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**ORIGINAL ARTICLE****Prevalence of Post-operative Wound Infections in Rural area of Latur District**

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**ABSTRACT:**

**Background:** Surgical site infection (SSI) continues to be a major source of morbidity following operative procedures. The modern surgeon cannot escape the responsibility of dealing with infections, having the knowledge for the appropriate use of aseptic and antiseptic technique, proper use of prophylactic and therapeutic antibiotics, and adequate monitoring and support with novel surgical and pharmacologic as well as nonpharmacologic aids.

**Objective:** To study the most common organisms encountered in postoperative wound infections and to find out the most effective Antibiotics in case of Post Operative Wound Infections.

**Methodology:** It is an Observational study done on 50 operated cases of post operative wounds.

**Results:** Most common microorganism encountered in present series was E. coli in 13 cases (26%). Least common micro organism was Proteus (2%). E. coli was also encountered in mixed culture with Kleibsiella, Pseudomonas and Citrobacter. Most effective antibiotic in present series was Imipenem. Other common effective antibiotics were Amikacin, Netillin,

Piperacillin, Tetracycline and Gentamycin. Least effective antibiotics were Penicillin, Cefotaxime, Cefuroxime and Cefoxitin.  
**Conclusion:** E. coli was the most common organism cultured. Imipenem and Amikacin were the most effective antibiotics.

**Keywords:** Postoperative, Wound Infection, E. coli, SSI, Organisms

**INTRODUCTION:**

Surgical site infection (SSI) continues to be a major source of morbidity following operative procedures. Wound infection is the commonest and most troublesome disorder of wound healing. Even though the complete elimination of wound infections is not possible, a reduction of the observed wound infection rate to a minimum level could have marked benefits in terms of both patient comfort and resources used.<sup>1,2</sup> Despite many decades of the application of refined surgical techniques, environmental changes in the operating room (OR), and the use of preventive antibiotics, infection at the surgical site remains a too common event.

With the introduction of antibiotic therapy in the middle of the 20<sup>th</sup> century a new adjunctive method to treat and prevent surgical infections was fostered. The modern surgeon cannot escape the responsibility of dealing with infections and

in dealing with them, of having the knowledge for the appropriate use of aseptic and antiseptic technique, proper use of prophylactic and therapeutic antibiotics, and adequate monitoring and support with novel surgical and pharmacologic as well as non pharmacologic aids. Basic understanding of how the body defends itself against infection is essential to a rational application of surgical and other therapeutic principles to the control of infection<sup>3</sup>.

Thus, in an era during which economic costs are a source of increasing concern in surgery, SSI prolongs hospitalization and increases many other costs that could be avoided if infection had not occurred

In the present study an attempt has been made to find out the most common microorganisms associated with post wound infections and to find out the Choice of Antibiotics for Post Operative Wound Infections.

### Methodology:

It is an Observational study done during 1 November 2011 to 1 November 2013 in MIMSR Medical College, Latur on all operated patients with exclusion of previously infected wound, patients with

Diabetes, Anaemia, HIV and Steroid Dependency. An elaborate study of these cases with regard to date of admission, history, clinical features of wound infection, special investigation, type of surgery, preoperative preparation and postoperative management is done till patient is discharged from hospital

### Procedure in laboratory:

As soon as swabs were received in laboratory, swabs were immediately put in glucose broth, the content were inoculated to blood agar and Mac Conkey agar plates and incubated at 37<sup>0</sup>C for 18 to 24 hours. Colonies were studied morphologically. Further colonies were inoculated in peptone water for gram negative bacilli and glucose broth for gram positive cocci. Both were incubated for 4 hours. Organisms were identified by using standard procedures.<sup>4</sup> The antibiotic sensitivity study was carried out by Kirby – Bauer disc diffusion method.<sup>5</sup> **Observations**

Most common microorganism encountered in present series was E. coli in 13 cases (26%). Least common microorganism was Proteus (2%). E. coli was also encountered in mixed culture with Klebsiella, Pseudomonas and Citrobacter (Table 1).

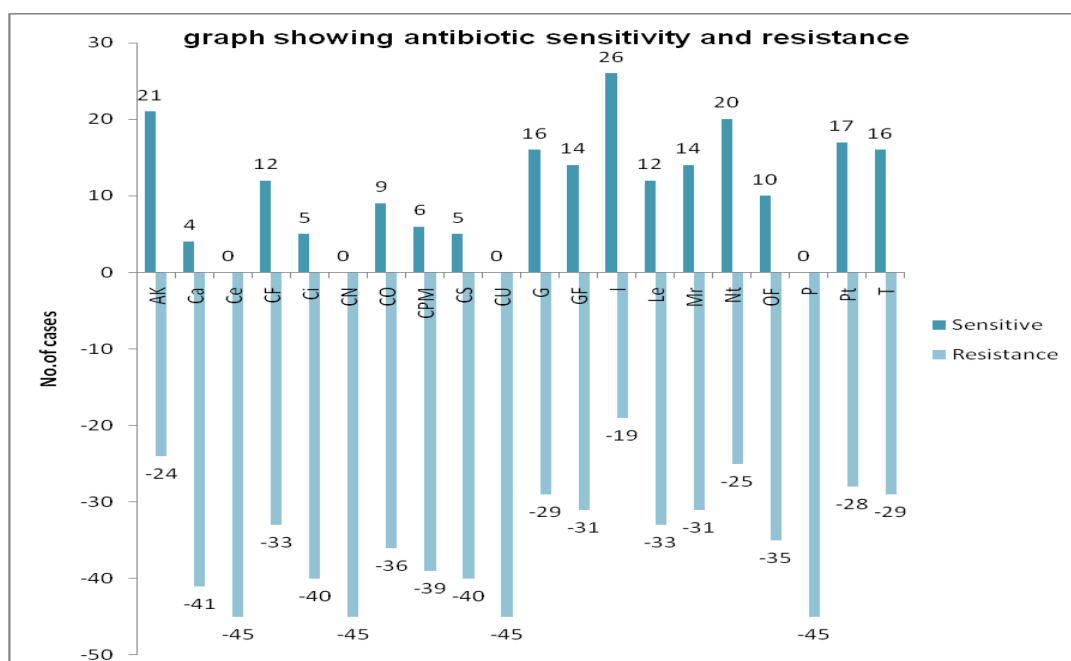
**Table 1: Distribution of Microorganisms Associated with Post Operative Wound Infections**

Microorganisms	No. of Cases	Percentage
E. coli	13	26
P. aeruginosa	11	22
S. aureus	10	20
Citrobacter	2	4
Klebsiella	2	4
E. coli + P. aeruginosa	2	4
E. Coli + Citrobacter	2	4
Proteus	1	2

Proteus + Acinetobacter	1	2
E. coli + Klebsiella	1	2
Culture Sterile	5	10
<b>Total</b>	<b>50</b>	<b>100</b>

**Table 2: Antibiotic sensitivity and resistance**

Antibiotic	Sensitive	Percentage	Resistance	Percentage
AK	21	42	24	48
Ca	4	8	41	82
Ce	0	0	45	90
CF	12	24	33	66
Ci	5	10	40	80
CN	0	0	45	90
CO	9	18	36	72
CPM	6	12	39	78
CS	5	10	40	80
CU	0	0	45	90
G	16	32	29	58
GF	14	28	31	62
I	26	52	19	38
Le	12	24	33	66
Mr	14	28	31	62
Nt	20	40	25	50
OF	10	20	35	70
P	0	0	45	90
Pt	17	34	28	56
T	16	32	29	58



**Discussion:**

Most common organism encountered in postoperative wound infection in this study was *E. coli* in 13 cases accounting for 26%. The second most common organism in this study was *Pseudomonas* in 11 cases accounting for 22%. The least common organisms were *Klebsiella* and *Proteus*.

The reason for *E. coli* being most common organism is that majority of patients getting postoperative wound infection, have undergone surgery for hollow viscus perforation and *E. coli* being the most common organism found in intestinal flora, might have contaminated the wound.

Agarwal et al.<sup>6</sup> showed *E. coli* as

commonest organism in postoperative wound infections. Kowli et al.<sup>7</sup> shows that *Staphylococcus aureus* as predominant micro-organism isolated i.e. 45.6%. In our study *Staphylococcus* is the third most common organism accounting for 20%. Tripathy and Roy<sup>8</sup> showed predominance of *Proteus* and *Pseudomonas* in their study. Our findings are similar to observations by Agarwal et al.<sup>6</sup>

In our study the most effective antibiotics were Imipenem, Amikacin, Netillin, Piperacillin, Tetracycline and Gentamicin. The least effective antibiotics were Penicillin, Cefotaxime, Cefuroxime and Cefoxitin. Our findings are quite similar to these earlier studies<sup>7,8</sup> (Table 3).

**Table : Antibiotics sensitivity and resistance**

Author	Kowli et al. <sup>7</sup>	Tripathy and Roy <sup>8</sup>	Our study
Antibiotic sensitive	Cloxacillin Cotrimoxazole Chloramphenicol Cephaloridine Gentamicin Kanamycin	Cotrimoxazole Chloramphenicol Gentamicin	Imipenem Amikacin Netillin Piperacillin Tetracycline Gentamicin
Antibiotic resistant	-	Penicillin Tetracycline Ampicillin Erythromycin	Penicillin Cefotaxime Cefuroxime Cefoxitin

A number of studies in the literature indicated a gradual increase in the

emergence of antibiotic-resistant microorganisms in patients undergoing surgery

(Green and Wenzel,<sup>9</sup> Taylor et al.,<sup>10</sup> Cruse and Foord, 1980,<sup>11</sup> Agarwal,<sup>6</sup>). *S. aureus* in surgical site infection is mainly due to its predominant role in hospital cross-infection and emergence of virulent antibiotic-resistant strains. In the present study, *S. aureus* strains from the infected wound were resistant to penicillin. Ineffectiveness of penicillin against *S. aureus* has been reported by Green and Wenzel (1977)<sup>9</sup>, Taylor et al. (1990),<sup>10</sup> Nicols et al.<sup>12</sup> and Berard and Gandon.<sup>13</sup>

These results show that *E. coli* was the most common microorganism associated with post operative wound infections, and Imipenem and Amikacin are the most sensitive antibiotics. Penicillin, Cefotaxime, Cefuroxime and Cefoxitin are the most resistant antibiotics.

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