RESEARCH PAPER

An Insight into Compliance to Surgical Antimicrobial Prophylaxis Policy in a Tertiary Care Hospital

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ABSTRACT

Compliance to surgical antimicrobial prophylaxis policy is an important factor to prevent surgical site infection. The present study was done to evaluate the compliance to surgical antimicrobial prophylaxis policy in a tertiary care hospital. Study of Surgical antimicrobial prophylaxis given to 938 patients from the surgical units over a six month period between October 2025 to March 2026 was studied to check for the adherence to Surgical antimicrobial prophylaxis policy. Surgical antimicrobial prophylaxis given was reviewed and statistically analysed. Interviews were conducted with surgeons who did not adhere to the surgical antimicrobial prophylaxis policy. Multivariate linear regression analysis was performed to find factors that affected surgeon's overall perception of antibiotic guideline adherence. Statistical analysis was performed using SPSS version 22.0. There was an overall 95.8% compliance to the Surgical antimicrobial prophylaxis guidelines and 4.2% nonadherence to Surgical antimicrobial prophylaxis guidelines. Nonavailability of antibiotics, lack of consensus, poor awareness about guidelines, preference for broad-spectrum antibiotics were the reasons for nonadherence to surgical antimicrobial prophylaxis policy. Compliance to surgical antimicrobial prophylaxis policy varies from place to place. Continuous educational training in Antimicrobial stewardship programme, implementation of audits by our Antimicrobial stewardship programme team, availability of proper protocol for surgical antimicrobial prophylaxis were the key reasons for satisfactory adherence to surgical antimicrobial prophylaxis policy in our hospital area.

Keywords: Surgical antimicrobial prophylaxis, Policy, Compliance, Tertiary care hospital.

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INTRODUCION:

Surgical Antimicrobial prophylaxis refers to the prevention of infectious complications by administering an effective antimicrobial agent prior to exposure to microbial contamination during surgery.[1] Surgical Antimicrobial prophylaxis is often associated with high rates of inappropriate antibiotic usage. Effective use of antimicrobials to prevent infection is essential to reduce the risks associated with surgical procedures. [2]Hence our study was conducted to evaluate the compliance to Surgical antimicrobial prophylaxis in a tertiary care hospital.

MATERIAL AND METHODS

Study design A prospective study of Surgical antimicrobial prophylaxis records in Operation theatres of Apollo general hospital was conducted . The study involved 938 patients undergoing surgery and was done over a 6-month period between October 2025 to March 2026.

Data analysis The data regarding administration of Surgical antimicrobial prophylaxis was reviewed and statistically analysed for adherence to the hospital surgical antimicrobial prophylaxis policy.

Analysis of reasons for noncompliance to surgical antimicrobial prophylaxis policy Interviews were

conducted with surgeons who did not adhere to the surgical antimicrobial prophylaxis policy to find out the reasons for noncompliance. Multivariate linear regression analysis was performed to find factors that affected surgeon's overall perception of antibiotic guideline adherence. Statistical analysis was performed using SPSS version 22.0.

RESULTS AND DISCUSSION

TABLE 1: NUMBER AND PERCENTAGES OF SURGERIES PERFORMED IN OUR INSTITUTION

DEPARTMENT	NAME OF THE SURGERY	No[%]
General surgery	Cholecystectomy	53(5.6%)
	Appendectomy	32(3.4%)
	Hernia repair	55(5.8%)
	Breast surgeries	8(0.8%)
Gynaecology and Obstetrics	LSCS	**99[10.5%]**
	Hysterectomy	36(3.8%)
	Dilatation & evacuation	10(1%)
Orthopedics	ORIF	53(5.6%)
	Total knee replacement	7(0.7%)
	CRIF	14(1.5%)
	Spinal fixation	13(1.4%)
Ophthalmology	PHACO+PCIOL	76(8.1%)
Total Surgeries		456

In our study ,the commonest surgical procedure performed was Lower segment caeserian section whereas in the studies of H.S Rehan *et al* [3] and Sneha *et al*[4] , the commonest surgical procedures performed were Inguinal hernia repair and Total knee replacement respectively . The common surgical procedures vary across geographical regions. Reasons for this could be the differences in physician beliefs about indications for different surgeries and the extent to which patient preferences are incorporated into treatment decisions. These factors are intern guided by broader environmental factors, technology diffusion, specialist supply & financial incentives to surgeons ,patient outcome of the surgery and regulatory environment. [3]

TABLE 2 SHOWING COMPLIANCE TO SURGICAL ANTIMICROBIAL PROPHYLAXIS.

Adherence to Surgical antimicrobial prophylaxis		
OUR STUDY	AKSA et al	ZAKIR KHAN et al
95.8%,	77.7%.	9.5%.

In the present study , the adherence to Surgical antimicrobial prophylaxis policy was 95.8%. However the studies of Aksa *et al* [4] and Zakir Khan *et al*[5] revealed adherence of 77.75 and 9.5% respectivel;y. Increased awareness among surgeons in our hospital due to regular training programmes could be the reason for more compliance to Surgical antimicrobial prophylaxis policy in our study . Another study [6] also revealed that continuous training on antibiotic stewardship programme & prevention of Surgical site infection have a lot of bearing upon the use & adherence to Surgical antimicrobial prophylaxis guidelines.

TABLE 3 SHOWING NON ADHERENCE TO SURGICAL ANTIMICROBIAL PROPHYLAXIS IN VARIOUS DEPARTMENTS .

DEPT	PERCENTAGE OF NON ADHERENCE TO SURGICAL ANTIMICROBIAL PROPHYLAXIS
General surgery	9.16%
Gynaec/obg	4%
Orthopaedics	2%
ENT	4.3%
Ophthalmology	0%

When 95.8 percent out of 938 is approx 899 surgeries. The rest 39 are non compliant surgeries. Hence in such context the percentage of the non adherent SAP percentage is a mistake in the above table.

Non adherence to Surgical antimicrobial prophylaxis policy was more in the general surgery department in our study. Majority of the other studies also reveal an over all compliance of less than 50% for operations of general surgery department. [7,8]

TABLE 4 SHOWING NON ADHERENCE TO SURGICAL ANTIMICROBIAL PROPHYLAXIS IN GENERAL SURGERY DEPARTMENT

DEPARTMENT	TYPE OF SURGERY	TOTAL NUMBER	% OF NON ADHERENCE
General surgery	Laparoscopic cholecystectomy	53	96%
	Appendectomy	32	62.5%
	Hernia repair	55	60%
		8	87.5%

Out of the either 39 surgeries the number distribution is not clear in the above table. The non adherence of 96% out of 53 in surgery department is 50 which is more than the total non adherent surgeries I.e. 39 .

The non adherence to Surgical antimicrobial prophylaxis policy was more in lapaoscopic cholecystectomy procedures compared to other general surgery procedures in our study (95%) whereas in other studies of Andrew et al [9] and Gandham Ravi Et al [10] the adherence was 75% and 68.7% respectively. Our policy recommends the use of cefazolin 2gm IV for these operations . Many surgeons prefer to use for elective laparoscopic colecystectomy but in other studies no antibiotics were recommended for this purpose .Hence the adherence in our study was more compared to other studies . However , it is advisable that the surgeons

should not use prophylactic antibiotics for laparoscopic colecystectomy as the use of antibiotics does not lower the already low infection rate associated with this procedure. [11]

TABLE 5 SHOWING NON ADHERENCE TO SURGICAL ANTIMICROBIAL PROPHYLAXIS IN GYNAECOLOGY & OBSTETRICS DEPARTMENT.

DEPAETMENT	TYPE OF SURGERY	TOTAL NUMBER	% OF NON ADHERENCE
Gyn /Obg	LSCS	99	31%
	Hysterectomy	36	27.7%
	Dilatation & evacuation	10	30%

Nonadherence to surgical antimicrobial prophylaxis in lower segment caesarian section was 31%. However in Jalil etal study [12] , the nonadherence was 1.09%. The decreased adherence to surgical antimicrobial prophylaxis in our study was due to non availability of cefazolin in the pharmacy. Cefazolin was the recommended drug for Surgical antimicrobial prophylaxis for gynaecology & obstetrics operations There was a time when cefazolin was not available in the market. Ideally the surgical antimicrobial prophylaxis drugs should be made available in the pharmacies of the respective hospitals.

TABLE 6 SHOWING NON ADHERENCE TO SURGICAL ANTIMICROBIAL PROPHYLAXIS IN ORTHOPAEDICS DEPARTMENT.

DEPARTMENT	TYPE OF SURGERY	TOTAL NUMBER	% OF NON ADHERENCE
Orthopaedics	ORIF	53	11%
	Total knee replacement	7	42.8%
	CRIF	14	21%

Non adherence to surgical antimicrobial prophylaxis was more in total knee replacement surgeries than in other orthopaedic operations. The choice of surgical antimicrobial prophylaxis antibiotic used in our study and in Justin etal study [13] was cefazolin . But the difference was in the dosage of antibiotic used .Canadian surgeons in Justin etal study preferred 1 gm IV cefazolin whereas our policy was to give 2gm IV cefazolin. .Opinions regarding use of perioperative antibiotic prophylaxis in total knee replacement vary widely among orthopaedic surgeons worldwide which is mainly due to lack of consensus about the current guidelines for surgical antimicrobial prophylaxis .

TABLE 7 SHOWING NON ADHERENCE TO SURGICAL ANTIMICROBIAL PROPHYLAXIS IN ENT DEPARTMENT.

DEPARTMENT	TYPE OF SURGERY	TOTAL NUMBER	% OF NON ADHERENCE
ENT	Tympanoplasty	16	12.5%
	septoplasty	21	19%

There was 19% nonadherence to surgical antimicrobial prophylaxis policy in septoplasty operations in our study . But in other studies of Slarin et al [14] and Kaygusuz et al [15] - 32% and 28% respectively . In other studies of Slarin et al [14] and Kaygusuz et al [15] there was more nonadherence to surgical antimicrobial prophylaxis policy-. ENT surgeons preferred to give surgical antimicrobial prophylaxisto patients to eliminate the pain after surgery though it was not required . Our surgical antimicrobial prophylaxis policy recommends the use of cefazolin IV for septoplasty operations. However Septoplasties are considered potentially only contaminated surgeries & do not require prophylactic use of antibiotics due to low risk of postoperative infection

TABLE 8 SHOWING REASONS FOR NON ADHERENCE SURGICAL ANTIMICROBIAL PROPHYLAXIS IN OUR STUDY

REASONS FOR NON COMPLIANCE TO TO SURGICAL ANTIMICROBIAL PROPHYLAXIS IN OUR STUDY
1. Lack of concensus
2. Non availability of drugs in the pharmacy
3. False belief that higher antibiotics are more effective.

COMPARISION OF REASONS FOR NON COMPLIANCE TO TO SURGICAL ANTIMICROBIAL PROPHYLAXIS IN VARIOUS STUDIES

OUR STUDY	ZAKIR KHAN ET AL [5]	USMAN ABUBAKAR ET AL [16]	YASER ET AL[17]	FRANCESCO ET AL[18]	NG & CHONG ET AL[19]
1. Lack of concensus	Lack of Protocol and guidelines for surgical antibiotic prophylaxis	Lack of protocol for surgical antibiotic prophylaxis		False belief that prolonged antimicrobial administration is safe & more efficient in reducing SSI incidence.	Inefficient dissemination of guidelines for surgical antibiotic prophylaxis
2. Non availability of antibiotics in the pharmacy	Underestimation of infection	Lack of knowledge regarding optimal timing of antibiotic prophylaxis	Lack of awareness of SAP guidelines	Underestimation of infection	
.	Lack of concensus	Misconception that long duration of antibiotic prophylaxis would reduce the risk of SSI.		Lack of protocol for SAP.	

CONCLUSION

Differences in the physician beliefs regarding indications for surgery and the extent to which patient preferences are incorporated into treatment decisions, broader environmental factors, specialist supply, patient outcome after surgery could be the factors responsible for a particular surgical procedure being the most common surgical procedure done in a particular hospital area.

Educational training on antimicrobial stewardship programme and associated risk of surgical site infection risk has a bearing on the adherence to surgical antimicrobial prophylaxis guidelines..It is not only important that the hospitals have a Surgical antimicrobial prophylaxis policy but also the drugs used for surgical antimicrobial prophylaxis should be available in the pharmacies of the respective hospitals.

Non adherence to Surgical antimicrobial prophylaxis is multifactorial. Hence we suggest that there is a need to identify these factors that prevent the receipt of guidelines by surgeons and also to determine interventions that not only enhance adherence but also sustain it for a extended period of time..

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