

Alternatives to Hysterectomy in Patients With Uterovaginal Prolapse

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Abstract

Background: Uterovaginal prolapse is a common problem in women. Hysterectomy has been considered as a standard procedure during surgical management of pelvic organ prolapse. However, in recent years, interest has been growing in the use of uterus-preserving surgeries. Different options available for uterine preservation include the Manchester Fothergill's operation, sacral hysteropexy (abdominal, laparoscopic or robotic with or without mesh), uterosacral ligament hysteropexy, sacrospinous hysteropexy (with or without mesh) and colpocleisis. The aim of this review was to analyze the different options of uterus-preserving surgeries and compare their outcomes with prolapse surgeries including hysterectomy.

Methods: PubMed, MEDLINE, Clinical trials.gov and the Hinari database were reviewed through 2020 by two of the authors. Only randomized controlled trials (RCTs) or non-randomized prospective controlled studies (nrPCSs) where different uterus-preserving surgeries for uterovaginal prolapse were compared with surgeries involving hysterectomy were included for the review.

Results: We identified 225 articles from the electronic search and 19 articles meeting the inclusion and exclusion criteria were reviewed. Among them, 10 were RCTs and nine were nrPCSs. The review identified that objective prolapse recurrence, quality of life and adverse events were similar between uterine preservation and hysterectomy groups. Abdominal routes were non-inferior to vaginal uterus-preserving surgeries. Need for repeat surgery after a hysteropexy procedure ranged from 2% to 29%. The Manchester operation demonstrated good anatomical and symptomatic improvement as compared to hysterectomy. When comparing sacrohysteropexy routes, the laparoscopic approach had lower recurrent prolapse symptoms than open sacrohysteropexy. Operating time and estimated blood loss were less with uterus-preserving surgeries. The most common adverse events in hysteropexy surgeries were urinary incontinence, voiding dys-

function, sexual dysfunction and mesh erosion, when mesh used.

Conclusion: The evidence from currently available literature suggests the vaginal and abdominal uterus-preserving surgeries to be equally effective, and not inferior to surgical procedures including hysterectomy. When surgeons are faced with a patient requesting uterine preservation, counseling should be performed cautiously regarding choosing one type of hysteropexy over another. However, the data on long-term follow-up and outcomes are lacking.

Keywords: Hysterectomy; Sacrohysteropexy; Uterus-preserving surgeries; Uterine suspension; Uterovaginal prolapse; Vaginal hysteropexy

Introduction

Pelvic organ prolapse (POP) is a common condition that may affect up to 50-70% of women worldwide. On an average, a woman has an 11% risk of undergoing surgery for POP during her lifetime [1]. Pelvic reconstructive surgery can be performed through either abdominal (laparoscopy or laparotomy) or vaginal routes.

Even though the uterus may not be culprit for development of prolapse, hysterectomy is traditionally performed along with POP repairs [2]. Transvaginal hysterectomy (TVH) for POP typically is accompanied by vaginal vault suspension by either uterosacral ligament suspension (USLS) or sacrospinous ligament fixation (SSLF). More recently, the role of hysterectomy during POP repair has been under debate. While some researchers believe that hysterectomy increases risk of complications, others believe that uterine preservation increases the risk of recurrence [3].

Currently, women are increasingly choosing apical POP surgeries that preserve the uterus, a collection of procedures also known as hysteropexy. Preservation of the uterus may be desired for many reasons including future fertility, beliefs regarding higher complication rates during hysterectomy, beliefs regarding impaired sexual function following hysterectomy, and personal choice. Uterine preservation surgeries include Manchester Fothergill's operation, sacral hysteropexy (abdominal, laparoscopic or robotic with or without mesh), sacrospinous hysteropexy (SSHP, with or without mesh), USLS and colpocleisis. The available data show most approaches are equal-

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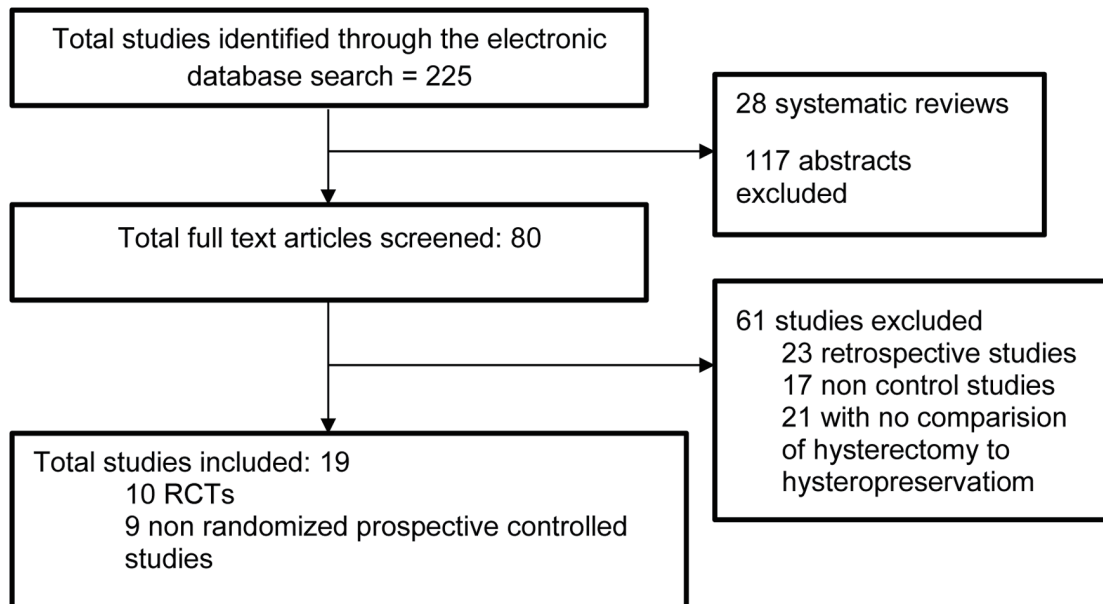


Figure 1. Flowchart showing screening of studies.

ly effective [4].

There are no clear guidelines on alternatives to hysterectomy in the repair of POP [5, 6]. Given that the number of different studies comparing hysteropexy procedures in different reviews is limited, it is difficult to recommend any specific alternative to hysterectomy. We conducted a review of recent randomized controlled trials (RCTs) and prospective comparative studies, comparing POP surgery with hysterectomy and alternatives to hysterectomy (hysteropexy).

Materials and Methods

We performed a systematic search of articles published in peer-reviewed, open-access, indexed journals. An electronic search was conducted on PubMed, MEDLINE, Clinical trials.gov and the Hinari database until through December 2020. Search terms included hysteropexy, uterine prolapse, pelvic organ prolapse, uterine preservation, and hysterectomy. Studies were selected according to population, intervention, comparator, outcome and study design (PICOS) criteria. To be included in the review, the study population had to have POP with a uterus, undergoing surgery (uterine preserving or hysterectomy) and the study design had to be either an RCT or non-randomized prospective controlled study (nrPCS) where uterine preservation was compared with hysterectomy. Studies needed to include assessment of one or more POP outcomes, perioperative or postoperative adverse events, sexual health or quality of life (QoL). Prospective single arm studies, retrospective studies, studies with obliterative surgery (colpocleisis), and studies with only abstract published were not included. Studies that included hysterectomy for non-prolapse benign (fibroid uterus, cervical dysplasia, and adenomyosis) or malignant diseases and POP surgery without apical suspen-

sion were excluded.

Studies were graded as good (A), fair (B) and poor (C) depending on the quality of study, risk of biases and completeness of report based on outcomes according to the Cochrane risk of bias tool [7] and relevant questions from Newcastle-Ottawa scale [8].

Alternatives to hysterectomy were categorized as Manchester procedure (MP), modified Manchester (MM), SSHP, vaginal uterosacral hysteropexy, vaginal mesh sacrospinous hysteropexy (VMSSHP), laparoscopic or robotic sacrohysteropexy (LRSHP), laparoscopic uterosacral hysteropexy (Lap USHP) and abdominal sacrohysteropexy (Abd SHP).

Results

Eighty full text articles were identified from the search of databases. Nineteen articles met the inclusion and exclusion criteria at the end of the review process. Among them, 10 were RCTs and nine were prospective controlled studies (Fig. 1).

The RCTs compared hysterectomy to hysteropreservation with different fixation types, or different routes or types of uterus-preserving surgeries in the management of uterovaginal prolapse. Of these, 17 studies compared hysterectomy with hysteropreservation with 14 studies that included vaginal hysterectomy. Three studies compared Manchester operation with vaginal hysterectomy. Six RCTs and three prospective controlled studies compared SSHP with other surgeries. One RCT and one nrPCS used vaginal mesh during SSHP. Abdominal route surgeries were compared in six studies (three RCTs and three nrPCS). Among them, two studies used a laparoscopic approach, whereas four used an open approach.

Vaginal hysterectomy technique and any performed associated POP repairs (vault, anterior or posterior) were not uni-

Table 1. Characteristics of Studies Comparing Manchester Procedure With TVH

Study	Design	Surgery	Follow-up	Outcomes
Thys et al [12]	nrPCS	Manchester vs. TVH with USLS	6 weeks	1) Operating time: 67 vs. 101 min (P = 0.01) 2) Blood loss: 250 vs. 358 mL (P = 0.01) 3) Repeat surgery: 4% vs. 9% (P = 0.15)
Tolstrup et al [13]	Prospective cohort study	Manchester vs. TVH with USLS	24 months	1) Apical recurrence: 0.3% vs. 5.1% (P = 0.004) 2) Overall recurrence: 7.8% vs. 18.3% (P = 0.002) 3) Repeat surgery: 2% vs. 8.5% (P ≤ 0.05)
Unlubilgin et al [14]	RCT	Manchester vs. TVH with USLS	5 years	1) Operating time: 62 vs. 77 min (P = 0.003) 2) Postop point C: -6.3 vs. -6 cm (P = 0.132) 3) Postop TVL: 8.3 vs. 6 cm (P = 0.016)

nrPCS: non-randomized prospective controlled study; RCT: randomized controlled trial; TVH: transvaginal hysterectomy; TVL: total vaginal length; USLS: uterosacral ligament suspension.

formly detailed in the reviewed papers. The same can be said about the uterine preservation papers reviewed, as most did not detail additional POP repairs performed, or their techniques used. We thus did not analyze the possible impact of these variables on the reported outcomes. We also did not include that information in the summary tables.

Since there are different alternatives to hysterectomy in terms of type or route of surgery, we reviewed them based on chosen route: either vaginal or abdominal (open/laparoscopic/robotic) hysterectomy.

Vaginal route surgeries

This includes MP, vaginal SSHP and vaginal mesh hysterectomy.

The Manchester operation

MP is considered as one of the earliest uterus-preserving surgeries. Cervical elongation (hypertrophy) is the most common reason for the procedure. The cervix is removed and the stump reattached to the cardinal and/or utero-sacral ligaments. The uterosacral and cardinal ligaments are plicated posteriorly and anteriorly, respectively in modified Manchester operations (Sturmdorf sutures) [9, 10]. Most of the research on MP are retrospective [11] or prospective controlled trials (Table 1) [12-14] and demonstrated significant anatomical and symptomatic improvement as a result of the surgery. We included two nrPCSs and one RCT in this review [9-11]. A retrospective study done in the Netherlands showed significantly less operating time and blood loss in the Manchester group than in the hysterectomy group [8]. The only RCT done in Turkey [11] found that the Manchester group had significantly shorter surgical time (62 vs. 77 min) and significantly shorter hospital stay (P = 0.042) than the vaginal hysterectomy group. Five years after the surgery, there was no statistically significant difference in the postoperative mean C point level between the groups (P = 0.132). Thys et al [12] discovered no differences in functional results or POP recurrence rates between the groups in a similar study.

In contrast to previous studies that showed similar anatomical and symptomatic improvement after both the procedures, Tolstrup et al in 2017 [13] found that the risk of recurrent or *de novo* POP in any compartment was higher after TVH (18.3%) compared to MP (7.8%) and there were more perioperative complications (2.7% vs. 0%, P = 0.007) after TVH. The authors concluded that MP should be recommended over TVH for surgical treatment of POP in the apical compartment if there are no additional indications for hysterectomy. With 2- to 5-year follow-up, the recurrence rate of uterine prolapse ranged from 2.04% to 7.8% and repeat surgery was 1.1-5.4%.

SSHP with or without mesh

The most researched vaginal approach for uterine preservation prolapse surgery is SSHP, which was first described by Richardson [15]. It suspends the cervix with permanent or delayed absorbable sutures by employing the sacrospinous ligaments.

The comparison of transvaginal SSHP with other operations was explored in nine studies (Table 2) (six RCTs and three nrPCSs). Six studies compared SSHP versus TVH (four RCTs [16-19] and two nrPCSs [20, 21]). One RCT [22] compared SSHP with Lap SHP and two (one RCT [23] and one nrPCS [24]) compared mesh augmented SSHP with TVH. In one study, TVH was compared to a combination of uterine preservation surgical techniques [25]. Two cohort studies comparing SSHP with vaginal hysterectomy found no difference in anatomical or symptomatic improvement, but the vaginal hysterectomy group had a three-fold increase in overactive bladder complaints. SSHP is advantageous in terms of blood loss, operational time, and recovery time. However, SSHP had the same rates of recurrence and reoperation as the hysterectomy group [20, 21].

A study done by Dietz et al [18] showed that SSHP had a shorter operative time and less blood loss. The hysterectomy group had 17% (95% CI: 2-30) decrease in recurrent prolapse compared to SSHP. There were no differences in QoL and urogenital symptoms between the groups.

In 2012, SSHP and vaginal hysterectomy with USLS were compared in a randomized controlled experiment. The

Table 2. Characteristics of Studies Comparing SSHP With Surgeries Involving Hysterectomy

Study	Design	Surgeries compared	Follow-up	Outcomes
Detollenaere et al [16]	RCT	SSHP vs. TVH	12 months	1) Apical failure: 2% vs. 7% (CI: -11.1 to 1.2) 2) Anterior failure: 8% vs. 6% (CI: -0.5 to 26.4) 3) Repeat surgery: 1% vs. 4% (CI: -7.8 to 2) 4) Blood loss: 202 vs. 209 mL (CI: -32.8 to 20) 5) Operating time: 59 vs. 72 min (CI: -18.5 to -8.6)
Schulten et al [17]	RCT	SSHP vs. TVH	5 years	1) Apical failure: 3% vs. 7% (CI: -10.2 to 2.5) 2) Anterior failure: 40% vs. 36% (CI: -8.9 to 17.8) 3) Repeat surgery: 3% vs. 9% (CI: -10.2 to 2.5)
Dietz et al [18]	RCT	SSHP vs. TVH	12 months	1) Apical failure: 21% vs. 3% 2) Anterior failure: 50% vs. 35% (P = 0.2) 3) Repeat surgery: 11.6% vs. 6% (CI: -9 to 19)
Jeng et al [19]	RCT	SSHP vs. TVH	6 months	1) Decrease sexual interest: 13% vs. 5.1% 2) Less frequent orgasm: 20% vs. 21%
Hefni et al [20]	nrPCS	SSHP vs. TVH	18 months	1) Apical failure: 4.9% vs. 4.1% (P = NS) 2) Anterior failure: 11.4% vs. 10.4% (P = NS) 3) Repeat surgery: 5% vs. 4% (P = NS) 4) Blood loss: 46 vs. 135 mL (P < 0.01) 5) Operating time: 51 vs. 77 min (P < 0.01)
van Brummen et al [21]	nrPCS	SSHP vs. TVH		1) UI: 38.6% vs. 50% (P = 0.23) 2) SUI: 47.7% vs. 46.7% (P = 1.00) 3) Recurrence of POP: 11.4% vs. 6.7% (P = 0.45)
van Ijsselmuiden et al [22]	RCT	SSHP vs. Lap SHP	12 months	1) Surgical failure: 3.3% vs. 1.6% 2) Apical failure: 3.4% vs. 3.6% (CI: -6.6 to 7) 3) Anterior failure: 56.9% vs. 50.9% (-24.3 to 12.4)
Nager et al [23]	RCT	VMSSHP vs. TVH	3 years	1) Failure rate: 31% vs. 41% (-25 to 4) 2) POP-Q: Ba: -1.2 vs. -0.7 cm (P = 0.05) C: -5.7 vs. -5.8 cm (P = 0.74) TVL: 8.5 vs. 7.7 cm (P < 0.01) 3) Operating time: 111 vs. 156 min (P < 0.01)
Chu et al [24]	nrPCS	VMSSHP vs. TVH	9 months	1) Postoperative POP-Q values (P > 0.05) 2) Operating time: 97.2 vs. 129 min (P < 0.01) 3) Blood loss: 77.4 vs. 179 mL (P < 0.01) 4) Mesh extrusion: 3.8% vs. 12.8% (P = 0.134)

nrPCS: non-randomized prospective controlled study; RCT: randomized controlled trial; SHP: sacrohysteropexy; SSHP: sacrospinous hysteropexy; SUI: stress urinary incontinence; TVH: transvaginal hysterectomy; TVL: total vaginal length; UI: urgency incontinence; VMSSHP: vaginal mesh sacrospinous hysteropexy; CI: confidence interval.

follow-up after the procedure was scheduled at 1 and 5 years. At 12 months, SSHP was non-inferior to vaginal hysterectomy in terms of structural apical compartment recurrence with unpleasant bulge symptoms or repeat operation. There were no differences in functional results, QoL, complications, hospital stays, or sexual functioning between the two groups. Anatomical recurrence of the apical compartment with unpleasant bulge symptoms or repeat surgery was substantially higher in the hysterectomy group than in the SSHP group 5 years following surgery (7.8% vs. 1%) [16]. However, there was no difference between the two in terms of functional results, QoL, problems, hospital stays, or sexual functioning [17]. Jeng et al [19] evaluated sexual function in patients undergoing TVH versus SSHP and discovered that TVH patients had lessened sexual interest and orgasms than uterine preservation patients (5.1% vs. 13%).

Table 3 compares the primary and secondary findings of SSHP studies. The majority of the studies found that uterine preservation resulted in reduced blood loss, shorter operative time, and a higher rate of anterior compartment failure. Apical failure occurred at a variable rate. In contrast to the Dietz et al study, there was an increased apical failure rate after hysterectomy [18].

Use of transvaginal mesh is an option during uterine preservation surgery. Mesh is frequently utilized to make a repair more durable. Recent systematic reviews and meta-analyses [26, 27] found that mesh uterine preservation (VMSSHP) surgery resulted in decreased blood loss and operating time, and that recurrence of POP ranged from 2-33% to 3-29%. *De novo* urinary incontinence, mesh exposure, sexual dysfunction, and urinary retention were all common complications linked with vaginal mesh surgery. When POP surgery included uterine

Table 3. Study Comparing SHP Through Various Routes With TVH

Study	Study design	Surgeries compared	Follow-up	Outcomes
Hemming et al [25]	RCT	1) SSHP vs. TVH 2) VMSSHP vs. TVH 3) Abd SHP vs. TVH 4) Lap SHP vs. TVH	12 months	Uterine preservation vs. hysterectomy: 1) Overall stage II or more: 18 vs. 15 (P > 0.05) 2) Further surgery needed: 7.4% vs. 4.5% (P = 0.182)

RCT: randomized controlled trial; SHP: sacrohysteropexy; SSHP: sacrospinous hysteropexy; TVH: transvaginal hysterectomy; VMSSHP: vaginal mesh sacrospinous hysteropexy.

preservation instead of vaginal hysterectomy, both mesh exposure and mesh exposure repeat operation were reduced [24, 26, 28]. Jirschele et al studied mesh augmented SSHP for uterovaginal prolapse and concluded that mesh augmented SSHP was an effective and safe procedure for treating uterovaginal prolapse [29].

One RCT [20] and one nrPCS [21] comparing VMSSHP with TVH were included in this review. The failure rates of POP in both groups were comparable. Mesh exposure was less prevalent, blood loss and operative time were reduced, and the total vaginal length was longer in the uterine preservation group relative to the hysterectomy group. Mesh exposure was seen in 8% of patients in the TVH RCT. In addition, ureteral kinking and suture exposure were shown to be more common in the hysterectomy group. As a result, the controversy over vaginal mesh's usefulness and safety continues, and further study is needed [23].

Abdominal uterus-preserving surgeries (abdominal/laparoscopic/robotic hysteropexy)

Open, laparoscopic, and robotic sacrohysteropexy are three procedures for uterine preservation that use the sacral promontory as a fixation point with or without mesh. Arthure et al [30] described the open procedure initially but Addison et al [31] described the mesh sacrohysteropexy first. Cutner et al were the first to create a laparoscopic uterine sling suspension [32]. In this review, we identified four RCTs [19, 22, 33, 34] and four nrPCSs [35-38] (Table 4).

Roovers et al [33] compared open Abd SHP with TVH with anterior and posterior repairs in 2004. Recurrent prolapse symptoms (39% vs. 12%) and repeated prolapse surgery (22% vs. 2%) were substantially greater in the abdominal group than in the vaginal group 1 year after the first surgery. In terms of

Table 4. Studies Comparing Abdominal Uterus-Preserving Surgeries With Surgeries Involving Hysterectomy

Study	Design	Surgeries compared	Follow-up	Outcomes
Roovers et al [33]	RCT	Abd SHP vs. TVH	12 months	1) Apical failure: 5% vs. 5% 2) Anterior failure: 36% vs. 39% 3) Repeat surgery: 22% vs. 2% 3) Operating time: 97 vs. 107 min (CI: -2 to 22) 4) Blood loss: 244 vs. 248 mL (CI: -119 to 127)
Rahmanou et al [34]	RCT	Lap SHP vs. TVH	12 months	1) Operating time: 39.5 vs. 28.1 min (P < 0.001) 2) Blood loss: 19.6 vs. 82.1 mL (P < 0.001) 3) Repeat surgery: 2% vs. 8% (P = 0.185)
Rosen et al [35]	nrPCS	Lap USLS with uterus vs. TLH with USLS	24 months	1) Operating time: 115 vs. 150 min (P ≤ 0.001) 2) Blood loss: 100 vs. 110 mL (P = 0.0295) 3) Failure rate: 20% vs. 20%
Paek et al [36]	nrPCS	RLSHP vs. Abd SHP	12 months	1) Operating time: 120 vs. 187 min (P < 0.001) 2) Blood loss: 50 vs. 150 mL (P < 0.001) 3) Repeat surgery: 4.7% vs. 1.8% (P = 0.611) 4) Success rate: 94.4% vs. 91.2% (P = 0.717) 5) Mesh erosion: 0 vs. 5.3% (P = 0.244)
Constantini et al [37]	nrPCS	Abd hysterectomy and CSP vs. Abd SHP	12 months	1) FSFI score: 22.4 vs. 24.3 (P ≤ 0.05) 2) TVL: 6.5 vs. 8 cm (P = 0.828)
Constantini et al [38]	nrPCS	Abd hysterectomy and CSP vs. Abd SHP	51 months	1) Operating time: 115 vs. 89 min (P ≤ 0.05) 2) Blood loss: 325 vs. 200 mL (P ≤ 0.001) 3) Mesh erosion: 3 vs. 0 4) TVL: 6.5 vs. 8 cm (P = 0.813) 5) Success rate: 92% vs. 91% (P ≥ 0.05)

CSP: colposacropexy; FSFI: female sexual function index; nrPCS: non-randomized prospective controlled study; RCT: randomized controlled trial; LRSHP: laparoscopic/robotic sacrohysteropexy; SHP: sacrohysteropexy; TLH: total laparoscopic hysterectomy; TVH: transvaginal hysterectomy; TVL: total vaginal length; USLS: uterosacral ligament suspension.

blood loss, hospital stay, and complications, there was no statistical difference between the two groups. Rahmanou et al [34] conducted a similar study in which they evaluated Lap SHP vs. TVH with anterior and posterior repairs. In this study, Lap SHP had better apical support, longer total vaginal length, a shorter hospital stay, and an earlier return to work postoperatively. The findings were challenged by Alay et al [39] who remarked that the USLS technique used at the time of vaginal hysterectomy may not have been the strongest for apical suspension. They recommended that, because the uterosacral ligaments may be weak in cases of uterovaginal prolapse, McCall culdoplasty or sacrospinous ligament suspension be utilized for apical stabilization, as these procedures may be more equivalent to Lap SHP. Rosen et al [35] examined USLS with uterus or hysterectomy and found that the hysterectomy group had longer operating times with no difference in perioperative or postoperative complications or recurrent prolapse 24 months later.

In a prospective observational research, Alshiek et al [3] compared all types of uterus-conserving operations and discovered that the risk of prolapse recurrence was equal in all surgical methods (abdominal 13.3%, vaginal 14.7%, laparoscopic 11.6%, robotic 3.6%; $P = 0.39$). All groups had equal rates of intraoperative, postoperative, and long-term complications. Paek et al [36] compared open Abd SHP to LRSHP and reported similar results. They found that objective prolapse recurrence was similar between the groups, but that recurrent prolapse symptoms and repeat prolapse surgery were less common in the LRSHP group. In terms of adverse events, both groups experienced *de novo* urinary incontinence, but the Abd SHP experienced higher voiding dysfunction and sexual dysfunction rates.

Colposacropexy with or without hysterectomy was compared by Constantini et al [37]. They demonstrated that hysterocolpopexy could be safely performed on women who desired uterine preservation. In terms of prolapse recurrence and improvement in voiding and sexual dysfunction, both surgeries produced identical results. In another study, the same author found that POP has a role in female sexual dysfunction and that uterine preservation operations are linked to better sexual function outcomes [38].

In the LAVA study, Lap SHP was compared to SSHP [22]. In terms of surgical failure, anatomical recurrence, and QoL 1 year after surgery, they determined that Lap SHP was not inferior to SSHP. SSHP had a greater rate of *de novo* dyspareunia, although it was not statistically significant. They came to the conclusion that while the alternatives for uterine preservation are limited, Lap SHP could be a viable alternative to SSHP.

Recently, two multicenter RCTs comparing various uterine preservation operations to hysterectomy were initiated with planned long-term follow-up [25]. They have reported that objective prolapse recurrence, QoL, and adverse events were similar in the uterine preservation and hysterectomy groups in early data comparison. Increased blood loss and hematoma were the most common major adverse events in both groups. They found no clinical evidence that abdominal uterine preservation surgeries are more effective than vaginal procedures a year following surgery. Abdominal surgeries are more expensive, and the long-term consequences are unknown. They plan

to follow up these patients for the next 12 years. As a result, we may be able to better understand the most clinically effective, safe, and cost-efficient options.

The level/depth of dissection, mesh type, and mesh tension used in the reported Lap SHP procedures vary. These differences, as well as others, may influence anatomical and functional outcomes. As a result, more clinical trials are needed to determine optimal surgical techniques, especially when mesh is used [40].

In other hysteropexy techniques, the uterine corpus was previously suture-fixed with sacral promontory. This surgery has been linked to severe cervical elongation [41].

Mesh has the potential to strengthen and extend apical support by supplementing deficient connective tissue. It may reduce the risk of sexual dysfunction and dyspareunia by preventing vaginal shortening. Clinical trials have yet to back up this claim.

Discussion

Our analysis found that uterus-conserving operations are just as beneficial as hysterectomy in the treatment of POP. When compared to hysterectomy, the MP takes less time, results in less blood loss, and requires less time in the hospital. There is no difference in POP recurrence. In short-term follow-up, SSHP was equivalent to hysterectomy for POP recurrence, but it was associated with less operative time and blood loss. The use of transvaginal mesh is still debatable, and the results are contradictory in terms of increased mesh exposure risk. When compared to the vaginal hysterectomy group, Abd SHP had a greater rate of prolapse symptoms and repeat prolapse surgery. However, it resulted in longer overall vaginal length. LRSHP, on the other hand, had greater apical support and a lower risk of repeat apical surgery than the other two groups.

Jeffris et al [42] examined whether hysterectomy is required for POP management and concluded that, despite the growing popularity of uterus-conserving operations, there is no strong evidence that they are superior to hysterectomy. The only putative benefits were improved apical support, reduced vaginal dysfunction, and improved psychological well-being.

The results of a review and meta-analysis of SSHP revealed that the apical failure rate was not significantly different from that of vaginal hysterectomy, indicating that SSHP was a safe and successful surgery for POP [43].

The review done in 2013 by Gutman and Maher [2] found that SSHP is equally effective as vaginal hysterectomy while being associated with lessened operative time, blood loss, and recovery time. Sacral colpopexy and hysterectomy were as successful as SHP (open/laparoscopic), although sacral colpopexy had a five-fold higher rate of mesh erosion than SHP.

According to systematic reviews with meta-analysis and clinical practice guidelines on uterus-preserving surgeries for POP, LRSHP, rather than open SHP, should be considered for women who desire uterine preservation and have no contraindications, to minimize estimated blood loss and urinary retention while reducing mesh exposure and the risk of repeat

prolapse surgery. Mesh exposure, urine retention, and sexual dysfunction were the most prevalent adverse effects [27].

Strengths and limitations

A strength of this review is that only RCTs and prospective controlled studies were included. Single technique trials and retrospective reports were excluded. With the exception of colpcleisis, this review included all commonly used uterine preservation operations.

One limitation of this review is that it included a wide range of uterine preservation surgery procedures, resulting in a heterogeneous comparison of results. There are not any randomized trials comparing one uterine preservation operation to another, such as Manchester vs. SSHP. Furthermore, surgical techniques employed for each surgery, whether abdominally or vaginally, can differ significantly. As a result, results reported on a specific surgical approach may not be similar between studies because surgical technique can have a major impact on reported outcomes. In addition, the performance of associated POP repairs (anterior, posterior, and apical) can greatly influence the surgical results and were not uniformly reported in the reviewed series. Furthermore, the surgeon's skill set and experience can be important, but this study cannot account for those variables.

Conclusion

Vaginal hysterectomy is considered as standard treatment for women with uterovaginal prolapse. Numerous uterine preservation surgeries are now becoming more widely accepted as realistic and successful options for women wishing to avoid hysterectomy. The evidence from currently available literature suggests the vaginal and abdominal uterus-preserving surgeries are overall equally effective, and not inferior to surgical procedures that include hysterectomy. However, data regarding long-term follow-up and outcomes are still pending. Counseling should be undertaken regarding available treatment options, the reported recurrence rates, effect on urinary and sexual function, cost and other side effects before a surgeon chooses hysterectomy or one type of hysteropexy over another when presented with a patient requesting uterine preservation. Furthermore, it is impossible to expect every pelvic surgeon to be an expert in all surgical techniques; however, each should be able to provide their patients with safe alternatives.

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Conflict of Interest

None to declare.

Author Contributions

Dr. Baburam Dixit Thapa: study design, article search and synthesis, report writing, and final manuscript preparation. Dr. Tulasas Basnet: article search and synthesis and final manuscript preparation. Dr. G. Wily Davila and Dr. Mohan Ch Regmi: study design and final manuscript preparation.

Data Availability

The authors declare that data supporting the findings of this study are available within the article.

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