and delayed surgery categories, and the primary outcome measure was the requirement for open reduction. A meta-analysis was performed where appropriate. Overall, the authors were able to include 12 studies reporting the outcomes of 1700 fractures. In the pooled data, mean time to surgery, from the point of injury, was 10.7 hours for early surgery and 91 hours for delayed surgery. Interestingly, there was no significant difference between early surgery *versus* delayed surgery for the outcome of requirements for open reduction of the fracture, which was one of the key findings of the previous study. There is also no significant difference for the other reported outcomes, including iatrogenic nerve injury, further surgery, and pin site infections. Currently, therefore, the evidence supports the avoidance of out-of-hours surgery in the absence of compromised vascularity. However, there are significant limitations in what is reported in the literature, with all the studies included having a high risk of bias, and the quality of evidence for each outcome was low. The authors, therefore, correctly hesitate in calling this conclusion certain, and instead suggest that large prospective cohort studies would be of most benefit, especially for clinical dilemmas, such as the timing of surgery in patients presenting with a well-fused but pulseless hand. Here at *360*, we look forward to reviewing this evidence.

REFERENCES

1. Kumar A, Chau WW, Hung AL-H, et al. Gonadal shield: is it the Albatross hanging around the neck of developmental dysplasia of the hip research? *J Child Orthop* 2018;12:606-613.

2. LaMont LE, McIntosh AL, Jo CH, Birch JG, Johnston CE. Recurrence after surgical intervention for infantile tibia vara: assessment of a new modified classification. *J Paediatr Orthop* 2019;39:65-70.

3. Clohisy JC, Pascual-Garrido C, Duncan S, Pashos G, Schoenecker PL. Concurrent femoral head reduction and periacetabular osteotomies for the treatment of severe femoral head deformities. *Bone Joint J* 2018;100-B:1551-1558.

4. Athey AG, Mignemi ME, Gheen WT, et al. Validation and modification of a severity of illness score for children with acute hematogenous osteomyelitis. *J Pediatr Orthop* 2019;39:90-97.

5. Aarvold A, Schaeffer EK, Kelley S, et al. Management of irreducible hip dislocations in infants with developmental dysplasia of the hip diagnosed below 6 months of age. *J Pediatr Orthop* 2019;39:e39-e43.

6. Mehlman CT, Denning JR, McCarthy JJ, Fisher ML. Infantile supracondylar humeral fractures (patients less than two years of age) twice as common in females and a high rate of malunion with lateral column-only fixation. *J Bone Joint Surg [Am]* 209;101-A:25-34.

7. Shore BJ, Miller PE, Zaltz I, Schoenecker PL, Sankar WN. Determining hinge abduction in Legg-Calve'-Perthes disease: can we reliably make the diagnosis? *J Paediatr Orthop* 2019;39:e95-e101.

8. Farrow L, Ablett AD, Mills L, Barker S. Early versus delayed surgery for paediatric supracondylar humeral fractures in the absence of vascular compromise. *Bone Joint J* 2018;100-B:1535-1541.

Research

X-ref ***X-ref For other Roundups in this issue that cross-reference with Research see: Spine Roundup 4; Trauma Roundup 7; Oncology Roundup 9.***

Why can't we all measure the same thing in paediatrics? X-ref

Patient-reported outcome measures (PROMs) and surgeon-reported outcome measures (SROMs) are used to assess the individual benefits of treatments from the patient's perspective. Since the revolution in orthopaedics research, their use within the literature has – for better or for worse – become ubiquitous. Each outcome measure has its own advantages and disadvantages, and there is a wide variation in measurement properties, development history, intended use, and reliability. Their application to measurement of paediatric outcomes is also vulnerable to the impact of childhood development on a patient's interpretation of the questions and answers. However, we nevertheless tend, as a discipline, to group these varied outcomes together as PROMs or SROMs. This study from **New York, New York (USA)** highlights this problem by describing the range of PROMs and SROMs used in paediatric orthopaedic publications over the past ten years.[1] The authors searched several prominent orthopaedic journals and conducted a systematic review of the outcome measures. The authors waded through 4614 articles in the orthopaedic press and reviewed the 2251 that met their inclusion and exclusion criteria. Overall, 230 different outcome scales were identified, of which 115 were patient-reported and 115 were surgeon-reported. The authors went on to establish if these were appropriately applied and, sadly, only 1:5 SROMs and 1:3 PROMs were found to be used with an appropriate age and disease cohort. This paper makes for a difficult read, especially given the work done by the COSMIN (Consensus-Based Standards for the Selection of Health Measurement Instruments) group to promote the use of appropriate outcome measures.

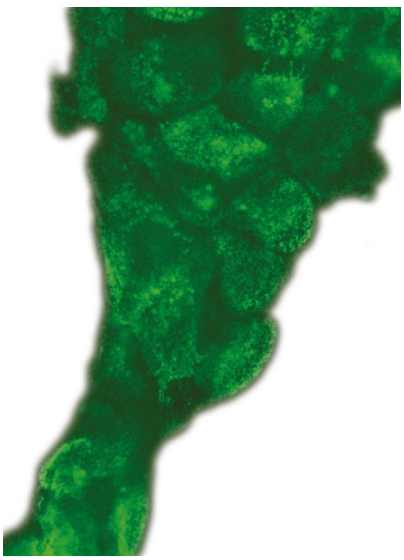
To improve your surgical drilling skills, make use of your index fingers

Surgery, despite all of its technological developments, is a practical skill. Every surgeon has been through their apprenticeship to learn these skills, and so it is surprising that there is so little evidence to support the various elementary techniques used. In this interesting study from **The Netherlands**, the authors assess the precision and accuracy of the shooting grip technique in drilling the bone, and investigate whether experience influences the accuracy and precision of a surgeon's technique.[2] A total of 36 Dutch surgeons were enrolled into this study and were stratified by surgical experience. Each was asked to drill through a synthetic bone using four different techniques, one of which was a shooting grip aiming at the contralateral index finger. Each participant drilled five times per test, which was repeated four weeks later. The accuracy and precision of the drill holes were analyzed using an analysis of variance. The authors show that the highest drilling accuracy occurs when a clenched grip is used while aiming at the contralateral index finger. A shooting grip aiming at the opposite index finger shows higher precision than clenched grip without aiming at the index finger, but is similar to other grip-and-aim techniques. The authors further note, perhaps unsurprisingly, that more experienced surgeons are more accurate and precise than inexperienced surgeons. Based on these results, we should aim at our fingers, but not through them, as often as possible.

Late dislocation following total hip arthroplasty: spinopelvic imbalance as a causative factor X-ref

The pelvis is thought of by some spinal surgeons as the terminal vertebrae and, while this may seem excessive to others, it is clear that spinopelvic movement should not be ignored by the hip surgeon. That is the conclusion of this paper from **Los Angeles, California (USA)**, which assessed the mechanical causes of late total hip arthroplasty dislocation.[3] The authors considered 20 consecutive patients presenting with late dislocation of their hip arthroplasty. Inclination and anteversion of the acetabular component were assessed using pelvic radiographs; pelvic motion, femoral movement, and the sagittal component position were evaluated using lateral standing and sitting plain radiographs. Spinopelvic motion was quantified as the difference between the sitting and standing sacral slope, and the data fed into a new measurement of the authors' devising – the combined sagittal index – to evaluate the

movement of the hip joint and quantify the risk of joint impingement. Nine of the hips that were studied dislocated anteriorly, with the remaining 11 dislocating posteriorly. Eight of the nine anteriorly dislocating hips showed spinopelvic abnormalities with increased standing femoral extension, leading to a higher combined sagittal index. Ten of the 11 patients with posterior dislocation showed reduced spinopelvic motion, increased femoral flexion, and lower combined sagittal index. Interestingly, for each 1° reduction in spinopelvic motion, there is a 0.9° increase in femoral motion, which caused impingement and dislocation in some patients. Combined with compromised soft tissues and errors in acetabular prosthetic positioning, these spinopelvic abnormalities appear to increase the likelihood of dislocation and impingement. When combined with comprehensive radiography, this research will be valuable as basic data for future research to predict dislocation risk before surgery.



Burnout syndrome in orthopaedic and trauma surgery residents in France: a nationwide survey

Doctor burnout is a topical subject in the United Kingdom at the moment, and its recognition should be everyone's responsibility. Burnout is a condition with serious consequences. It is characterized by emotional exhaustion (EE), a feeling of low personal accomplishment (PA), and depersonalization (DP). No data on burnout in orthopaedic trainees has been published using the French population, and this study gives interesting insight into this insidious condition. In this study from **Besancon (France)**, a group of authors has explored its prevalence among orthopaedic trainees across the country.[4] The authors conducted a nationwide survey of trainees over three months during 2017 via an emailed questionnaire. Subjects were assessed using the Maslach Burnout Inventory (MBI), and any symptoms of depression were identified using the General Health Questionnaire (GHQ-12). In total, 107 trainees responded. A high EE was reported by 26%, high DP by 63%, and low PA by 33%. The MBI identified severe burnout in 40% of respondents, and the GHQ-12 showed evidence of depression in 40%. Rather worryingly, 10% reported suicidal ideation within the last year, and 61% stated that they would not recommend orthopaedic surgery as a career to their offspring. Close examination of the data showed that risk factors for burnout are medical errors, depression, and living alone. These findings make for sober reading, even when considering that the low response rate may cause overestimation of burnout. We know that surgeons suffering burnout are more likely to make errors and develop mental health problems, and so we need to establish a support system to help those at risk without stigma and without compromising their professional standing if they are to have a future in surgery.

Predatory publishing in orthopaedic research

Open access has revolutionized medical publishing, giving the opportunity for medical literature to reach a wider audience. Unfortunately, as many readers will have experienced, successful publishing in open-access journals often leads to a flurry of unsolicited communication from other alleged journals, some of which exploit the open-access movement for monetary gain through the collection of publishing fees while avoiding rigorous peer review. In this study from **Hamilton (Canada)**, the authors explore this phenomenon, termed 'predatory publishing', to draw attention to the scale of the problem.[5] The team of authors used previously published lists of predatory journals and publishers to identify 104 publishers relevant to orthopaedic surgery. The website of each was then scoured to identify information regarding their fees and processes. In addition, the authors assessed the quality of published papers taken from a random selection of these journals. The group identified 225 relevant journals, 20 of which were indexed in PubMed. Nearly half of the listed office addresses of the journals were unidentifiable or were residential addresses. Only 82 of the journals appeared legitimate. The mean publishing fee from predatory journals was $420, in contrast to $2900 from legitimate journals. Unsurprisingly, article quality was generally higher in legitimate journals than in predatory journals. As the shocking results of this study show, we all need to be careful not to become easy prey to these unscrupulous publishers.

Frailty on outcomes after primary and revision total hip arthroplasty X-ref

Total hip arthroplasty (THA) is one of the most successful operations carried out in modern surgical practice. Many thousands are carried out in the United Kingdom alone each year and, as a result, every incremental gain we can achieve in improving the outcomes of these patients will have a large impact. Much has been written and discussed about frailty in recent years and, here at *360*, we were delighted to see this first step in quantifying the effects of frailty on the usually frail population of lower limb arthroplasty patients. In this study from **Rochester, Minnesota (USA)**, the authors explore the relationship between frailty and adverse events following THA.[6] A total of 8640 patients aged 50 years and over undergoing THA at a single institution between 2005 and 2016 were assessed for frailty using the frailty deficit index. The patients' postoperative outcomes at 90 days and one year were then correlated with their score using multivariable logistic and Cox regression. The authors showed that 22.7% of the cohort were classified as frail, with a further 32.9% classed as vulnerable. Frail patients tended to be female, older, and more likely to need general anaesthesia. Frail patients showed a higher rate of wound complications, haematoma, reoperation during the same admission, mortality, infection, and dislocation at both 90 days and one year. Interestingly, the team found no association with aseptic loosening or periprosthetic fracture. This study shows that it is important to realize the impact that frailty has on outcomes, especially in today's ageing population. Assessing the frailty of an individual patient informs our counselling of patients and our decision to carry out this common, generally successful procedure.

REFERENCES

1. **Truong WH, Price MJ, Agarwal KN, et al.** Utilization of a wide array of nonvalidated outcome scales in pediatric orthopaedic publications: can't we all measure the same thing? *J Child Orthop* 2019;39:153-158.
2. **Langeveld ARJ, Rustenburg CME, Hoozemans MJM, Burger BJ, Meuffels DE.** To improve your surgical drilling skills, make use of your index fingers. *Clin Orthop Relat Res* 2019;477:232-239.
3. **Heckmann N, McKnight B, Stefl M, et al.** Late dislocation following total hip arthroplasty: spinopelvic imbalance as a causative factor. *J Bone Joint Surg [Am]* 2018;100-A:1845-1853.
4. **Faivre G, Kielwasser H, Bourgeois M, et al.** Burnout syndrome in orthopaedic and trauma surgery residents in France: a nationwide survey. *Orthop Traumatol Surg Res* 2018;104:1291-1295.
5. **Yan JR, Baldawi H, Lex JR, et al.** Predatory publishing in orthopaedic research. *J Bone Joint Surg [Am]* 2018;100-A:e138.
6. **Johnson RL, Abdel MP, Frank RD, et al.** Impact of frailty on outcomes after primary and revision total hip arthroplasty. *J Arthroplasty* 2019;34:56-64.