

A Prospective Study on Prevalence of Post-Operative Wound Infections in Obstetrics and Gynaecological Department of a Tertiary Care Teaching Hospital.

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ABSTRACT

Background: The study was performed with the aim to find out the incidence of post-operative wound infection among the elective and emergency obstetrics and gynaecological abdominal surgeries with the objectives to identify the risk factors and most common causative micro-organism and to study the preventive aspects.

Methods: This prospective observational study was carried out in the Dept. of Obstetrics and Gynaecology at Government Medical College, Amritsar from February 2013 to January 2014.

Results: During this period a total of 375 patients underwent major abdominal surgeries, out of which 31 cases develop post-operative wound infections with rate being 8.26%. The rate was found to be higher among the emergency obstetric case (51.17%) with the common risk factors being anaemia, advanced age and diabetes among gynaecological surgeries and prolonged rupture of membranes and previous LSCS and multiparity among obstetric cases. The common causative organism was found to be E. coli (36.15%).

Conclusion: The merit of this study was to start the active surveillance of surgical site infections based on standard definitions and methods to be maintained by cooperation of infection control practitioners and surgical team. Identification of risk factors for surgical site infections to encourage the development of recommendations for prevention of SSI in order to achieve the setting goal to reduce the SSI.

KEYWORDS: Wound infection, Abdominal surgery.

INTRODUCTION

Despite advances in operative techniques and a better understanding of the pathogenesis of wound infection and wound healing, post-operative wound infection (surgical site infections) continue to be a major source of morbidity and mortality for patients undergoing operative procedures.

The overall incidence of wound sepsis in India is from 10%-33%. However, the incidence of wound complications in the obstetric population varies with rates ranging from 2.8% to 26.6%.¹⁻³ Surveillance of post-operative wound infection or surgical site infection (S.S.I.) is useful tool to demonstrate the magnitude of the problem. By keeping the above points in mind, the present study was conducted for early recognition of the problem so that early intervention can be done for better management of postoperative wound infections in our problem.

MATERIALS & METHODS

The prospective study of wound infection was carried out at Government Medical College, Amritsar in the department of Obstetrics and Gynaecology from February 2013 to January 2014 after the approval from the Ethical Committee. The study population consisted of 375 patients who underwent surgery were included in our study on the basis of inclusion and exclusion criteria. All these patients were thoroughly examined and investigated on admission and prepared for operative procedures through abdominal approach, either elective or emergency. Patients who underwent surgeries were grade 3 or less than grade 3 according to ASA score.⁴ Operated patients were followed up regularly, during the post-operative period. The wound was checked on 4th post-operative day routinely and earlier and later according to the complaint of the respondents. Wound swabs were sent for culture and sensitivity where

discharge from the wound was present. Severity of the post-operative wound infection were graded according to the Southampton wound grading system (Bailey IS et al).⁵ Micro-organisms were identified and their antibiotic sensitivity were done.

Treatment was started in accordance with the culture sensitivity report. Patient's progress and the response to drug treatment were monitored. If needed secondary suturing was done and noted. Complications and their cause were identified thereby providing a clue to their successful prevention.

Table 1: Post-operative wound infection rate in surgical patient.

Total patient operated	Total post-operative wound infection(n)	%
375	31	8.26%

Table 2: Post-operative wound infection rate in type of surgery.

Type of Surgery	Total patients operated	Total wound Infection (n)	%
Elective Patients	278	15	5.39
Emergency Patients	97	16	16.49

Table 3: Post-operative wound infection according to Southampton Wound Grading System.

Grade	No. of post-operative wound infected patients (31 Patients)	%
I	17	58.2%
II	7	24.4%
III	4	10.3%
IV	2	5.2%
V	1	1.9%
Total	31	100.00%

Table 4: Risk factor in post-operative wound infection patients.

Risk Factors	No. of P.O. wound infected patients
Advanced Age	8
Diabetes	2
Obesity	2
Hypertension	4
Anaemia	7
Multiparity	8
No risk factor	31

RESULTS

This prospective observational study was carried out in the Dept. of Obstetrics and Gynaecology at Government Medical College, Amritsar from February 2013 to January 2014. The study population consisted of 375 patients who underwent major abdominal surgeries were eligible for analysis (278 elective surgery and 97 emergency surgery) who underwent surgery. Post-operative wound infection (SSIs) was found in 31 patients out of 375 patients with an overall post-operative wound infection rate of 8.26%. Age of the population ranges from 20-70years, being the patient of obstetrics and gynaecology, all were females. Majority of the population was housewives. Regarding the educational status one quarter of the patients were illiterate. Types of surgery done among the wound infected population were caesarean section, total abdominal hysterectomy and laparotomy. The wound infection rate was found to be more amongst the emergency cases (16.49%) as compared to elective (5.39%) and that too amongst emergency obstetric cases (51.17%). The total number of cases were graded according to the Southampton wound grading system and was found to be higher among grade I(17) and lowest among grade V(1). Anaemia n=7, Advanced Age n=8. Grade I and II had minor complications like fever, while in grade III, IV and V had major complications like gaping. Out of 31 patients of post-operative wound infection, 28 (90.32%) patients of grade I, II and III were managed conservatively and surgical management was required in 3 (9.67%) of grade III, IV and V. Morbidity of post-operative wound infected patients in terms of average hospital stay was more in grade V (mean=36.75 days) as compared to grade I(mean=11.53 days). The results of our study are summarized in Tables 1 and 2.

In the present study, the post-operative wound infection was studied in two different sub groups.

From table no.3 it was observed that among all groups of infected patients anaemia n=7, advanced age n=8 and multiparity n=8 were found to be common risk factors.

DISCUSSION

The study was conducted to find out the incidence of post-operative wound infection (S.S.I) in abdominal surgeries in both gynaecological and obstetric surgeries. In present study based on our inclusion criteria, total 375 operated patients were eligible for analysis (278 elective surgery and 97 emergency surgery) who underwent major abdominal surgery. Post-operative wound infection (SSIs) was found in 31 patients out of 375 patients with an overall post-operative wound infection rate of 8.26%. This study correlates with the studies of Mishriki SF et al⁶, Jahanara Rahman.⁷ Mean age group was found to be 42 among gynaecological surgeries. No co-relation with wound infection among obstetric cases. Incidence of post-operative wound infection (S.S.I.) was

more in emergency obstetric patients (51.17%) and clean contaminated nature of surgery patients (15.87 %) and it is quite comparable with the study performed by Jahanara Rahman et al.⁷ The incidence of wound infection in obstetric surgeries was found to be higher among the previous c-section (24.58%) and prolonged rupture of membranes (>4hrs) (22.03%). Other indications are found to be less contributing towards the post-operative wound infection among obstetric surgeries. Anaemia (21.13%), advanced age (19.72%) and multiparity (59.32%) were overall common risk factors in post-operative wound infected patients. Uncontrolled Diabetes and anaemia delay wound healing, and causes tissue breakdown which leads to post-operative wound infection (SSIs). Fat in subcutaneous plane (obesity) causes lipolysis in fatty patients which contributes in SSIs as serous discharge. The incidence of prolonged rupture of membrane, prolonged labour, repeated internal examination in labour, trial of labour at home invites bacterial invasion and increases the chance of wound infection. Six factors significantly associated with wound infection, which were identified by univariate analysis, were put into multiple logistic regression for further analysis. This study also found, the occurrence of post-operative wound infection was more in multiparous women than in primiparous and possibly malnutrition and anaemia due to repeated childbirth acted as the predisposing factors. Another author mentioned similar picture Jahanara Rahman et al.⁷ This study shows 21.13% of the populations were anaemic, though severe and moderate anaemia was found in a negligible number of the patients. Diabetes was found in 8.45% of patients who underwent surgery which is found to be statistically significant when compared in univariate analysis which is quite comparable with the Dhaka study group.⁷ *Escherichia coli* is the most common cause of SSI, accounting for 36.62% of cases. It originates from fecal flora that colonize the periurethral area (ascending infection). *Klebsiella* (6.10%) and *Pseudomonas* (6.57%) species cause most of the remaining cases. Gram-positive organisms, particularly *Staph. aureus*, are also clinically important pathogens, contributing 4.69% of the infections. Urea-splitting bacteria including *Proteus*, *Klebsiella*, *Pseudomonas*, and coagulase negative *Staphylococcus* alkalize the urine and may be associated. *S. aureus* from the exogenous environment or the patient's skin flora is the usual pathogen, whereas, in other categories of surgical procedures, the polymicrobial flora closely resembling the normal endogenous microflora of the surgically resected organ are the most frequently isolated pathogens (Nichols, 1991)⁸ (Wassef et al)⁹.

Out of 31 patients of post operative wound infection, 90.12% patients of grade I, II and III were managed conservatively and surgical management was required in

9.90% of grade III, IV and V. In conservative management, we managed the wound with daily sterile povidone-iodine (Betadine) dressing along with antibiotic coverage and found it effective measure. In surgical management, after obtaining swab culture for microorganisms and repeated daily dressings, secondary suturing was done. In secondary suturing refreshing of skin edges with excision of fibrosed granulation tissue was done after achieving haemostasis. Thus conservative treatment was common mode of treatment as compare to surgical treatment in our study. Our study co-relates with the studies of BJ Kothuis.¹⁰

CONCLUSION

Surgical site infections determine the final outcome of an operation apart from the morbidity and mortality they cause. Though surgical care is very important to prevent wound infection, but some pre and post-operative steps can reduce post-operative wound infections also. Each post-operative wound infection (SSI) further caused a heavy toll on the nutrition of the patient, and further accentuated the mal-nutrition. They also increase the cost of treatment for a particular surgical operation, as infection in a post-operative wound increases the length of stay in the hospital. The cost of antibiotics, and increased duration of antibiotic therapy further adds on to the cost of treatment. If we can eradicate anaemia in pregnancy, control diabetes, avoid prolonged labour, use potent antibiotics in cases of rupture of membrane, do timely intervention, provide well equipped obstetrics ward with clean environment, then incidence of wound infection can be lowered. The merit of the study was to start the active surveillance of surgical site infections based on standard definitions and methods to be maintained by cooperation of infection control practitioners and surgical team. Identification of risk factors for surgical site infections has encouraged the development of recommendations for prevention of SSI in order to achieve the setting goal to reduce the SSI.

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