

# ROUNDUP<sup>360</sup>

## Children's orthopaedics

### Learning the Pavlik

■ The Pavlik harness has become the mainstay for treatment of children with developmental dysplasia of the hip. The harness is relatively easy to apply and adjust, but still requires some specialist skills. Given the length of time many children remain in the harness, parents also need to be able to feel comfortable with its use. Commenting that educational programmes for the most part focus on operative techniques, the paediatric group in **Toronto (Canada)** set out to establish a consensus on how best to evaluate the application of the Pavlik harness in addition to the development of a competency-based assessment tool. The tool itself was developed after applying a Delphi process to ten experts, and using the results of this process to produce an objective structured assessment of technical skill with 25 items. A video-based validation exercise suggested that there was excellent consensus on the use of this tool, with a test-retest reliability of 0.98 and an intra-class correlation co-efficient of 0.96.<sup>1</sup> The study group then went on to use the scoring template to assess three groups of users: novice (parents), intermediate (junior residents) and experts (staff surgeons, fellows and orthotists). They found the assessment tool to be a reliable and valid method for assessing Pavlik harness application and the expertise of the user (<http://links.lww.com/BPO/A42>). This is a useful document to review your own knowledge base and gives

an excellent structured framework for assessing and teaching trainees and allied health in the application of the Pavlik harness.

### MRI and patellar instability

■ There is currently much interest in the orthopaedic community regarding the unstable patellofemoral joint. Often associated with joint hypermobility and occasionally recalcitrant to treatment, there are some discussions surrounding the indications for operative and non-operative treatments. This timely paper compares measurements taken on MRI studies of children's knees with and without patellar instability, and compares them with the normal values seen in adults. The research team undertook a retrospective study from **San Diego (USA)** examining a range of radiological parameters in patients with and without clinical symptoms of instability. The team identified a range of MRI characteristics relating to patellar and trochlear morphology, overall limb alignment and identification in particular of the medial-patellofemoral ligament.<sup>2</sup> The results of this study related to 132 MRI scans from knees without patellofemoral instability and 66 from children with patellar instability. The study team analysed by age group to establish which factors were age-dependent. Those age-dependent parameters were found to be bony and cartilaginous sulcus angles, sulcus depth and lateral condylar cartilage thickness; this should be taken into consideration when interpreting scan results. For those of us

performing MPFL reconstruction in the skeletally immature, it was reassuring to see that the MPFL insertion site falls more commonly distal to the femoral physis.

### Cerebral palsy and hip dysplasia x-ref Hip

■ The traditional 'nihilistic' approach to hip displacement in children with cerebral palsy (CP) has become less and less palatable over the past decade or so, and in most practices is now no longer considered acceptable. Patients with CP who have hip subluxation and dislocation are known to be at risk of a painful arthritic hip, for which surgical options are ineffective at both symptom and posture control. This literature review from the Nemours/ Alfred I. duPont Hospital for Children, **Wilmington (USA)**, gives evidence-based guidelines on screening for hip displacement in children with CP.<sup>3</sup> The review team were able to include ten studies reporting the outcomes of children with CP and specifically reporting their outcomes in terms of hip dislocation with recorded two-year follow-up. The review team makes clear recommendations for screening radiographs annually with all patients until the age of eight, then biannually after that. For higher-risk patients they suggest six-monthly radiographs until the age of eight. The review team also comment that there is ample evidence to support screening radiographs in patients with CP. Here at 360 we agree that, in this day and age, all paediatric

orthopaedic services should offer an active screening programme.

### 'Pick your poison': elastic nailing under the spotlight x-ref Trauma

■ It seems, based on the recently published work from **Kirkland (USA)**, that choice of approach for elastic stable intramedullary nailing (ESIN) of the forearm really is a case of 'picking your poison'. Reported complications of EPL rupture, and radial nerve neuroma in particular, may be affected by entry point, and as such the study team tried to address the issue of approach in their outcomes-based study. In what is a rather small study, 19 patients were reported, all of whom were treated over a six-year period, all with a dorsal approach to the radius. Patients were followed up for two years post-operatively and outcomes were reported both from chart review and radiographic review.<sup>4</sup> In their series, all of the patients went on to sound radiographic union. However, when approaching the distal radius dorsally, the reported 18% rate of EPL rupture must be accepted. This can be balanced against the reports through a radial entry point of around 2.7% risk of neuroma from damage to branches of the superficial radial nerve. Perhaps learning how to cast the paediatric forearm expertly, and managing these fractures following initial reduction and casting in a closed way, may be an appropriate response to this paper. Of course, the remuneration associated with the non-operative

management of such injuries is significantly less if one works in a fee-for-service environment.

## Club feet and surgery

### x-ref Foot & Ankle

■ The widespread adoption of the Ponsetti method and the various other casting and splinting regimes for the treatment of club feet has made the use of, and indications for, surgical interventions a 'second line' for nearly every surgeon. The programme originally described by Ponsetti of course includes percutaneous Achilles tendon release, however, some patients require more extensive surgical releases. A study team from **New York (USA)** set out to review the results in a multicentre study of a cohort of patients with more than three years of follow-up. The study was designed with the intention of identifying risk factors for subsequent surgical release. The study team based their report on the outcomes of 86 patients (134 feet), all presenting with idiopathic club feet.<sup>5</sup> Of the initial 134 feet, there were 43 (32%) that had undergone surgery beyond a percutaneous Achilles tenotomy. In terms of risk factors for failure of non-surgical treatment, female patients (relative risk of 5.4) and those patients with higher Dimeglio/Bensahel scores (relative risk 1.5 x per point of score increase) are at increased risk for needing surgical intervention. Non-compliance with the FAO is associated with the highest risk for surgical intervention (relative risk of 7.9). There are a number of factors that the authors have clearly identified which are associated with failure of conserva-



tive management. The message here is that compliance with post-plaster splintage is the strongest indicator of a good result.

## Donor site morbidity in vascularised fibular grafting

### x-ref Trauma

■ In a short report of their experience of vascularised fibular grafting, surgeons from **Pahang (Malaysia)** ask what the longer-term sequelae to the donor site following a vascularised fibular graft might be. They report the outcomes of a series of eight patients, all of whom underwent vascularised transfer of their fibular graft between the ages of three and 12 years, with a minimum of three years' follow-up.<sup>6</sup> In their series, the only deformities were seen in patients in whom a fibular graft was performed under the age of eight. Of these, there were two with ankle valgus following mid-shaft fibular excision and a single patient with tibialis posterior insufficiency requiring fusion. Although these are small numbers, and this is a simple paper, the message is straightforward: try to avoid free fibular grafting in the under-eights as resulting deformity isn't uncommon.

## Cartilage biochemistry with hip dysplasia

### x-ref Hip

■ The rationale behind peri-acetabular osteotomy is to achieve more normal hip biomechanics and thereby improve function. It stands to reason that, if peri-acetabular osteotomy works, some changes in the cartilage biology should also be seen, given the new more favourable biomechanics. One simple non-invasive method for measuring cartilage biology and performance of any intervention is to measure

the GAG content using dGEMRIC MRI scan sequences. A collaboration between **Massachusetts (USA)** and **Bern (Switzerland)** set out to ask the simple study question, 'Does peri-acetabular osteotomy for hip dysplasia modulate cartilage biochemistry?'.<sup>7</sup> The study team undertook MRI scanning both pre- and post-operatively on 37 patients undergoing peri-acetabular osteotomy for hip dysplasia. Comparison between the two paired scans by the authors demonstrated a decrease in the dGEMRIC index of the acetabular cartilage in the superior aspect of the acetabulum. The improved mechanical loading after osteotomy appears to alter the cartilage matrix composition, which would suggest the osteotomy may have a potential disease-modifying effect on osteoarthritis progression.

## SUFE and hip decompression: a good option?

### x-ref Hip

■ There is much that is not yet known about the best management of slipped upper femoral epiphysis (SUFE), including how best to manage avascular necrosis (AVN). Perhaps one of the best options for treatment of regular AVN is decompression as there has been a renewed interest in AVN post-SUFE. One of the largest unanswered questions surrounding the management of unstable slipped capital femoral epiphysis is: will decompression of the joint lower the rate of AVN?<sup>8</sup> Given the lack of a conclusive answer, yet large volumes of published data, researchers in **Doha (Qatar)** set out to review the available evidence. In the meta-analysis, the authors report that the cumulative evidence (not high quality) does not indicate an association with hip decompression and lowered rate of AVN. The review team identified 17 articles for potential inclusion in the review, but

just nine were suitable for inclusion in the meta-analysis, reporting data surrounding 302 patient outcomes. Although the pooled data analysis was suggestive of a minor benefit to hip decompression (odds ratio of 0.91), this difference was not significant. This review does not suggest that decompression should not, or does not, need to be performed. Multicentre prospective cohort studies are clearly necessary here.

## REFERENCES

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