



A STUDY OF WOUND INFECTIONS IN POST-OPERATIVE PATIENTS IN A TERTIARY CARE CENTRE

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ABSTRACT

BACKGROUND: Infection occurs at the incision site within 30 days of surgery and may involve superficial or deep tissues with purulent discharge from the wound, culture confirms pathogenic organism and presence of pain, tenderness, swelling, erythema and increased local temperature.

METHODS: To study association and contributing factors leading to post operative surgical site infections, a prospective study of 255 cases of wound infections in post operative patients was carried out in obstetric and gynecology department of civil hospital over a period of 12 months.

RESULTS: Highest number of operated cases were those of caesarean section(88.7%) with highest rate of wound sepsis in laparotomy(11%). Rate of wound sepsis was higher in emergency cases(10.26%), longer duration of surgery(24.55%) and in patients with 2 or more comorbid conditions(44.2%)....

KEYWORDS :

INTRODUCTION

Surgical infection continues to affect the practice of every surgeon. At the minimum they lead to inconvenience to the patients and the surgeon. Infection can cause an increase in patient's hospital stay, create discomfort, cause disfigurement and lead to failure of operation.

- Surgical wound infection continues to consume considerable portion of health care finances. The financial drain that these infections place on the resource constrained hospitals in the form of prolonged hospitalization along with increased duration and dosage of medications that need to be administered to the patient.
- Infection control is a major concern in health care in general, but it is particularly important issue in the sterile environment of the operating room, where patients undergo surgical procedures and are at significant risk for peri operative nosocomial infection. Even the best operative room design will not compensate for improper surgical technique or failure to pay attention to infection prevention.

Disinfection of surfaces, proper sterilization of surgical instruments with effective methods, maintenance of positive pressure in operating room, temperature and humidity regulation are some of the important factors to prevent infection.

- It is in the context that the preventive measures need to be constantly evaluated and updated and hence we have to study and analyse the causes of postoperative wound sepsis.

AIMS AND OBJECTIVES

- The aims and objectives of this study were to evaluate the various factors in operating room affecting the post operative wound sepsis in Obstetrical and Gynecological wards of Civil Hospital Ahmedabad during the period of October 2018 to September 2019.

The data so obtained were studied to:

- To obtain an accurate infection rate as a guide to the efficient functioning of operating rooms, surgeons and staff.
- To determine the factors in operating room that influences our infection rate.
- To decrease infection rate and improve bed utilization by practicing various methods of antiseptics.

MATERIALS AND METHODS

- This study was conducted prospectively in the obstetrical and gynecological wards of Department of Obstetrics and Gynecology in this hospital during the period of October 2018 to September 2019(12 months). It included all clean and clean contaminated surgical procedures conducted in planned or emergency surgeries.
- The case records were maintained for each patient from the time of admission to the time of discharge and updated on a daily basis.

INCLUSION CRITERIA:

- All general surgical clean(class 1) and clean contaminated (class 2) wounds those were managed on scheduled basis were included in the study.

EXCLUSION CRITERIA:

Criteria for exclusion of patients were:

- Contaminated (class 3) and dirty (class 4) wounds.

OBSERVATIONS AND DISCUSSION

- The data for present study were obtained from the obstetrical and gynecological wards of Department of Obstetrics and Gynecology in our hospital. The study was conducted over a period of 12 months from October 2018 to September 2019, covered a total of 3122 patients undergone scheduled (elective and emergency) operations for their disease processes and satisfying the inclusion and exclusion criteria. Of these 3122 patients, wound sepsis was detected in 255 patients which were then analysed on the basis of different factors affecting the infection rate.

DISTRIBUTION OF PATIENTS BY THE TYPE OF SURGERY

TYPE OF SURGERY	NUMBER OF CASES	NUMBER OF INFECTED CASES	PERCENTAGE
CAESAREAN SECTION	2772(88.7%)	231	8.2%
ABDOMINAL HYSTERECTOMY	250(8%)	15	6%
LAPROTOMY	100(3.2%)	11	11%

The highest number of operated cases were those of cesarean section (88.7), followed by those of abdominal hysterectomy(8%). The least number of cases were those of laparotomy surgery(3.2%). The highest rate of wound sepsis was found in laparotomy cases in view of increased duration of

surgery, contaminated surgery, more amount of blood loss etc.

OVERALL WOUND SEPSIS RATE

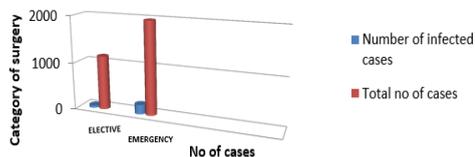
	NUMBER OF CASES	PERCENTAGE
INFECTED	255	8.1%
NON INFECTED	2867	91.9%
TOTAL NO OF SURGERIES	3122	

Postoperative follow up of the patients in this study showed that 8.1% developed postoperative surgical site infection. It is also high as compared to the study reported by Varsha, Jan 2017 in pune(6%). The difference is statistically highly significant(p<0.001) and can be partially explained on the following reasons:

- Poor nutritional status of the patients included in this study
- compared to western studies.
- Lack of facilities in the resource strapped government hospitals.
- Poor socio-economic status and lack of health care facilities for the masses.
- Also, ours being the largest tertiary care centre in the state has the largest referral rate with maximum number of high risk and neglected cases being referred to our hospital, increases the rate of postoperative wound sepsis.
- The other factor which can affect the increased rate is the technique of autoclaving. There is mass autoclaving in the hospital and at times it can be defective.
- The improper scrubbing technique and the failure to maintain proper asepsis by different personnel of the hospital can also lead to increased rate of postoperative wound sepsis.

WOUND SEPSIS ACCORDING TO CATEGORY OF SURGERY

Category Of Surgery	Number Of Infected Cases	Total Number Of Cases (percentage%)	Percentage
ELECTIVE(Elective LSCS + Abdominal hysterectomies)	52	1150(36.8) {900+250}	4.5%
EMERGENCY (Emergency LSCS + Laparotomies)	203	1972(63.16) {1872+100}	10.26%

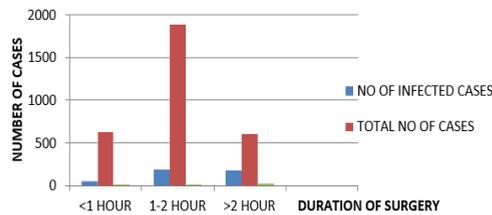


- In the present study, elective surgeries including elective LSCS and abdominal hysterectomies, constituted 36.8% of the total surgeries and emergency surgeries including emergency LSCS and Laparotomies were about 63.16%. The rate of wound sepsis was more in emergency surgeries (10.26%) as compared to elective surgeries (4.5%). This could be attributed to slightly more number of high risk factors in patients operated on an emergency basis. Also the patients operated on an emergency basis are usually referred as complicated or neglected cases and thus carry higher rate of wound sepsis. Moreover in elective surgeries factors such as operating conditions, scrub duration and techniques, proper administration of pre operative antibiotics, associated comorbid conditions are better taken care of as compared to emergency surgeries.

WOUND SEPSIS AS A FUNCTION OF NUMBER OF CO-MORBIDITIES

Duration of surgery	Number of infected cases	Total no of cases	Percentage (%)
<1 hour	54	632	8.79

1-2 hour	189	1890	10.04
>2 hour	177	600	24.55



- The wound sepsis rate was approximately 8.79% when the operative procedure ended in less than 1 hour. The rate increased to almost three times(24.55%) when the operative procedure lasted for more than two hours.

Reasons being;

- Dosage of bacterial contamination increases with time of tissue exposure.
- Wound cells are damaged by drying and by exposure to air and retractors.
- Increased amounts of suture and electrocoagulation may reduce the local resistance of the wound.
- Association with more blood loss and shock reduces the general resistance of the patient.

WOUND SEPSIS ACCORDING TO PREOPERATIVE ANTIBIOTICS

PREOPERATIVE ANTIBIOTICS	NO OF INFECTED CASES	TOTAL NO OF CASES	PERCENTAGE
ADMINISTERED	100	2000(64.06%)	5%
NOT ADMINISTERED	155	1122(35.94%)	13.8%

Preoperative antibiotics are known to decrease the incidence of SSI. Patients who are operated on an emergency basis may or may not receive preoperative antibiotics. This leads to increased risk of post operative wound sepsis.

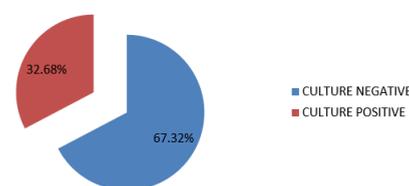
RELATION SHIP BETWEEN PROLONGED DURATION OF LABOUR AND POST OPERATIVE WOUND INFECTION

DURATION OF LABOUR	NO OF INFECTED CASES	TOTAL NO OF CASES	PERCENTAGE (%)
Prolonged (>24 hrs)	71	667	10.64%
< 24 hrs	160	2105	7.6%

The data showed that patients with prolonged duration of labour (includes patients with prolonged PROM, obstructed labour, non progression of labour and induction failure) were at increased risk of post operative surgical site infections. This could be attributed to as duration of labour increases, the number of vaginal examinations also increase and repeated P/V examinations increase chances of iatrogenic contamination during examination. Also after premature and prolonged rupture of membranes, amniotic fluid is no longer sterile and this may act as a transport medium by which bacteria may come into contact with uterine and skin incision there by leading to risk of developing surgical site infections.

WOUND SEPSIS ACCORDING TO CULTURE SENSITIVITY REPORT

WOUND SEPSIS ACCORDING TO CULTURE REPORT



CONCLUSION

The development of post operative surgical site infection is an important event that can be prevented by taking various measures:

- There should be proper autoclaving and set guidelines should be strict followed.
- The preparation of the patient in the form of preoperative antibiotics, shaving etc should be standardized and followed.
- In those associated with comorbid conditions, proper care like blood transfusion in cases with anaemia, higher antibiotics in cases of sepsis and timely management of related comorbid conditions can reduce surgical site infection rate. As per the condition of the patient, she should be operated by a skilled personnel to reduce postoperative complications.
- There should be proper fumigation periodically of all operation theaters.
- The scrubbing technique protocols should be strictly followed.
- There should be judicious use of antibiotics in the post operative period. In event of early signs of sepsis, antibiotics to be administered properly as per culture sensitivity report
- As far as the preparation of patient is considered, proper scrubbing, antibiotic coverage and surgical techniques all should be nearly same in emergency surgeries as in elective surgeries.

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