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A Comparative Analysis of Conventional Anterior Colporrhaphy with Native Tissue Repair for Pelvic Organ Prolapse

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ABSTRACT

Objective: To compare outcomes between traditional anterior colporrhaphy (AC) and Native Trapezoid Repair (NTR) for anterior compartment pelvic organ prolapse (POP), focusing on anatomical correction, recurrence, perioperative outcomes, and functional and anatomical outcome. **Methods:** Key outcome measures included recurrence at 12 months, POP-Q (point Ba), and patient satisfaction. **Results:** The study has suggested lower recurrence and higher patient satisfaction with NTR (99%) versus AC (60%). In this study, recurrence for AC was 15% as compared to 5% for NTR; Regarding post op functional outcome symptoms were significantly improved in NTR as compared to AC regarding voiding difficulty and vaginal buldge. In anatomical outcome, result were highly significant regarding POP points Aa and Ba in NTR than in AC ($P<0.05$). Recent literature increasingly supports tailored native-tissue techniques and highlights variability in outcomes across techniques and follow-up period. **Conclusions:** NTR demonstrates promising anatomical durability and better patient-reported outcomes in a Shalimar Hospital; however, RCT are recommended to further elaborate the findings.

INTRODUCTION

Pelvic organ prolapse results from loss of support for the pelvic organs leading to prolapse of one or more of these organs into the vagina. Pelvic organ prolapse (POP) is a prevalent disorder in females, with frequency of 30-40% throughout all stages of prolapse(1).Urinary symptoms, bowel problems, or sexual dysfunctions may also be present, which might affect quality of life. The treatment of prolapse can be done conservatively (perineal rehabilitation or the use of pessaries) or surgically (usually 80-90% via vaginal route)(2).Surgical techniques to address POP include anterior and posterior colporrhaphy, as well as native tissue trapezoidal repair (3).

The most frequent vaginal segment to prolapse is the anterior vaginal compartment, and the most common pelvic organ prolapse (POP) surgery, either alone or in conjunction with other vaginal surgeries, is anterior repair (4). Additionally, the biggest likelihood of long-term surgical failure is linked to anterior vaginal prolapse. Generally speaking, natural tissue healing following anterior vaginal prolapse surgery has success rates between 30% to 70% (5).

The goal of anterior colporrhaphy(6) is to correct abnormalities in the anterior vaginal wall, usually urethrocele or cystocele. To restore normal anatomy, the vaginal wall is plicated, and the supporting tissue is reattached. Even though anterior colporrhaphy is a simple and often done treatment, there may be a larger chance of recurrence, especially if there is a lot of tissue laxity (7).Repairing deformities in the posterior vaginal wall, usually rectocele or enterocele, is the goal of posterior colporrhaphy. To strengthen pelvic floor support, the rectovaginal fascia is reapproximated and superfluous tissue is removed. Despite being a successful treatment for posterior compartment prolapse, posterior colporrhaphy may include a postoperative risk of dyspareunia and bowel problems (8).

A procedure called native tissue trapezoidal repair, uses the patient's tissue to strengthen pelvic support while including elements of anterior and posterior restoration. To strengthen weak pelvic floor components, a trapezoidal-shaped graft made from the patient's fascia is created.(9) The benefit of native tissue trapezoidal healing is that it provides long-lasting support without the need for artificial materials, which may lower the chance of erosion or extrusion. In addition to economic benefits, this

native tissue regeneration method decreased the chance of prolapse recurrence (10).

Data on comparing anterior and posterior colporrhaphy with native tissue trapezoidal repair for treating anterior and apical prolapses in the same setting is currently lacking (7). Comparable effectiveness has been demonstrated in studies comparing anterior and posterior colporrhaphy with native tissue trapezoidal repair in reestablishing pelvic organ support and reducing symptoms of POP(11). When compared to conventional colporrhaphy procedures, native tissue trapezoidal correction may provide better anatomical results, especially when multi-compartment involvement or severe prolapse is present(4) .Although some issues such as bowel dysfunction, dyspareunia, or recurrence, may be linked to anterior and posterior colporrhaphy, native tissue trapezoidal repair has been shown to have better complication profiles with decreased rates of mesh-related complications (12).

Aim of study

The purpose of this study is to determine if native tissue repair for anterior vaginal prolapse is more effective than an anterior Colporrhaphy based on anatomical results three months after surgery.

METHODOLOGY:

The study was conducted at Shalimar Hospital, a tertiary Urogynecology referral centre, from January 2023 to September 2025. In this observational study, convenience sampling was used to select participants from two groups: those opting for Anterior Colporrhaphy (AC) and those selecting Native Tissue Repair (NTR) for Pelvic Organ Prolapse. Patients were free to select their preferred treatment option. Participants were recruited based on availability and willingness to participate in the study.

The study population consists of adult women diagnosed with anterior vaginal wall prolapse (AVWP) who are referred to the tertiary urogynecology referral centre at Shalimar Hospital with inclusion criteria of (a) Adult women aged 20 years or older, (b) diagnosed with cystocele grade II or more, based on the Pelvic Organ Prolapse Quantification (POP-Q) classification system. (c)No plans for pregnancy within the next 12 months, (d) Give willingness for informed consent to participate in the study. The exclusion criteria were (a)Patients requiring anti-incontinence procedures other than suburethral plication. (b)Patients with a history of previous vaginal surgery. (c) Immunocompromised patients or those with uncontrolled diabetes. (d)Patients with symptoms primarily attributed to chronic urinary tract infections.

Preoperative Assessment

Preoperative Assessment was done by (1) detailed history taking with a focus on prolapse, sexual dysfunction, and urinary symptoms; (2) General, abdominal, and pelvic examination that also includes bimanual examination, supine cough stress test, and POP-Q staging. Patients were assigned to a POP-Q stage: (0) means no prolapse; (1) is the most distal point of prolapse is more than 1 cm above the hymen; (2) the most distal point is about 1 cm or less proximal or distal to the hymen; (3) means that the most distal point is more than 1 cm below the hymen and protrudes not more than 2 cm less than the total length of vagina; (4) Lower genital tract is completely everted.

To evaluate the strength of pelvic floor muscle (PFMS), the patient was instructed to maximally contract her muscles around two of the examiner's fingers, assessed as: (1) absent, (2) weak, (3) moderate contractility but without pelvic floor elevation, and (4) good with strong contractility and pelvic floor elevation

Postoperative Assessment

Patients were provided postoperative advice on medicines, contraceptive usage in the follow-up period, return of work activities, sexual intercourse, as well as exercises for pelvic floor muscles. Follow-up appointments were planned at 6 weeks, 4 months, 6 months, and 1 year after surgery.

Follow-up: The normal postoperative follow-up cards were utilized, along with the Prolapse Quality of Life Questionnaire (13), which includes urine symptoms (such as urge or stress incontinence or difficulties in voiding), vaginal bulge, and sexual function (activity and dyspareunia).The POP-Q system re-evaluated patients and asked about changes in symptomatology as well as any adverse effects or complications. Symptom changes were classified as resolved, persistent or new onset from the last visit. Surgical outcome was defined as ''optimal'' which means Aa, Ba, Ap, and Bb points were at stage 0 (-3 cm), as ''satisfactory'' if these points were at stage 1 (-2 cm), or unsatisfactory when these were at stage 2 (-2 cm) or more. The patient was labelled as cured when optimal or adequate anatomical scores were obtained by the conclusion of the follow-up time; otherwise, it was declared a failure (14). Comparisons were made based on differences between preoperative and postoperative follow-up findings.

Sample size and Statistics

Using the Minitab Statistical Computer software, Version 12, the sample size was calculated to be at least 20 patients in each arm which includes the lifetime risk of surgical intervention for prolapse which is 11%(5) as an alternative probability and 44% incidence of the perimenopausal prolapse (15) as a hypothetical probability, giving the study a power of 85.02%. The Statistical Program for Social Science (SPSS) was used that includes Chi-square and Fisher exact tests for qualitative data, the Student's t test for quantitative parametric data, and the likelihood ratio for quantitative non-parametric data, to analyse the data. The variables were shown as percentages, means, and standard deviations. Results were considered significant when $P < 0.05$, highly significant when $P < 0.001$, and insignificant when $P > 0.05$.

RESULTS

The study found no significant differences in the demographics, precipitating events, and presenting symptoms in both groups. Fifty patients were initially enrolled, five declined to consent, and forty-five agreed to participate. One patient was diagnosed with diabetes during the evaluation phase and was excluded prior to surgery. Four patients—three from group I(AC) and one from group II (NTR) were excluded for not adhering to the

follow-up schedule because of their remote geographic location.

Table 1

Clinical Characters of Both Group

Variable	Group 1 (AC)	Group 2 (NTR)	Statistical test	P test
Demographic Factors	Mean value ±SD		T-test	
Age	49.5 ±5.9	52.3 ±6.9	1.4	>0.05
Parity	6 ±2.2	6 ±2	0.2	
BMI	31.7 ± 6.6	33.4 ± 7.01	0.8	
Precipitating Factor	N (%)		ChiSquare/Fisher exact (F)	
Smoking	1 (5)	3 (15)	0.61 (F)	>0.05
Menopause	2 (10)	3 (15)	1.0 (F)	

Table 2

Preop Clinical Criteria in Both Group

Variable	Group 1 (AC)	Group 2 (NTR)	Statistical test	P test
PFMS	N (%)		Likelihood ratio	
Absent	1 (5)	2 (10)	0.59	>0.05
Weak	12 (60)	10 (50)		
Moderate	7 (35)	8 (16)		
Good	0	0		

Table 3

Preop Clinical Criteria in Both Group

Variable	Group 1 (AC)	Group 2 (NTR)	Statistical test	P test
POP-Q stage	N (%)		Chi square	
0	0	0		>0.05
1	0	0		
2	12 (60)	11(55)		
3	8 (40)	9 (45)		
4	0	0		

Regional anaesthesia was administered to most patients. Regarding surgical time, blood loss, surgical complications, and hospital stay, there was no statistically significant difference between the two groups. Both groups experienced lower urinary tract infections. While evaluating postoperative functional outcomes, symptoms had significantly improved postoperatively in each group. These symptom changes were more significant in relation to improvement in voiding difficulty and vaginal bulge in group II (NTR) as compared to group I (AC) (P <0.05); however, regarding urinary incontinence, there was no statistical significance between the two groups (P >0.05) (Table 4).

Table 4

Comparison between Postoperative Data in Both Groups

Variable	Group 1 (AC)	Group 2 (NTR)	Likelihood ratio	P value
SYMPTOMS	N (%)			
Stress Incontinence	10	10	6.63	>0.05
Resolved	6(60)	7 (70)		
Persistent	4 (40)	3 (30)		
Voiding difficulty	15	15	5.08	<0.05=S
Resolved	9 (60)	14 (93)		
Persistent	6 (40)	1 (7)		
Vaginal bulge/pressure	19	18	4.77	<0.05=S
Resolved	12 (63)	18 (100)		
Persistent	7 (37)	0		

When anatomical changes were compared preoperatively and postoperatively in the both group, both groups have showed at the end of the follow-up period a significant improvement in the assessments of POP-Q points (Aa, Ba, Ap, Gh, Pb); however, the results were highly significant, especially to points Aa and Ba in group II (NTR) than in group I (AC) (P<0.05) (Table 5).

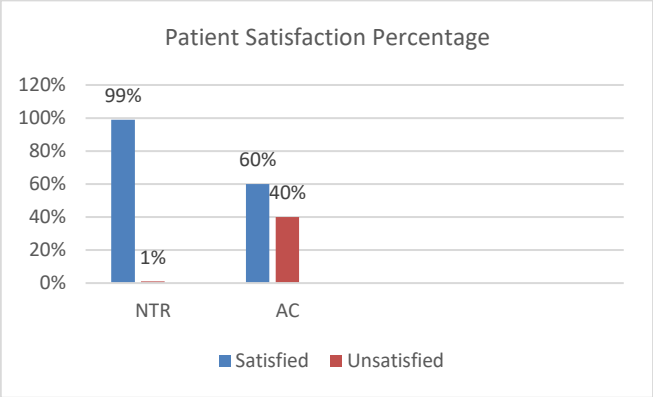
Table 5

Comparison between Anatomical Outcomes in Both Group

Variable	Group 1 (AC)	Group2 (NTR)	Statistical test	P test
POP-Q staging outcome	N (%)		Likelihood ratio	
Optimal	7 (35)	16 (80)	9.22	<0.05=S
Satisfactory	7 (35)	3(15)		
Unsatisfactory	6(30)	1(5)		
Recurrence	3 (15)	1(5)	1.16	>0.05

Variable	Group 1(AC) Mean ± SD	Group 2 (NTR)	Statistical test	P test
POP-Q Point	Postoperative	Postoperative	T	
Aa	-2.05 ± 0.9	-2.8 ± 0.6 3	3	<0.05=S
Bb	-1.8 ± 1.4	-2.7 ± 0.7	2.7	

Figure 1



DISCUSSION

Pelvic organ prolapse is a serious issue for patients that negatively affects the quality of life; to define the severity of prolapse, it should include an objective assessment (16).The POP-Q staging system's introduction helps to describe and evaluate pelvic support disorders and to measure genital prolapse objectively. Numerous procedures have been suggested; however, there are few long-term follow-up data on prolapse surgery, and regardless of the method, the recurrence percentage of vaginal wall prolapse can vary from 25 to 37%(17). Numerous new techniques, such as Native tissue trapezoid repair, have been employed to enhance therapeutic results. Among these attempts, the clinical effectiveness of anterior repair and native tissue repair was compared in this study.(9).

The demographic data of both groups have shown no statistical differences in the mean age, BMI, and parity in both groups. The mean age of group I (AC) was 49 ± 5.9 years and for group II (NTR) 52.3 ± 6.9 years which was similar to another study in which prevalence of prolapse was 6.6% in the 20–29 age group, approximately 44% in the premenopausal age group, and 55.6% in the 50–59 age group; the overall prevalence was 30.8%(18). shown

In another study, parity was the most significantly related

variable to uterovaginal prolapse; the risk also increased with each child(19). Regarding the relationship between obesity, smoking, and prolapse, some research found a strong correlation between genital prolapse and BMI. (20). Most of the prolapse surgeries were carried out in post-menopausal women,(21), which are similar to our study findings.The same was reported by the American College of Obstetricians and Gynaecologists (ACOG) that prolapse was associated with menopausal estrogen deficiency, and hormone replacement therapy (HRT) might slow its progress(22). One of the limitation of our study was that it was intended to evaluate surgical results rather than identify risk factors for vaginal prolapse, and there is little data in the literature regarding how risk factors like occupation and chronic diseases affect POP-Q staging.(23).

CONCLUSION

In this study, Native tissue Trapezoid Repair demonstrates favourable short- to mid-term anatomical outcomes and higher patient-reported satisfaction compared with traditional anterior colporrhaphy. Decision-making should be individualized, considering apical support, patient preferences and surgeon experience. Well-designed randomized trials with standardized outcomes and longer follow-up are necessary to confirm these findings.

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