

Case Series

# Understanding and Managing Caesarean Scar Ectopic Pregnancy: A Retrospective Analysis of Risk Factors, Strategies, and Outcomes

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## Abstract

**Objective:** Caesarean Scar Ectopic Pregnancies (CSEP) pose distinct diagnostic and management challenges. This study investigates the risk factors, treatment options, and outcomes for CSEP cases treated at Prince Sultan Medical Military City, Riyadh.

**Methods:** Over a two-year period, medical records of 28 patients with CSEP were reviewed, collecting data on patient demographics, obstetric history, and treatment outcomes. This analysis aimed to identify influential risk factors and assess the effectiveness of various management strategies.

**Results:** Treatment success was achieved in 85.7% of cases, with Methotrexate (MTX) proving effective in over half of the cases. The findings suggest significant risk factors and best practices for managing this rare condition.

**Conclusion:** Early detection, risk factor awareness, and tailored treatment strategies are key to optimizing outcomes in patients with CSEP.

## More Information

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## Introduction

Ectopic pregnancy in Caesarean scar tissue, known as CSEP, is an uncommon but serious complication that has been observed more frequently as Caesarean deliveries have increased globally. When implantation occurs within scar tissue from a previous Caesarean section, there is a high risk of uterine rupture, hemorrhage, and potentially life-threatening consequences if undiagnosed [1].

CSEP is diagnosed primarily through serum  $\beta$ -HCG levels and transvaginal ultrasound, which together offer a reliable approach for early detection [2]. Studies have shown that early intervention is crucial to reduce maternal morbidity<sup>1</sup>. This retrospective analysis focuses on CSEP cases at Prince Sultan Medical Military City, examining key risk factors, evaluating different management strategies, and providing insights to support better-informed care.

## Methods

### Study design

This retrospective observational analysis was conducted at

Prince Sultan Medical Military City, including cases diagnosed between July 2021 and December 2023. A total of 28 CSEP cases were confirmed through clinical assessments [1].

### Ethical approval

Ethical clearance was granted by the Institutional Review Board (IRB No. 905), with all patient data treated confidentially. Informed consent was obtained for the study.

### Objectives

The study objectives were to:

1. Identify major risk factors associated with CSEP.
2. Assess the effectiveness of various treatment approaches (medical, conservative, surgical).
3. Analyze maternal outcomes to better understand the impact of CSEP.

### Data collection

Data points included:



- **Demographics:** Age, weight, BMI.
- **Obstetric history:** Total pregnancies, number of previous Caesarean sections, and any history of ectopic pregnancies.
- **Clinical presentation:** Gestational age at diagnosis,  $\beta$ -HCG levels, and ultrasound findings [2].
- **Management and outcomes:** Type of intervention used (MTX, surgery, or expectant management), success rates, and any complications [1].

### Statistical analysis

Descriptive statistics were employed to summarize patient demographics and clinical data, with continuous variables reported as mean  $\pm$  standard deviation and categorical data as frequencies.

## Results

### Patient demographics and risk factors

The average age of patients was 39, and the mean BMI was 30.3. Risk factors commonly identified included older maternal age and multiple prior Caesarean sections [1].

### Clinical Presentation

- **Gestational age:** Diagnoses generally occurred between 6 and 11 weeks of gestation.
- **$\beta$ -HCG levels:** Levels ranged widely, from 146 to 124,450 mIU/mL, with a mean of 13,200 mIU/mL [3].

### Treatment modalities and effectiveness

Treatment was selected based on each patient's presentation and condition:

- **Methotrexate (MTX):** Used for 15 patients (53.5%), showing effectiveness particularly in cases with lower initial  $\beta$ -HCG levels [4].
- **Surgical intervention:** Necessary in 10 cases (35.7%) due to resistance to MTX or other complications [2].
- **Expectant management:** Used in 3 cases (10.7%) where patients were stable and  $\beta$ -HCG levels were lower [1].

### Outcomes

A successful outcome, indicated by  $\beta$ -HCG levels falling below 5 mIU/mL, was achieved in 85.7% of cases. Minimal complications were reported, with four patients experiencing mild abdominal pain and one patient requiring surgery due to hemorrhage.

## Discussion

This study underscores the importance of understanding specific risk factors for CSEP, such as older maternal age and multiple previous Caesarean sections [4]. Tailoring treatment according to these factors can enhance outcomes. Methotrexate (MTX) was effective in managing cases with lower  $\beta$ -HCG levels, aligning with recent findings on MTX as a primary option for CSEP management. For complex cases where MTX alone was insufficient, surgical intervention proved essential [5-8].

### Limitations and future directions

The study's retrospective design and limited sample size are notable limitations, suggesting a need for broader studies with larger data sets. Future research should investigate long-term outcomes to refine protocols for managing CSEP.

## Conclusion

Caesarean scar ectopic pregnancy presents complex challenges that require prompt diagnosis and individualized treatment. Recognizing risk factors and selecting the right approach—whether MTX or surgery based on the case—can improve outcomes and reduce complications in patients with CSEP.

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