

ROUNDUP³⁶⁰

Children's orthopaedics

Reducing the incidence of DDH – is 'back carrying' the answer?

x-ref Hip

■ It is well-established that swaddling infants leads to an increase in the rates of developmental dysplasia of the hip (DDH) seen in populations. The traditional baby wrapping employed in many underdeveloped nations results in progressive dysplasia in susceptible children that may even lead to the progressive development of DDH. Reasoning that the first-line treatment for DDH in the majority of developed nations is the Pavlik harness which holds the children in a similar position to the 'back-carrying' position socially preferred in some African nations, a study team from **Balantyre (Malawi)** undertook a speculative study to establish the rates of DDH in patients seen in Malawi.¹ The Cure Hospital in Balantyre is the only centre in Malawi offering treatment for paediatric orthopaedic conditions. There are no other hospitals offering treatment. They therefore set out to establish the prevalence of DDH in the population of Malawi. Using a retrospective study design the research team reviewed ten years of presentations to the Beit Cure International Hospital in Malawi. In total there were 40 683 children reviewed and 9842 underwent surgery for a variety of diagnoses. Amazingly in this vast longitudinal cohort there were no infants that presented with symptomatic DDH or required acute intervention for DDH. This is a fairly

significant finding. The authors jump to causation as all too often happens with this kind of paper and make the bold assertion that "The majority of mothers in Malawi back-carry their infants during the first two to 24 months of life, in a position that is similar to that of the Pavlik harness. We believe this to be the prime reason for the low incidence of DDH in the country". It is well-known that DDH is multifactorial and that causes include genetic, environmental and other factors. It certainly seems likely that given the remarkably low incidence of DDH in this population the 'back-carrying' position has something to do with the low incidence, but to leap directly to causation is perhaps a bridge too far. We would agree with the authors however that there is enough presented here to warrant a public health style large randomised controlled trial.

Surgical approach and avascular necrosis may not be linked in developmental dysplasia of the hip

x-ref Hip

■ The use of open reduction in developmental dysplasia of the hip (DDH) is widely accepted. What isn't however widely accepted is the best approach, and if that is influenced by the presence of an ossific nucleus. Whilst individual 'experts' have their own views on what constitutes a best algorithm, there is little in the way of comparative data on which to base a sensible surgical strategy. The researchers based in **Massachusetts (USA)** undertook a prospective

comparative series of medial approach open reduction to an age-matched cohort that underwent anterior approach open reduction.² Outcomes were assessed using incidence of avascular necrosis (AVN) and the need for further surgery. Like many of these kinds of studies, numbers were low, with 19 hips managed with medial open reduction matched to 19 hips managed with anterior reduction. Matching was performed on an age basis, and neuromuscular or connective tissue disorder patients were excluded. At the minimum two year follow-up reported by the study team, there were few differences between the two groups. AVN rates were remarkably similar (22% medial approach vs 28% anterior approach) and although there was a slightly higher rate of further surgery in the anterior approach group (37% vs 21%), this difference was not significant. The only predictor of poorer outcome the authors of this study were able to find was that of a previous failed closed reduction. It appears that within the confines of a relatively small study the surgical approach, presence of an ossific nucleus or length of follow-up did not appear to determine outcomes. Certainly, although a small case-matched series, there is food for thought here.

First year Routine Radiographic follow up for Scoliosis not necessary

x-ref Spine

■ Orthopaedic surgeons like to radiograph their patients. It is

central to the orthopaedic model of consultation – patients and their relatives are traditionally talked through the findings on the imaging before surgery and shown the imaging post-surgery to help explain their pathology and the treatment strategy. There is some resistance to omitting radiographs both from patients and surgeons. However, sometimes discretion is the better part of valour. Given the relatively high dose of radiation associated with plain spinal films, researchers in **Colorado (USA)** set out to establish if there was any diagnostic benefit in plain film radiographs within the first year of spinal surgery.³ They designed a diagnostic study evaluating 227 consecutive patients, all of whom underwent corrective surgery for idiopathic scoliosis. The study team undertook a chart review to determine the frequency of clinical symptoms (including pain, implant problems and sensory or motor disturbance). The study team also reviewed the radiographs to establish if there had been any implant breakage or curve progression. Using logistic regression analysis, factors that were associated with deviations from the planned treatment course were identified. It turned out that as many as 12 radiographs (an average of six) were taken during the first year following surgery. The incidence of revision surgery was 2.9/1000 radiographs, and was not triggered by changes seen on the x-rays. Curve progression was very low (0.9%) and did not result in further surgery for

any patients. In all cases, pain was associated with implant failure. The authors conclude (not unreasonably it seems) that if pain were used to guide the need for a radiographic evaluation, a negative predictive value of 99.5% could be achieved – and many doses of radiation avoided for patients who do not require radiographic evaluation.

Diagnosis of osteochondritis dessicans

x-ref Knee

■ Osteochondritis dessicans is a difficult condition for the patient and clinician alike. With many cases amenable to conservative treatment, yet the natural history difficult to predict on plain films alone, it really is tricky to give patients reliable information concerning prognosis and likely direction of future treatment. Paediatric orthopaedic surgeons from **Cincinnati (USA)** set out to establish the reliability of the currently-recognised features for diagnosis, treatment and prognosis of osteochondritis dessicans on plain film radiographs.⁴ The research team undertook a cohort study with seven raters evaluating the plain films of 45 knees known to contain osteochondritis dessicans lesions. As is standard for this kind of study, the radiographs were evaluated at two different time points to allow the inter- and intra-rater reliability to be calculated. The orthopaedic surgeons were asked to comment on the majority of widely-accepted radiographic features including lesion location, growth plate maturity, parent bone radiodensity, progeny bone fragmentation, progeny bone displacement, progeny bone contour, lesion boundary, and radiodensity of the lesion centre and rim. As would perhaps be expected, there was excellent concordance

with regards to lesion location, condylar width and size, and growth plate maturity. However things were more tricky when fragmentation, displacement, boundary, central radiodensity and bony contour were taken into account, with moderate to substantial concordance between observers. There was very poor reliability found with radiodensity measurements in either the lesion rim or the surrounding bone. The results of this study are encouraging in that surgeons are able to classify and recognise the majority of widely-recognised features of osteochondritis dessicans. Given this, it is slightly curious that there is no real widely-recognised classification. Perhaps more work is required here?

Telemedicine in paediatrics

x-ref Research

■ Telemedicine has a somewhat mixed past – used in developing nations extensively to provide simple healthcare consultations to remote parts of the planet, and increasingly used in developed nations to reduce the costs of follow-up. There is a third potential area where the onwars march of the electronic revolution may yield significant benefits in healthcare and that is in providing specialist consultations in remote parts of the developed world. The distances needed to travel in some parts of Australia, Canada and USA in order to obtain a specialist opinion in niche specialities such as paediatrics can be vast. There are a range of communities that have been harnessing technologies to potentially reduce

the requirement for sick children to travel. Orthopaedic surgeons in **Queensland (Australia)** have shared their own system of remote medicine to provide specialist opinions in remote areas of the planet.⁵

The Royal Children's Hospital in Queensland has been running a telehealth service for the past decade and have shared the results of their system. The research team reviewed the notes of 124 patients who were users of the telehealth system. The largest group of users were those with CP (40% of patients) in addition to routine consultations surrounding common 'normal variants' or simple paediatric orthopaedic conditions (with limb malalignment being the most common). Interestingly the telehealth system was able to deal with 58% of these consultations without requiring a face-to-face consultation. It is certain that as technology progresses the concept of telemedicine is going to become more and more widespread.

Regional anaesthesia in supracondylar fractures?

■ The supracondylar fracture is one of the most significant injuries that can be sustained in childhood. Given the association with neurological compromise, vascular injury and compartment syndrome, we were somewhat surprised to read a report from **Texas (USA)** describing the application of ultrasound-guided regional anaesthesia (UGRA) following closed reduction and percutaneous pinning of supracondylar fractures.⁶ Whilst this may not be on everyone's list of ideal indications for regional anaesthesia, undaunted the authors

report their experiences of UGRA. In a slightly confusing report the authors described 230 patients undergoing closed reduction and percutaneous pinning, 10% of whom had significant pain post-operatively in recovery. In a smaller cohort of 36 patients they report better pain relief with general UGRA. Although the authors suggest that the lack of compartment syndrome in their 36 patients make this a safe technique, we would have some reservations. The event rate is probably only around 5%, and as such this technique would require study in hundreds of patients to establish if there is a risk of missed compartment syndrome or not.

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