few years. Surgeons have adopted this over the modified ilioinguinal approach due to both the simplicity and the extensive exposure of anterior and posterior columns on the inner table facilitating access to the quadrilateral plate. There is, however, another anterior approach, the pararectus approach, that also offers exposure to the anterior acetabulum through a slightly modified soft-tissue window. This approach may offer slightly improved exposure, particularly for instrumentation, over the Stoppa approach. We were delighted to see a thoughtful cadaveric review from authors in **Bern (Switzerland)** comparing these two anterior acetabular exposures in human cadavers.[8] The study team undertook both exposures on five cadaveric pelvises and marked the exposures on the bone achievable with the two differing approaches. It does appear from their work that the pararectus approach provides slightly better access for instrumentation of the pelvis than the Stoppa. Although this is essentially a subtle variation in the difficult world of pelvic fracture surgery, this can be an essential difference.

Outcomes in geriatric trauma X-ref

In an impressive prognostic score study, investigators from across the USA report their development and validation of the geriatric outcome score. It seems that novel scores are ten a penny in the orthopaedic literature at the moment, however, we do wonder if this one might be here to stay. The score is designed as a prognostic score for general geriatric trauma outcomes, and the model was developed using a sample cohort from **Parklands Hospital (Dallas, USA)** consisting of 3841 patients.[9] The prognostic factors included age, ISS and blood transfusion. This score was then validated in a larger cohort of patients from three other trauma centres (n = 18 282). The overall mortality rate was similar between the development (10.8%) and validation (11.0%) cohorts and the score was essentially found to have very accurate prognostication for patients with geriatric trauma. The limitation of this score as it stands is that it's a little difficult to apply, requiring calculation of the score and then conversion into an absolute mortality figure. However, the sense is easy to get; the older you are with a higher ISS, and the more transfusion you require, the more likely you are not to survive. The only difficulty is, we are struggling to see what is novel here.

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Oncology

X-ref ***For other Roundups in this issue that cross-reference with Oncology see:*** *Spine Roundup 1; Knee Roundup 2; Hip Roundup 2, 4.*

Surgery for spinal lung mets? X-ref

Lung cancer has traditionally been considered a terminal diagnosis. The mean interval from diagnosis to death has remained at or around six months for many years, and although surgery can be curative, often presentation is at a stage where surgery is not a viable option. There have been a number of recent studies however that have lowered the threshold for spinal metastatic surgery suggesting improved quality of life, particularly in the case of metastatic cord compression where spinal decompression has been found almost universally to have a surprisingly good result. Surgeons in **Chongqing (China)** have published their own experience of surgery for spinal metastasis arising from non-small-cell lung carcinoma.[1] They report the results of 133 patients, all with metastasis, 86 of whom survived six months and were included in the final results. Of the 86 patients, 45 received decompression, and 41 did not. Outcomes were assessed using survival and the Functional Assessment of Cancer Therapy-General questionnaire. The results are almost universally in favour of the surgical group, with longer survivals and improved functional outcome scores at all follow up intervals. It does seem that the results from other cancer diagnoses have been mirrored here in a more aggressive primary than most – spinal metastatic disease is best treated surgically when possible, whatever the primary diagnosis.

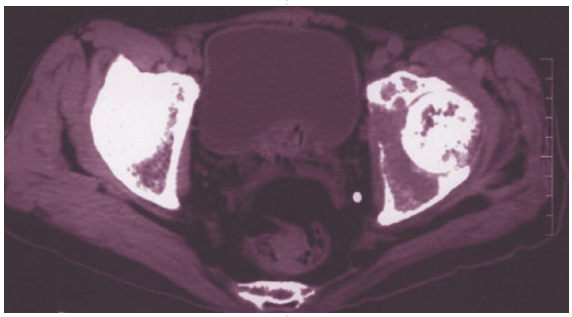
Low grade chondrosarcoma suitable for less aggressive treatment X-ref

The less aggressive cartilage tumours (variably known as grade 1 chondrosarcoma or atypical cartilaginous tumours) are known to be suitable for less intrusive surgical excision than their higher-grade counterparts – the question at the moment is how much less aggressive is less aggressive? A large series of 108 patients is reported from **Groningen (The Netherlands)** this month confirming previous reports that less may very well be more in these cases.[2] The surgical team used a conservative surgical strategy of curettage and adjuvant phenolisation to excise 108 tumours over a six year period, all in long bones, and present their results with a minimum of two year follow-up. During the observation period of the study, the research team established that there were no local recurrences at a mean of 48 months follow-up, although there was likely residual tumour in five cases giving a 95.4% disease-free survival rate. However, there were significant complications seen with a 10.2% fracture rate and a smattering of other complications such as infection and arthrofibrosis. There were no appreciable patient or tumour factor associations with complication occurrence.

The authors conclude that a less aggressive strategy is certainly viable in these tumours, and pose the interesting question that given the fracture rate perhaps even less could be done with similar success, either observation or minimally invasive approaches.

Knowing when to operate on metastatic disease

Across all disciplines of oncological surgery, the excision of solitary or even multiple metastases is becoming more commonplace. What was once considered oncological heresy is now becoming the gold standard of care – thanks mainly to the improved survivals afforded by better chemotherapy regimes. The decision whether or not to excise is a tricky one and in many branches of surgery survival models are used to aid decision-making. However in orthopaedic oncology there isn't a decent survival model available. We were delighted to see this new prognostic model to help with that tricky decision – should appendicular skeleton metastases be treated with curative surgery or not? A study team in **Copenhagen (Denmark)** used a relatively slim database of 130 consecutive patients all undergoing total joint arthroplasty to establish what the likely outcome was for patients presenting with metastatic bone disease.[3] Their score was produced using the now familiar logistic regression method and the multivariate analysis included covariates such as primary diagnoses, pre-operative haemoglobin, fracture presence, Karnofsky score, visceral metastasis, bony metastasis and ASA score. The survival outcomes were cross referenced at three, six and 12 months. Although dodgy methodology, the research team also report the outcomes of their own internal cross-validation – where clearly an independent (preferably prospective) validation set is required for calculators such as these. The ROC analysis performed by the study team suggested that there was an overall diagnostic accuracy of between 79% and 85% between three and 12 months' follow-up. This paper, in our opinion at *360*, is potentially a landmark one. A simple calculator (if externally validated successfully) to predict survival following total joint arthroplasty for metastatic disease, which could gain the traction and usefulness of Mirell's scores.



Ganz style debridement of osteochondromas X-ref

Treatment of multiple hereditary exostosis is a lifelong undertaking. When the exostosis mutate into osteochondromas they will usually require surgical treatment. It is not uncommon for exostosis to be seen around the proximal femur, and whilst in the older patient clearly a total hip arthroplasty is an option, in the younger patient with symptomatic osteochondromas, total hip replacement is fraught with longevity issues. Surgical oncologists in **Amsterdam (The Netherlands)** have been using the Ganz approach for surgical debridement of femoral neck osteochondromas in young patients for a number of years, the blood supply-sparing approach potentially offering the option of decent access for debridement and improved longer-term outcomes over the total hip.[4] They report their results of 20 hips (17 patients) treated in this way over a five-year period. Outcomes were reported at just shy of four years and included range of motion, quality of life scores and symptom scales. As perhaps would be expected, the range of motion scores were significantly better following surgery and the benefit was maintained throughout. There were also improvements in quality of life scores and pain scores. There were however a range of complications including avascular necrosis, and it is important for the treating surgeon to weigh the risks and benefits; clearly this approach is not a solution for all, but may very well be the answer for a number of patients.

Evidence-based orthopaedic oncology?

There is little argument that the evidence basis for much of medicine in general, and orthopaedics specifically, leaves something to be desired, but this has improved of late. There are few patients for whom there is no evidence to support their treatments these days, yet there is still rightly a drive to improve levels of evidence and provide higher-quality evidence for the majority of treatments. A small but interesting study from authors in **Salt Lake City (USA)** asks the question, has this drive towards higher evidence levels yet hit the musculoskeletal tumour world?[5] They used the level of evidence framework tool to categorise the data for studies presented at the Musculoskeletal Tumor Society and the Orthopaedic Trauma Association between 2005 and 2014. There were 1222 abstracts included in total with a roughly 50:50 split, and the authors quantified the changes over time. The Musculoskeletal Tumor Society papers did not change over time, with no improvement in levels of evidence for any study type, whilst there was a marked improvement in the Orthopaedic Trauma Association papers. There were less level IV papers, and the proportion fell over time, whilst there were no improvements seen in the proportion of level IV papers at the MSTS. The authors make the slightly worrying observation that the evidence base for musculoskeletal tumours is still dominated by uncontrolled case series. In rarer diagnoses it is difficult to conduct randomised controlled trials, however comparative case series or prospective work is relatively easy to perform, and authors should be encouraged to increase the scientific rigor of their work.

Grafting reduces complications in giant cell tumours

Sticking with the theme of lower malignancy tumours, our interest here at *360* was definitely piqued by a paper from **New Jersey (USA)** which sets out to answer the question, 'are bone grafts beneficial in the treatment of giant cell tumours?'. The primary treatment of giant cell tumours (intralesional excision and curettage) is not in doubt; the interesting debate surrounds the periphery – is bone grafting or PMMA indicated? The authors present a series of 49 patients all treated for GCT in the epiphysis of the long bones. The patients were reconstructed with a variety of techniques, with 21 receiving femoral head allografts and 22 receiving PMMA alone. The patients were treated by different surgeons thus the authors were able to present a comparative series with less selection bias than the traditional retrospective mixed series. The key outcome message was that whilst there was no difference in the oncologic complications (29% *vs* 32% recurrence) between the two groups, there were dramatic differences in the non-oncological complication rates (10% *vs* 55%) favouring the bone graft group. It certainly appears that the use of

bone graft improves the complication profile of surgical treatment of giant cell tumours.

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Children's orthopaedics

X-ref ***For other Roundups in this issue that cross-reference with Children's orthopaedics see:*** *Foot & Ankle Roundup 1; Hip Roundup 2, 3, 4, 6; Wrist & Hand Roundup 8; Trauma Roundup 3, 8; Knee Roundup 7.*

Sever's disease under the spotlight X-ref

■ Sever's disease (calcaneal apophysitis) is a disabling condition resulting in heel pain and diminished quality of life. Although common, there is as yet little consensus as to which conservative treatment strategy yields the best results. We were delighted here at *360* to read the report of a 3-arm randomised controlled trial of conservative measures from **Amsterdam (The Netherlands).**[1] Their study randomised 101 patients to either expectant management, a heel raise or a calf strengthening programme. Outcomes were primarily assessed with pain scores and a satisfaction scale at six weeks and three months. Surprise, Surprise! At three months of follow-up, all of the patients were improved over baseline and there was no significant difference in pain, patient satisfaction, or scores on the Oxford Ankle and Foot Questionnaire between the groups. However, the heel raise programme offered an earlier satisfaction advantage over the other treatment modalities.

Acetabular remodeling in varus femoral osteotomy X-ref

■ Controversy continues over the type and timing of hip surgery to maintain concentric reduction in children with cerebral palsy. The ability of the acetabulum to remodel following proximal femoral surgery also remains controversial. The majority of centres worldwide use the varus femoral osteotomy as part of their treatment strategy in at least some dysplastic cerebral palsy hips, either in isolation or combined with a pelvic osteotomy. This retrospective study from **Colorado (USA)** gives us some useful insights into what the longer-term outcomes might be of remodeling following varus osteotomy.[2] In what is essentially a retrospective case series, the medical records including radiographs of a consecutive series of 87 patients (174 hips) with cerebral palsy undergoing varus derotational osteotomy for the treatment of hip subluxation from 2003 to 2009 were reviewed. The average age at surgery was 4.6 years (2.4 - 10.6) and acetabular remodeling was assessed by measurement of the acetabular depth ratio (ADR). Progression of the ADR with age was determined in 917 normal children (1834 hips) for comparative purposes. The patients were divided into two groups based on the Gross Motor Function Classification System (GMFCS I, II, III and GMFCS IV and V). As perhaps might be expected, the ADR increased post-operatively across the whole group. However, there were some predictors of better outcomes, with a lower GMFCS level (I, II, III), female sex and a lower neck shaft angle associated with an improvement in ADR. This study is an immense help to those wishing to stratify patients for whom an isolated femoral osteotomy may be satisfactory without the need for concomitant acetabular surgery. It has also demonstrated the presence of acetabular remodeling in terms of an improvement in ADR following VDRO in patients with cerebral palsy.

Outcomes following paediatric hip fractures X-ref

■ The femoral neck fracture in a child is one of the most worrying injuries for the paediatric orthopaedic surgeon. The risks of avascular necrosis are not insignificant; with no reasonable treatments should this occur. While a serious condition, the rarity of the diagnosis means little is known about the risk factors. In an excellent paper with a simple message, researchers in **Boston (USA)** reviewed 70 patients suffering from a femoral neck facture, over an 11-year period.[3] In their series, injuries occurred across the whole age range (1.3 - 18). Across all cases, osteonecrosis occurred in 20 (29%), with a median time to diagnosis of 7.8 months following injury. The predictive factors identified for development of osteonecrosis included increasing fracture displacement and fracture location (transphyseal being the worst). Perhaps surprisingly, the authors could find no association between patient age, fixation quality or type, the use of capsular decompression or energy of injury. Osteonecrosis will continue to cause pain and disability in patients presenting with paediatric femoral neck fractures; sadly, no modifiable factor was found in this series to be predictive of outcome, with high rates of osteonecrosis reported here.

Osteotomy for adolescent SUFE X-ref

■ Paediatric surgeons in **Middlesex (UK)** report an interesting paper that is worthy of note.[4] The application of osteotomy of the femoral neck for severe (> 50%) slipped upper femoral epiphysis is somewhat controversial, with opinion divided between those who advocate *in situ* pinning irrespective of the degree of slip, *versus* those who believe that the resultant anatomical deformity is a source of significant disability which justifies the risks of femoral neck osteotomy. In this simple series of 57 patients, follow-up was achieved to a mean of seven years with the vast majority (88%) achieving a full level of pain-free function. The reported AVN rate of 10.5% compares favourably with other series published. This paper is in line with other literature in that the authors advocate that this procedure should only be undertaken by high-volume surgeons in specialist centres, via a blood supply-sparing approach to the femoral neck. What is unusual is that the authors here advocate that the surgery should not be undertaken within an acute timeframe, allowing the initial acute inflammatory response to the slip to