

ROUNDUP³⁶⁰

Wrist & Hand

Radial osteotomy and advanced Kienböck's disease

■ Kienböck's disease has long been regarded as a difficult condition to treat, so *360* was interested to read of the work by a group from **Porto (Portugal)**. For the earlier forms of the condition, certainly Lichtman stages II and IIIA, radial osteotomy has been advocated. However, the role of radial osteotomy for Lichtman stage IIIB disease is controversial. The Lichtman classification is a radiological one, where Lichtman stage IIIB describes collapse of the lunate with fixed scaphoid rotation. Its significance is that load then shifts to the lunate, thereby further hastening collapse. The purpose of this study was to investigate the medium-term results of radial osteotomy in these circumstances and to compare the outcome in patients with stage IIIB disease and those with earlier stages (II and IIIA). The authors studied 18 patients (18 osteotomies) and assessed them both clinically and radiologically at a mean follow-up of 10.3 years. Range of movement, grip strength and pain improved significantly in all patients. Pleasingly, the functional score (Nakamura Scoring System (NSSK)) was high and self-reported disability (Disabilities of Arm, Shoulder and Hand questionnaire) was low at the final follow-up. Patients with stage IIIB disease, however, had significantly lower grip strength, lower NSSK scores and higher disability than those in less advanced stages. Radiological progression of the disease was not

seen in either group, regardless of the stage. It thus appears that radial osteotomy is indeed effective in halting the progression of disease, and improving symptoms, in stages II, IIIA and IIIB Kienböck's. Unsurprisingly, notes *360*, the authors conclude that patients at a less advanced stage of the disease should be expected to have better clinical results.¹

Fixing the Bennett fracture

■ One of the most common, if not the most common intra-articular fracture of the thumb, is the Bennett fracture. This is nearly always accompanied by some degree of subluxation or frank dislocation of the carpometacarpal joint. Many would choose to internally fix such an injury, a procedure highlighted by a follow-up study from **Bern (Switzerland)**. The authors treated 24 patients with Bennett fractures over an eight-and-a-half-year period. Each had been treated with open reduction and internal fixation with screws. Radiological and functional assessments, including range of thumb movement and pinch and grip strength, were performed four months after surgery and at a mean of 83 months later. At the four-month follow-up, mean pinch and grip strength reached 92% and 89% of the contralateral side, respectively. Reduction of the Bennett fracture was maintained as it was at the time of the procedure in 96% when fixation with two lag screws was performed.² Surprisingly, thinks *360*, long-term follow-up demonstrated no correlation between the

accuracy of fracture reduction and the subsequent development of post-traumatic arthritis.

PEEK plates and four-corner arthrodeses

■ *360* feels that nearly every combination of intercarpal arthrodesis has been described over the years. The concept of excising the scaphoid and fusing the remaining carpal bones in neutral alignment was described more than two decades ago and is frequently called the four-corner arthrodesis. It is a movement-sparing, limited arthrodesis that is said to allow pain relief and preserve movement. There are different ways of undertaking the procedure, one method being with a locked circular plate, the topic of a paper from **Innsbruck (Austria)**. Compared with traditional methods of fixation in four-corner arthrodesis, reviews of results using a dorsal circular plate have identified higher complication rates. As the use of circular plate fixation for limited wrist arthrodesis is a valuable concept, the authors reported the first results using a radiolucent, non-metallic (polyetheretherketone, or PEEK), locked dorsal circular plate for four-corner arthrodesis. They retrospectively analysed the clinical and radiological results of 24 patients who underwent four-corner arthrodesis with the device at a mean follow-up of 76 months. Patients had a mean age of 53 years at the time of surgery. Range of movement, grip strength and function were assessed while radiographs were looked at for union, carpal alignment and hardware

problems. By the latest follow-up, range of movement was a mean of 66% and 77% of the uninjured side in flexion-extension and radioulnar deviation, respectively. Meanwhile, grip strength was a mean of 70% of the uninjured side. Union was found in 22 of the 24 patients. The authors concluded that four-corner arthrodesis with a locked, circular, PEEK plate is indeed effective. It permits stable primary fixation as a basis for a good functional outcome, provided surgical technique is up to the mark, of course.³

Carpal tunnel release and haemodialysis

■ Carpal tunnel syndrome is extraordinarily common. Sometimes it comes out of the blue while at others it can be caused by a definable entity. One such entity is haemodialysis, where carpal tunnel syndrome may be frequently seen. In the short-term, however, the perception is that this group of patients is less likely to have pain relief and restoration of function after carpal tunnel release compared with those who have idiopathic carpal tunnel syndrome. Yet is that actually true? Surgeons from **Seoul (South Korea)** have looked at this with a retrospective review of 36 patients with carpal tunnel syndrome who were receiving haemodialysis and comparing them with 54 patients suffering from idiopathic carpal tunnel syndrome. The mean follow-up was 44.3 months although all comparisons were made at two years. Despite this being a level III therapeutic study it does appear as

though patients with haemodialysis-associated carpal tunnel syndrome remain impaired when compared with their idiopathic counterparts. That said, the majority of the haemodialysis patients still had improved carpal tunnel symptoms at the two-year review although the four patients with complications were all in the haemodialysis group.⁴ 360's view? Clearly a procedure worth doing whether or not a patient is on haemodialysis, but do not expect to achieve a brilliant result if they are.

Degloved digits and the reverse radial forearm flap

■ Any hand surgeon will tell you. Wearing a ring can lead to trouble as a degloving injury can result in total digit disaster. A complete ring avulsion injury necessitates a difficult choice between microvascular repair and revision amputation, says an author from **Sohag (Egypt)**. Microvascular repair is technically difficult and amputation may leave an unsatisfactory result. An alternative method is described whereby a reverse radial forearm flap is wrapped around the completely degloved digit. This provides good quality cover to the whole volar, dorsum, and both sides of the finger. The paper describes 26 pedicle radial forearm flaps in 26 patients that were undertaken over an eight-year period. Indications included soft-tissue coverage of the thumb (n = 8), ring finger (n = 11), index finger (n = 4), middle finger (n = 2), and little finger (n = 1). Finger salvage was successful in 96% of patients. However, there was complete loss of one flap and partial loss of another. Meanwhile, the range of movement was excellent in 18 fingers, good in seven, and fair in one. Two donor sites were closed primarily and the remainder with split-skin grafts. There were no reports of cold intolerance of the hand or dysaesthesia in the superficial radial or lateral antebrachial nerves.⁵ This is excellent work, we feel at 360, and a good contribution to the management of an injury that is hugely difficult to treat.

Occupational hand injuries – a feature of inexperience

■ How and where hand injuries occur is clearly of interest, as a paper from **Hong Kong (China)** shows. Occupational hand injuries lead to a significant loss of working hours and an increase in compensation requirements. The authors thus studied the epidemiology of occupational hand injuries and any associated social and industrial factors. For this retrospective case study, patient records were retrieved to gather data, all subjects being interviewed by a single interviewer using a predesigned questionnaire. Over a two-year period, 250 patients with occupational hand injuries were treated, so this period was chosen to obtain ten years of follow-up data to assess return to work and any secondary injuries. A mass of data was recorded, including personal particulars (gender, age, marital status, education level, length of stay in Hong Kong, type of employment, wage system, personal habits, family size, number of breadwinners, income), type of industry and mode of injury, causes of injury according to the worker, work conditions, type of injury, and the treatment given. The results were fascinating although perhaps predictable. Two groups of worker in particular had more occupational hand injuries, namely those with less than one year of experience in a new job and immigrants from China. Men were more at risk of occupational hand injuries than women. Meanwhile, personal risk factors included smoking, regular alcohol consumption, long working hours and, in the case of machine operators, inadequate training and inadequate use of safety devices.⁶ 360 notes that the conclusions are

clear. To prevent occupational hand injuries, the workplace should be made into a safer, more work-friendly environment. Workers should also have sufficient training.

Trapeziometacarpal osteoarthritis – keep surgery simple

■ 360 loves to see level I studies as they appear to be in short supply in orthopaedic surgery. Consequently, a study on the medium- to long-term follow-up of treatment for trapeziometacarpal osteoarthritis from **Derby (UK)** certainly deserves mention. The authors wished to study whether palmaris longus interposition or flexor carpi radialis ligament reconstruction and tendon interposition improved the outcome of trapezium excision for the treatment of basal joint arthritis after a mini-



mum follow-up of five years. The longest follow-up was 18 years, with a median of six. They randomised 174 thumbs with trapeziometacarpal osteoarthritis into three groups to undergo (1) simple trapeziectomy, (2) trapeziectomy with palmaris longus interposition, or (3) trapeziectomy with ligament reconstruction and tendon interposition using 50% of the flexor carpi radialis tendon. A K-wire was passed across the trapezium void and retained for four weeks, and a thumb spica was used for six weeks, in all three groups. The authors then reviewed 153 thumbs after a minimum of five years with subjective and objective assessments of thumb pain, function, and strength. There was no difference in the pain relief achieved in the three treatment groups, with good results in 120 (78%) patients. Grip and pinch strengths did not differ and the range of thumb movement was similar. Few complications

persisted after five years and were distributed evenly among the three groups. The pain relief achieved was maintained in the longer term, irrespective of the type of surgery, while improvements in grip strength were also preserved. Although pinch strengths deteriorated with time, the type of surgery was not a factor. 360 thus notes that the outcomes for these three versions of trapeziectomy were similar after a minimum follow-up of five years. There was no benefit to tendon interposition or ligament reconstruction in the longer term.⁷ The conclusion? Keep it simple. How often do we say that in orthopaedic surgery? We do not say it enough.

Fixing the fractured metacarpal neck

■ There is no firm evidence for the best method of treating fractures of the metacarpal neck. Leave them alone, internally fix, externally fix? Surgeons from **Osaka (Japan)** have looked at this. The purpose of their comparative study was to investigate whether the intramedullary nail or low-profile plate allowed good clinical and radiological results for displaced fractures of the metacarpal neck. The authors prospectively reviewed 30 patients who underwent surgery for a displaced fracture of the metacarpal neck. There were 15 who received an intramedullary nail and 15 a low-profile plate. The radiological and clinical outcomes for both groups were compared. The objective findings of range of finger movement and grip strength were assessed at three, six, and 12 months post-operatively. The authors showed that although there were no nonunions, there were three post-operative complications; an extensor tendon rupture in one patient and transient neuritis of the ulnar nerve in two. Radiological parameters after fracture healing were comparable between the two groups. However, the post-operative range of finger movement was better in patients with an intramedullary nail, while the grip strength in the low-profile plate group was better

than that seen in the intramedullary nail group. These results show that both procedures are highly effective in treating these unstable fractures. Plate fixation allowed earlier recovery of powerful hand function, while intramedullary nailing permitted a better range of finger movement.⁸ You pay your money, concludes 360, and you take your choice.

Pyrocarbon implants for the destroyed PIPJ

■ When faced with a destroyed proximal interphalangeal joint (PIPJ) a number of options exist. Arthrodesis is one but arthroplasty is another. PIPJ arthroplasty with pyrolytic carbon (pyrocarbon) has been undertaken, although short-term results have suggested this implant suffers from a high complication rate. Despite this, patient satisfaction is high. Workers from **Ann Arbor (USA)** have delved further into this and assessed the effectiveness of a pyrocarbon implant for use in the PIPJ at a minimum two years' follow-up. They prospectively studied 13 consecutive candidates who underwent 21 PIPJ arthroplasties with a pyrocarbon implant. Functional measurements and the Michigan Hand Outcomes Questionnaire (MHQ) were administered pre-operatively, at 12 months, and over two years post-operatively. The mean data for all functional measures and MHQ scores were compared, with a mean

final follow-up of 44 months. Grip strength, key pinch strength, and active arc of movement demonstrated no statistical difference between the pre-operative and subsequent assessments. However, there were ten complications in nine joints (42.9% complication rate). Although the patients without complications had a better functional outcome, there were no statistical differences in MHQ scores between those with and without complications, except for pain.⁹ Except for pain, asks 360? Surely that is important? Yet somehow this study suggests not. Despite a high rate of complications, patients generally were satisfied with the operation, paradoxically also with pain relief. Additionally, complications did not affect patients' satisfaction even if hand function was affected.

Viva wrist arthroscopy!

■ Wrist arthroscopy is becoming widespread as a study from **Singapore (Republic of Singapore)** shows. After all, what would one expect from a country that has the third highest GDP per capita in the world, thinks 360, and where medical care is widely held to be first rate? Hand surgeons there have reported the outcomes of arthroscopic debridement in the treatment of scapholunate, lunotriquetral and triangular fibrocartilage complex tears. The authors conducted a retrospective review of 68 consecutive wrist arthros-

copies performed over a five-and-a-half-year period. Pre-operatively, all the patients complained of wrist pain, which often interfered with their daily activities, work or sport. A standard arthroscopic technique was employed in each case. Any intercarpal ligament or triangular fibrocartilage complex tears found were debrided. There were 42 patients with triangular fibrocartilage complex tears, 58 with scapholunate tears and 49 with lunotriquetral tears. At a mean follow-up of 16.6 months, 85.3% of the patients reported an improvement in symptoms and 27.9% an improved range of movement. Grip strength improved by 11.8%. All except two patients returned to their original activities. By comparing the pre- and post-operative wrist scores of 31 patients, the authors were able to demonstrate significant improvement in patients who underwent wrist arthroscopies.¹⁰ Quite a drop-out rate, 360 notes, but the authors have nevertheless demonstrated a definite role for arthroscopic debridement in the management of scapholunate, lunotriquetral and triangular fibrocartilage complex tears. Viva wrist arthroscopy!

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