

# Incidence and Most Common Organism Associated Post Caesarean Surgical Site Wound Infection at Khairpur Medical College (Teaching Hospital)

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## ABSTRACT

**Objective:** To determine the incidence and most common organism associated post caesarean surgical site wound infection at Khairpur medical college (Teaching hospital). **Study design:** Descriptive case series study. **Settings:** Department of Gynecology, Khairpur Medical College. **Duration:** Six months from 01-01-2018 to 30-06-2018. **Methodology:** The females of age 20 to 40 years undergoing caesarean section at the same institute were included. These cases were then followed at 1<sup>st</sup> week after the C section and the wound site was examined for the presence of any organism detected and their pattern of isolation of culture media. **Results:** In this study there were total 2745 cases. The mean age of the participants was 32.48±8.73 years and mean BMI was 27.11±2.46 kg/m<sup>2</sup> (table I). Out of these 2745 cases, 780 (28.41%) cases underwent C section in six months with an average incidence of 130 cases per month. Wound infection in these cases undergoing CS was seen in 53 (6.79%) out of 780 cases (table II). The most common organism detected was Staph Aureus which was seen in 16 (30.1%) of the cases. It was followed by E coli affecting 12 (22.6%) and P Aeruginosa and Klebsiella affecting 13.2% and 11.3% cases each. **Conclusion:** Infection after C section is common and the most common organism detected is staph aureus.

**Keywords:** C section, Infection, Staph, E-coli

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## INTRODUCTION

The number of obstetrical surgical interventions like Caesarean section (CS) is on the rise all across the globe including developing countries like Pakistan. According to a survey the frequency of C section in cases of all obstetrical cases in United States (US) accounted for 32% of the cases and the number has increased significantly in the past 10 years.<sup>1,2</sup>

There are a number of complications that can be attributed in cases undergoing these surgical interventions and include haemorrhage, shock, disseminated intra vascular coagulation (DIC), ureter ligations, surgical site infection (SSI) etc. Surgical site infections can be both superficial as well as of the deep structures like endometritis that can add to the overall increased likelihood of increased morbidity and even mortality.<sup>3,4</sup>

The risk factors that can contribute to the risk of SSI in cases after C section include co morbid conditions like immunocompromised state, Diabetes mellitus, higher number of gravida and parity, low socioeconomic status, lack of anti-biotic therapy, poor hygiene of the theatre as well as of the patients, lack of ante and post-natal visits etc.<sup>5,6</sup>

A number of steps have been taken in the past to decrease the chances of infection in such cases and include better decontamination age, pre and post-surgical antibiotics and also different protocols for the choice and different dose of antibiotic therapy to minimize the infection risk. Negative pressure dressing and regular follow up for inspection of the wound are

the other steps taken; yet infection is still there; though the number has markedly decreased. The classical signs and symptoms of SSI include fever, wound discharge, erythema or induration at incision site and can affect in 1 to 7% of the cases undergoing C section in various settings.<sup>6,7</sup>

The goal of treatment is antibiotic therapy which is usually empirical and can be targeted after the culture and sensitivity, which is usually requested in non-responding cases. The most common organisms associated in cases suffering from early infection i.e. within 48 hours comprise groups A or B-haemolytic Streptococcus. Along with these common pathogens, the others include Staphylococcus epidermidis, Urea plasma urealyticum, Enterococcus facial is, Escherichia coli, Staphylococcus aureus, and Proteus mirabilis.<sup>8-10</sup> A relatively severe and deeper infection is denoted as necrotizing fasciitis which is characterized by rapid necrosis of the subcutaneous tissue and fascia and augment intensive management.

The prevalence of different organisms is variable across not only the globe but also in the various regions of the same country; that's why this study was planned to see the burden as well as the pattern of organism detected after C section.

## OBJECTIVE

To determine the frequency and most common organism associated post caesarean surgical site wound infection at Khairpur medical college (Teaching hospital).

## METHODOLOGY

**Study Design:** Descriptive case series study.

**Settings:** Khairpur Medical College Khairpur Mir's-Pakistan

**Duration:** Six months from 01-01-2018 to 30-06-2018.

**Methods:** The females of age 20 to 40 years undergoing caesarean section at the same institute were included. The cases were selected irrespective of gravida, parity, duration of gestation and co morbid conditions like DM and HTN. These cases were then followed at 1<sup>st</sup> week after the C section and the wound site was examined for the presence of infection in the form of redness or pus collection, along with fever of at least 100 F or more and White blood cell count less than 4,000 or more than 11,000 mm<sup>3</sup> and if this was found a swab was taken and sent for cultures and sensitivity of all the cases. The cases were checked for the presence of any organism and their pattern of isolation of culture media and were divided according to gram staining as positive or negative.

### Statistical Analysis:

The data was entered and analysed by using statistical package for social sciences version 23. Mean and standard deviations were calculated for quantitative variables and frequency and percentages were qualitative variables.

## RESULTS

In this study there were total 2745 cases. The mean age of the participants was 32.48±8.73 years and mean BMI was 27.11±2.46 kg/m<sup>2</sup> (table I).

**Table 1: Study demographics**

| Variables | Mean ± SD  | Range      |
|-----------|------------|------------|
| Age       | 32.48±8.73 | 18-42      |
| BMI       | 27.11±2.46 | 17-35      |
| WBC count | 17300±4200 | 2500-27600 |
| Gravida   | 4.45±2.23  | 1-9        |
| Parity    | 3.54±2.11  | 1-9        |

Out of these 2745 cases, 780 (28.41%) cases underwent C section in six months with an average incidence of 130 cases per month. Wound infection in these cases undergoing CS was seen in 53 (6.79%) out of 780 cases (table II).

**Table 2: Number of C section and wound infection**

| Variables       | No.        | %      |
|-----------------|------------|--------|
| C section       | 780 (2745) | 28.41% |
| Wound infection | 53 (780)   | 6.79%  |

The most common organism detected was Staph Aureus which was seen in 16 (30.1%) of the cases. It was followed by E coli affecting 12 (22.6%) and P Aeruginosa and Klebsiella affecting 13.2% and 11.3% cases each as shown in table III.

**Table 3: Types of organism detected (n=53)**

| Organism detected | No.                    | %  |       |
|-------------------|------------------------|----|-------|
| Gram positive     | S. Aureus              | 16 | 30.1% |
|                   | MRSA                   | 2  | 3.7%  |
|                   | Beta H-Streptococci    | 1  | 1.8%  |
|                   | Alpha H-Streptococci   | 1  | 1.8%  |
| Gram negative     | E coli                 | 12 | 22.6% |
|                   | Pseudomonas aeruginosa | 7  | 13.2% |
|                   | Klebsiella             | 6  | 11.3% |
|                   | Enterobacter           | 3  | 5.6%  |
|                   | Proteus mirabilis      | 2  | 3.7%  |
|                   | Mixed                  | 3  | 5.6%  |

## DISCUSSION

The burden of the C section in the obstetrical cases has inclined significantly in the recent era and no surgical intervention is free of any side effect profiles. Surgical site infection (SSI) is one of the salient untoward effect and need to be addressed to look for the type of organisms and infection rate. This can be helpful not only to take steps to reduce the risk of infection but also to have a check on types of organisms in the local population to better tailor the empirical therapy against these organisms.<sup>11,12</sup> In the present study the wound infection in cases undergoing C Section was seen in 53 (6.79%) out of 780 cases. The data regarding this prevalence was wide variable and prevalence varied between 2 to 40% of the cases.<sup>13,14</sup>

According to a study done by Mah et al<sup>13</sup> this infection was seen in 2.8% of the cases while in another study done by Dykorn OA et al<sup>14</sup> this infection rate was seen in 38.7% of the cases. While the other studies have shown posit C section infection rate in 9.1% and 9.6% of the cases.<sup>15,16</sup> According to another study done by Satyanarayana V et al, they found almost similar frequency of infection rate and it was seen in 25.2% of the cases after C section.<sup>17</sup>

The most common organism detected was Staph Aureus which was seen in 16 (30.1%) of the cases. It was followed by E coli affecting 12 (22.6%) and P Aeruginosa and Klebsiella affecting 13.2% and 11.3% cases. These results were closer to the findings of the study done by Dhar H et al where they also found S aureus as the most common bug where it was seen in 31.7% of the cases. E coli was seen in 18.95% of the cases, Klebsiella in 9% and P aeruginosa in 8.53% of cases.<sup>18</sup> The other studies have also shown that S aureus was the most common organism detected in their study; however, staph epidermidis was also not uncommon. In these studies, the other common pathogens detected were E coli, Klebsiella, Proteus, Enterobacter.<sup>19-21</sup>



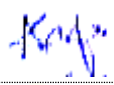



## CONCLUSION

Surgical site infection after C section is not un common and the most common organism detected is staph aureus.

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| <b>Dr. Anila Gul Shaikh</b><br>Assistant Professor, Gynecology<br>Khairpur Medical College Khairpur Mir's     | Interpretation of Data              |  |
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