

Uterus Preservation Versus Uterus Removal for the Repair of Uterine Prolapse: A Systematic Review and Meta-Analysis

Hussain M. Assiri^{*1}, MashailA. Alomari², Jawaher H.Allugbi¹, Eidah M.D.Alahmari¹,
Laila A Al-nashri², Amani A Al-nasheri², Hammad Ahmed HammadAlabdali²,
Jameelah A.Alqahtani²

¹Ob/Gyn Department, Khamis Mushayt Maternity and Children Hospital, Saudi Arabia

²Ob/Gyn Department, Abha Maternity and Children Hospital, Saudi Arabia

***Corresponding Author:** Hussain M. Assiri, Ob/Gyn Department, Khamis Mushayt Maternity and Children Hospital, Saudi Arabia

ABSTRACT

Introduction:

Hysterectomy for women with uterine prolapse may increase the risk of complications and morbidity and question the need for uterine removal, while uterine prolapse may recur more frequently if the uterus is preserved. This study aimed to assess the currently available evidence comparing reconstructive pelvic floor surgical procedures involving hystero-preservation or hysterectomy for managing uterine prolapse.

Methods: An exhaustive electronic search of the PubMed, Embase, and Ovid databases was performed. Retrieved studies were combined into groups according to the surgical techniques and approaches used, and all data were combined so that the comparison between hysteropexy and hysterectomy could be performed.

Results: After removing duplicate items, 1,011 articles were retrieved. At the end of the review process, 164 studies were excluded because they did not meet the inclusion criteria or did not provide sufficient data for being included in the meta-analysis, and 10 studies met the criteria for inclusion and were described and evaluated. The included studies accounted for 827 patients (438 in the hystero-preservation group and 389 in the hysterectomy group). Important outcomes included recurrence rate, operative time, blood loss, voiding dysfunction, length of hospital stay, and postoperative dyspareunia.

Conclusions: Recurrence of uterine prolapse following vaginal hysterectomy is significantly lower than following vaginal hysteropexy. Operative time is shorter and blood loss is less with hystero-preservation.

Keywords: Uterine prolapse, Hysterectomy, Hystero-preservation, Systematic review, Meta-analysis.

INTRODUCTION

Uterine prolapse is a common clinical condition that affects women after menopause. However, it frequently affects fertile parous women, whose quality of life becomes troubled by urinary incontinence, voiding dysfunction, vaginal bulging, bowel disorders, or sexual symptoms [1-2]. About 11% of women aged 80 years or more have undergone surgery for their pelvic prolapse or symptoms of urinary incontinence, and almost one-third may undergo recurrence [3].

Uterine prolapse tends to be more likely among women with successive births [4]. Moreover, obese women are more likely to experience uterine prolapse than those with

normal body weight [5]. Its incidence increases significantly with advancing age [6]. Additional risk factors include connective tissue disorders, e.g., Marfan syndrome or Ehler's Danlos syndrome [7].

Despite the fact that uterine prolapse is not a life-threatening condition, it usually causes several psychological problems, e.g., anxiety, and depression, in addition to physical discomfort, bowel and bladder incontinence, and sexual complaints [4].

Conservative management for uterine prolapse among premenopausal women includes pelvic floor muscle training and vaginal pessary. This can be the treatment of choice according to

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their symptoms, stage of prolapse, general health status, and preference [8].

Conservative management may not be an attractive choice for patients with severe pelvic organ prolapse, and completely corrective surgery may be advised. However, surgical counseling should include a uterus-preservation option, which is always preferred for women who desire childbearing. [9]

Surgical techniques for the repair of symptomatic uterine prolapse include subtotal or total hysterectomy. Reconstructive pelvic surgery for pelvic organ prolapse comprises two primary surgical access routes, i.e., the abdominal approach (via laparotomy or laparoscopy) [10], or the vaginal approach [11].

Results of some studies indicated that hysterectomy increases the risk of complications and morbidity and question the need for uterine removal, while others reported that uterine prolapse will recur more frequently if the uterus is preserved [12-13].

This systematic review and meta-analysis aimed to evaluate the current available evidence comparing reconstructive pelvic floor surgical procedures involving hysteropreservation or hysterectomy in managing uterine prolapse in relation to efficacy and complications.

MATERIALS AND METHODS

To retrieve a study in this systematic review, several inclusion and exclusion criteria were considered. The accepted research designs were prospective, randomized controlled trials (RCTs) or a comparative cohort study. Retrospective studies were excluded. A study was excluded also if it was published in the form of a letter to the editor or comments, a meta-analysis, or a review article. Studies that included colpoceleisis as a surgical procedure for the management of uterine prolapse were also excluded.

An exhaustive electronic search of the PubMed, Embase, and Ovid databases was performed. The references of the identified articles were also searched. The search was limited to articles published in English during the last 20 years (i.e., 2000-2020).

The search was based on the following combined relevant terms and MeSH (Medical

Subject Headings of the National Library of Medicine) descriptors: “uterine prolapse”; “hysterectomy”; “hysteropexy”; “organ preservation”; “surgical meshes”; “quality of life”; “operative time”; “surgery time length”; “complication*”; “postoperative”; “perioperative”; “intraoperative”; “surgical injury*”; “recurrence*”; “prevention”; “tumor*”; “neoplas*”; and “cancer”.

Two reviewers (H.A. and M.O.) independently selected and combined the retrieved articles, and further extracted the data using a standardized form. Any divergence in study selection and/or extraction of data was resolved by consensus between the two reviewers or by a third reviewer (J.A.). Initially, the reviewers evaluated all titles and abstracts of retrieved articles. Full texts were evaluated if the abstracts did not provide sufficient information. Only studies that met the inclusion criteria were included.

A standardized form was used for the systematic review of the selected articles. It included the following information: study title, authors, source and year of publication, sample size, study design, duration of follow-up, inclusion and exclusion criteria, the demographics of participants, type of procedure, outcome measurements, and their results.

Outcomes included recurrence rate of uterine prolapse (defined as symptomatic prolapse of stage II or more with Pelvic Organ Prolapse Quantification System (POP-Q) point C >0). [3] Operative time related to the uterine prolapse (in minutes), intraoperative blood loss (in mL), voiding dysfunction (incomplete micturition with the presence of post-void residual or low urine flow rate), length of hospital stay (in days), and postoperative dyspareunia. The terminology and definitions recommended by the International Urogynecology Association were used. [14]

Retrieved studies were combined into groups according to the surgical techniques and approaches used, and all data were combined so that the comparison between hysteropexy and hysterectomy could be performed.

Data on dichotomous outcomes from the original studies were pooled to obtain the risk ratio (RR) for the occurrence of an outcome event and the corresponding 95% CI (confidence interval). Outcomes for

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continuous variables were pooled from the original studies using the inverse variance method to obtain the mean difference for the occurrence of an outcome event and to present the corresponding 95% CIs, with the statistical significance set at p-values less than 0.05. The random effects model was applied when the heterogeneity was greater than 50%. [15] Review Manager (version 5.2) software was used for the meta-analysis.

RESULTS AND DISCUSSION

After removing duplicate items, we could

retrieve 1,011 articles. At the end of the review process, 164 studies were excluded because they did not meet the inclusion criteria or did not provide sufficient data for inclusion in the meta-analysis, and finally, 10 studies met the criteria for inclusion and were described and evaluated (Figure 1).

There were three RCTs and seven prospective comparative cohort studies comparing hysteropreservation techniques to hysterectomy in patients with uterine prolapse.

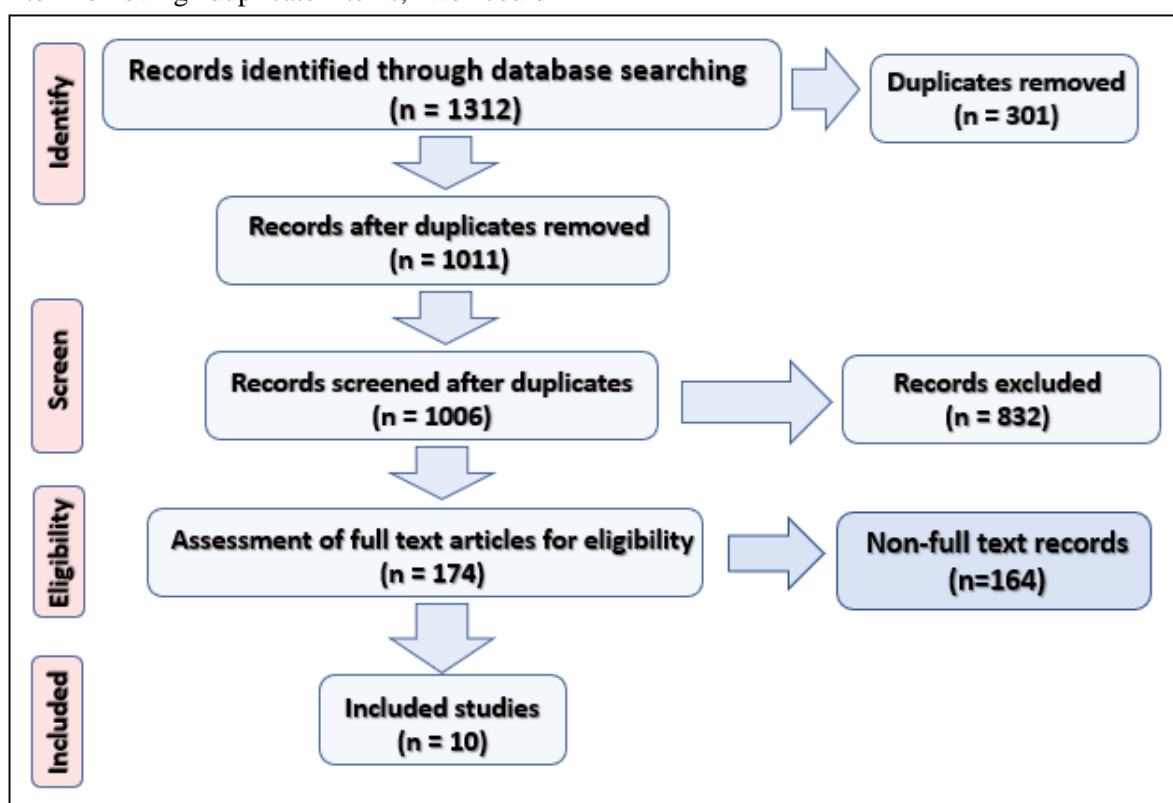


Figure 1. Flowchart of study procedures

The included studies accounted for 827 patients (438 in the hysteropreservation group and 389 in the hysterectomy group), with follow-up ranging from 6 to 29.8 months (mean \pm SD: 11.23 \pm 8.07 months).

IMPORTANT OUTCOMES

Recurrence Rate

Recurrence rates were documented in nine studies involving 406 patients in the hysteropreservation group and 353 who had hysterectomy. [16-22]

The follow-up for the diagnosis of recurrence varied among the studies, ranging from 6 to 29.8 months, (mean \pm SD 18 \pm 17 months).

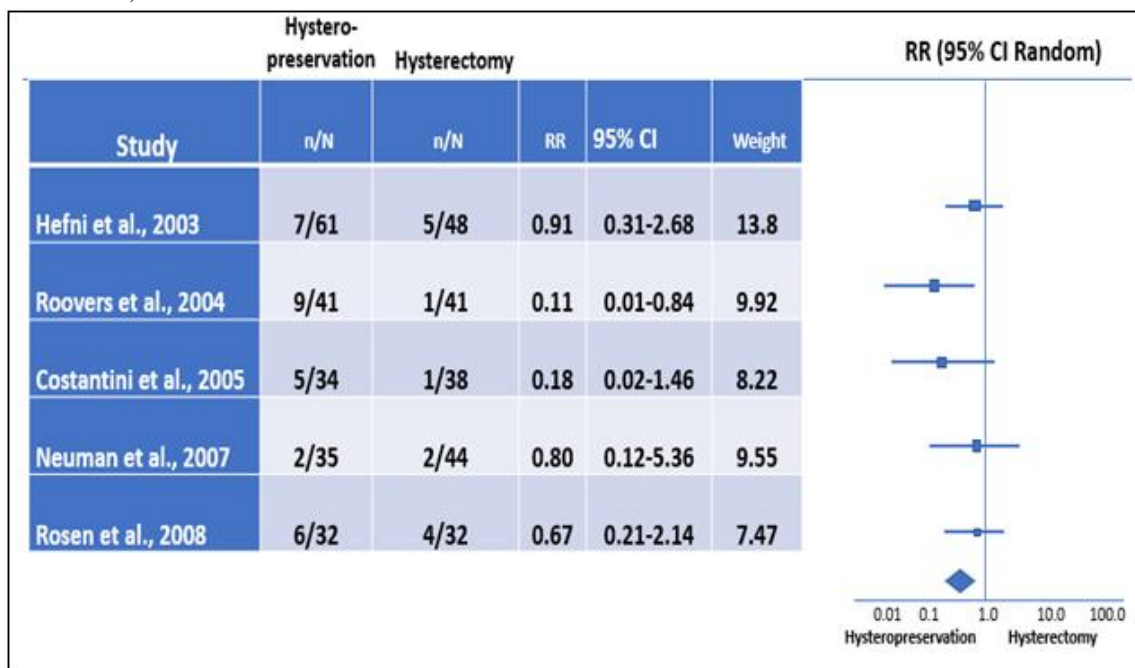
Pooled data showed significant differences between groups (RR 0.42, 95% CI 0.23–0.78; $p < 0.001$), with a tendency for a lower rate of recurrence among women who underwent hysterectomy than those who underwent hysteropreservation (13 cases and 35 cases, respectively).

Grouping the studies according to the surgical procedures, the recurrence rate was significantly lower with hysterectomy than with hysteropexy, independent of the technique used for fixation of the apical defect. The recurrence rates with both techniques using the vaginal approach with mesh, or both using the abdominal approach were similar whether or not the uterus was preserved, but

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individual analysis showed that in the majority of the studies, the recurrence rate was lower with

hysterectomy(Figure 2).



Operative Time

Four studies evaluated the operative time in 372 procedures [16; 18; 22-23]. Overall, pooled data showed that the operative time was shorter with hysteron-preservation than with hysterectomy (Mean difference: -16.68 , 95% CI: -2.32 , -35.7 ; $p < 0.01$).

Blood Loss

Seven studies evaluated intraoperative blood loss in 614 procedures [16-18; 20; 22-24]. Overall, pooled data showed that blood loss was less with hysteron-preservation than with hysterectomy (Mean difference: -62.24 ,

95% CI: -28.6 to -95.8 ; $p < 0.01$; Fig. 6). Among the included studies, only that of Roovers et al.[17]did not show a difference in intraoperative blood loss between abdominal hysterectomy and vaginal hysterectomy with native tissue.

Voiding Dysfunction

Three studies reported voiding dysfunction following 269 procedures. [16; 20; 24] Overall, pooled data showed similar rates of voiding dysfunction between the groups (RR 0.87, 95% CI 0.33 to 2.32; $p = 0.776$; Figure3).

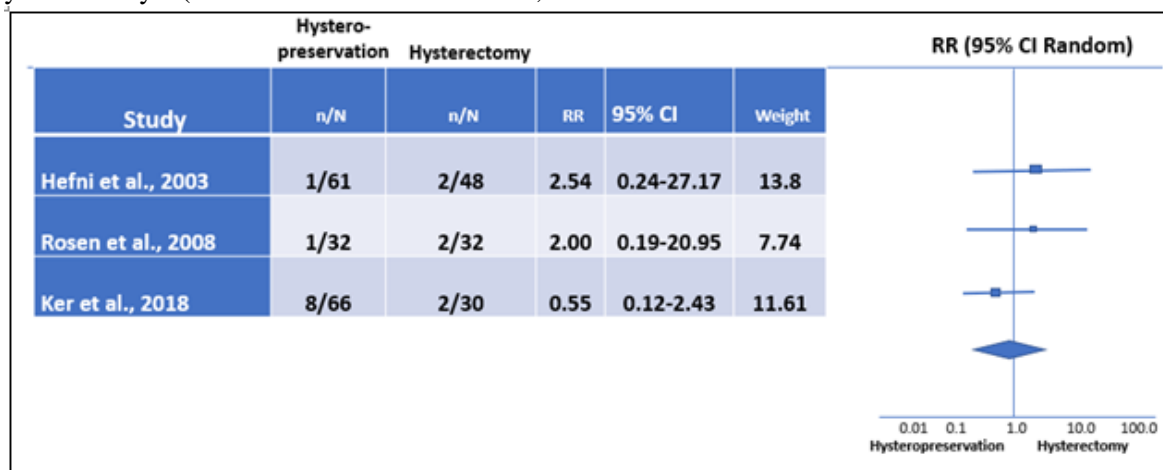


Figure3. Comparison between study groups regarding voiding dysfunction

Although analyses have also not shown differences in the rate of voiding dysfunction following procedures preserving and removing

the uterus, we observed a tendency for the rate to be higher following hysterectomy. Costantini et al. [18] found that voiding dysfunction rates

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reached 11.8% for abdominal hysteroscropey, and 2.6% for abdominal hysterectomy with colposcropey.

Duration of Hospital Stay

Three studies compared the duration of hospital stay after surgery in a total of 252 patients. [17; 19; 22] Pooled data showed similar RRs for both procedures (Mean difference: -1.07, 95% CI:-0.17to 0.04; p = 0.23). For vaginal techniques with mesh, hospital stay was shorter with hysteron-preservation than with hysterectomy (Mean difference:-1.45,95%CI-1.77to-1.13;p< 0.01). This finding was mainly accounted for by the study of Neumanet al.[19], who found that the mean duration of hospital stay was 1.5 days for hysteropexy (in 35 patients), and 4.2 days for hysterectomy (in 44 patients), (Mean difference: -2.70, 95% CI -3.17 to -2.23). However, Chu et al. [22] did not observe such

a difference, finding mean hospital stays of 4.9 days in 52 patients who had vaginal hysteropexy and 5.3 days in 39 patients who had a vaginal hysterectomy (Mean difference: -0.40, 95% CI: -0.83 to 0.03). Roovers et al. [17] found similar mean hospital stays following abdominal hysteroscropey (7.7 days) and vaginal hysterectomy (7.6days), with 41patients in each group (MD0.10,95% CI -0.01 to 0.21).

Postoperative Dyspareunia

Three studies evaluated the postoperative incidence of dyspareunia in 232 patients [18, 20, 24]. There was no difference in the RR for dyspareunia between techniques that preserve or remove the uterus (RR 1.98, 95% CI 0.5517 to 7.0762; p=0.2955), nor in the analyses combining surgical techniques and routes (Figure4).

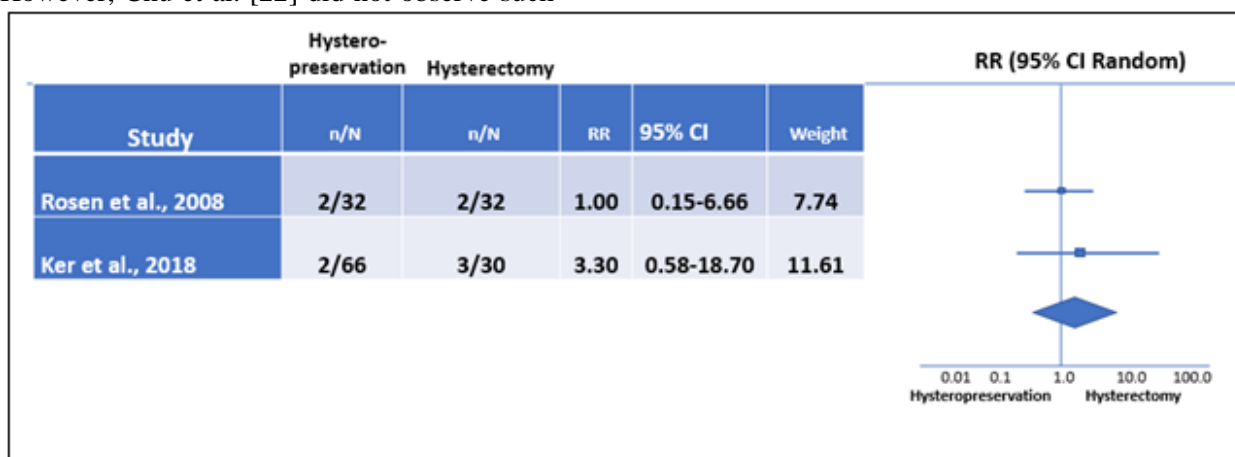


Figure4. Comparison between study groups regarding postoperative dyspareunia

Severe uterine prolapse is typically treated by hysterectomy with concomitant pelvic reconstruction. However, the need for hysterectomy became progressively questionable with the progress of anatomical knowledge and surgical techniques. Moreover, every woman will choose to preserve the uterus if a hysterectomy is not necessary [25].

This study demonstrated that hysterectomy was associated with less recurrence of uterine prolapse. However, care should be given to these findings since they may be of clinical relevance despite not being statistically significant. Generally, hysterectomy resulted in a significantly less recurrence of uterine prolapse, independent of the used technique for fixation of the apical defect.

Ker et al. [24] noted that, if vaginal

hysterectomy is planned as part of reconstructive surgery, techniques using native tissue should be the optimal choice. In the USA, as high as 41% of all prolapse procedures used synthetic mesh.

Several studies have suggested that it is preferred to preserve the uterus when using mesh to reduce the possibility of mesh exposure [26-27]. Huang et al. [28] added that pelvic reconstruction using Prolift with a concomitant hysterectomy and uterus-sparing surgery have similar anatomic and functional results. Therefore, uterus-sparing surgery can be considered as an alternative to hysterectomy in the repair of uterine prolapse.

Uterus-preservation techniques yielded average operative times and blood loss similar to those usually obtained with procedures

requiring less dissection. This finding is particularly relevant in women at high risk of recurrence in whom perioperative morbidity should be avoided or reduced to a minimum.

A history of cervical or uterine abnormalities, such as abnormal uterine bleeding, polyps, fibroids or cancer, is a well-established factor in the choice between hysteropreservation and hysterectomy [11].

Our study addressed a subject still not well explored. We included three RCTs and seven prospective comparative cohort studies with a large sample size. In general, apart from the technique, we compared hysteropreservation and hysterectomy, the route of access (vaginal, abdominal, or laparoscopic), or the combination of procedures. Analysis of forest plots did not depict important differences in outcomes between the RCTs and nonrandomized studies, so the potential bias from including nonrandomized studies can be considered low.

It is to be noted that, the quality of patients' life was not reported by any of the included studies. Therefore, further studies are necessary to address subjective outcomes properly. Moreover, there were no reports of malignant uterine disease. The follow-up times may not have been long enough for any conclusions to be drawn on the risk of preserving the uterus in this population.

We conclude that generally, the recurrence rate of uterine prolapse following vaginal hysterectomy is significantly lower than following vaginal hysteropexy, independent of the technique with native tissue used to repair the apical defect. Moreover, the operative time is shorter. In addition, blood loss is less with hysteropreservation.

This study contributes to the argument: to remove or not to remove the uterus during prolapsed repair. It seems that more studies with longer durations of follow-up will help settle definite conclusions on this matter.

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