

**Research Article****Analysis of associated risk factors of surgical infection  
in obstetrics among females in Pakistan****Ali Tariq<sup>1</sup>, Muhammad Usman<sup>2</sup>  
and Muhammad Fawad Yonis<sup>3</sup>**<sup>1</sup>MO at I.R.H.C Lalamusa tehsil Kharian, Pakistan.<sup>2</sup>MO at D.H.Q ABSTH district Gujrat.<sup>3</sup>MO at I.R.H.C Lalamusa tehsil Kharian, Pakistan.**Corresponding author:** Dr Ali Tariq, MO at I.R.H.C Lalamusa tehsil Kharian,, Pakistan.**Contact:** 0092-347-6309747. **E-mail:** dralitariq06@gmail.com**ABSTRACT**

**Introduction:** Pregnant women are at risk of infection during labor and delivery; most infections of the female pelvic organs occur when normal flora of the female genital or gastrointestinal tract contaminate the normally sterile amniotic fluid and uterus. **Objectives of the study:** The main objective of the study is to analysis of associated risk factors of surgical infection in obstetrics among females in Pakistan. This study intended to assess the prevalence of SSI and associated risk factors. **Methodology of the study:** The current study was conducted by the combined efforts of Osh state university and Lalamusa hospital during March 2017 to December 2017. The data include all those women who delivered baby through C-section or by normal delivery. **Analysis and results:** The socio-demographic values of the patients indicated that these are dependent factors and SSI are also depend upon these values. Socio demographic variable had no significant association with SSIs except age, those women age less than nineteen years were three times risk of developing surgical site infection as compare to those age range 20–34. **Conclusion:** It is concluded that surgical site infection rate become high among young age women as compared to old age women. Duration of surgery and wound healing are not a dependent factor these are independent factors because it is not related to SSI.

**Keywords:** SSI, Infection, Pregnant, Women**INTRODUCTION**

Pregnant women are at risk of infection during labor and delivery; most infections of the female pelvic organs occur when normal flora of the female genital or gastrointestinal tract contaminate the normally sterile amniotic fluid and uterus. Infection in obstetrics accounts for the second most common cause of maternal mortality next to post-partum hemorrhage<sup>1</sup>.

Infection is defined as an invasion and multiplication of microorganisms in body cells and tissues, which may be clinically unapparent or result in local cellular injury because of

competitive metabolism, toxins, intracellular replication or antigen-antibody response.<sup>1</sup> Surgical site infection (SSI) show up in the postoperative period that happens inside 30 or 90 days of post-agent procedure on account of metallic embed addition. Infection has dependably been an element of human life and sepsis in present day surgery keeps on being a critical issue for medicinal services experts over the globe. It isn't just a vital reason for horribleness and mortality yet additionally cause extreme financial weight all through the world by causing torment, expanding

the danger of hospital readmission and making rehashed procedures more probable.<sup>2</sup>

Surgical site infection (SSI) is the second most regular irresistible entanglement after urinary tract infection following cesarean section (CS) delivery. Surgical site infection after cesarean section is related with expanded maternal bleakness, delayed hospital stay, and expanded therapeutic expenses.<sup>3</sup> The gainful impact of anti-toxin prophylaxis in decreasing events of infection related with elective or crisis cesarean section is as of now settled. In numerous organizations, the anti-infection organization is performed after the umbilical rope has been braced, defended by the neonatal effect of antimicrobial utilize.<sup>4</sup>

According to previous report, maternal morbidity related to infections after cesarean section was eight-fold higher than that of vaginal delivery<sup>5</sup>. Knowing the prevalence of the problem and associated risk factors would help to undertake optimal precautions and standard surgical techniques to reduce SSI which poses increased hospital cost and total hospital stay of the patients<sup>6</sup>. **Objectives of the study**

The main objective of the study is to analysis of associated risk factors of surgical infection in obstetrics among females in Pakistan. This study intended to assess the prevalence of SSI and associated risk factors.

**Methodology of the study**

The current study was conducted by the combined efforts of Osh state university and Lalamusa hospital during March 2017 to December 2017. The data include all those women who delivered baby through C-section or by normal delivery. Facility based retrospective observational study design was carried out purposively to assess the prevalence of surgical site infections and associated risk factors among mothers who had delivery related surgery at obstetric ward of hospital from the calculated sample size.

**Statistical analysis**

The collected data were analyzed using SPSS software (version 17). The results are presented as a mean with 95% confidence interval limits or standard deviations. The significant value for P <.05 was accepted as statistically significant.

**Analysis and results**

The socio-demographic values of the patients indicated that these are dependent factors and SSI are also depend upon these values. Socio demographic variable had no significant association with SSIs except age, those women age less than nineteen years were three times risk of developing surgical site infection as compare to those age range 20–34.

**Table 01:** analysis of socio-demographic characteristics of SSI among women having obstetrics surgery

| Variable         | Category            | SSI            |               | Crude OR(95%CI)    |
|------------------|---------------------|----------------|---------------|--------------------|
|                  |                     | Yes Number (%) | No Number (%) |                    |
| Age              | ≤ 19                | 5(13.9%)       | 18(52%)       | 3.453(1.18–10.00)  |
|                  | 20–34               | 23(63.9%)      | 286(82.2%)    | 1                  |
|                  | ≥35                 | 8(22.2%)       | 44(12.6%)     | 2.26(0.95–5.37)    |
| Residence        | Urban               | 17(47.2%)      | 149(42.8%)    | 1                  |
|                  | Rural               | 19(52.8%)      | 199(57.2%)    | 0.837(0.437–1.66)  |
|                  | Other               | 1(2.8%)        | 10(2.9%)      | 0.979(0.120–7.981) |
| Occupation       | House Wife          | 26(72.2%)      | 199(57.2%)    | 2.047(0.815–5.14)  |
|                  | Civil Servant       | 6(16.7%)       | 94(27%)       | 1                  |
|                  | Teacher             | 0              | 3(0.9%)       | 0.000(0.000)       |
|                  | Business lady       | 4(11.1%)       | 52(14.9%)     | 1.205(0.325–4.465) |
| Education Status | Illiterate          | 10(27.8%)      | 67(19.3%)     | 1.727(0.64–4.783)  |
|                  | Read and Write only | 2(5.6%)        | 51(14.7%)     | 0.454(0.091–2.270) |
|                  | Grade 1–8           | 7(19.4%)       | 61(17.5%)     | 1.328(0.442–3.985) |
|                  | Grade 9–12          | 10(27.8%)      | 88(25.3%)     | 1.315(0.478–3.617) |
|                  | Above Grade 12      | 7(19.4%)       | 81(23.3%)     | 1                  |

|              |           |           |            |                    |
|--------------|-----------|-----------|------------|--------------------|
| Month Income | ≤ 1000    | 17(47.2%) | 158(45.4%) | 0.890(0.400–1.983) |
|              | 1001–3999 | 8(22.2%)  | 99(28.4%)  | 0.669(0.257–1.736) |
|              | ≥4000     | 11(30.6%) | 91(26.1%)  | 1                  |

In our study, there was a statistically significant association between gestation age and SSIs, preterm gestation age mothers were four times more likely to develop SSIs as compared to those mothers gestation age was term. Table 02 shows the gestational age and duration of labor of patients. This data represents the common population of Pakistan.

**Table 02:** Association of surgical site infection and obstetric variable among women having obstetric surgery

| Variable                     | Category  | SSI            |               | Crude OR(95%CI)     |
|------------------------------|-----------|----------------|---------------|---------------------|
|                              |           | Yes number (%) | No number (%) |                     |
| Gestation Age                | Preterm   | 4(11.1%)       | 10(2.9%)      | 4.225(1.254–14.238) |
|                              | Term      | 32(88.9%)      | 338(97.1%)    | 1                   |
| Duration of Labor            | ≤ 24 h    | 24(66.7%)      | 284(81.6%)    | 1                   |
|                              | ≥25 h     | 12(33.3%)      | 64(18.4%)     | 2.219(1.054–4.670)  |
| Duration Rupture of Membrane | ≤12 h     | 23(63.9%)      | 318(91.4%)    | 1                   |
|                              | ≥12 h     | 13(36.1%)      | 30(8.6%)      | 5.991(2.757–13.022) |
| Chorioamnionitis             | Yes       | 6(16.7%)       | 7(2%)         | 9.743(3.077–30.848) |
|                              | No        | 30(83.3%)      | 341(98%)      | 1                   |
| Meconium                     | Grade III | 12(33.3%)      | 83(23.9%)     | 1.596(0.765–3.33)   |
|                              | No        | 24(66.7%)      | 265(76.1%)    | 1                   |
|                              | Total     | 36             | 348           |                     |

## DISCUSSION

SSIs represent a burden to the health care system and patient, mainly attributable to the extended length of stay in hospital and additional treatment required. Consequently, strategies and intervention aimed at reducing the incidence of SSIs could provide cost-saving and improve the efficiency of the health care system<sup>7</sup>. The rate of SSIs were lower when we compared our finding with different studies conducted in African countries but still higher than the studies conducted in developed countries<sup>8</sup>.

A large portion of the SSIs found in our investigation were superficial SSI. This is like different examinations from asset compelled settings. In USA additionally around 66% of the SSI are shallow and staying profound<sup>9</sup>. In USA the assessed frequency of SSIs in hysterectomy is around 1.7%. Be that as it may, as indicated by the creators this is by all accounts a think little of the same number of hospitals do not have the assets to track SSI happening outside of the hospital<sup>10-12</sup>.

Young maternal age has been appeared to be a hazard factor for SSI following cesarean section. Nonetheless, our investigation we found that age over 40 years as a hazard factor for SSI. This might be because of the patient blend in our

examination, which included both gynecological and obstetric surgeries<sup>13</sup>. A territorial community information from USA did not demonstrate any distinction in age of the ladies having SSI following hysterectomy<sup>14</sup>.

Unseemly planning of anti-infection prophylaxis in our examination was a critical hazard factor for SSI. Comparable outcomes have been accounted for before and are additionally in accordance with suggestions from prophylaxis rules<sup>15</sup>. Nonetheless, amid the examination period no standard strategy for prophylaxis was taken after. The American Congress of Obstetricians and Gynecologists prescribes pre-agent anti-microbial prophylaxis for hysterectomies, prompted premature births, hysterosalpingography, and uro-gynecological procedures<sup>16-17</sup>.

## CONCLUSION

It is concluded that surgical site infection rate become high among young age women as compared to old age women. Duration of surgery and wound healing are not a dependent factor these are independent factors because it is not related to SSI.

## Contribution of authors

All the authors contributed equally.

## REFERENCES

1. Opoien HK, Valbo A, Grinde-Andersen A, Walberg M. Post-cesarean surgical site infections according to CDC standards: rates and risk factors. A prospective cohort study. *Acta Obstet Gynecol Scand* 2007; 86:1097-102.
2. Ward VP, Charlett A, Fagan J, Crawshaw SC. Enhanced surgical site infection surveillance following caesarean section: experience of a multicentre collaborative post-discharge system. *J Hosp Infect.* 2008; 70:166-73.
3. Heethal J, Sarala N, Kumar TN, Hemalatha M. Pattern of antimicrobial use in caesarean section in a tertiary care hospital in rural south India. *Int J Pharm Biomed Res* 2010; 1:57-61.
4. MehrunNisa, Naz T, Afzal I, Hassan L. Scope of surgical site infection (SSI) in Obstetrics and Gynecology. *J Postgrad Med Inst* 2005; 19:438-41.
5. Weissman C, Klein N. The importance of differentiating between elective and emergency postoperative critical care patients. *J Crit Care* 2008; 23:308-16.
6. Awan MS, Dhari FJ, Laghari AA, Bilal F, Khaskheli NM. Surgical site infection in elective surgery. *J Surg Pak (Int)* 2011; 16:33-7.
7. Johnson A, Young D, Reilly J. Caesarean section surgical site infection surveillance. *J Hosp Infect.* 2006;64(1):30-5.
8. Hillan EM. Postoperative morbidity following Caesarean delivery. *J Adv Nurs* 1995; 22:1035-42.
9. van Ham MA, van Dongen PW, Mulder J. Maternal consequences of caesarean section. A retrospective study of intra-operative and postoperative maternal complications of caesarean section during a 10-year period. *Eur J Obstet Gynecol Reprod Biol* 1997; 74:1-6.
10. De Muylder X. Caesarean morbidity at district level in Zimbabwe. *J Trop Med Hyg* 1989; 92:89-92.
11. Ahmed N, Mehboob R. A study of caesarean birth in a teaching hospital, Multan. *Pak J Med Res.* 2002; 41:118- 22.
12. Choy-Hee L, Raynor BD. Misoprostol induction of labor among women with a history of caesarean delivery. *Am J Obstet Gynecol* 2001; 184:1115-7.
13. McNally OM, Turner MJ. Induction of labour after previous Caesarean section. *Aust N Z J Obstet Gynaecol* 1999; 39:425-9.
14. Anaya DA, Dellinger EP. The obese surgical patient: a susceptible host for infection. *Surg Infect.* 2006;7:473-480.
15. Karlsson EA, Beck MA. The burden of obesity on infectious disease. *Exp Biol Med* 2010;235:1412-1424.
16. Tsai P-S, Hsu CS, Fan YC, Huang CJ. General anaesthesia is associated with increased risk of surgical site infection after Caesarean delivery compared with neuraxial anaesthesia: a population-based study. *Br J Anaesth.* 2011;107:757-761.
17. Killian CA, Graffunder EM, Vinciguerra TJ, Venezia RA. Risk factors for surgical- site infections following caesarean section. *Infect Control Hosp Epidemiol.* 2001;22:613-617.