

Prevalence of SSI in Post Operative Patients in Tertiary Health Care Hospital

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Abstracts: Aim & Objective: To find out the prevalence of SSI in patients post operatively in tertiary health care hospital. Methods: This study was conducted from June 2016 to October 2016. 891 samples of Surgical site swab were evaluated for bacterial growth. As a part of active surveillance of health care associated infection all the post operative cases are clinically evaluated for the diagnosis of SSI by the Infection Control Team, Civil Hospital Ahmedabad. For the suspected case of SSI, the swab specimen were send to bacteriological section Microbiology Department BJMC, Civil Hospital Ahmedabad . Methods used for bacterial identification were Grams stain, culture media and biochemical reactions. Antibiotic susceptibility using modified Kirby Bauer disc diffusion as per current CLSI guidelines. Result: Out of 891 samples Tested 675 were culture positive. Pseudomonas being the most common isolate (32%) followed by E.coli (25%) and Klebsiella pneumonia(19%). The rate of SSI is 4.4.The rate is high in emergency cases & higher among contaminated surgeries. Conclusion: This study provides information regarding prevalence and microbiological profile in patients with SSI post operatively in tertiary health care hospital. With increasing resistance to available antibiotics in microbes causing nosocomial infections, identification of pathogen and susceptibility pattern are the need of hour and thus very important. [Binda P NJIRM 2017; 8(2):84-87]

Key Word: SSI, Nosocomial infection.

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Introduction: An infection occurring within 30 days after any operative procedure or within 1 year if any implant is left in place is called surgical site infection i.e. SSI (as per CDC current guidelines).SSIs Healthcare-associated infections are deemed the most common and deadliest events threatening the health of patients.

A surgical site infection (SSI) is a wound infection that occurs following an invasive procedure¹. SSI accounts for over 20% of all health care associated infections in surgical patients^{2,3}. Approximately 2–5% of surgical patients worldwide have developed an SSI. SSIs are associated with considerable morbidity and it has been reported that over one third of postoperative deaths are related, at least in part, to SSIs.^{4,5} Study of SSI is important for it being most common Infections that occur in the wound created by an invasive surgical procedure are generally referred to as surgical site infections (SSIs)

They prolong the length of hospital stays and increase healthcare costs worldwide^{6,7,8}. The main additional costs are related to reoperation, extra nursing care and interventions, and drug treatment costs. The indirect costs, due to loss of productivity, patient dissatisfaction and litigation, and reduced quality of life.

The development of an SSI depends on contamination of the wound site at the end of a surgical procedure and specifically relates to the pathogenicity and inoculum of microorganisms present, balanced against the host's immune response. The microorganisms that cause SSIs are usually derived from the patient (endogenous infection), being present on their skin or from an opened viscous. Exogenous infection occurs when microorganisms from instruments or the theatre environment contaminate the site at operation, when microorganisms from the environment contaminate a traumatic wound, or when microorganisms gain access to the wound after surgery, before the skin has sealed. Rarely, microorganisms from a distant source of infection, principally through haematogenous spread, can cause an SSI by attaching to a prosthesis or other implant left in an operative site. Practices to prevent SSI are therefore aimed at minimising the number of microorganisms introduced into the operative site, for example by: removing microorganisms that normally colonise the skin preventing the multiplication of microorganisms at the operative site, for example by using antimicrobial therapy enhancing the patient's defences against infection, for example by minimising tissue damage and maintaining normothermia preventing access of microorganisms into the incision postoperatively by use of a wound dressings.

The aims of the study is to provide the guidance about on patient's postoperative phase of surgery and to provide the appropriate treatment for specific condition by knowing the prevalence of SSIs and knowing the which type of organism involved.

Methods: A retrospective study was conducted from June 2016 to October 2016. This study was conducted on a total number of 15340 patients underwent major surgery in civil hospital Ahmedabad. Out of 15340 patient, we had received 891 samples of swab surgical site and were evaluated for bacterial growth. Out of 891, swab for surgical site were positive in 675 samples.

As a part of active surveillance of health care associated infection all the post operative cases are clinically evaluated for the diagnosis of SSI by the Infection Control Team, Civil Hospital Ahmedabad. For the suspected case of SSI, The swab specimens are sended to bacteriological section Microbiology Department BJMC, Civil Hospital Ahmedabad. Methods used for bacterial identification were Grams stain, culture media and biochemical reactions. Various type of Culture media were used such as blood agar, macConkey agar, chocolate agar. On the basis of culture obtained specific biochemical test done to identify the various gram positive and gram negative organism and Antibiotic susceptibility also done by using modified Kirby Bauer disc diffusion as per current CLSI guidelines.

Results : There was 15340 cases operated between june 16 to October 16. Out of 15340 cases operated 891 cases were suspected for surgical site infection for that swab culture taken. Out of 891 cases 675 case positive by stain and culture. So RATE OF SSI = NO OF CASES POSITIVE/ NO OF CASES OPERATED*100
 $= 675/15340*100$
 $= 4.40$

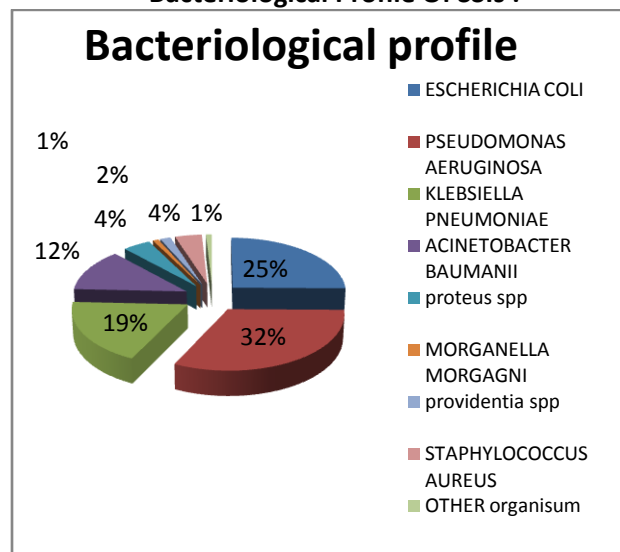
Organisum	June	July	August	September	October	Total	Percentage
Escherichia coli	15	44	60	29	22	170	25%
Pseudomos	16	33	63	54	50	216	32%
Klebsiella pneumonia	14	19	21	43	28	125	19%
Acinetobacter baumanii	10	16	31	21	6	84	12%
Proteus spp	1	6	5	13	4	29	4%
Morganella morgagni	2	0	1	1	2	6	1%
Providentia spp	1	1	5	4	0	11	2%
Staphylococcus aureus	2	7	5	8	6	28	4%
OTHER organism	3	0	1	1	1	6	1%
Total	64	126	192	174	119	675	100%



Surgical site infection rate according to month wise

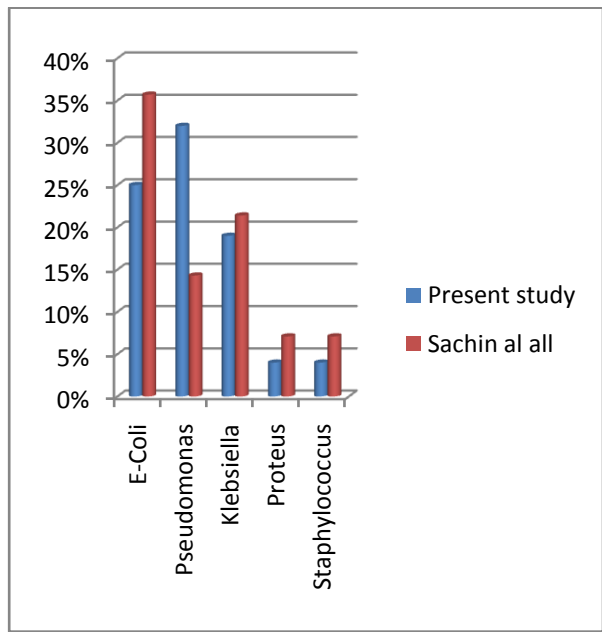
Month	Total no of surgery	No of case positive	SSIs rate
June'16	2624	65	2.4%
July'16	3447	125	3.6%
August'16	3247	192	5.9%
September'16	3018	174	5.7%
October'16	3004	119	3.9%
Total	15340	675	4.4%

Bacteriological Profile Of SSIs :



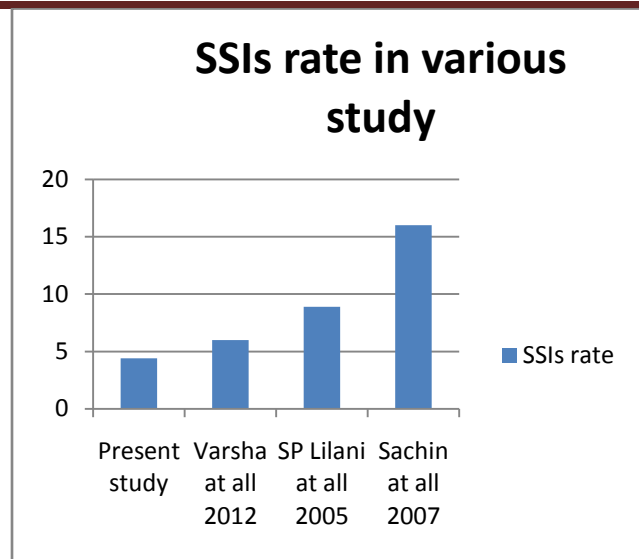
Discussion: The present study was carried out in 15340 patient who underwent various surgery in surgical department in tertiary care hospital Ahmedabad. The rate of SSI varies greatly worldwide and from hospital to hospital. The rate of SSIs varies from 2.5% to 41.9% as per different studies¹⁰. The present study shows SSIs rate 4.4% which is comparable In our present study pathogen isolated were E-coli (25%), Pseudomonas (32%), Klebsiella (19%), Proteus (4%), staphylococcus(4%) detected. In comparison to Sachin at all, the pathogen such Klebsiella (21.4%), proteus (7.1%), and staphylococcus (7.1%) were comparable to our study but Ecoli (35.7%) was much higher then our study(E Coli-25%) and Pseudomonas (14.3%) much lower then our study(Pseudomonas-32%).

In comparison to Varsha at all, no pathogen were comparable to our study. Staphylococcus(22%) and E-coli(31.25%) were much higher prevelant and Pseudomonas (25%) was lower prevelant rate in comparison with our present study to the rate of SSIs reported by varsha at all (6%)⁹. The SSIs rate higher reported Lilani at all (8.95%)¹⁰ and Sachin at all(16%)¹¹



Conclusion: This study provides information regarding prevalence of surgical site infections and microbiological profile of SSI in post operative patients in tertiary health care hospital.

Identification of causative agent and their antibiotic susceptibility are the need of hour.



Growing resistance towards antibiotics in microbes esp. Those causing Hospital Acquired Infections presents very threatening picture and its very important for medical fraternity to pay attention and take necessary steps.

In infection control programs study of risk indices helps in surveillance & control efforts. Surveillance of surgical site infections with feedback of appropriate data to surgeons would be desirable to reduce SSI rates.

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