ABSTRACT
BACKGROUND: Post-operative wound infections contribute to delay in recovery and increase risk of spread of hospital acquired infections (HAI). Surveillance of post-operative wound infections helps in determining the infection rates, risk factors and in planning the preventive strategies to ensure a quality healthcare in hospital. The present study was conducted to identify the post-operative wound infection rate, to isolate and identify the bacterial pathogens and to determine its antibiotic susceptibility pattern. MATERIALS AND METHODS: Total 100 pus samples were collected from patients having post-operative wound infections out of 1062 operations performed during August to October 2012. Samples were processed as per standard guidelines. RESULTS: Out of 100 pus samples, 73 yielded growths of organisms making total 86 isolates. Out of 86 bacterial isolates 18 (38.3%) were Pseudomonas sp. followed by 10 (21.3%) Klebsiella sp., 10 (21.3%) E. coli, 5 (10.6%) Proteus sp., 4 (8.5%) Acinetobacter sp., 23 (59%) S. aureus, 12 (30.7%) CONS and 4 (10.3%) Enterococci sp. Out of 47 GNB, 21 (44.6%) were Extended Spectrum β lactamase (ESBL) producer. Most Gram negative isolates were resistant to Amoxicillin-clavulanic acid, Gentamicin and Ciprofloxacin. Most Gram positive isolates were resistant to Roxithromycin and Erythromycin. Out of 23 S. aureus, 16 (69.5%) were Methicillin Resistant Staphylococcus aureus (MRSA) sensitive to Vancomycin. CONCLUSION: Post-operative wound infection rate was 9.41%. Pseudomonas sp. and S. aureus were the most common cause of post-operative wound infections. Most isolates were multi drug resistant.

Keywords: Post-operative wound infection, Bacterial isolates, Antibiotic susceptibility pattern.

INTRODUCTION
Infection is the clinical manifestation of the inflammatory reaction incited by invasion and proliferation of micro-organisms[1]. Despite modern surgical techniques and the use of antibiotic prophylaxis, surgical site infection (SSI) is one of the most common complications encountered in surgery[2]. SSI places a significant burden on both the patient and health system. SSI delays recovery and often resulting in the need for further surgical procedures[3]. SSI is thus a major cause of morbidity, prolonged hospital stay, and increased health costs[2]. Surveillance of post-operative wound infections helps in determining the infection rates, risk factors and in planning the preventive strategies to ensure a quality healthcare in hospital[3]. The present study was conducted to measure the post-operative wound infection rate and to isolate and identify the bacterial pathogens and to determine its antibiotic susceptibility pattern.

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MATERIALS AND METHODS
The present study was conducted in the Department of Microbiology, Surendranagar during the period of August to October, 2012. Out of 1062 total operations performed, 100 (9.41%) patients having post-operative surgical site infections were included in the study. Sample collection: Pus samples were collected from surgical site wound infections, using a sterile disposable swab. Care was taken to avoid contamination. Swabs were transported to the Microbiology laboratory and processed as per standard guidelines. Isolation and identification: Samples were subjected to Gram stain to screen for presence of bacterial pathogen then samples were inoculated on Blood agar, MacConkey agar and Nutrient agar. Isolates were identified morphologically and confirmed by biochemical reaction. Antibiotic susceptibility testing: Antibiotic susceptibility testing was performed by Kirby Bauer Disk Diffusion method as per CLSI guidelines[5].

RESULTS
100 (9.41%) pus samples were obtained out of 1062 operation performed, from which 73 yielded growth of organisms making 86 total isolates. Out of 86 bacterial isolates, 47 were Gram negative and 39 Were Gram positive. Out of 47 Gram negative
isolates 18 (38.3%) were Pseudomonas sp. followed by 10 (21.3%) Klebsiella sp., 10 (21.3%) E. coli, 5 (10.6%) Proteus sp. and 4 (8.5%) Acinetobacter sp. Out of 39 Gram positive cocci, 23 (59%) were S. aureus followed by 12 (30.7%) CONS and 4 (10.3%) Enterococci sp. as shown in Chart-1. Out of 47 Gram negative isolates, 21 (44.6%) were Extended Spectrum β lactamase (ESBL) producer as shown in Chart-2 and were sensitive to Imipenem. Most Gram negative isolates were resistant to Amoxycillin-clavulanic acid, Gentamicin and Ciprofloxacin. Out of 23 S. aureus, 16 (69.5%) were Methicillin Resistant Staphylococcus aureus (MRSA) and sensitive to Vancomycin. as shown in Chart-2. Most Gram positive isolates were resistant to Roxythromycin and Erythromycin.

**Chart 1: Distribution of various isolates**

**Chart 2: Antibiotic resistance pattern of GNB and S. Aureus**

**DISCUSSION**

According to WHO guidelines of hospital acquired infections, Surgical Site Infection contributes to 0.5% to 15% of total burden to HAI. In present study post-operative wound infections rate is 9.41% which is quite comparable with various authors like Bemnet Amare et al 3.5% [5], Varsha Sahane et al 6.0% [4], S. Sixto et al 7.80% [7] and Sule A M et al 7.78% [8]. In contrast Khaleid M et al [9] have reported post-operative wound infection rate 25.8% and Mohammed et al 77.9% [10]. In the present study S. aureus 23 (59%) was the most common isolate which is comparable with Sixto et al 14 (22.9%) [7], Sengupta S R et al 30 (29%) [6], Sule M et al 32 (17%) [8]. In the present study 18 (38.3%) Pseudomonas aeruginosa was isolated which is comparable with Sixto et al 14 (22.9%) [7], Sengupta S R et al 22 (21%) [6], Sule M et al 37 (19.9%) [8]. In the present study 10 (21.3%) Klebsiella sp. was isolated which is comparable with Sule M et al 47 (25.3%) [8]. In the present study 10 (21.3%) E.coli was isolated which is comparable with Sixto et al 6 (9.8%) [7], Sengupta S R et al 18 (17%) [6], Sule M et al 17 (9.1%) [8]. In the present study 4 (8.5%) Acinetobacter sp. was isolated which is comparable with Sixto et al 6 (9.8%) [7].

**CONCLUSION**

S. aureus 23 (59%) and Pseudomonas sp.18 (38.3%) were the most common cause of post-operative wound infections. Most isolates were multi drug resistance. Various factors like age, sex, smoking, immunocompromised status, diabetes mellitus, duration of operation and hospital stay, improper coverage of pre-operative antibiotic and resistance of ongoing treatment, improper work of hospital infection control committee are responsible for surgical site infection. This warrants proper aseptic precautions during surgery and regular surveillance by hospital infection control committee.

**Recommendation:** Surveillance systems that monitor rates of wound infection and provide feedback to clinicians have been shown to contribute to quality improvement and help to prevent and control infection and also in prescribing rational antibiotics. Rigorous adherence to the principles of asepsis by all scrubbed personnel is the foundation of surgical site infection prevention.

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