Study of Prophylactic Single dose Antibiotic in Obstetrics and Gynecological Procedures 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 therapy. 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 precautions. ‘Prophylactic antibiotic’ means to use antibiotic to prevent development of infection and antibiotic treatment means to use antibiotic to resolve the established infection. To achieve sufficient antibiotic tissue concentration to be present before possible bacterial wound contamination antibiotic is administered intravenously 30 to 90 minutes before the procedure. Prophylactic antibiotic helps to reduce the bacterial colonisation of operating site. The antibiotic to be chosen depends on the established infection. The aim was to study 3 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 gram %), cardiac disease, diabetes, any infective focus, immune-compromised patients, and patients for extensive pelvic surgery 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 4 th postoperative day. For all patients of major procedures hemogram and urine routine was done after 48 hours. Patients were followed up till 8 th postoperative day, 1 week after discharge and after 4 weeks. For all patients record forms were filled for proper documentation. Surgical Site Infection Form 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, resuming done whenever required.

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.
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 (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.

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 appropriate. 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 infection. Bagratee (2001) in a randomized controlled trial of prophylactic antibiotic in elective cesarean delivery found prevalence of febrile morbidity of 8.0% 

Sadique et al (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 al (2009) 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 al 3 (2009) 1% incidence of wound infection and endometritis was found, in our study no cases of endometritis were found. In the Cochrane review, operative vaginal delivery seven cases of endometrometritis 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 al (2001). 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. 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 surgery. We should never forget the proper protocols of scrubbing techniques, aseptic precautions, preparation of operating area before procedures.
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