

The microbiology of bone fragments in patients with diabetic foot ulceration:
- a retrospective 5 year series.

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Background/Aims: Chronic osteomyelitis in subjects with deep foot ulceration often leads to bone looseness and fragmentation. Wound debridement often enables detachment of such fragments, so that bone specimens can be sent for further microbiological analysis.

Methods: We retrospectively reviewed the bacteriology reports on bone specimen samples received from 96 consecutive patients attending the diabetic foot clinic from March 2005 to February 2010. Results: 13 out of the 96 (13%) bone fragments showed no bacterial growth. In the 83 culture positive samples, 54.2% showed a polymicrobial flora, and 45.8% showed a single isolate. The type of culture isolate based on stain was as follows: - 55.4% gram positive, 7.2% gram negative and 36.1% mixed gram positive and negative.

Of the gram positive isolates the most common species was *Corynebacterium* spp. (30.5%), followed by Coagulase-negative staphylococci (24.2%) and *Enterococcus* spp. (16.8%).

Staphylococcus aureus comprised only 5.2% of gram positive organisms. MRSA was present in 13.7% of gram positive isolates. Other gram positive organisms grown included *Viridans streptococci* (3.2%), *Beta-haemolytic streptococcus* (2.1%), *Streptococcus pneumoniae* (2.1%), *Peptostreptococcus* (1.1%) and *Micrococcus* (1.1%). Of the gram negative isolates 31.6% were *Pseudomonas* spp, 18.4% were "Mixed Coliforms", 15.8% were *Proteus* spp and 15.8% were gram negative anaerobes. Other gram negative organisms grown included *Morganella morganii* (10.5%), *Escherichia coli* (2.6%), *Klebsiella oxytoca* (2.6%) and *Stenotrophomonas maltophilia* (2.6%). Conclusion: This study clearly highlights the wide variability of flora that may be present on bone fragments debrided from diabetic wounds associated with chronic osteomyelitis. The relevance of these microbiology reports is debatable, in that often, bone fragments represent bone sequestra formed during the 'recovery' phase of osteomyelitis, and that organisms may simply represent a colonising rather than infective species. This may also be a reflection of the relatively low yield of *Staphylococcus aureus* (often a pathogen in acute wound infection) within samples. These findings add to the on-going debates on the usefulness of bone fragment samples, and we suggest that they should certainly be interpreted with great caution when deciding on antibiotic strategies.