

**BACTERIOLOGY OF SURGICAL SITE INFECTION AND STUDY
OF ANTIMICROBIAL SUSCEPTIBILITY PATTERN AMONG THE
PATIENTS VISITING SHREE BIRENDRA HOSPITAL**

**A
DISSERTATION SUBMITTED
TO THE CENTRAL DEPARTMENT OF MICROBIOLOGY
TRIBHUVAN UNIVERSITY**

**IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE
DEGREE OF MASTER OF SCIENCE IN MICROBIOLOGY (MEDICAL)**

BY

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KIRTIPUR, KATHMANDU, NEPAL

2012

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ACKNOWLEDGEMENT

My first and foremost expression of deepest gratitude goes to my honorable supervisors Prof. Dr. Anjana Singh, Professor of Central Department of Microbiology and Col. Dr. Sunil Singh, Pathologist of Shree Birendra Hospital for their regular supervision, unreserved, constructive and invaluable guidance as well as for providing necessary facilities throughout the entire period of this study.

Respectfully, I would like to express my sincere gratefulness to the honorable Head of Department Dr. Dwij Raj Bhatta, Mr. Megh Raj Banjara, and all my respected teachers of Central Department of Microbiology, Tribhuvan University, for their continuous support, cooperation, valuable suggestions and helping in various means during this research work.

With a deep sense of gratitude, I wish to express my sincere thanks to all the staff members of the Microbiology laboratory and different wards of Shree Birendra Hospital for their help and kind cooperation during sample collection, processing and for facilitating good working environment. Words of appreciation must be extended to all the staff members of Central Department of Microbiology, Tribhuvan University for their continuous support during the study period.

I am extremely grateful to my colleague Mr. Krishna Thapa for his genuine support during the period of this thesis work. I would also like to share thanks to Ranju Karki, Rekha Thapa, Kritu Panta and all my classmates for their support and valuable suggestions.

Finally, I would like to express special thanks to my family members for their constant encouragement and endless support throughout my study and during the preparation of this thesis work.

Shrijana Maharjan

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ABSTRACT

The present study was carried out in Shree Birendra Hospital, Chhauni, with a view to observe the pattern of bacterial isolates and their antibiotic susceptibility pattern from the infected surgical wounds of patients for the period of 7 months (October 2010 to May 2011). Altogether 200 wound specimens were collected and processed as per the standard protocol. Male patients were found to be more vulnerable to Surgical Site Infection constituting 61% (n=122) of the total patients than females 39% (n=78). The patients of working age groups 16-40 years were found to be highly affected with a significant difference in the incidence of SSI among males and females of different age groups. Most of the samples were collected from patients with orthopedic surgery (24.5%) followed by GI surgery (11%). Growth was found in 78% (n=156) pus specimens, out of which 83.3% (n=130) showed the growth of single bacteria and 16.7% (n=26) showed the presence of multiple isolates. A total of 183 bacteria of 12 different species were isolated which included 4 species of Gram positive bacteria and 8 species of Gram negative bacteria. Out of 183 bacterial isolates 54.1% (n=99) were Gram positive bacteria and 45.9% (n=84) were Gram negative bacteria. Different types of organisms were isolated from different types of surgical sites. *Staphylococcus aureus* was the most common isolate (n=49, 26.78%) followed by CONS (n=43, 23.5%), *Escherichia coli* (n=39, 21.31%), *Pseudomonas aeruginosa* (n=17, 9.29%) and *Klebsiella pneumonia* (n=14, 7.65%). Other isolates were *Klebsiella oxytoca*, *Morganella morganii*, *Enterobacter* spp., *Proteus mirabilis*, *Citrobacter freundii*, β -haemolytic streptococci and non-haemolytic streptococci. Antibiotic susceptibility pattern of the isolated organisms showed Polymixin B (78.14%) as the most effective drug followed by Amikacin (77.60%), Gentamicin (61.20%) and Pefloxacin (60.66%). Most of the bacteria were resistant to Cloxacillin (79.24%), Amoxicillin (49.73%), Cefepime (49.73%) and Ciprofloxacin (40.44%). Out of 49 isolates of *S. aureus*, 18.37% (n=9) were MRSA and all of them were sensitive to Vancomycin. A significant number of isolates (75.96%) were found to be multi-drug resistant with 84.62% (n=33) of *E. coli* and 74.42% (n=32) of CONS, 78.57% (n=11) of *K. pneumonia* and 70.59% (n=12) of *P. aeruginosa*. Hence, SSI was found to be a predominant cause of morbidity for the surgical patients with male patients being affected more than the female patients. Therefore routine microbial analysis of surgical site infections and antimicrobial susceptibility pattern of the isolates is recommended so as to guide clinician for the treatment of surgical site infections.

Keywords: surgical site infection, multidrug resistant, antibiotics, surgery

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LIST OF ABBREVIATIONS

AMP	Antimicrobial prophylaxis
ATCC	American Type Culture control
BA	Blood Agar
CDC	Centers for Disease Control and Prevention
RCMB	Robertson's Cooked Meat Broth
CONS	Coagulase Negative Staphylococci
GNB	Gram Negative Bacilli
GPB	Gram Positive Bacilli
GW	Gynae ward
HAI	Hospital Acquired Infection
HCU	High Care Unit
ICU	Intensive Care Unit
MA	Mac Conkey Agar
MDRO	Multi-Drug Resistant Organism
MHA	Muller Hinton Agar
MR	Methyl Red
MRSA	Methicillin Resistant <i>S. aureus</i>
MSA	Mannitol Salt Agar
NA	Nutrient Agar
NB	Nutrient Broth
NCCLS	National Committee for Clinical Laboratory sources
NNIS	Nosocomial Infection National Service System

POP	Post Operative Ward
SSI	Surgical Site Infection
SOPD	Surgical Outpatient Department
SIM	Sulphide Indole Motility
VP	Voges Proskauer
WHO	World Health Organization
ZOI	Zone of Inhibition