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PROPHYLACTIC UTERINE ARTERY EMBOLIZATION VERSUS CESAREAN SECTION ALONE FOR PLACENTA ACCRETA SPECTRUM: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Abstract:

Background: Placenta accreta spectrum (PAS) is a severe obstetric disorder characterized by abnormal placental invasion into the myometrium, frequently leading to massive hemorrhage, maternal morbidity, and the need for cesarean hysterectomy with consequent loss of fertility. Prophylactic uterine artery embolization (UAE) has been proposed as a uterine-sparing adjunct during cesarean delivery; however, its clinical effectiveness and safety remain uncertain. Aim: This study aimed to evaluate whether prophylactic UAE performed during cesarean delivery improves maternal outcomes in patients with PAS compared with cesarean delivery alone.

Methods: A systematic review and meta-analysis were conducted in accordance with PRISMA guidelines and registered in PROSPERO (CRD420251266306). Electronic databases were searched through December 2025 for comparative studies assessing prophylactic UAE performed intraoperatively or immediately post-cesarean delivery versus cesarean delivery alone in patients with PAS. Primary outcomes included the rate of hysterectomy, intraoperative blood loss, and blood transfusion requirements. Secondary outcomes were length of hospital stay and intensive care unit (ICU) stay. Pooled risk ratios (RR) and weighted mean differences (WMD) with 95% confidence intervals (CI) were calculated. Certainty of evidence was assessed using the GRADE framework.

Results: Four retrospective comparative studies involving 408 women with PAS were included (UAE + CS: 140; CS alone: 268). Prophylactic UAE was associated with a significant reduction in hysterectomy rates (RR 0.60, 95% CI 0.41–0.88; $p < 0.01$). UAE was also linked to a significantly shorter ICU stay (WMD −2.5 days, 95% CI −3.45 to −1.55; $p < 0.01$). No statistically significant differences were observed in intraoperative blood loss, blood transfusion requirements, or overall hospital stay. The certainty of evidence was moderate for ICU stay reduction and low to very low for the remaining outcomes.

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Conclusions: Prophylactic UAE during cesarean delivery in patients with PAS may reduce the need for hysterectomy and shorten ICU stay. However, most available evidence is derived from retrospective studies with low certainty. Well-designed prospective trials are required to better define the role of UAE in improving maternal outcomes and preserving fertility.

Key Words: Placenta accreta spectrum, Uterine artery embolization, Cesarean delivery, Hysterectomy, Maternal outcomes, Systematic review

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