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Operative hysteroscopy versus blind or ultrasound-guided uterine evacuation for retained products of conception after miscarriage or induced abortion: a systematic review and meta-analysis protocol

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 5 July 2026 and was last updated on 5 July 2026.

INTRODUCTION

Review question / Objective The objective of this systematic review and meta-analysis is to compare operative hysteroscopic removal with blind or ultrasound-guided uterine evacuation for retained products of conception after miscarriage or induced abortion. The review will assess treatment efficacy, repeat intrauterine intervention, newly diagnosed intrauterine adhesions, perioperative safety, menstrual recovery, and subsequent reproductive outcomes.

Rationale Retained products of conception are commonly managed by uterine evacuation; however, the optimal surgical approach remains uncertain. Operative hysteroscopy allows direct visualization and targeted removal of retained intrauterine tissue, whereas non-hysteroscopic procedures may be performed blindly or under ultrasound guidance. These comparator procedures differ clinically and should not be assumed to have equivalent efficacy or safety profiles.

Previous evidence syntheses have often focused on single-arm hysteroscopic outcomes or have pooled heterogeneous non-hysteroscopic procedures without adequately distinguishing blind evacuation from ultrasound-guided evacuation. In addition, the effects of hysteroscopic management on uterine integrity, particularly newly diagnosed intrauterine adhesions and the need for repeat intrauterine intervention, remain insufficiently clarified.

Therefore, this systematic review and meta-analysis will synthesize direct comparative evidence on operative hysteroscopy versus blind or ultrasound-guided uterine evacuation, with emphasis on surgical efficacy, uterine integrity, safety, and subsequent reproductive outcomes.

Condition being studied Retained products of conception after miscarriage or induced abortion are defined as persistent gestational or placental tissue within the uterine cavity following spontaneous miscarriage, early pregnancy loss, medical abortion, surgical abortion, or induced abortion.

The condition may present with persistent or irregular vaginal bleeding, pelvic pain, infection, delayed uterine recovery, prolonged elevation of serum human chorionic gonadotropin, or abnormal findings on transvaginal ultrasonography. Diagnosis is generally based on clinical manifestations, transvaginal ultrasound findings, hysteroscopic findings, histopathological confirmation, or a combination of these approaches.

Ultrasound features may include an intrauterine echogenic mass, heterogeneous intrauterine material, increased endometrial thickness, or vascularity detected by color Doppler ultrasonography. Diagnostic thresholds, ultrasound criteria, vascularity classifications, and indications for surgery may vary across studies.

Retained products of conception are clinically important because they may result in prolonged bleeding, anemia, pelvic infection, repeat uterine evacuation, emergency intervention, and possible endometrial injury. Repeated intrauterine procedures may increase the risk of intrauterine adhesions, potentially affecting menstrual recovery, fertility, and subsequent pregnancy outcomes.

This review focuses on retained products of conception after miscarriage, early pregnancy loss, medical abortion, surgical abortion, or induced abortion. Studies focused exclusively on postpartum retained placental tissue, placenta accreta spectrum disorders, cesarean scar pregnancy, cervical pregnancy, gestational trophoblastic disease, or isolated placental polyps will be excluded unless data for the eligible population can be extracted separately.

METHODS

Search strategy PubMed/MEDLINE, Embase, Web of Science Core Collection, and the Cochrane Library were searched from database inception to ⟦actual final search date⟧. Reference lists of included studies and relevant systematic reviews were screened manually to identify additional eligible studies.

Participant or population Women with retained products of conception after miscarriage, early pregnancy loss, medical abortion, surgical abortion, or induced abortion who underwent surgical management were eligible.

Intervention The intervention was operative hysteroscopic removal of retained products of conception under direct visualization.
Eligible procedures included hysteroscopic cold-loop resection, hysteroscopic electrosurgical resection, resectoscopic removal, hysteroscopic morcellation, hysteroscopic mechanical tissue removal, and other direct-visualization hysteroscopic techniques intended to remove retained products of conception.

Comparator The comparator was non-hysteroscopic uterine evacuation for retained products of conception. Comparator procedures were categorized according to whether ultrasound guidance was used.

Study designs to be included Randomized controlled trials and comparative non-randomized studies of interventions, including prospective cohort studies and retrospective cohort studies, were eligible.

Eligibility criteria Studies were excluded if they focused exclusively on postpartum retained placental tissue, placenta accreta spectrum disorders, cesarean scar pregnancy, cervical pregnancy, gestational trophoblastic disease, or isolated placental polyps; included mixed populations without separately extractable data; lacked a non-hysteroscopic surgical comparator; reported only diagnostic hysteroscopy; or represented duplicate publications from overlapping cohorts.

Information sources Electronic databases: PubMed/MEDLINE, Embase, Web of Science Core Collection, and the Cochrane Library.

Main outcome(s) The primary outcomes were complete clearance or one-step treatment success, repeat intrauterine intervention, and newly diagnosed intrauterine adhesions.

Quality assessment / Risk of bias analysis The Risk of Bias 2 tool was used to assess randomized controlled trials. The domains assessed included bias arising from the randomization process, deviations from intended interventions, missing outcome data, measurement of outcomes, and selection of the reported result.

The Risk Of Bias In Non-randomized Studies of Interventions tool was used to assess comparative non-randomized studies. The domains assessed included confounding, selection of participants, classification of interventions, deviations from intended interventions, missing data, measurement of outcomes, and selection of the reported result.

Risk-of-bias assessments were performed independently by two reviewers, with disagreements resolved by discussion or consultation with a third reviewer.

Strategy of data synthesis Meta-analysis was performed when at least two studies reported sufficiently comparable populations, interventions, comparators, and outcomes.

Randomized controlled trials and comparative non-randomized studies were synthesized separately in the primary analyses. Any pooled analysis combining different study designs was considered exploratory and interpreted cautiously.

Dichotomous outcomes were summarized as odds ratios with 95% confidence intervals. Continuous outcomes were summarized as mean differences when the same unit was used and standardized mean differences when different scales measured the same construct.

Subgroup analysis The prespecified subgroup analysis was based on the use of ultrasound guidance in the comparator group.

Subgroup 1: operative hysteroscopy versus uterine evacuation without ultrasound guidance, including blind curettage, blind suction curettage, conventional uterine evacuation, and non-ultrasound-guided vacuum aspiration.

Subgroup 2: operative hysteroscopy versus uterine evacuation with ultrasound guidance, including ultrasound-guided curettage, ultrasound-guided suction curettage, ultrasound-guided electric vacuum aspiration, ultrasound-guided manual vacuum aspiration, and ultrasound-guided uterine evacuation.

Sensitivity analysis Sensitivity analyses were conducted using a leave-one-out approach. Each eligible study was sequentially omitted from the pooled analysis to determine whether the magnitude, direction, or statistical significance of the overall effect estimate was disproportionately driven by a single study.

Country(ies) involved Department of Obstetrics and Gynecology, West China Second University Hospital, Sichuan University.

Keywords retained products of conception; hysteroscopy; uterine evacuation; curettage; ultrasound-guided vacuum aspiration; intrauterine adhesions; reproductive outcomes; meta-analysis.

Contributions of each author

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