

Sacrohysteropexy Technique Variations: Description and Outcomes; a Systematic Review (#579)



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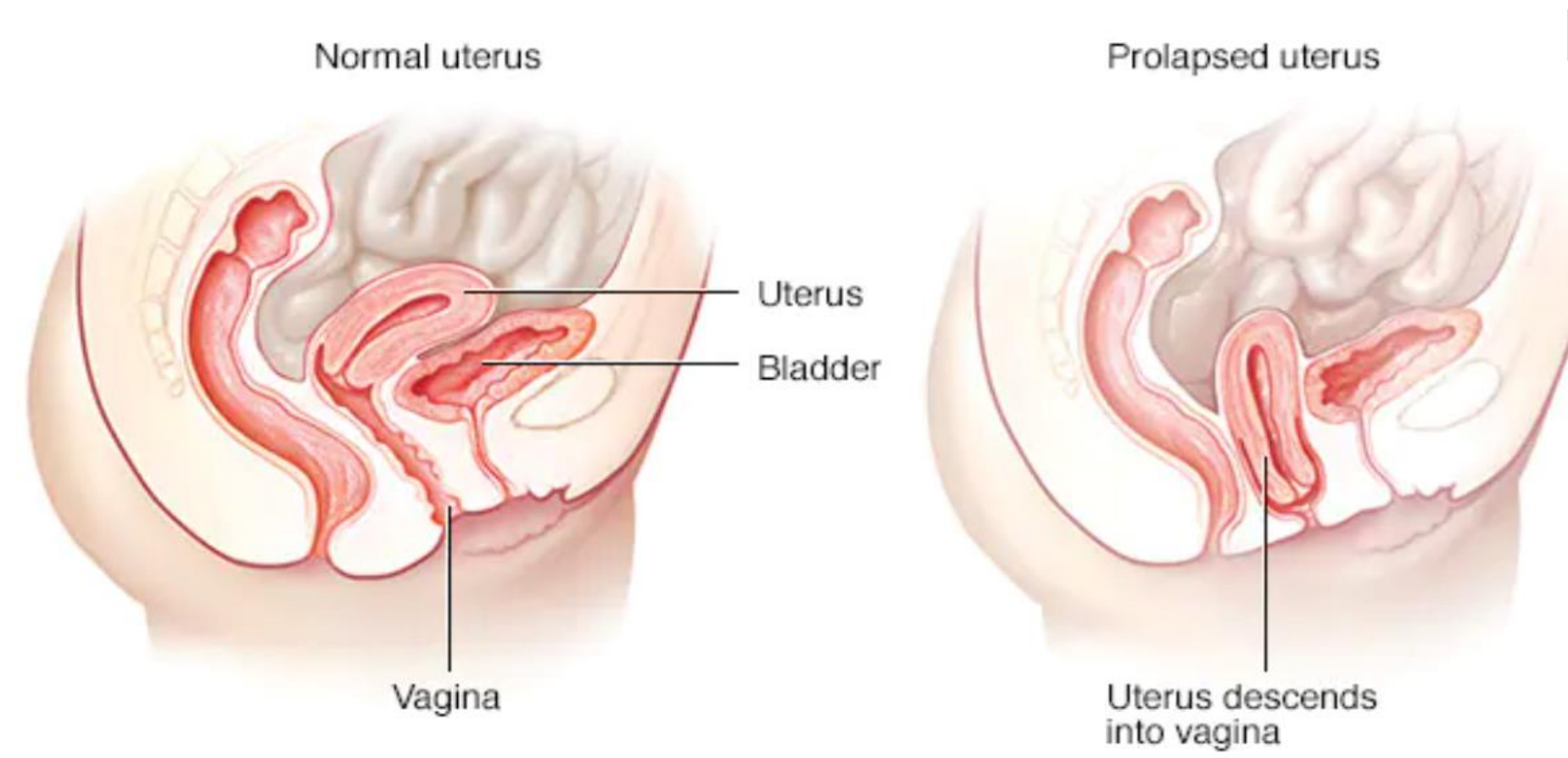
Introduction

Enhancing Quality of Life through Sacrohysteropexy (SHP)

SHP is an innovative procedure involving fixing the uterus to the sacrum using mesh or other supportive materials. By establishing enduring support, SHP offers sustained protection against uterine prolapse, thereby improving the quality of life for women. The advantages also encompasses alleviating symptoms like vaginal bulging and pelvic pressure.

Minimally Invasive Advancements

SHP is a minimally invasive surgery that can be performed using laparotomy, laparoscopy or robotic techniques. The surgery is typically well-tolerated by patient with low rates of complications and quick recovery times (1).



SHP is proven effective for uterine prolapse, with high success rates and patient satisfaction. However, the lack of standardized technique undermines result comparability and patient approach.

Mesh Configuration

While diverse mesh setups, ranging from single to double to y-shaped, flat, and three-dimensional are employed, a thorough understanding of their distinct effects remains uncertain.

Research Aims

1. Examine diverse technique and mesh configurations in SHP
2. Analyze outcomes among surgical techniques

Hypothesis

Our hypothesis proposes that the mesh configuration type has an impact on both the objective and subjective pelvic organ prolapse (POP) outcomes

Methods

- **Database search:** we systematically searched major electronic databases (MEDLINE, Embase, and CENTRAL) from 2005 to 2022, limited to English and French
- **Inclusion Criteria:** We included randomized controlled trials (RCTs), observational comparative studies, and case series with accessible full text. These studies focused on women with uterine POP who underwent SHP in at least one study arm.
- **Independent Screening:** Two researchers independently screened for inclusion
- **Data extraction:** We extracted data on surgical aspects, including technique details (mesh type, surgical route, mesh configuration, dissection extent, sutures/tacks type and number, retroperitonealization)
- **Outcomes:** We analyzed objective and subjective success, surgical parameters, and complications.
- **Study quality:** was assessed based on Cochrane Risk of Bias for RCTs, Newcastle-Ottawa Scale for comparative observational studies, and NIH Quality Assessment Tool for case series.
- **Association Testing:** We conducted logistic regression to assess the relationship between mesh configuration types and binary outcomes. Mesh configuration categories were defined as:
 - Posterior attachment only, or
 - Anterior attachment only, or
 - Anterior and posterior attachment
- **Study Inclusions:** Studies with combinations or variable attachments were excluded from technique comparison but included in overall results.
- **Accounting for Clustering:** We employed the Generalized Estimating Equation (GEE) approach to address clustering arising from diverse studies (2).
- **Outcome Analysis:** For each outcome's rates and 95% confidence intervals were computed using logit model estimates. For rare event outcomes (organ injury rates), we utilized both crude rates and the Firth logistic model.

Results

Sacrohysteropexy Technique Variations

	Results
Surgical approach	
Laparoscopy	32 (61.5)
Robotic	5 (9.6)
Laparotomy	7 (13.5)
Vaginally-assisted laparoscopy	4 (7.7)
More than one approach included in same study	4 (7.7)
Mesh type	
Polypropylene	41 (78.8)
Mersilene tape	3 (5.8)
Other	4 (7.7)
More than one approach included in same study	2 (3.8)
Not specified	2 (3.8)
Mesh configuration	
Posterior attachment only	12 (23.1)
Anterior attachment only	13 (25.0)
Anterior and posterior attachment	22 (42.3)
Consistent anterior attachment and variable posterior attachment (case-dependent)	1 (1.9)
Unclear attachment	1 (1.9)
More than one different configuration included in same study	3 (5.8)
Peritoneal closure over mesh	
No	2 (3.8)
Yes	46 (88.5)
Changed technique during conduct of study (included cases with and without)	1 (1.9)
Not specified	3 (5.8)

Outcomes of Different Sacrohysteropexy Techniques

	All techniques combined	Posterior mesh attachment only	Anterior mesh attachment only	Anterior and posterior mesh attachment	P value
Objective success					
Overall	72.6 [58.5; 86.7]	92.4 [74.3; 100]	81.9 [62.7; 100]	60.0 [40.9; 78.9]	0.124
Apical	88.4 [80.4; 96.4]	90.4 [70.7; 100]	87.9 [73.7; 100]	87.9 [78.8; 100]	0.975
Anterior	75.0 [66.5; 83.4]	75.7 [49.1; 100]	72.4 [49.1; 95.7]	74.7 [64.7; 84.7]	0.979
Posterior	91.1 [86.5; 95.8]	No studies	90.3 [77.8; 100]	91.4 [86.5; 96.3]	NA
Subjective success	88.2 [85.0; 91.3]	85.4 [78.1; 92.8]	88.8 [81.5; 96.5]	90.3 [86.7; 94.0]	0.491
Reoperation					
For POP recurrence	5.0 [0.0; 9.8]	6.2 [1.5; 11.0]	6.0 [2.8; 9.1]	3.8 [1.7; 5.9]	0.425
For mesh exposure	2.1 [0.1; 3.7]	3.0 [0.0; 7.1]	0	2.2 [0.3; 4.1]	0.700
Organ injury					
Bladder	0.5 [0.2; 1.0]	0.3 [0.0; 5.1]	0.2 [0.0; 0.8]	1.5 [0.8; 2.6]	0.029
Bowel	0.8 [0.4; 1.3]	1.2 [0.3; 4.1]	0.8 [0.3; 2.2]	0.7 [0.3; 1.7]	0.816
Ureter	0.3 [0.1; 1.1]	0.4 [0.0; 6.7]	0.2 [0.0; 3.1]	0.3 [0.0; 5.3]	0.929

- **Age:** the average age varied from 30-69 years old between studies (range 19-91).
- **Follow-up:** the median follow-up was 1.6 years (range 0-10 years).

1985 studies
(4 590 SHP)

5 RCTs

22 comparative studies

25 case series

- **Suture and Tacks:** out of 20 studies, the number of sutures or tacks for sacral mesh attachment ranged from 1 to 5.
- **Sacral Attachments Techniques:** Among 29 studies (55,8%), permanent sutures were used for sacral attachment, while 15 studies (28,8%) used tacks. Six studies (11,5%) used combinations of tacks/sutures, non specified or delayed absorbable sutures, and 2 studies (3,8%) remained unspecified.
- **Vaginal Mesh Attachment:** in 26 studies (505), the precise number or range of sutures for vaginal mesh attachment was provided, varying from 1 to 14.

Interpretation & Conclusion

Technique Variations: Our study identified a wide range of technique variations within the literature, resulting in notable heterogeneity. This diversity complicates the comparison of SHP outcomes with those of other apical POP procedures. Unfortunately, not all studies provided comprehensive descriptions of surgical techniques.

Predominant Technique: Among reported techniques, the laparoscopic approach with a polypropylene mesh and attachments to both the anterior and posterior cervix/vagina emerged as the most frequent. Closure of the peritoneum over the mesh was a common feature.

Outcome insights: Analysis of outcomes revealed minimal differences based on mesh attachment. Notably, the group with both anterior and posterior attachments showed elevated bladder injury rates compared to the group with anterior attachment only. Further analysis is essential to explore potential associations, such as the role of extent of dissection in influencing this observation.

Conclusion

This is the first systematic review to report on surgical technique variations of sacrohysteropexy and their respective outcomes. Substantial heterogeneity in techniques was observed.

Upcoming sacrohysteropexy studies should prioritize detailed surgical technique. Furthermore, the need for trials directly comparing SHP techniques becomes apparent in identifying the optimal mesh configuration.

Acknowledgments & References

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