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STUDY OF FACTORS AFFECTING THE POST-OPERATIVE WOUND INFECTION IN OBSTETRICS AND GYNECOLOGICAL SURGERIES

Obstetrics & Gynaecology

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ABSTRACT

Objectives: To find out factors associated with post-operative wound infection in obstetrics and gynecological surgeries in OBG department, Navodaya medical hospital and research center Raichur, between June2022 - November2023 **Methods:** A prospective study on patients who developed wound infection following major abdominal surgery i.e 1620 cases of c-section and 1200 cases including all gynecological surgeries excluding vaginal hysterectomy, after consent from patient, and satisfying inclusion and exclusion criteria. Patients will be thoroughly examined and investigated and taken for surgery. Severity of post operative wound infection was graded with Southampton wound grading system. Wound swabs sent for culture-sensitivity, where discharge from wound was present. Micro-organisms was identified and antibiotic sensitivity done. **Result:** Total 2820 patients who underwent obstetrics(LSCS)(62%) and gynecological surgeries(38%). 58(2.05%)cases developed wound infection among which organisms isolated in 23(40%)cases. wound discharge was serosanguinous in 77%. In wound swab culture, growth of staphylococcus was predominant, others E.coli, Streptococcus, Pseudomonas, Klebsiella, were isolated. In 60% cases no growth of organism seen. Anemia was most common risk factor, others were diabetes, obesity, malnourishment and PROM. Among patients with SSI 49(85%) patients were medically managed. Secondary suturing was done for 9(15%) cases. **Conclusion:** This study gives possible risk factors which is responsible for SSI. Patients should be evaluated thoroughly and if any risk factors present, to be corrected before elective surgeries. Proper disinfection, sterilization procedures should be followed in OT and wound hygiene to be maintained to prevent wound infection. It is seen that anemia, diabetes, obesity, malnourishment, emergency operations like c-section are some common factors responsible for wound infection. Among microorganisms, staphylococcus aureus was most common organism to cause SSI.

KEYWORDS

SSI; LSCS; CD;

INTRODUCTION

Post-operative wound infection is a major complication of surgery. The manifestation of postoperative wound infection has a tri-factorial basis; the overall systemic trauma, local host damage, and bacterial contamination of wound. SSIs are the second most common complication after urinary tract infections as HAI in cesarean delivery (CD) with reported rates between 3 to 15%.

Incisional infection risk factors include obesity, diabetes, corticosteroid therapy, immunosuppression, malnutrition, anemia, hypertension, and inadequate hemostasis with hematoma formation. If prophylactic antimicrobials are given, the incidence of abdominal wound infection following cesarean delivery ranges from 2 to 10 percent depending on risk factors.[1]

SSI is one of the most common post-operative complications and causes significant post-operative morbidity and mortality.

The global estimates of SSI have varied from 0.5% to 15%, studies in India have consistently shown higher rates ranging from 23% to 38%.[2] However, the incidence of wound complications in the obstetric population varies with rates ranging from 2.8% to 26.6%.
Hysterectomy for gynecological cause is reported to have SSI rate of 1.7% according to the center for disease control (CDC).

Post-operative wound infection following caesarean section is related with some other factors like pregnancy with anemia, diabetes, obesity, prolonged rupture of membrane, chorioamnionitis, prolonged labour, obstructed labor, duration of surgery, blood loss during surgery.[3] In gynecological surgeries details regarding the age, BMI, existing medical illness, duration of surgery, and the amount of blood loss during surgery play an important role in wound healing[4].

The bacterial wound flora is the product of the bacterial invasion force and the local wound conditions. The bacterial wound flora and local condition of wound are interrelated. If either factor exceeds the tolerable threshold, infection will manifest.[5] Bacteria can infect through two major sources, endogenous and exogenous.E coli, Pseudomonas, Staphylococcus aureas, Streptococcus pyogenes, Klebsiella are common organism infect a surgical wound. Of them Staphylococcus aureus and Streptococcus pyogenes have a greater propensity to cause post-operative wound infection.[6]

Aims and Objectives

To study the factors associated with post-operative wound infection in obstetrics and gynecological surgeries.

MATERIALS AND METHODS

Source of Data: All patients who develop wound infection following major abdominal surgery in the department of Gynecology and Obstetrics, Navodaya Medical College Hospital and Research Centre, Raichur during the study period.
Ethical committee clearance was taken.
Study Site : Navodaya Medical College Hospital and Research Centre, Raichur
Study Design: Prospective study
Study Period: 18months
Sample Size: 58 samples

Inclusion Criteria

- To have undergone a major Obstetrics and/or Gynecological surgery.
- Involves only the skin or subcutaneous tissue
- Patient coming with wound infection after getting discharge from the hospital and for follow-up

Exclusion Criteria

- Patients not consenting for the study

RESULTS

In total 2820 patients, 1620(62%) underwent obstetrics(LSCS) and 1200(38%) gynecological surgeries.58(2.05%)cases developed wound infection among which organisms isolated in 23(40%)cases. The overall prevelance of SSI in cesearean section in our hospital during the study period was 2.2% and gynecological surgeries except VH prevalence of SSI was 1.83%.

Table 1: Shows the Number and Percentage of Cases According to Southampton Wound Grading System

Southampton wound grading	N	%
III A	39	67.2%
III B	6	10.3%
IV A	9	15.5%

The wound was presented with serosanginous in 45(77%)cases and purulent discharge(with or without blood tinged) in 13(22%) cases and further the SSI was classified using Southampton wound grading system where majority cases 39(67.2%)wound were of grade IIIA

,followed by wound of IIIB 6(10.3%), IVA 9(15.5%) and IVB respectively 4(6.8%)(Table1).

Table 2: Shows the Risk Factors Among Obstetric Cases

Obstetric case risk factors	N	%
Mild anemia	12	33.3%
Moderate anaemia	3	8.3%
PPROM/PROM	3	8.3%
GDM	1	2.8%
Malnourishment	1	2.8%
None	16	44.4%

In obstetric cases total 36 patients developed SSI. Among them patient-related risk factors was present in 20 cases and Patient without any risk factors were 16 in number contributing upto 44.4%. Major significant risk factor associated with impaired healing of wound and infection was anemia with 15(41.6%) where mild anemia cases are 12(33.3%) and moderate anemia are 3(8.3%). PROM/PPROM contributing upto 8.3% with 3 cases. There was 1 case with Malnourishment contributing upto 2.8% and 1 case with gestaional diabetes mellitus which contributes to 2.8%. (Table2)

Table 3: Shows the Risk Factors Among Gynecological Cases

Gyneac case risk factors	N	%
Mild anaemia	3	13.6%
Moderate anaemia	2	9.1%
Severe anaemia	2	9.1%
Diabetes	4	18.2%
Obesity	3	13.6%
Malnourishment	1	4.5%
Obesity and psoriasis	1	4.5%
None	6	27.3%

In gynecological cases total 22 of them developed SSI among which 16(72.7%) cases had patient related risk factors and 6 (27.3%)cases did not had any risk factors. Risk factors were anemia leading to major contribution among other riskfactors with 7 (31.8%) cases where 3(13.6%) cases had mild anemia, 2(9.1%) cases had moderate anemia and 2(9.1%) cases had severe anemia. Diabetes was the next major risk factor affecting 4(18%) cases followed by obesity affecting 3(13.6%) cases. 1(4.5%) case was with risk factor of malnourishment and 1 case with psoriasis contributing to 4.5%.(Table3).

Fig. 1: Shows Microbiological and Clinical Infected Cases

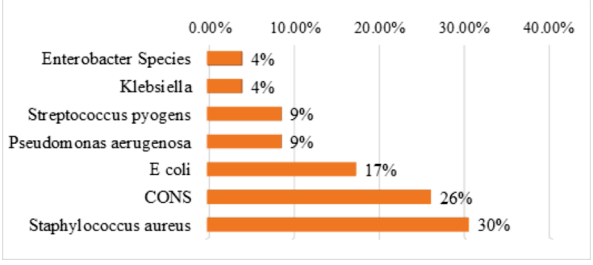

Fig.2: Percentage of Organism Isolated from SSI

Wound swab was sent to culture and sensitivity for all patients with SSI, and organism were isolated in 40% cases in other 60% cases no growth of bacteria was found (Fig. 1). Predominant organism was staphylococcus aureus affecting 7 cases(30%). CONS was found in 6(26%)cases. E.coli was found in 4(17%). Growth of streptococcus pyogens was found in 2(8.6%) cases and pseudomonas aeruginosa in 2(8.6%).Klebsiella species was found in 1(4%) case and Enterobacter species in 1(4%) case (Fig.2). Wounds were healed by secondary suture in 9(15%) cases, and by medical management in 49(85%) cases.

DISCUSSION

In this study wound infection was more frequent in cesarean section than gynecological surgeries. In our study among obstretic cases incidence of anemia, diabetes, prolonged rupture of membrane, prolong labor, repeated internal examination in labor invites bacterial invation, increases the chance of wound infection which is similar to the study by Pelle et al[6] where he states that PROM, interval between rupture and operations and fetal and labor monitoring by intra uterine devices were significantly associated with wound infection.

This study had 40% of cases were anemic. There is a strong relationship between anemia and wound infection in a study by Zaman F et al[7] in 2011 in her study. It showed high rate of 75% wound infection in patients with moderate to severe anemia which is similar to our study.

In our study, among gynecologic cases other than anemia risk factors like diabetes and obesity had major contribution to SSI which is similar to a study by B. Tserenpuntsag et al[8]. it states that obesity had twice the risk compared with cases without obesity and cases with diabetes had almost 50% increased risk to develop SSI. In our study Malnourishment also showed relation with SSI.

In microbiological growth of staphylococcus aureus was seen in majority of cases which was followed by CONS. Study by Malakar A et al[9] in 2019 have found that staphylococcus has a greater propensity to cause infection. He states that principal organisms to cause SSI after obstetric and gynecologic surgery are aerobic staphylococci, which inoculate into the wound from skin.

CONCLUSION

This study gives various possible risk factors which is responsible for SSI. Patients should be evaluated thoroughly and if any risk factors present, to be corrected before elective surgeries.

Risk factors like anemia, diabetes, obesity, malnourishment, emergency operations like caesarean section are some common factors responsible for wound infection. Among microorganisms, staphylococcus aureus was most common organism to cause SSI. Hence, controlling anemia, diabetes, obesity, malnutrition, avoid prolonged labor, use of potent antibiotics in case of ruptured membrane, Proper disinfection, sterilization procedures should be followed in OT maintain hygeinity in ward and surroundings, providing knowledge to patients about proper wound care can lower the risk of SSI.

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