



Exploring the Surgical Site Infection Rate after Caesarean Delivery in a Military Hospital in Alkharj

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Authors' contributions

This work was carried out in collaboration among all authors. Authors NA, ZSA and EE designed the study, performed the statistical analysis, wrote the protocol, wrote the first draft of the manuscript and managed the analyses of the study. Author MAA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: A cesarean section is a life-saving surgery when some complications arise during pregnancy or the process of childbirth. The development of post-caesarean delivery surgical site infections is one of the significant cause of prolonged hospitalization, greater mortality than before, increased morbidity, and increased hospital readmission

Aim: This study aims to explore the rate of caesarian section surgical site infection in the military hospital in Alkharj.

Methodology: This retrospective study includes collecting data from the infection control unit in a military hospital in Alkharj in 2019.

Results: The total number of caesarian surgeries in 2019 was 756 surgeries. The surgical site infections percentage in 2019 was 1.19%. The percentage of caesarian section surgical site infections was 0% in several months such as in January, April, June, Sept, and December. The highest percentage was in May and July (2.5%).

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Conclusion: The surgical site infections incidence in the present study was low (about 1.2 %) but because the percentage is usually underestimated and because the rate of delivery by caesarean section is increasing continuously, monitoring of women for several weeks after caesarian surgeries are necessary.

Keywords: Caesarian section; Cesarian surgery; rate; surgical site infection.

1. INTRODUCTION

A cesarean section is a life-saving surgery when some complications arise during pregnancy or the process of childbirth. However, it is a main surgical procedure and is associated with instantaneous perinatal and maternal risks and may have consequences for upcoming pregnancies in addition to long-term effects that are still being investigated [1-4]. The usage of cesarean section has increased intensely worldwide in the previous decades predominantly in high- and middle-income countries, in spite of the lack of a suitable evidence to support substantial perinatal and maternal benefits with cesarean section rates more than a certain threshold. Contrariwise, some studies showing a link between increasing the rates of cesarean section and poorer consequences [5,6].

More than 1.2 million caesarean deliveries are performed per year in the United State, so caesarean deliveries are considered the most common surgery implemented in the United State [7]. Hsu et al. said that cesarean sections account for 32% of all inpatient deliveries in the United State annually [8]. The development of post-caesarean delivery surgical site infections is one of the significant causes of increased mortality, prolonged hospitalization, increased morbidity, and increased hospital readmission [7].

Surgical site infections include organ space infections as well as deep and superficial incisional infections [9]. In order to help physicians in diagnosing Surgical site infections correctly, the *Centers for Disease Control and Prevention* has released guidelines for the classification and surveillance of Surgical site infections diagnosed within 30 days of surgery [9-11].

Wound infection after cesarean section presents with discharge, induration of the incision and erythema complicates about 2-7% of patients, and usually develops 4 to 7 days after CD [12-16]. Women should check the wound daily for any signs of infection because several types of

infection don't cause symptoms until 4–7 days after the surgery when numerous women have already returned from the hospital to their home [17]. Many post-caesarean wound infections generally appear after delivery within the first weeks [18].

It is important to know the accurate rate of post-caesarean wound infections in order to prepare an evidence-based approach that leads to the prevention of caesarian section surgical site infections. Therefore, this study aims to show the rate of caesarian section surgical site infection in the military hospital in Alkharj.

2. METHODOLOGY

This retrospective study includes collecting data from the infection control unit in a military hospital in Alkharj in 2019. The inclusion criteria include all women who underwent caesarean delivery in the hospital during 12 months from the beginning of January to the end of December 2019. So other surgeries were excluded.

The data include the number of caesarian surgeries in 2109, caesarian section surgical site infections percentage in all months, and the overall percentage of caesarian section surgical site infections in 2019.

The data were represented by numbers and percentages. The caesarean section surgical site infections rate was calculated by dividing number of caesarean section surgical site infections by the total number of caesarean section surgeries that were performed during the study period and after that multiplies the result by 100%. This study is approved by the IRB committee in the military hospital No: 4101728.

3. RESULTS AND DISCUSSION

The total number of caesarian surgeries in 2019 was 756 surgeries. About 54.23 % of these surgeries were between July and December. The total number of caesarian surgeries in 2109 is shown in Table 1.

Table 1. Total number of caesarian surgeries in 2019

Period	Number N=	Percentage
January-June	346	45.77%
July -December	410	54.23%

The percentage of surgical site infections in 2019 was 1.19 %. The least number of infections was between September till the end of December (only 2 surgical site infections). Table 2 shows the percentage of caesarian section surgical site infections in 2019.

The percentage of caesarian section surgical site infections was 0 % in several months such as in January, April, June, Sept, and December. The highest percentage was in May and July (2.5%). Fig. 1 shows the percentage of caesarian section surgical site infections in different months in 2019.

In the present study, the total percentage of surgical site infections in 2019 was 1.19%. Yokoe et al. and Conner et al. reported a higher rate of surgical site infections [19,20]. They

stated that While surgical site infections complicate (1.9%) of all surgeries performed, the incidence of surgical site infections after caesarean delivery is significantly higher (7-10%) [19,20]. Alfouzan et al. reported that in a general hospital in Kuwait, the overall SSI prevalence following the caesarean section was 2.1% [21].

Surveys in European countries conducted from 2008–2013 reported that the rate of post-caesarean section surgical site infections were between 1.75 to 4.78%, which included inpatients and post-discharge patients [22]. Farret et al reported that the rate of surgical site infections after caesarean delivery during the four-year study period was 1.44% [23]. In addition to that, Edwards et al stated that the incidence of surgical site infections after caesarean delivery was 1.46% [24].

Our study demonstrates that the rate of surgical site infections after caesarean section was low but these surgical site infections commonly occur after patients returning to their homes, this may lead to underestimating the percentage of surgical site infections after caesarian surgeries.

Table 2. Percentage of Caesarian section surgical site infections in 2019

Month	Number of caesarian surgeries N=	Number of surgical site infections N=	Percentage of surgical site infections
January-April	185	2	1.08%
May-August	296	5	1.69%
September-December	275	2	0.73%
Total	756	9	1.19%

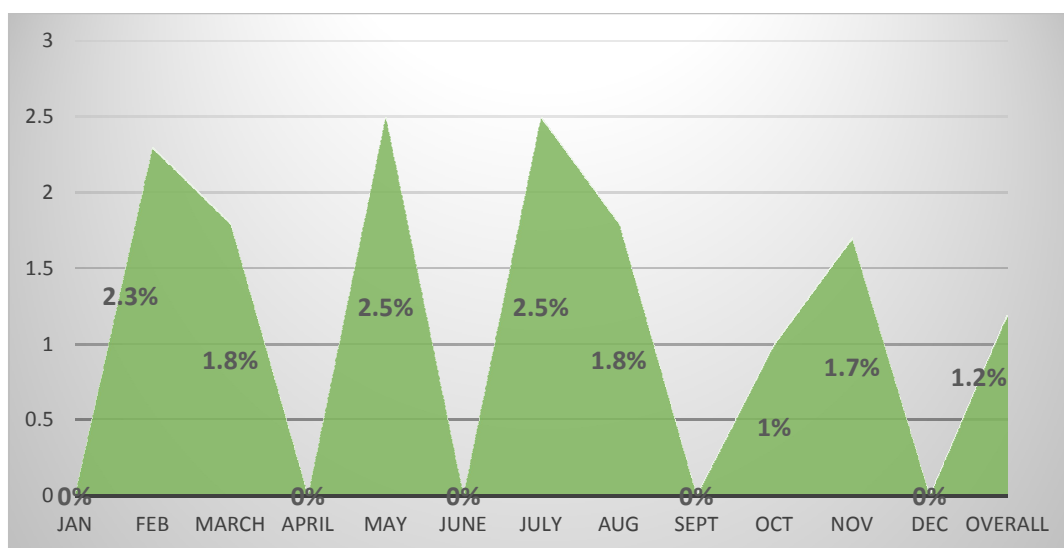


Fig. 1. Percentage of caesarian section surgical site infections in different months in 2019

In addition, surgical site infections are the most costly problem related to hospital infections. Therefore, it is important to follow the patient status after their discharge from the hospital to know if they developed infections or no.

4. CONCLUSION

The incidence of surgical site infections in the present study was low (about 1.2%) but because the percentage is usually underestimated and because the rate of delivery by caesarean section is increasing continuously, monitoring of women for several weeks after caesarian surgeries are necessary to rule out the rate of surgical site infections. It is important to increase the awareness of health care providers about preventive strategies such as prescribing antibiotic surgical prophylaxis in order to decrease the rate of surgical site infections.

CONSENT AND ETHICAL APPROVAL

As per university standard guideline, participant consent and ethical approval have been collected and preserved by the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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