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OUTCOMES OF CAESAREAN HYSTERECTOMY – A PRISMA ANALYSIS

Dr. A. Emaya [1] and Dr. Nidhi Sharma [2]*

[1] Department of Obstetrics and Gynecology,
Saveetha Medical College & Hospital, Tamil Nadu, India.
[2] Professor, Department of Obstetrics and Gynecology,
Saveetha Medical College & Hospital, Tamil Nadu, India.

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Abstract

Caesarean hysterectomy, usually considered as a rare procedure, but still it carries its significant implications for maternal and neonatal outcomes. This PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) analysis aims to comprehensively review the various outcomes associated with caesarean hysterectomy, considering articles from recent literatures published from 2019 onwards from the 46 studies identified and excluded the articles before 2019 and around 9 article were analysed and reported here. By compiling evidence from various studies, this PRISMA analysis will provides an insight into various surgical interventions such as the morbidity, mortality and long-term consequences.

Keywords: Outcomes; Hysterectomy; Analysis.

INTRODUCTION

Caesarean hysterectomy, the removal of uterus either before or after a caesarean section, is a critical procedure which is usually performed in cases of various severe complications such as uncontrollable hemorrhage or any placenta accreta spectrum disorders. [1,2] Though the procedure is considered to be a life-saving intervention, it has lot of risks and complications.[3] The outcomes of caesarean hysterectomy are an essential intervention and it involves the process of informed decision-making as well it optimizes the maternal and neonatal health complications.[4] This PRISMA analysis systematically reviews recent literature to explore the outcomes associated with caesarean hysterectomy.

Peripartum hysterectomy is the surgical removal of the uterus due to severe complications during pregnancy, birth, or postpartum.[5] When all conservative measures have failed to control massive obstetric hemorrhage or life-threatening sepsis, emergency peripartum hysterectomy is used as an intervention of last resort It is a technically challenging procedure owing to the anatomic and physiologic changes of pregnancy, including a massive increase in blood flow to the uterus at term.[6,7] Emergency peripartum hysterectomy is associated with significant morbidity and mortality worldwide. They are seen more often in developing countries due to decreased availability and lack of uptake of antenatal care services especially in the rural areas.[8] the main indications for emergency peripartum hysterectomy are massive obstetric hemorrhage due to placental pathology, uterine atony, or uterine rupture, followed by puerperal sepsis.[9, 10]

Aim and Objective:

The aim of this review is to describe the outcomes of emergency peripartum hysterectomy.

Sources:

A comprehensive search of various databases including PubMed, Medspace, Medline and Web of Science was conducted to identify relevant studies published between 2019 and the present. The search strategy included keywords such as "caesarean hysterectomy," "maternal outcomes," "neonatal outcomes," & "complications." Studies were included if they reported outcomes of caesarean hysterectomy in obstetric populations. The PRISMA guidelines were followed to ensure transparency and rigor in the review process.

Study Selection

- **Inclusion Criteria**

  All studies that reported the outcomes of peripartum hysterectomy were included.

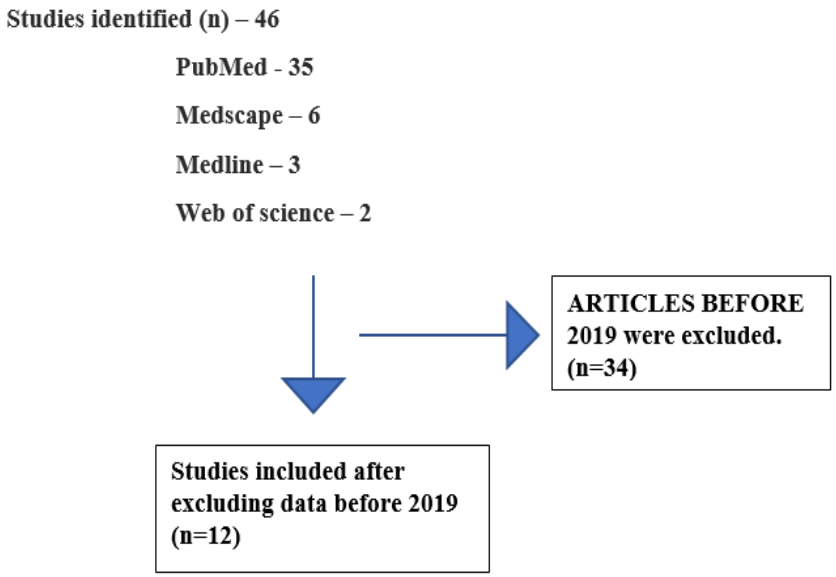
- **Exclusion Criteria**

  Article not published in English were excluded.

Data on outcomes of peripartum hysterectomy was extracted and combined from the previous systematic review, case reported & case series. Primary outcome of this study is to describe the outcomes of peripartum hysterectomy.

RESULTS

In total, 12 studies were included.



The initial search yielded a total of 46 studies, of which 12 studies met the inclusion criteria for this analysis. The included studies encompassed diverse populations and settings, providing insights into the outcomes of caesarean hysterectomy across different contexts.

Maternal outcomes:

The most commonly reported maternal outcomes included intraoperative complications, postoperative complications such as infections and hemorrhage, length of hospital stay, and long-term complications such as pelvic organ prolapse and urinary incontinence.[11, 12]

Several studies also assessed maternal mortality and morbidity associated with caesarean hysterectomy, providing valuable insights into the risks and complications of the procedure.[13-20] The majority of the complications noted in these patients were infectious complications like fever, wound site infection, and urinary tract infection followed by complications related to the emergent surgery itself.[21, 22]

Neonatal outcomes:

While the primary focus of caesarean hysterectomy is maternal well-being, neonatal outcomes are also of paramount importance. Studies included in this analysis examined neonatal outcomes such as Apgar scores, neonatal intensive care unit (NICU) admission rates, and long-term developmental outcomes among infants born to mothers who underwent caesarean hysterectomy.[23, 24]

Complications and long-term consequences:

In addition to immediate postoperative complications, such as wound infections and thromboembolic events, caesarean hysterectomy may have long-term implications for women's health. Studies explored the risk of future fertility, the impact on mental health, and the quality of life following the procedure.[25-30] The complications include Fever, Wound infection, UTI, Coagulopathy, Vesicovaginal fistula, Ileus, Transfusion reaction, sepsis, prolonged intubation, urethral/bladder injury, pneumonia, DVT.[31,32]

DISCUSSION

Oonagh et al. 2019 has done a systematic review to describe the long-term risks and benefits of cesarean delivery for mother, baby, and subsequent pregnancies. The primary maternal outcome was pelvic floor dysfunction, the primary baby outcome was asthma, and the primary subsequent pregnancy outcome was perinatal death. One RCT and 79 cohort studies (all from high income countries) were included, involving 29,928,274 participants. Compared to vaginal delivery, cesarean delivery was associated with decreased risk of urinary incontinence, odds ratio (OR) 0.56 and pelvic organ prolapse (OR 0.29). Children delivered by cesarean delivery had increased risk of asthma upto the age of 12 years (OR 1.21. and obesity upto the age of 5 years (OR 1.59). Pregnancy after cesarean delivery was associated with increased risk of miscarriage (OR 1.17) and still birth (OR 1.27), but not perinatal mortality (OR 1.11). Pregnancy following cesarean delivery was associated with increased risk of placenta previa (OR 1.74), placenta accrete (OR 2.95), and placental abruption (OR 1.38). When compared with vaginal delivery, cesarean delivery is associated with a reduced rate of urinary incontinence and pelvic organ prolapse, but this should be weighed against the association with increased risks for fertility, future pregnancy, and long-term childhood out-comes. This information could be valuable in counselling women on mode of delivery.[33]

Bremen, et al. 2019 stated that the incidence of placenta accreta has increased in recent years and it has been suggested that the rising trend in cesarean delivery and other uterine surgery is the underlying cause. They had explored the magnitude of the effect of performing single and repeat cesarean deliveries or other uterine surgery on the incidence of placenta accreta. The risk of placenta accreta in a second pregnancy increased for women who had undergone a cesarean in their first pregnancy compared with vaginal delivery (OR 3.02). Absolute risk of placenta accrete increased with the number of previous cesareans. The risk of uterine rupture and hysterectomy was also associated with the number of cesareans. Risk of placenta accreta,

hysterectomy, and uterine rupture increases with the number of previous cesarean deliveries.[34]

Siwanon et al. 2019, with increasing rates of cesarean sections (CS), the number of hysterectomies performed among women with a previous CS is on the rise. To provide the association between the odds of complications following a hysterectomy performed later in life and a previous CS. A three-level meta-analysis was applied for outcomes with dependent effect sizes. Twenty-six studies were included involving 54,815 women. The odds of the following complications were increased in women with a previous CS: urinary tract injury (pooled unadjusted odds ratio (OR)=3.15, gastrointestinal tract injury (pooled unadjusted OR=1.73), postoperative infections (pooled unad-justed OR=1.44), wound complications (pooled unadjusted OR=2.24), reoperation (pooled unad-justed OR=1.46, 95% CI=1.19–1.78, 2 studies, 9,899 women), and blood transfusion (pooled unadjusted OR=1.35). Previous CS increases risks of various complications following hysterectomy. This information reminds the gynecologists to be aware of the associations between previous CS and potential complications among women undergoing hysterectomy.[35]

Gavin et al. 2023 aimed to review iatrogenic bladder and ureteric injuries sustained during caesarean section and hysterectomy. Ninety-six eligible studies were identified, representing 1,741,894 women. Amongst women undergoing caesarean section, weighted pooled rates of bladder or ureteric injury per 100,000 procedures were 267 or 9 events respectively. Injury rates during hysterectomy varied by approach and pathological condition. Weighted pooled mean rates for bladder injury were 212–997 events per 100,000 procedures for all approaches (open, vaginal, laparoscopic, laparoscopically assisted vaginal and robot assisted) and all pathological conditions (benign, malignant, any), except for open peripartum hysterectomy (6,279 events) and laparoscopic hysterectomy for malignancy (1,553 events). Similarly, weighted pooled mean rates for ureteric injury were 9-577 events per 100,000 procedures for all hysterectomy approaches and pathologies, except for open peripartum hysterectomy (666 events) and laparoscopic hysterectomy for malignancy (814 events). Surgeon inexperience was the prime risk factor for injury, and improved anatomical knowledge the leading preventative strategy. Caesarean section and most types of hysterectomy carry low rates of urological injury. Obstetricians and gynaecologists should counsel the patient for her individual risk of injury, prospectively establish risk factors and implement preventative strategies.[36]

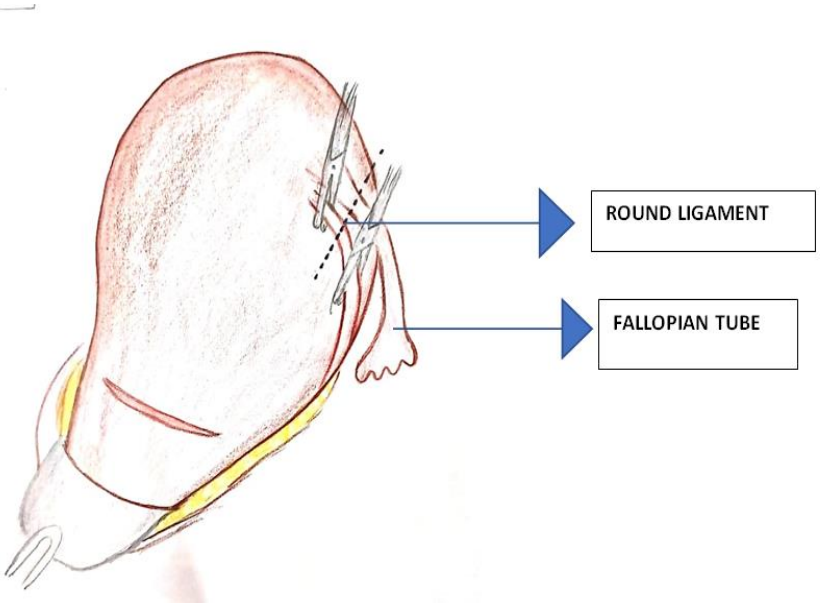
The incidence of Peripartum hysterectomy is in increasing trend. The factors contributing to this increasing trend may be related to an increase in the caesarean delivery rates. In some countries incidence rate of peripartum hysterectomy rate is decreased which attributed to increased rate of uterine artery embolisation. The most common indication for Peripartum hysterectomy was found to be atonic postpartum haemorrhage, followed by adherent placenta and rupture uterus. The most common type of child birth preceding the Peripartum hysterectomy was a caesarean section rather than a vaginal delivery.[37-40]

With increasing rates of caesarean section and its associated rise in placenta previa and placenta accreta, the incidence of EPH is expected to rise world over.[41,42] However, the most common reason for Peripartum hysterectomy is still postpartum haemorrhage in developing countries. Performing surgery depends on hemodynamic stability.

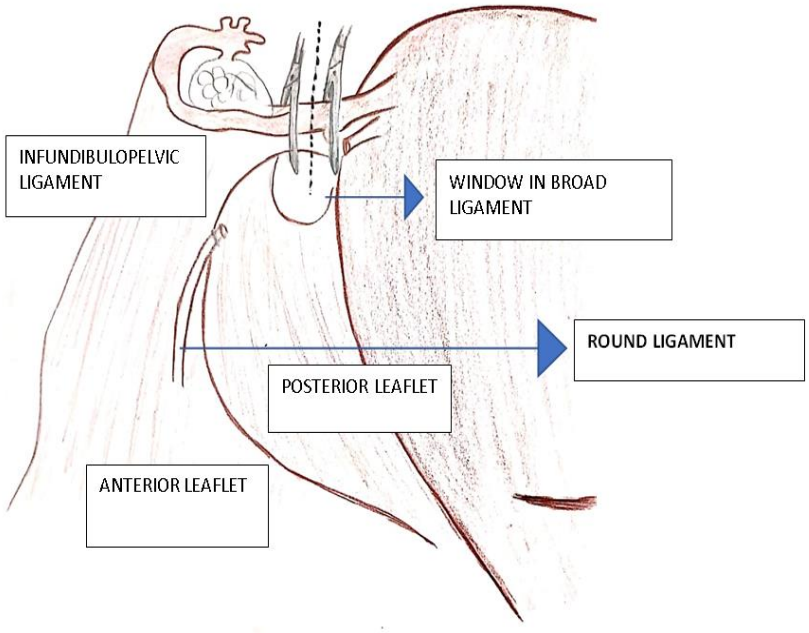
Early intervention with conservative measures to be done to prevent hysterectomy. Subtotal Emergency peripartum hysterectomy may be a better choice. Performance of hysterectomy by an experienced surgeon is reported to significantly reduce the operating time, number of units of blood transfusion and hospital stay.[43, 44]

STEPS OF CESAREAN HYSTERECTOMY

STEP 1 - Clamp, cut and ligate bilateral round ligaments.

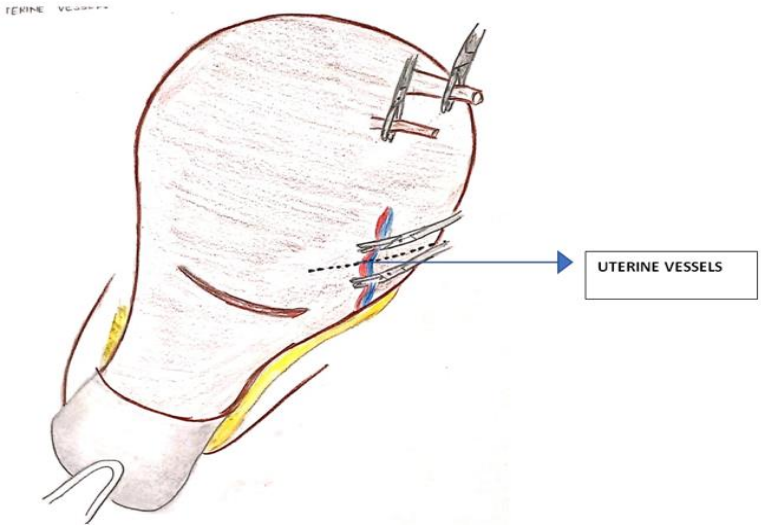


STEP 2 - Clamp, cut and ligate uterine- ovarian ligament

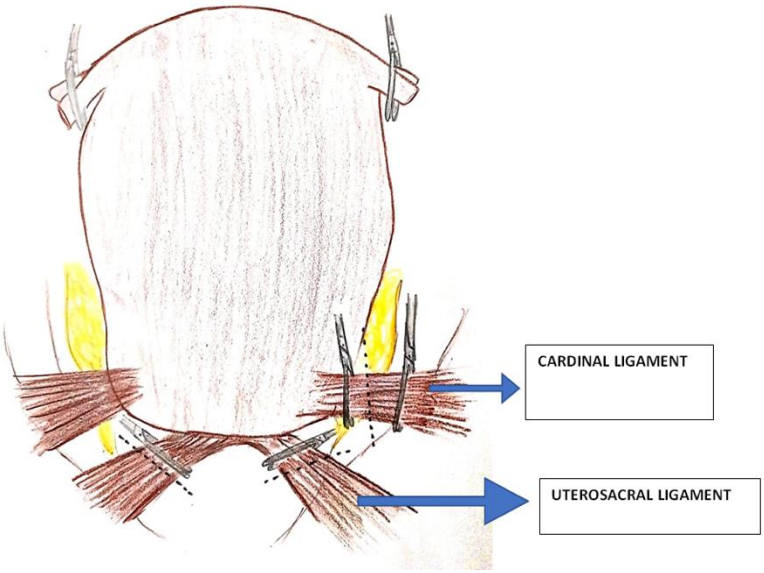


STEP 3 - Cut the bladder peritoneum

STEP 4 - Clamp, cut and ligate bilateral uterine areteries and vein.



STEP 5 - Clamp, cut and ligate bilateral cardinal and uterosacral ligament.



STEP 8 - vault closure.

As hysterectomy abruptly end the reproductive career of a woman, careful antenatal assessment and early recognition of risk factors for haemorrhage should be accompanied by arrangements for adequate uterotonics and blood products for early resuscitation.[44]

This can be reduced only by improving accessibility, availability, and quality of care for the vulnerable group of pregnant women globally.

The findings of this PRISMA analysis the outcomes associated with caesarean hysterectomy. While the procedure is often necessary to prevent maternal morbidity and mortality, it is not without risks, and careful consideration of both short-term and long-term outcomes is crucial in clinical decision-making. Future research should focus on standardizing reporting mechanisms for caesarean hysterectomy outcomes and evaluating strategies to optimize maternal and neonatal health in high-risk obstetric populations.[45]

CONCLUSION

In most of the cases emergency cesarean hysterectomy is performed. In conditions like placenta accreta spectrum elective hysterectomy is planned. Either cases it should be performed by skilled surgeons or under guidance of skilled and experienced sugeon to reduce after coming side effects. The most common side effects is fever followed by Wound infection, UTI, Coagulopathy, Vesicovaginal fistula, Ileus, Transfusion reaction, sepsis, Prolonged intubation, urethral/ bladder injury, pneumonia, DVT. Though these studies have publication bias the outcomes are relatively safe. Since it a lifesaving procedure benefits overweight risks associated with it.

Caesarean hysterectomy is a life-saving intervention for severe obstetric complications, but it carries significant implications for maternal and neonatal outcomes. This PRISMA analysis highlights the diverse range of outcomes associated with the procedure and underscores the importance of informed decision-making and comprehensive postoperative care to optimize patient outcomes. Further research is needed to enhance our understanding of the long-term consequences of caesarean hysterectomy and improve clinical management strategies.

Conflict of Interest: None to declare."

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