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## The Evolving Management Approach to Musculoskeletal Infection

Osteomyelitis is classified as hematogenous when the bacteria initiates infection through the bloodstream and contiguous when it is instigated by direct inoculation through traumatic wounds or surgery. Modern development and change in lifestyle have seen a dramatic reduction in hematogenous causes and are currently superseded by trauma such as road traffic accidents.<sup>1</sup>

Hematogenous osteomyelitis causes acute sepsis and responds well to antibiotics as there are no associated injuries and the organism is predictably *Staphylococcus aureus* in most cases. Alternately, the patient's with trauma-induced osteomyelitis are usually less septic, require multiple surgeries and the causative organisms are difficult to predict as it is predominantly a nosocomial infection. The patients are invariably already prescribed antibiotics.

This led to the development of a new classification of Osteomyelitis by Cierny and Mader to guide the management of these patients. It is an anatomico-physiological staging system and consists of the anatomy or location of the infection and the host's physiological ability to fight infection. The anatomical staging is divided into intramedullary, superficial, localised and diffused osteomyelitis. It provides management strategies including surgical and non-surgical options and if the former, the type of surgery that is required for the patients. The accurate location of infection is best visualised through MRI and CT scan imaging.<sup>2</sup>

The physiological classification also helps to prognosticate the chance of eradicating the infection and the ability of patients to withstand the ordeal of surgery. It may similarly assist in determining the margin of resection or else, whether the patient's limb is salvageable. This principle is similar to the oncological approach utilized to stage the patients prior to deciding on the kind of surgery. While salvage of limbs following resection of the tumour

is by replacement with allograft or prosthesis, in osteomyelitis, the reconstruction of bone is carried out by bone tissue regeneration called distraction osteogenesis.<sup>3</sup>

Recently a group of surgeons from the American Orthopaedics (AO) Foundation and the European Bone and Joint Infection Society (EBJIS) developed a consensus document on how to define and diagnose fracture-related infection (FRI). The expert's group in their guideline proposed an algorithm to diagnose fracture-related infection based on suggestive and definitive criteria. This document further highlights the importance of obtaining an intraoperative microbiological sample in order to get a reliable culture and sensitivity results for diagnosis.<sup>4</sup> In principle, it is akin to performing a biopsy to achieve a definitive histological diagnosis prior to initiating a treatment regime that is most appropriate for that tumour.

The rapid development in the field of musculoskeletal infection has led to a multidisciplinary team approach consisting of an orthopaedic surgeon, plastic surgeon, Infectious disease physician, radiologist and microbiologist to work together to achieve the best outcome for the patients. This approach is similar to that is practised in musculoskeletal oncology.

### REFERENCES

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