochrane Database Syst Rev. 2016 Nov 30;11:CD004014. Doi: 10.1002/14651858.CD004014.pub6. PMID: 23633316.

[8] Iglesia CB, Smithling KR. Pelvic organ prolapse. Am Fam Physician 2017; 96(3): 179-85. PMID: 28762694.

[9] Altman D, Väyrynen T, Engh ME, Axelsen S, Falconer C; Nordic Transvaginal Mesh Group. Anterior colporrhaphy versus transvaginal mesh for pelvic-organ prolapse. N Engl J Med 2011; 364(19): 1826-36. Doi: 10.1056/NEJMoa1009521.

[10] Feiner B, Maher C. Vaginal mesh contraction: definition, clinical presentation, and management. Obstet Gynecol 2010; 115(2 Pt 1): 325-30. Doi: 10.1097/AOG.0b013e3181cbca4d. PMID: 20093906.

[11] Center for Devices and Radiological Health. Urogynecologic surgical mesh: Update on the safety and effectiveness of transvaginal placement for pelvic organ prolapse. U.S.: FDA Safety Communication 2019.

[12] Maher C, Feiner B, Baessler K, Christmann-Schmid C, Haya N, Marjoribanks J. Transvaginal mesh or grafts compared with native tissue repair for vaginal prolapse. Cochrane Database Syst Rev 2016; 2(2): CD012079. Doi: 10.1002/14651858.CD012079.

[13] Fındık RB, Doğanay M, Aksakal OS, Çoşkun ZY, Karakaya J. A novel suturing technique for natural tissue repair in cystocele treatment. BMC Womens Health 2024; 24(1): 474. Doi:10.1186/s12905-024-03317-3

[14] Pirtea M, Balint O, Secoșan C, Costăchescu D, Dabîca A, Navolan D. Quality of life assessment after pelvic prolapse surgery with and without mesh: A literature review. J Clin Med 2025; 14(4): 1325. Doi:10.3390/jcm14041325.

[15] 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. Doi:10.1186/s12905-020-00934-6

[16] Syed KK, Javed Z. Exploring the sociodemographic, clinical, and psychosocial characteristics of women seeking outpatient rehabilitation for pelvic floor dysfunction: A cross-sectional study. J Health Rehabil Res 2024; 4(1): 16-22. Doi:10.61919/jhrr.v2i1.18

[17] Capobianco G, Sechi I, Muresu N, Saderi L, Piana A, Farina M, *et al.* Native tissue repair (NTR) versus transvaginal mesh interventions for the treatment of anterior vaginal prolapse: Systematic review and meta-analysis. Maturitas 2022; 165: 104-12. doi: 10.1016/j.maturitas.2022.07.013. Epub 2022 Aug 3. PMID: 35963180.

[18] Iyer S, Seitz M, Tran A, Scalabrin Reis R, Botros C, Lozo S, *et al.* Anterior colporrhaphy with and without dermal allograft: A randomized control trial with long-term follow-up. Female Pelvic Med Reconstr Surg 2019; 25(3): 206-12. doi: 10.1097/SPV.0000000000000524. PMID: 29300253.

[19] Lee U, Wolff EM, Kobashi KC. Native tissue repairs in anterior vaginal prolapse surgery: Examining definitions of surgical success in the mesh era. Curr Opin Urol 2012; 22(4): 265-70. doi: 10.1097/MOU.0b013e32835459bb. PMID: 22617056.

[20] Oversand SH, Staff AC, Spydslaug AE, Svenningsen R, Borstad E. Long-term follow-up after native tissue repair for pelvic organ prolapse. Int Urogynecol J 2014; 25(1): 81-9. doi: 10.1007/s00192-013-2166-z. Epub 2013 Jul 6. PMID: 23832266.

[21] Barber MD, Brubaker L, Nygaard I, Wheeler TL 2nd, Schaffer J, Chen Z, *et al.* Defining success after surgery for pelvic organ prolapse. Obstet Gynecol 2009; 114(3): 600-9. doi: 10.1097/AOG.0b013e3181b2b1ae. PMID: 19701041; PMCID: PMC2904469.

[22] Wolters JP, King AB, Rapp DE. Satisfaction in patients undergoing concurrent pelvic floor surgery for stress urinary incontinence and pelvic organ prolapse. Female Pelvic Med Reconstr Surg 2014; 20(1): 23-6. doi: 10.1097/SPV.0000000000000051. PMID: 24368484

[23] Köse O, Sağlam HS, Kumsar Ş, Budak S, Adsan O. A novel technique for anterior vaginal wall prolapse repair: Anterior vaginal wall darn. Scientific World J 2013; 2013: 198542.

[24] Rudnicki M, Laurikainen E, Pogosean R, Kinne I, Jakobsson U, Teleman P. A 3-year follow-up after anterior colporrhaphy compared with collagen-coated transvaginal mesh for anterior vaginal wall prolapse: A randomised controlled trial. BJOG 2016; 123(1): 136-42. doi: 10.1111/1471-0528.13628. Epub 2015 Sep 30. PMID: 26420345.

[25] Brubaker L, Nygaard I, Richter HE, Visco A, Weber AM, Cundiff GW, *et al.* Two-year outcomes after sacrocolpopexy with and without burch to prevent stress urinary incontinence. Obstet Gynecol 2008; 112(1): 49-55. doi: 10.1097/AOG.0b013e3181778d2a.

Received: January 08, 2026 Revised: June 06, 2026 Accepted: June 11, 2026