

## Use of Antimicrobial Agents in Post-operative Patients in Obstetrics and Gynaecology Ward: A Prospective Study

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### ABSTRACT

**Objective:** Drug Utilisation studies help in achieving rational prescription. Antibiotics are the major drugs prescribed in hospitals. This study was aimed to identify pattern of drug use in post-operative patients in obstetrics and gynaecology department in tertiary care hospital attached with medical college.

**Materials and Methods:** We collected data from 320 postoperative patients in the obstetrics and gynaecology ward of a tertiary care hospital over a period of 6 months. We analyzed the data using various drug use indicators given by the WHO.

**Results:** Antacids, analgesics, antibiotics, intravenous fluids accounted for majority of the drugs prescribed. 100% of the encounters were prescribed with an antibiotic. The percentage of encounters with an injection prescribed was 89.13% in our study. Out of 24 different drugs prescribed, 20 (85.18%) were from the National list of essential drugs and 20 drugs were prescribed by their generic name.

**Conclusion:** The present study provides valuable insight about the overall pattern of drug used in postoperative patients

in the obstetrics and gynecology unit of a tertiary care hospital. It is intended to be a step in broader evaluation of safety and efficacy of drug prescription in surgical wards of a teaching hospital.


**Key words:** Drug Utilization, Gynecology, Antibiotics.

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### INTRODUCTION

WHO defines drug utilization as "The marketing, distribution, prescription and use of drug in a society with special emphasis on resulting medical, social and economic consequences."<sup>1</sup> The principal aim of drug utilization research is to facilitate rational use of drugs in the populations. Without knowledge, how drugs are being prescribed and used it is difficult to suggest measure to change prescribing habits for better.

A growing number of pharmaceutical products are available in the world market and there has been an increase both in the consumption of the drugs and in expenditure on them. In spite of this, many people throughout the world cannot obtain the drugs they need. There are also many people who have access to drugs but do not get the right drug in the right dosage when they need it. Irrational prescription of drug is common occurrence in clinical practice, important reason being lack of knowledge about drug, unethical drug promotion.

Although rational use of drugs is quite a usual practice, but sometimes certain factors may cause irrational practice. Monitoring of prescriptions and drug utilization studies could

identify the associated problems and provide feedback to prescribers.<sup>2</sup> Developing countries have limited funds available for healthcare and drugs and it becomes very important to prescribe drug rationally so that the available funds can be utilized optimally.<sup>3</sup>

Essential drugs are those that satisfy the health care needs of the majority of the population; they should therefore be available at all times in adequate amounts and in appropriate dosage forms and at a price that individuals and the community can afford. This concept is intended to be flexible and adaptable to many different situations; exactly which drugs are regarded as essential remains a national responsibility.<sup>4</sup>

Postoperative utilization of drugs is very much marked. Drugs are prescribed for the purpose of analgesia, prevention of infection, nausea and vomiting, intravenous fluids so forth and so on. Also, there are very few studies which describe the utilization of drugs postoperatively. Therefore, we decided to conduct this study in which we studied the utilization pattern of drugs postoperatively and their cost.

**MATERIALS AND METHODS**

As per selection criteria, total 320 patients were enrolled in the study and data of such patients like name, age, sex, diagnosis, ongoing treatment were recorded and analyzed.

**Data Analysis**

The generic name of the drugs and the generic contents of formulation were obtained from the Indian Drug Review (IDR).

Data were further analyzed as age wise distribution, average number of drugs per encounter, percentage of encounters with an antibiotic prescribed, prescribing frequency of antibiotic, percentage of encounters with an injection prescribed, percentage of drugs prescribed by generic name, average drug cost per encounter, percentage of drug cost spent on antibiotics, percentage of drug prescribed from Essential drug list formulary.<sup>5</sup>

**Table 1: Patients undergoing different type of surgeries (n=320) and Distribution of antibiotics in different surgeries**

Type of Surgery	No. of Patients	Total No. of Antibiotic used
<b>Lower Segment Caesarean Section (LSCS)</b>	127	350
<b>Hysterectomy</b>	78	240
a. Total Abdominal Hysterectomy (TAH)	24	130
b. TAH with Bilateral Salpingo-Oophorectomy (BSO)	18	90
c. TAH with unilateral Salpingo – Oophorectomy	1	5
d. Total Vaginal Hysterectomy (TVH)	5	26
e. TVH with A & P Repair	16	102
f. Non-Descent Vaginal Hysterectomy (NDVH)	5	20
<b>D &amp; C (Dilatation and curettage)</b>	28	18
<b>Emergency Laparotomy</b>	7	32
<b>Cystectomy</b>	6	24
<b>Wound gap repair</b>	2	10
<b>Cervical biopsy</b>	2	6
<b>Myomectomy</b>	1	5
<b>Total</b>	320	1058

**Table 2: Most Frequently prescribed drugs (n=320)**

Name of drug	No. of encounters
Tab. Ranitidine	310
Tab. Diclofenac sodium	280
Inj. Metronidazole	275
Inj. Ranitidine	272
Inj. Dextrose with Normal Saline	270
Inj. Dextrose (5)%	270
Inj. Ringer's Lactate	270
Inj. Gentamicin	252
Inj. Diclofenac	251
Inj. Ciprofloxacin	132
Inj. Ceftriaxone + Sulbactam	125
Tab. Metronidazole	70
Inj. Ceftriaxone	68
Tab. Cefixime	64
Inj. Ondansetron	61
Inj. Tramadol	53
Tab. Ciprofloxacin	48
Cap. Amoxicillin	43
Inj. Cefoperazone + Sulbactam	32
Tab. Brufen	30
Inj. Cefotaxime	28
Inj. Amikacin	27
Tab. Cefadroxil	18
Tab. Amoxicillin + Clavulanic acid	18
Inj. Piperacillin + Tazobactam	9
Inj. Ampicillin	2
Inj. Amoxicillin + Clavulanic acid	1

## RESULTS

In the present study, total numbers of encounters were 320. The mean age of the women undergoing obstetrics and gynecological procedure was 37.86 +15.51 years (mean + SD) in total 320 patients. In our study, patients most commonly belonged to age group of 18-38 years (62.60%) followed by 38-57 years (31.70%), 58-77 years (4.88%) and 78-97 years (0.82%).

As shown in Table 1, patients had undergone different types of surgeries during the study. Lower segment caesarean section (LSCS) was the most common surgery (127 patients), followed by hysterectomy (78 patients), followed by dilatation and curettage (D & C) (28 patients). Among the hysterectomy, most common performed surgery was total abdominal hysterectomy (TAH), followed by TAH with bilateral salpingo-oophorectomy (BSO). Total vaginal hysterectomy with A & P repair was the third most common performed hysterectomy.

Most frequently prescribed drugs in decreasing frequency are shown in Table 2. In our study, total encounters with an antibiotic prescribed were 320 and percentage of encounters with an antibiotic prescribed was 100%. Number of antibiotics prescribed per encounter is shown in Table 1. Most of the encounters contain a minimum of 1 antibiotic to a maximum of 7 antibiotics.

Out of 320 encounters, an injection was prescribed in 285 encounters either as an injectable antibiotic, or an injectable analgesic or intravenous fluid. Thus, the percentage of encounters with an injection prescribed was 89.16% in our study. Out of 24 drugs used, 20 (85.18%) drugs were prescribed from the National List of Essential Medicines. In our study, a total of 20 and 4 drugs were prescribed by generic name and brand names respectively.

## DISCUSSION

We obtained data of 320 patients who underwent surgery in the obstetrics and gynecology department of a tertiary care teaching hospital attached to Medical College. The mean age of women undergoing Obstetrics and Gynecological procedure was 37.86 + 15.51 years out of 320 patients, which is comparable to the study conducted by Heethal J et al<sup>6</sup> in which mean age was 25.2 + 4.7 years and lower than study conducted by Sallie SO et al<sup>7</sup> (27.8 + 5.9 years). The mean age of women undergoing Gynecological procedure (150 patients) was 43.27 + 14.52 years, which is comparable to Sallie SO et al<sup>7</sup> in which mean age was 42.4 +14.8 years.

In present study, surgery for LSCS was very common and accounted for a total of 127 patients. This finding is lower than the findings of Prashanth P et al<sup>8</sup> which was 67.59%. In study conducted by Shah BK, Shah VN,<sup>9</sup> it was 20% (n=69). This difference is because in their study episiotomy (n=123) and normal delivery (n=23) were included.

The second most common procedure done was Hysterectomy. This finding is higher than the findings of Prashanth P et al,<sup>8</sup> which was 19.44% and Shah BK, Shah VN<sup>9</sup> in which it was 11.30%. Other procedures with decreasing frequency were D & C (12.68%), emergency laparotomy (2.44%) and cystectomy (2.43%). miscellaneous (1.95%) surgeries include pyometra drainage, re-suturing of wound gap, recanalization, marsupialization and purandare sling operation.

The average number of drugs per encounter was 9.16 in our study with range of 2 to 12. This is similar to the findings of Gyawali S et al<sup>10</sup> in which it was 10.60.

Most commonly prescribed drugs were tablet ranitidine, tablet diclofenac sodium, injection metronidazole, injection Ranitidine, injection ringer's lactate, injection dextrose with normal saline, injection dextrose, injection gentamicin, injection diclofenac, injection ciprofloxacin, injection ceftriaxone plus sulbactam, and tab. metronidazole.

In present study antibiotics were prescribed in all 320 encounters (100%). The purpose of antibiotic usage in post-operative patients was prophylactic to prevent post-operative infection at the surgical site.

The average no. of antibiotics used in our study for LSCS came out to be 3.40, which is comparable with 3.75 found in a study conducted by Shah BK, Shah VN.<sup>9</sup> But the average no. of antibiotics used for Hysterectomy was 5.89 which is higher than a study conducted by Shah BK, Shah VN<sup>9</sup> in which the same indicator was 3.42. The higher number of antibiotics per patient indicates that more and more antibiotics were used for prophylaxis purpose rather than definitive treatment purpose. It is used more as a blanket therapy to prevent any or all types of infection. This not only leads to the increased cost of therapy, but also to increased incidence of adverse drug reactions and to the selection of drug resistant bacterial strains. As far as preference of antimicrobial was concerned major factor was availability of free drugs from hospital supply was appeared to be governing the choice. Metronidazole, gentamicin, ciprofloxacin therefore, topped the list. According to group wise distribution of antimicrobial anti-amoebic agents topped the list followed by cephalosporin and aminoglycosides.

Most of the patients received antimicrobials intravenously for the first five post-operative days. Patients were then changed to oral formulations for better compliance and cost effectiveness. This is to achieve high and quick plasma concentration of the drug during the period at which the risk of bacterial contamination is maximum.<sup>6</sup>

Amongst the analgesics, diclofenac sodium was the most commonly used analgesic as parental and oral route. As post-operative pain is one of the major problems after surgery, use of an analgesic has almost become mandatory following surgery. The most commonly used analgesic was diclofenac which is consistent with the findings of Dashputra AV, Badwaik RT.<sup>11</sup> Intravenous fluids were also amongst the most commonly used drugs. The different type of fluids used included injection ringer's lactate (86.18%), injection dextrose plus normal saline (86.18%) and injection dextrose 5% (86.18%). These findings are consistent with that of the study conducted by Gyawali S et al<sup>10</sup> for injection ringer's lactate (93.83%). but for injection dextrose plus normal saline (46.91%) and injection dextrose 5% (45.68%), finding in our study is higher in percentage. Administration of intravenous fluids may be one of the reasons causing increase in the average number of drugs per patient.

Percentage of encounters with an injection prescribed is 89.13% in our study.

The primary purpose of NLEM is to promote rational use of medicines considering the three important aspects i.e. cost, safety and efficacy. Furthermore it promotes prescription by generic names, NLEM, India.<sup>12</sup>

Postoperative state commonly requires the need for a very few classes of drugs. The most common amongst them are antimicrobials, analgesics, intravenous fluids, anti-emetics and

antacids. All these drugs add a lot to the cost of therapy. In particular, the cost of injectable drugs is very high. Direct non-medical cost i.e. cost incurred by patient in receiving medical care e.g. transportation to and from hospital and lodging of family members were not considered. Indirect cost like income loss of family due to absenteeism from work and intangible cost i.e. pain, worry, stress, anxiety due to the disease were also neglected as these costs are difficult to measure and variations are bound to occur when interpreted by different individual.

### CONCLUSION

To sum up, all though the present study provides valuable insight about the overall pattern of drug use profile in postoperative patients in the obstetrics and gynaecology unit of a tertiary care hospital. This report is intended to be a step in the broader evaluation of safety and efficacy of drug prescription in surgical wards of a teaching hospital. Awareness to avoid polypharmacy is required for cost effective treatment.

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