

**BACTERIOLOGICAL STUDIES OF OPEN FRACTURES AT THE  
OBAFEMI AWOLowo UNIVERSITY TEACHING HOSPITALS  
COMPLEX (O.A.U.T.H.C), ILE-IFE.**

**BY**

***DANIELS, FOLASHADE VICTORIA***

**B.Sc. (HONS) MICROBIOLOGY, O.A.U.**

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE AWARD OF THE MASTERS OF SCIENCE,  
DEPARTMENT OF MICROBIOLOGY. OBAFEMI AWOLowo  
UNIVERSITY, ILE-IFE.**

**2008**



## ABSTRACT

This study was aimed at isolating the bacteria associated with open fractures, enumerating the antibiotic sensitivity profiles and production of enzyme with virulent potential which could increase the virulence/pathogenicity of such microorganism.

Fractures were examined according to Gustilo and Anderson's classification as *grade I* (2.1%), *grade II* (29.8%), *grade IIIa* (36.2%) and *grade IIIb* (31.5%). Samples were taken from superficial swab, superficial biopsies, deep swabs as well as deep biopsies making a total of four samples per patient at presentation, A total of 180 samples obtained on day 1, 42 samples were obtained on day 3 and 26 were obtained on day 7. Each sample was introduced onto thioglycolate broth to enhance the growth of anaerobic organism. Serial dilutions were made from these samples and plated out on nutrient agar. Incubation was allowed for 24 hrs at 37°C for the viable cell counts at each presentation. The samples in thioglycolate broth were then incubated for 24h at 37°C. Positive samples were plated out onto differential medium so as to identify some of the isolates and selective medium. Negative cultures that demonstrated fowl smells were plated out onto lactose egg yolk milk agar and neomycin blood agar and incubated anaerobically using Gas Pak for 24h at 37°C and extended to seven days and beyond to aid the growth of strict anaerobes. Discrete colonies were further characterized by standard methods.

The results showed the prevalence of open fractures was higher in male 37(78.7%) than in females (21.3%). The results showed that tibial fractures constituted 66.1% and were mainly from road accident (RTA). A total of 203 bacterial isolate were cultured from the forty-seven patients with 53 from

superficial swabs, (52) from superficial biopsies, (52) from deep swabs and (46) from deep biopsies were cultured. Gram negative bacteria isolates constituted 53.2% of total bacterial, *Escherichia coli* was the commonest with 26 (12.8%) followed by *Salmonella spp* and *Pseudomonas aeruginosa* occurring at the rate of 8.9%. Gram positive cocci constituted 58(28.6%) with *Staphylococcus aureus* constituting 31(15.3%) and *S. epidermidis* constituting 27(13,3%). A high incidence of antibiotic resistance was observed against penicillins such as amoxicillin and cloxacillin with values 72(68.6%) and 28(58.3%) respectively for superficial specimens and 57(58.2%) and 15(31.9%) for deep samples. Bacteria isolates cultured were relatively resistant to tetracycline with values 57(54.%) and 41(41.8%) in superficial and deep samples respectively but considerably sensitive to gentamycin and nutrofurantoin while quinolones especially ofloxacin were noted for high effectiveness and against screened bacterial isolates. 75% and 87.5% of *Staphylococcus aureus* cultured produced lipase and DNase respectively from deep samples while all the *Pseudomonas aeruginosa* stains produced DNase with 77.5% and 75% lipase production in superficial and deep samples respectively.

In conclusion, both Gram-positive and Gram-negative organisms were relatively sensitive to gentamycin especially *Pseudomonas aeruginosa* which is known for high resistance against most antimicrobials. Ofloxacin was also highly effective against Gram negative organisms.