

**X-ref** For other Roundups in this issue that cross-reference with *Oncology* see: [Trauma Roundup 4](#), [5](#); [Knee Roundup 6](#).

## Differentiating between low-grade chondrosarcoma and enchondroma

■ Distinguishing low-grade chondrosarcoma from enchondroma remains a dilemma in orthopaedic oncology. What is an enchondroma and what is a low-grade chondrosarcoma? Researchers in [Madrid \(Spain\)](#) have shed some light on what might be useful clinical and radiological criteria to guide treatment. These orthopaedic oncologists report their experience of 133 patients with cartilaginous tumours that could theoretically fall into either category, presenting in the appendicular skeleton. All patients were followed prospectively. Features including clinical history, and radiological and nuclear imaging, along with biopsy results, were collected, and the authors also categorised patients on an aggressiveness scale. Patients were followed clinically and radiologically, and their characteristics compared with the eventual outcomes.<sup>1</sup> The authors were able to identify that pain on palpation, cortical erosion on cross-sectional imaging and Tc99 bone scan uptake above that at the iliac crest were all statistically significantly associated with the likelihood of malignant tumours. Interestingly, the clinical judgement showed a sensitivity of 73.5% and specificity of 94.1%. This paper goes some way towards identifying helpful criteria for diagnosis, and certainly outlines some important factors that can be used to arouse suspicion.

## PET-CT in chondroma and chondrosarcoma

■ On the same theme, an oncology team in [São Paulo \(Brazil\)](#) evaluate the potential for use of positron emission tomography-computed

tomography (PET-CT) in differentiating between chondroma and chondrosarcoma.<sup>2</sup> PET-CT is a maturing technology that is starting to find its feet, and, although clearly not suitable for all applications, is finding its niche in a number of diagnostic situations. The study team reports their experience of PET-CT as a diagnostic modality in 36 patients with suspected chondrosarcoma over a period of six years. The authors identified a threshold of SUVmax of 2.0 as the threshold for exploring the potential for malignancy. Patients above the threshold underwent surgery; those below, observation. Their study population included 17 below-threshold patients diagnosed as chondromas and 19 diagnosed as likely chondrosarcomas with SUVmax values over the threshold. Although the authors do examine nicely the potential benefits of SUVmax and undertake some ROC analysis, not all patients underwent biopsy, and follow-up is rather limited. While this paper adds extra sophistication, it is potentially less clinically useful than the previous report!

## Denosumab: great until you stop taking it

■ Denosumab has become a bit of a wonder drug in orthopaedic oncology, with widely reported trials demonstrating it to be as effective as almost any other treatment in the management of giant cell tumours of bone (GCT). Denosumab works through direct inhibition of the bone resorption pathways mediated by the RANK receptor and its ligand. In a small prospective series from [Toronto \(Canada\)](#), the research team investigated the outcomes of 20 patients managed with denosumab to downgrade tumours prior to resection.<sup>3</sup> The patients in this study received at least six months of neo-adjuvant denosumab and then joint-preserving surgery.

Denosumab was effective in all patients in resolving pain, and intralesional resection was possible in 18 of 20 cases. The patients were followed up to 30 months, with local recurrence occurring in three patients within this relatively short time period. This is a small series, confirming other work showing that denosumab works brilliantly to downstage GCT and allows for conservative surgery; however, rates of local recurrence when denosumab is stopped are worrying.

## Is cement augmentation helpful in intramedullary nailing for mets? X-ref

■ The management of metastatic disease of the long bones is often a quality-of-life issue, with surgery performed to maintain mobility and reduce the pain associated with mechanical instability. In difficult-to-treat metastatic disease associated with fracture or impending fracture, intramedullary nailing is usually the preferred choice; in difficult-to-treat conditions, this can be augmented with the use of polymethylmethacrylate cement. There is little evidence, however, to support the use of cement augmentation. Researchers in [Gyeonggi-do \(South Korea\)](#) have reported their experience of 43 patients, all achieved with cement augmentation,<sup>4</sup> and compared their outcomes with those of 23 'controls' without the augmentation. Outcomes were essentially assessed using VAS pain scores, with patients followed up at one week and six weeks. In addition, PET-CT was undertaken to evaluate tumour spread. Those patients who underwent the cement augmentation had significantly lower immediate mean post-operative pain scores (3.8 vs 6.0) and in addition, the further spread of metastatic disease was only seen in 50% of patients compared with 92% in the

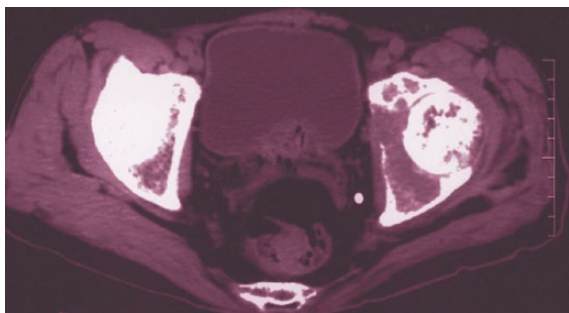
control group, suggesting that the thermal setting of the cement had a therapeutic effect. This is an informative study which clearly demonstrates that cement augmentation along with IM nailing improves stabilisation, relief of symptoms and tumour control. This technique should be much more widely used in palliative nailing of long bone metastases.

## Nailing sufficient for pathological fractures X-ref

■ With a slightly different slant to the previous paper investigating the benefit of cement augmentation, researchers in [Victoria \(Australia\)](#) set out to establish what the outcomes were of plain intramedullary (IM) nailing for those metastatic deposits in the femur with an associated fracture.<sup>5</sup> The authors undertook a retrospective review of 80 consecutive cases in 75 patients, all treated with femoral nailing. The majority of fractures were seen in the subtrochanteric region (46/80) and, perhaps unsurprisingly, the post-operative rate of survival was low at 14.2% and 8.4% at two and three years from surgery, respectively. In contrast, implant survival was good, with a 94% survival at both two and three years post-surgery. The authors concluded that the performance of the simple intramedullary nail was satisfactory. To some extent, this goes against the grain of recently published research. The thrust in recent years has very much been towards the use of the proximal femoral replacement as a potentially curative option, with reported excellent outcomes. This series (and the previous nail: cement reinforcement paper) do underline the advantages of simple interventions, particularly in cohorts like this one with poor longer-term survival where clearly a smaller operation with quicker recovery time has some intrinsic advantages for the patient.

## The patella in distal femoral arthroplasty? X-ref

■ Resurfacing of the patella is a controversial procedure, whatever the indication for the arthroplasty. There are some potential significant advantages (potential for improved tracking, the possibility of increasing quadriceps function or reducing anterior knee pain) and some disadvantages (patellar fracture, increased wear). While this issue is yet to be resolved in total knee arthroplasty, it has certainly caused some significant levels of interest with much debate and research. This has not been mirrored in the world of massive endoprostheses. Whilst this is understandable from a volume perspective when distal femoral arthroplasties don't offer the same anatomical landmarks to help with rotation and length, there is an argument that patellar resurfacing may be more advantageous in this situation. In one of the only research papers to address



this issue, a group from **Houston (USA)** have reported their experiences with 168 patients undergoing distal femoral arthroplasty<sup>6</sup> (48 who had undergone patellar resurfacing) and their cohort was followed up to four and a half years following surgery. Outcomes were assessed in terms of patellar positioning radiographically, anterior knee pain, range of motion, extensor lag and re-operation rates. Surprisingly, in what is a very large cohort of distal femoral arthroplasties, the authors were not able to find any substantial differences in any of their outcome measures. It appears that in distal

femoral arthroplasty, resurfacing the patella doesn't make a difference one way or the other!

## Does size reliably predict malignancy in soft tissue tumours?

■ In a retrospective study from **Innsbruck (Austria)**, the authors set out to examine whether size is a predictive marker of tumour malignancy in soft tissue masses (STM), and furthermore if the ratio of width and length of a STM reflects tumour biology more accurately.<sup>7</sup> The research team performed measurements of maximal lesion size and perpendicular diameter on MRI and ultrasonography studies of 212 patients, all with a histologically verified diagnosis. Size alone was a weak predictor of malignancy in STMs (sensitivity 68.8%, specificity 50.3%), whereas the ratio showed better discriminatory power, with greater separation between benign and malignant entities (sensitivity 83.6%, specificity

53.6%). A weighted combination of size, age and ratio improved the diagnostic power of this simple test (sensitivity 77%, specificity 80%). The authors of this study have demonstrated that malignant tumours have a significantly higher length:width ratio – i.e. they grow in a more spherical fashion – than benign lesions, and crucially also intermediate lesions. This is a simple, easy to digest paper with an important clinical message: essentially, when combined with some simple demographics, the sphericity of the lesion can be used as a reasonable predictor of the likelihood of malignancy.

## Surgical staging of osteosarcoma under the spotlight

■ Although widely used throughout orthopaedics, classifications can sometimes be simply an end unto themselves with no clinical or surgical relevance. We are always slightly hesitant when a 'new classification' paper crosses our desks at 360. The journals are full of self-serving classifications with little visible benefit over previous efforts at classification. In orthopaedic oncology, however, classifications are hugely important, and understanding the prognosis of specific lesions is key to the patient and medical team in order to have an idea as to the likely success of any treatment. So any new classification should add utility to the decision making. The **Birmingham (UK)** classification is devised on the basis of two parts: the response to chemotherapy (good response =  $\geq$  90% necrosis; poor response =  $<$  90% necrosis) and margins ( $<$  2 mm or  $\geq$  2 mm).<sup>8</sup> The intention was to improve upon the current 'gold standard' of surgical margins. Their retrospective study applies their newly devised classification to establish how useful it might be in clinical practice. The study team included 389 patients, all of whom had high-grade conventional osteosarcoma without metastasis. Patients were all treated with pre-operative chemotherapy and surgical resection. All the available covariates were modeled using univariate and then multivariate modeling. This yielded the 'Birmingham' classification based on chemotherapy response and soft-tissue resection margins. The authors established that intralesional resection (hazard ratio 10) and pre-operative chemotherapy (hazard ratio 3.8) were both associated with recurrence in this series, which, when independently tested, did provide a better prediction for local recurrence than the musculoskeletal tumor society (MSTS) criteria. In addition, the Birmingham classification was discriminatory for survival between subcategories, which the MSTS system was not.

## UK guidelines for the management of bone sarcomas

■ And finally we would draw the attention of 360 readers to the British Sarcoma Group (**London, UK**) guidelines, which are newly updated this month from their previous 2010 incarnation.<sup>9</sup> The new guidelines incorporate recent recommendations from European and UK bodies and essentially boil down to the recommendation that all patients with bone pain or a palpable mass should be appraised thoroughly with appropriate clinical review and imaging. A valuable read for anybody with a general orthopaedic practice who is likely to come into contact with bone sarcomas.

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