



Study of Prophylactic Single dose Antibiotic in Obstetrics and Gynecological Procedures in Low Risk Patients

KEYWORDS

Single dose antibiotic, Injection Ceftriaxone, Drug Resistance, Surgical site infection

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ABSTRACT

Introduction: To decide the antibiotic policy of Department for procedures study was conducted by department of Obstetrics & Gynecology in low risk patients.

Material & Method: The study was conducted in Bharati Hospital for a period of seven months. All the patients undergoing Obstetrics or Gynecological procedures with low risk were included in the study (533), high risk patients (332) were excluded from the study. For patients in inclusion group (533) single dose of Injection Ceftriaxone 1 gm intravenous was administered 30 minutes prior procedure or after vaginal delivery.

Results: Failure rate in inclusion group was 1.31% (7 out of 533). Average duration of stay was about 7 to 8 days.

Conclusion: Prophylactic single dose antibiotic is effective in reducing infective morbidity in low risk patients.

Introduction: Infection is the most common complication after any procedure and causes a significant burden in terms of patient morbidity and cost to health services around the world. Antibiotic resistance is now regarded as a major public health issue because it leads to infections by multi-drug resistant bacteria which in turn causes increased morbidity and increases cost of therapy¹. The optimal duration of antibiotic administration is still controversial. Extended antibiotic coverage instead of coverage within 24 hours of bacterial contamination is still preferred. There has been much concern in medical fraternity regarding the misuse of antibiotics giving sense of security leading to suboptimal aseptic precautions¹. 'Prophylactic antibiotic' means to use antibiotic to prevent development of infection and antibiotic treatment means to use antibiotic to resolve the established infection⁴. To achieve sufficient antibiotic tissue concentration to be present before possible bacterial wound contamination antibiotic is administered intravenously 30 to 90 minutes before the procedures³. Prophylactic antibiotic helps to reduce the bacterial colonisation of operating site¹¹. The antibiotic to be chosen depends on the antimicrobial susceptibility patterns in the local hospital⁹. Recent guidelines and publications show that single dose prophylaxis is equally effective in clean contaminated surgical procedures².

The points which need to be considered in Obstetrics and Gynecological procedures are:

1. We often deal with the genitourinary system which has normal bacterial flora which can turn pathogenic.
2. Skin incision of LSCS as well gynecological surgeries are placed 2.5 to 3 cms above the pubic symphysis which is less vascular.
3. Genital tract has open access through vagina, by which ascending infections can occur easily.

Aims & Objectives: Keeping in mind above considerations it was necessary to have a policy of antibiotic administration developed for our department. In our study 3rd generation cephalosporins, ceftriaxone is used as it has action against gram positive as well as gram negative bacteria, with long half life, it is inexpensive, safe, and effective

against microorganisms likely to be encountered in procedures⁴. The aim was to study 3rd generation cephalosporin Injection Ceftriaxone as prophylactic antibiotic for Obstetric and Gynecological procedures in low risk patients to prevent infection.

Materials and Method: The prospective single blind study was conducted in Obstetrics & Gynecology department in Bharati Hospital for a period of 7 months from May 2012 to November 2012. Criteria for inclusion were all the patients for vaginal delivery (with or without episiotomy), caesarean section (emergency or elective), minor procedures like Os tightening; MTP, D and E, D and C, laparoscopic surgery. Obstetric patients who had PROM, who were referred from other centers were not taken in study. Patients with severe anemia (hemoglobin less than 7 gm %), cardiac disease, diabetes, any infective focus, immune-compromised patients, and patients for extensive pelvic surgeries were excluded. Out of total 865 patients who got admitted 533 patients were included in the study and 332 were excluded. A detail history, general examination, obstetrics or gynecological examination and laboratory investigations like hemogram, urine examination, blood sugar levels, and serology of each patient was done.

Patients in inclusion group received single dose 1 gm of Ceftriaxone 30 minutes prior the surgery. Those patients undergoing vaginal delivery were given 1 gram injection ceftriaxone after cord clamping. All patients were monitored for vital signs, per abdominal examination, inspection of surgical site, for any foul smelling vaginal discharge during hospital stay daily. For surgical wounds check dressing was done on 4th postoperative day. For all patients of major procedures hemogram and urine routine was done after 48 hours. Patients were followed up till 8th postoperative day, 1 week after discharge and after 4 weeks. For all patients record forms (figure 1) were filled for proper documentation. Surgical Site Infection Form (figure 2) was filled for all patients in the study who developed any sign of infection, or wound gape. Antibiotic was given for 5 days according to culture & sensitivity report and, resuturing done whenever required.

Figure1: Record Form Figure 2: Surgical Site Infection Form

Department of Obstetrics & Gynecology	Department of Obstetrics & Gynecology
Reg.no:	Reg.no:
Name:	Name:
Age:	Age:
Date of admission:	Date of admission:
Type of surgery:	Vitals of patient:
Date of surgery:	Investigations:
Antibiotic which?	Type of surgery:
Wound: clean/dirty	Indication of surgery:
Redness/tenderness/redness	Antibiotic started? Which?
Discharge	Any sign of infection:
Change of antibiotic:	Change of antibiotic:
If yes, which?	If yes, Which?
Culture & sensitivity report	Remarks:

Results: In our study 533 patients were in inclusion group, the distribution being as follows in Table 1: 231 patients were of vaginal delivery, and 145 of cesarean section, 5 of hysterectomy and rest of minor procedures.

Table 1: Patient distribution in inclusion groups

Sr.no	Criteria	Number of patients(n=533)	Percentage (total 61.61%)
1	Vaginal Delivery	231	43.33%
2	LSCS	145	27.20%
3	MTP	81	15.19%
4	D & E	42	7.87%
5	Os Tightening	22	4.12%
6	Hysterectomy	5	0.93%
7	Endoscopy	7	1.33%

Total seven cases were reported as failures (1.31%) the distribution of . One LSCS patient had fever spike on 3rd day but no sign of endometritis or pelvic abscess was found, there was no sign of wound infection as well. One vaginal hysterectomy had fever spike on 2nd day, no sign of pelvic or vault infection was found. Considering both cases as failures empirically antibiotic was started. Three LSCS patients in inclusion group had skin gape after suture removal out of this one had serous wound discharge; for which alternate day dressings were done till healing and no resuturing required. Two patients of LSCS had wound dehiscence with serosanguinous discharge; for both the patients culture and sensitivity swab was sent one had growth of E coli, other patient's C& S had no growth of organisms. Resuturing was done after wound was healthy and antibiotic was given for 7 days for both the patients. These two patients were hospitalized for 15 days, later wound healed without any further complication. Out of these 7 failure cases. Rest all cases in inclusion group were successful. The average duration of stay was 7 to 8 days.

Table 2: Complications seen in inclusion group

Criteria	Inclusion group (n=533)	Percentage (61.61%)
Nonspecific pyrexia	2	0.3%
Superficial skin gape, no discharge	2	0.3%
Superficial skin gape, serous discharge	1	0.18%
Wound dehiscence with serosanguinous discharge	2	0.3%
Total failure cases	7	1.31%

Discussion: Each hospital needs to formulate its own antibiotic protocol by clinical study and the results of such studies should be the basis for future therapy. Keeping this in mind and the indigent population our institution caters to, 3rd generation cephalosporin was considered. Prophylaxis can be successful if choice of antibiotic, its timing of administration is appropriate². Postoperative febrile episode remains one of the common morbidities of gynecologic surgeries which are most of the times considered due to bacterial infections and antibiotic therapy is initiated. Fever occurring after any surgical procedure and a low grade fever following elective caesarean section may not necessarily be a marker of infection¹⁰. Bagratee(2001) in randomized controlled trial of prophylactic antibiotic in elective Cesarean delivery found prevalence of febrile morbidity of 8.0%¹⁰. Sadique et al² (2009) found febrile morbidity 30% without infection, in our study febrile morbidity 0.3% was found without infection or wound erythema, probably the antibiotics should have been withheld. Dr.Jyothi Shetty et al⁵ (2010) in their study of antibiotic prophylaxis for cesarean and hysterectomy, found one case of pelvic cellulitis and two cases of endometritis. In the study of short term antibiotic prophylaxis by Dr.Jyothi Shetty et al³ (2009) 1% incidence of wound infection and endometritis was found, in our study no cases of endometritis were found. In the Cochrane review⁸(2004) for operative vaginal delivery seven cases of endomyometritis were found in placebo group, and none in antibiotic group but no statistical significant difference was noticed. In our study, for vaginal deliveries with or without episiotomy no case of infection was found. Surgical site infection was the most common post-operative complication, occurring in 32 women (12%) in the placebo group and in 30 women (11%) in the cefoxitin group in trial by Bagratee et al¹(2001)¹⁰. In our study surgical site infection (dehiscence with serosanguinous discharge) was 0.3% which was not significant as in previous studies. Superficial skin gape can be attributed to suboptimal skin apposition technique.

The average hospital stay was 7 to 8 days, as in study by previous authors^{2, 5}. Postoperative infection is not only dependent on antibiotic use but also on other important factors like nutritional status, hygiene of the patient, blood loss during procedures and duration of surgery⁶. We should never forget the proper protocols of scrubbing techniques, aseptic precautions, preparation of operating area before procedures⁷.

Conclusion: Our study results showed no significant infectious morbidity. From our study we conclude that prophylactic single dose 3rd generation cephalosporin Ceftriaxone is effective. The added advantage being it is cost effective and drug related side effects are reduced. Chances of development of bacterial resistance and suboptimal infection are less

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