



Analysis of Prescription in the Department of Cosmetic Surgery - According To Who Prescribing Indicators

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Abstract

Cosmetic surgery is a unique discipline of medicine focused on enhancing appearance through surgical and medical techniques. Cosmetic surgery can be performed on all areas of the head, neck and body. Cosmetic surgical principles are used by plastic surgeon to improve overall appearance of the body and for a better outcome of the reconstructive procedures. Antibiotic prophylaxis is always indicated in microsurgery, prosthetic surgery, incisional hernias, clean non-prosthetic osteoarticular surgery and contaminated procedures such as oral cavity or genitourinary system. To monitor, evaluate and suggest modifications in the prescriptions as to improve patient care and make it reasonable and effective, prescribing pattern assessment plays an important role. The intent of this study is to analyse the prescribing pattern of antibiotics used for surgical prophylaxis in different plastic surgeries. Among 350 patients, 86 % patients were operated surgically. Aminoglycosides, III generation Cephalosporins, Penicillins & Beta-lactamase inhibitors were frequently prescribed class of antibiotics. 66 % were males and 24 % were females. 180 prescriptions were

encountered to have 5-8 drugs per prescription. In infectious disease management and prevention, antibiotics play a key component. Clinical Pharmacist plays a vital role in proper selection of antibiotics in pre and post operative patients.

Keywords: Cosmetic Surgery, Prescribing Pattern, Who Indicators, Rationale Antibiotics

Introduction

Cosmetic surgery is a unique discipline of medicine focused on enhancing appearance through surgical and medical techniques. Cosmetic surgery can be performed on all areas of the head, neck and body^[1]. Plastic surgery is defined as a surgical specialty dedicated to reconstruction of facial and body defects due to birth disorders, trauma, burns, and disease. Plastic surgery is intended to correct dysfunctional areas of the body and is reconstructive in nature^[1]. It deals with the repair, reconstruction, or replacement of physical defects of function involving the skin, musculoskeletal system, cranio maxillofacial structures, hand, extremities, breast and trunk, external genitalia or cosmetic enhancement of these areas of the body. The main essential component of

plastic surgery is cosmetic surgery. Cosmetic surgical principles are used by plastic surgeon to improve overall appearance of the body and a better outcome of the reconstructive procedures^[2]. Antibiotic prophylaxis is always indicated in microsurgery, prosthetic surgery, incisional hernias, clean non-prosthetic osteoarticular surgery and contaminated procedures such as oral cavity or genitourinary system^[3]. The efficacy of the antimicrobial prophylaxis for the prevention of SSIs was established in the 1960s and has been demonstrated repeatedly since then^[8]. Surgical antimicrobial prophylaxis refers to the use of antibiotics for the prevention of surgical site infections^[9]. In the clean operative field, antibiotics effectively prevent surgical site infection (SSI). Prophylactic antibiotics are able to not only reduce the SSI, but also decrease the incidence of drug resistance^[4,5]. Besides, SSI refers to the infection of surgical incision or deep organ/space following the surgery, including incision infection, abscess peritonitis, etc.^[6]. SSI accounts for 15 % of the hospital acquired infection and 35 to 40 % of the infection in the department of surgery^[7].

Aim and Objectives

The intent of our study is to analyse the prescribing pattern of antibiotics used for surgical prophylaxis in different plastic surgeries. All the hospital case records during the period of 2012 to 2014 were analysed for assessment of prescription pattern.

The data has been categorised in different ways to analyse the prescribing pattern of drugs.

Materials and Methods

This study was conducted in a private hospital located in Telangana, India.

Inclusion Criteria

All the patients who admitted into the hospital for undergoing cosmetic surgical procedures were included in

the study. Cases include: Scalds, Birth defects, breast augmentation, Liposuction, Carcinoma cases, Trauma, Diabetic gangrene, Hernia.

Various surgical procedures performed in the treatment of aabove conditions are as follows: Debridement, Soft Skin grafting, Collagen application, Soft Tissue repair, Post burn contracture, Tendon repair. Along with these surgical procedures few General Surgeries are also performed such as: Hernioplasty, Hemi Thyroidectomy, Abdominoplasty, Liposuction, Excision Biopsy, ‘K’ wire fixation, Serial Excision.

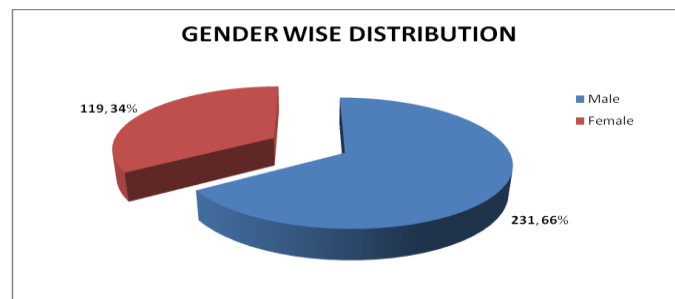
Exclusion Criteria

Patients suffering from immunocompromised disorders like HIV & HbV were excluded.

Results

Data has been collected by observing records of 350 inpatients and it is summarized into different categories

Gender Wise Distribution



Among 350 patients there were 231 (66 %) male patients and 119 (34 %) female patients.

Age Group Wise Distribution

S.No	Age Group	No. Of Patients (350)	Percentage
1	Paediatrics (Upto17 Years)	87	25 %
2	Adults (18-59 Years)	238	68 %
3	Geriatrics (> 60 Years)	25	7 %

In this study of 350 patients, adults were 68 % while paediatrics and geriatrics were 25 % and 7 % respectively.

Distribution of Patients According To Pattern of Diagnosis

S.No.	Type of cases	No. of Patients admitted	Percentage
1	Scald	94	31 %
2	Trauma	94	31 %
3	General Surgeries	69	23 %
4	Infectious cases	31	10 %
5	Excision Biopsy	11	4 %
6	Birth Defects	2	1 %
7	Carcinomas	2	1 %

Scald and Trauma cases constitute 31 % and birth defects & carcinomas were lowest (1 %).

Categorization Based On Requirement of Surgery

S. No.	Need of Surgery	No. of patients	Percentage
1.	YES	303	86 %
2.	NO	47	14 %

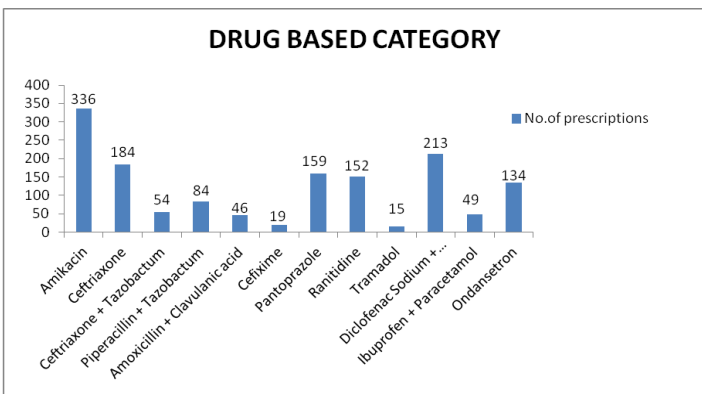
Among 350 patients, 86 % were operated surgically and 14 % did not undergo surgery.

Distribution of Drugs Based On Class

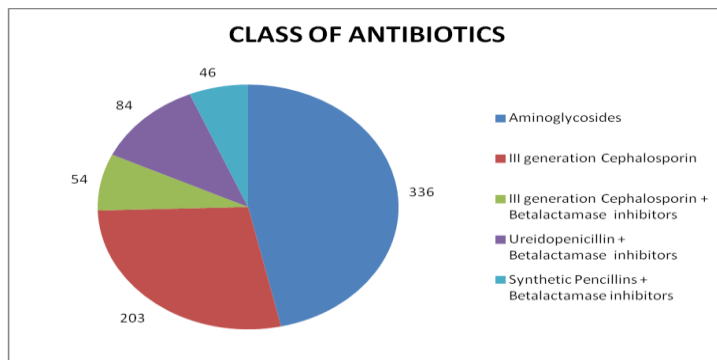
S.No	Class of Drugs	Number (1261)	Percentage
1	Antibiotics	539	43 %
2	Analgesics	277	22 %
3	Antiemetics	134	11 %
4	H2 antagonists	152	12 %
5	Proton Pump Inhibitors	159	13 %

Of 1261 prescribed drugs, 43 % were antibiotics, analgesics constitute to 22 % followed by Proton pump inhibitors, H2 antagonists and antiemetics up to 13 %, 12 % and 11 % respectively.

Drug Based Category

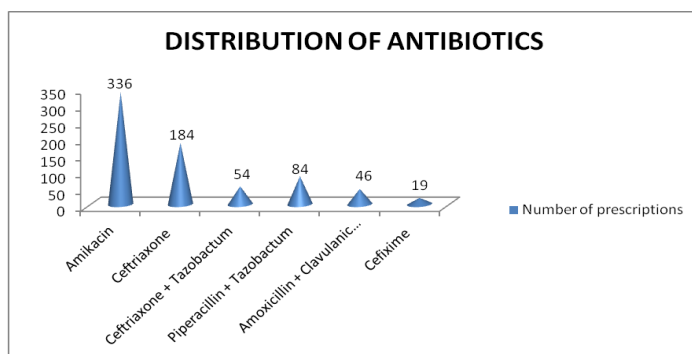


Class of Antibiotics



Among antibiotics, Aminoglycosides were given to 336 patients followed by III generation Cephalosporin and Ureidopenicillin + Betalactamase inhibitors which were given to 203 and 84 patients respectively.

Distribution of Antibiotics



Amikacin was prescribed to 336 patients and Ceftriaxone has been prescribed to 184 patients followed by Piperacillin + Tazobactam and Ceftriaxone + Tazobactam to 84 and 54 patients respectively.

Number of Drugs Per Prescription

Of 350 Prescriptions, 180 prescriptions had more than 5 drugs per prescription. The maximum number of drugs prescribed per prescription was found to be 12 (4 prescriptions).

No. of Prescriptions	No. of drugs per Prescription
44	7
36	4
44	6
21	9
38	8
19	3
54	5
11	10
4	12

Duration of Hospital Stay

No. of Days Admitted	No. of Patients	Percentage
1 – 5	163	46.5 %
6 -10	157	44.8 %
11 – 15	26	7.4 %
> 15	4	1.1 %

Out of 350 Patients, majority of the patients were hospitalized for 1-5 days (46.5 %).

Discussion

In our study of 350 patients, 231 (66 %) were male and 119 (34 %) were female. Abel Abraham Thomas *et al* stated that the majority of their study population was female (72.94 %) and male were about 56 people (27.06 %) [10]. In another study conducted by Joshi DK *et al* (100 patients), Female (55 %) were relatively higher than male (45 %) [11]. Compared to another study by Napolitano F, Teresa M conducted at Department of Experimental Medicine, Naples, Italy of 404 patients, 44.3 % were male and 55.7 % were female [12]. Because majority of the patients in our study were admitted with trauma and scalds. Most of the paediatric populations (25 %) were admitted with scalds and birth defects while the geriatric population (7 %) was admitted with non-healing ulcers or

gangrene and among adult population (68 %) most of the patients were admitted with trauma and scalds. In a study conducted by Abel Abraham Thomas *et al*, they found that only 70.7 % of patients underwent surgery [10]. In contrast our study had 86 % of patients operated. As surgical intervention needs to be decided based upon the condition of the patient.

Abel Abraham Thomas *et al* states that, of 207 patients the most common post-operative drugs prescribed were cephalosporin (62.3 %), Nitro imidazole (54.1 %), Aminoglycosides (7.2 %), Beta lactamase inhibitors (1.9 %), Fluoroquinolones (1.4 %) [10]. In another study conducted by Joshi DK *et al*, among 100 patients, 86 were prescribed cephalosporins and 15 patients were prescribed fluoroquinolones. 64 % patients were prescribed aminoglycosides, 53 % patients were prescribed with ampicillin [11]. Similarly in another study conducted by Venkateswarlu B *et al* higher utilization of cephalosporins 80.5% and fluoroquinolones 38 % was noticed [13]. Where as in our study the prescribing pattern primarily includes Amino glycoside antibiotics (96 %) followed by III generation Cephalosporin antibiotics (58 %) and combination of Ureidopenicillin and beta lactamase inhibitors (24 %). The disproportionate percentage in our study (96 %, 58 % and 24 %) shows the prescription of multiple antibiotics to single patient. The reason of prescribing multiple antibiotics could be broader coverage of organisms and synergistic activity.

Bratzler DW *et al* stated that as per ASHP guideline cefazolin is a drug of choice in the treatment of SSI due to appropriate duration of action, desirable spectrum of activity, safety, and low cost [14]. Another study conducted by Shadi Baniyadi *et al* stated that cefazolin was the most commonly selected antibiotic for Surgical antibiotic prophylaxis [15]. Hosoglu S *et al* in their study conducted in Turkey stated that third generation cephalosporins (42

%) followed by cefazolin (30 %) were the most commonly used antibiotics for surgical prophylaxis^[16]. In another study conducted by Al-Azzam SI *et al* in 20 Jordanian hospitals showed that third and second generations of cephalosporins were the most commonly used antibiotics^[17], In contrast we observed that Amikacin (96 %) along with third generation cephalosporins (53 %) are the most commonly prescribed antibiotics for surgical prophylaxis.

In a study conducted by Anderson DJ *et al* and another study conducted by Bratzler DW *et al* described that the alternative to cephalosporins includes intravenous vancomycin or clindamycin^[18,14], Where as in our study a combination of Ceftriaxone with Tazobactam (53 %) was prescribed in combination with amikacin or alone.

In a study conducted by Abel Abraham Thomas *et al* in 207 patients, majority were hospitalized for duration of 1-5 days i.e. 49.2 % followed by 48.8 % patients for 6-10 days^[10]. Similarly in our study, among 350 patients, majority were hospitalized for 1-5 days (46.5 %) followed by 44.8 % patients for 6-10 days. The hospital stay is decided based on condition and severity of the patient.

Antibiotics are the second most prescribed drugs in the world followed by cardiovascular drugs^[19]. In a study conducted by Ramesh *et al*, antibiotics constitute about 36 % of the total drugs prescribed in their study^[20], where as in our study we found that 43 % which is slightly higher. This is because in patients who underwent surgery, antibiotics play a key role in preventing and reducing the pre and post operative infections.

To measure the degree of polypharmacy, the average number of drugs prescribed per prescription was calculated by WHO prescribing indicators^[21].

In our study the average number of drugs per prescription was found to be 3.6 which is less compared to study conducted by Ramesh *et al* (4.1)^[20]. In contrast, study

conducted by Joshi DK *et al* found that the average number of drugs per encounter was 7.85^[11].

Conclusion

Antibiotics play very important role in prevention and management of surgical site infections. Majority of prescriptions were according to standard recommendations and WHO prescribing indicators. Few patients were prescribed multiple antibiotics. To minimize mortality, morbidity and economic burden on to the patients and for better patient care, Physician - Clinical Pharmacist relationship must be improved to a larger extent to evaluate and promote rational use of drugs. Apart from appropriate selection of antibiotics, Clinical Pharmacist can assist health care team in patient counseling and proper precautions to be taken for speedy recovery.

Acronyms

ASHP – American Society of Health-System Pharmacists

HbV – Hepatitis b Virus

HIV – Human Immunodeficiency Virus

SSI – Surgical Site Infections

WHO – World Health Organization

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