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Wrist & Hand

X-ref For other Roundups in this issue that cross-reference with *Wrist & Hand* see: [Trauma Roundup 6](#); [Research Roundup 6](#).

The elderly wrist fracture – to treat or not to treat?

■ It has been known ever since Abraham Colles that older people with wrist fractures usually do unexpectedly and remarkably well. We suspect that there is a temptation to fix these surgically unless the fragments are well reduced and stable; surgeons not wishing to be ‘ageist’, and with a paucity of data to support differing treatments by age, there may be a temptation to over-intervene in the elderly. A team from **Wenzhou Medical University, Wenzhou (China)** has reviewed the available literature, and produced a worthwhile analysis including two RCTs and four retrospective studies.¹ Their review reports on the expected outcomes of surgical and non-surgical treatment in patients over 60 years of age, with an isolated distal radial fracture. The study team report that, in composite outcome analysis in patients over 60 years, although surgery gave better grip strength and improved radiology, this was at the expense of a higher complication rate with no evidence of better clinical outcome measured with a goniometer, pain scales and functional scores. So in these days of risk aversion and cost

pressure, one might consider the evidence and relieve some elderly patients of the imposition of an operation.

How reliable is wrist arthroplasty?

■ We are familiar with the excellent and durable results for many designs of hip and knee replacement, yet the metal-on-metal saga reminds us that implant surgery can be at best unreliable, if not catastrophic. When even elbow and ankle replacements are starting to get their share of good long-term follow-up series, it does beg the question: why does wrist arthroplasty not have such a good pedigree? The orthopaedic literature is riddled with fairly encouraging small series of short-term results, however, some designs have been withdrawn. With a niche operation with currently limited indications and little evidence to support its outcomes, it is tricky to formulate an opinion on the likely success of such a procedure – particularly so when many reports are written by early adopters or designing surgeons, which introduces a certain bias into the proceedings. A group from **Thomas Jefferson University Hospital, Philadelphia (USA)** is to be applauded for their candour in reporting the rather miserable results from their large series of 105 total and partial wrist replacements.² With a mean follow-up of just 35 +/- 28

months, the surgical team reported 51% of patients suffered a complication and 39% required a revision procedure. Stiffness and component failure were the most common reasons. Hand surgeons would be wise to make their patients aware that wrist arthroplasty, although an appealing concept, remains experimental.

Antibiotics in simple hand trauma

■ From time to time a study is published which really should alter practice, and here at 360 we would recommend a change in practice based on this paper. Antibiotics are expensive and there is the matter of resistance, which may one day become an apocalyptic public health issue, so we all have a responsibility for stewardship of antibiotic use. In this important work from **Oxford and London (UK)**, a meta-analysis was undertaken of antibiotic use in simple hand wounds requiring surgical treatment.³ Following a fairly extensive review of the literature, the study team was able to include 13 studies reporting the outcomes of 2578 patients. The authors quite sensibly excluded open fractures, crush injuries and bites from their meta-analysis. The majority of studies were of good quality evidence with five RCTs reported, allowing for some meta-analysis to be performed. The headline result is that there were no differences in infection rates between

those managed with and without prophylactic antibiotics (risk ratio 0.89, range 0.65-1.23). In this large and well conducted meta-analysis, there was no evidence that the routine use of prophylactic antibiotics reduces the infection rate in simple hand wounds. There is a clear message: these injuries should not receive prophylaxis.

BMP complicates scaphoid nonunion surgery

■ Nonunion is one of the last ‘unsolved’ problems in surgery – even those with major practices in nonunion and trauma have difficulty goading some fractures into union. This, combined with the blossoming basic science to support our understanding of matrix biology and bone healing, has resulted in a range of ‘biologics’, the first of which was of course the recombinant human protein (rhBMP). Initially widely adopted in trauma nonunion and the spine, reports of complications, high costs and even suggestions of cancer and local compressive symptoms from prolific bone formation have resulted in a steady erosion of its regular use. That said, there is no doubt that rhBMP does have a profound effect on the formation of callus. We were intrigued to read this brief report from **OrthoCarolina Hand Center, Charlotte (USA)**, describing the authors’ experience in just six cases of recalcitrant nonunion of the scaphoid;⁴ to our

knowledge this is the only such paper. The authors report six cases performed over a three-year period, all revision fixations for previous open reduction and internal fixation. Of those receiving surgery, there was persistent nonunion in two, and CT-proven healing in four patients. However, there were significant associated complications. Heterotopic ossification was seen in four cases, one requiring revision surgery. All in all, only a single patient united without complications. While the concept remains attractive for BMP, the nature of application with an uncontrolled bolus and sustained release (the only options with a single growth factor from amongst a cascade of factors) clearly results in high levels of complications. For the moment, BMP would be difficult to recommend in scaphoid nonunion.

Visual estimation of joint positions inconsistent [X-ref](#)

■ The venerable goniometer has somewhat fallen out of fashion lately. It is a rare occurrence to see a surgeon or therapist carefully measuring out ranges of joint motion in the clinic, something that was commonplace a few years ago. However, these readings are still being recorded in patient records, as they are essential documentation for the reasons behind surgery, the documentation of recovery and can, in certain circumstances (such as elbow stiffness), guide treatment. The question posed by researchers at the [Mayo Clinic in Jacksonville \(USA\)](#) is, how accurate is visual estimation of joint position in the hand and wrist?⁵ The research team undertook a series of evaluations with 40 observers – 20 hand surgeons and 20 therapists. The observers were estimating the position of the wrist metacarpophalangeal (MCP) and proximal interphalangeal (PIP) joints with a volunteer, who was placed in some pre-fabricated, low-profile orthoses to ensure accuracy of positioning. In addition, control measurements using radiographs,

digital photographs and a goniometer were estimated. Perhaps as might be expected, the visual assessments were inconsistent and never really within the $\pm 5^\circ$ of the measurements obtained on control radiographs. However, perhaps more surprisingly, the use of the goniometer did not consistently result in accurate assessment of joint position (which isn't that surprising as the goniometer cannot be positioned over the centre of rotation and is by definition dictated by the soft-tissue envelope). However, it was more accurate than visual assessment.

Accurately determining the range of motion seen in any joint is always going to be difficult, however, given the results presented here it seems more likely that while the goniometer does suffer from systematic error, is the most consistent and reliable. Perhaps use of the goniometer should make a resurgence in orthopaedic practice?

Endoscopic carpal tunnel release and fellowship training

■ The thorny topic of endoscopic carpal tunnel release and surgical preference has been examined from a different perspective by surgeons at [University of North Carolina School of Medicine, Chapel Hill \(USA\)](#) who asked the question, are surgical preferences dictated by fellowship training?⁶ The study team identified surgeons who had undertaken fellowship training in hand surgery using the American Board of Orthopaedic Surgery Part II database, and then went on to cross-reference this with cases from the American Board of Orthopaedic Surgery database. They attempted to establish from this which surgical treatment patterns were based on

surgeon training by subdividing the patient group into those undergoing open carpal tunnel release, and those having an endoscopic procedure.

Although there are clearly some flaws with this methodology, there are also some clear-cut associations. Around 12% of carpal tunnel releases were performed endoscopically, and, overall, patients were 4.5 times as likely to have an endoscopic carpal tunnel release if

their treating surgeon had been fellowship-trained. These data are very much open to interpretation – on one hand it is heartening to see that surgeons are only undertaking the more complex procedure if they have had appropriate training, while on the other it is clear that fellowship training does bias treatment options. Given the equivalent complication rates (although nerve injury was much higher in the endoscopic group), it does not seem unreasonable to use either approach.

One cortex a cortex too few? [X-ref](#)

■ Biomechanically unicortical fixation has some significant disadvantages, including a fulcrum rather than a balance beam principle. However, there are some disadvantages to protruding screw heads, particularly on flexor tendon surfaces. There is a bit of a trade-off, however, between compromise on fixation for soft-tissues and the disadvantages of a slower mobilisation protocol used by some surgeons when unicortical fixation is used. In an interesting cadaveric model, a research team at [Frenchay Hospital, Bristol \(UK\)](#) ask whether unicortical fixation provides enough biomechanical stability to allow for early mobilisation.⁷ Their study involved fixation of metacarpal

fractures with either an eight-hole unicortical plate or a four-hole bicortical plate construct. The bones were loaded using a bending load, and tested to single-cycle failure, rather than fatigue failure. As would be expected with this construct, the mean load to failure was increased in the eight unicortical screws (414N vs 296N). While we would agree with the authors here at 360 that this does suggest early mobilisation is likely to be possible with this construct, with no ill effects, it does illustrate for us the disparity that can creep in with choice of biomechanical testing. A four-point load model will tend to work better with plate constructs that distribute the load across a larger working distance. The results may have been different if a torque, or even cycles to failure model, were chosen.

Headless screws in metacarpal fractures? [X-ref](#)

■ The difficulties of proud screw heads and tips is given a slightly different approach to the multiple unicortical approach from Bristol, with surgeons at the [University Hospital of Zurich \(Switzerland\)](#) turning their attention to the outcomes of 31 displaced fractures of the proximal and middle phalanges of the digits.⁸ They developed a rather neat system of axial headless intramedullary compression screws. Although only really suitable for extra-articular displaced or unstable fracture patterns, the concept in itself is clearly quite neat. The authors report that of the 31 fractures in 26 patients treated with this method over a 12-month period, there were no major complications, and patients were able to undertake early mobilisation with no reported issues with prominent metalwork. This neat technique is clearly one that should be in the armamentarium of surgeons treating fractures of the fingers, however, one wonders what would occur if the metalwork became infected (given how



difficult these screws would be to remove), and if indeed they are needed at all - the functional results of neighbour strapping are clearly quite reasonable and a comparative study is needed here.

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