

IMPROVING OUTCOMES IN THE MANAGEMENT OF OSTEOSARCOMA

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The word osteosarcoma originates from the Greek language meaning bone and fleshy growth. This is a malignant tumour originating predominantly from the meta-epiphyseal region of long bones and has a bimodal age distribution. It is the commonest primary bone malignancy and affects about 2-3 per million population per year characterised by the production of abnormal bone matrix.¹ They often present with pain which is worse at night but may also present with a lump or as a pathological fracture. It is not uncommon for these patients to be diagnosed late considering the rarity of this condition and for them to be an incidental finding with patients presenting for some completely different problem. Radiologically they present as a destructive lesion and sometimes with the typical Codman's triangle and sunray spiculations. They can be associated with a big soft tissue component involving the surrounding tissues which makes surgical resection and any reconstruction challenging. These patients should have local and systemic staging in the form of MRI scans of the whole limb to rule out any skip metastasis and CT scan of the chest, abdomen and pelvis and a bone scan to rule out any systemic disease.

To attain a histological diagnosis, the principles of biopsy must be adhered to and it should be performed by the surgeon who is going to perform the ultimate surgery, as an improperly placed biopsy tract can compromise the outcome of surgery. Biopsy is most commonly performed with a percutaneous technique utilising a core needle which limits soft tissue contamination.

Survival of patients with osteosarcoma has improved significantly with advances in chemotherapeutic medications making the results of amputation comparable with limb salvage surgery, as almost 80% of these patients are considered to have micrometastasis at

presentation.^{2,3} Limb salvage surgery is performed in a significant number of patients with osteosarcoma in many specialised centres.⁴ The techniques for reconstruction of the defects after resection of these sarcomas have improved significantly over the years along with advancements in biomaterial properties particularly of the megaprosthesis. This has also led to further increase in patient expectations for improved functional outcome following reconstruction with a current 84% reported rate of survival of these megaprosthesis at 20 years post-surgery.⁵ Other options available for reconstruction include the use of autografts and allografts with their proposed benefits and disadvantages and rotationplasty particularly in the lower limbs. Contraindications to limb salvage surgery may include involvement of the neurovascular bundle, joint involvement, progression of disease while on treatment, patient choice, infection and a pathological fracture. Another concern in the case of children with osteosarcoma has been the management of limb length discrepancy which has been dealt with by invasive growing implants and more recently with non-invasive growers. This significantly reduces any further surgeries and subsequently the risk of infection. A most recent advance in the management and reduction of risk of infection in this high risk group of patients has been the use of silver coated megaprosthesis.⁶

The key to successful management of this special cohort of patients is early recognition and prompt referral to specialist units where they can be dealt with by a multi-disciplinary team ideally under one roof including surgeons specialised in sarcoma surgery, radiologists, oncologists and histopathologists. It is also important to pick up the "red flags" from the history and examination at presentation to facilitate early recognition and improving the outcomes.⁷

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