ROUNDUP360

Wrist & Hand

For other Roundups in this issue that cross-reference with Wrist & Hand see: *Children's Orthopaedics Roundup 6.*

Pulsed electromagnetic field of no use in acute scaphoid fractures

■ The appeal of the 'bone healing box' to patients is massive. It is not uncommon to meet patients in the consultation room with newspaper clippings describing the story of someone whose fracture united due to the use of a bone healing accelerator. The enthusiasm of the patient is only matched by the scepticism from many trauma and orthopaedic surgeons. While there are clearly described mechanisms by which electromagnetic fields (EMF) and ultrasound may accelerate bone healing (through modification of piezoelectric forces amongst other possibilities), the literature does not support its clinical use unequivocally. One of the suggested applications for EMF is in fractures with a high nonunion rate, such as scaphoid fractures. Investigators in **Maastricht (The Netherlands)** set out to establish if there was any potential to shorten healing times and decrease nonunion rates in acute scaphoid fractures. The study team used a double-blind randomised placebo-controlled trial method to establish what role (if any) EMF has in the treatment of acute scaphoid fractures. The study population consisted of 102 patients, randomised to either EMF or no EMF from five different centres, all presenting with a unilateral undisplaced acute scaphoid fracture. Functional and radiological outcomes (multiplanar reconstructed CT scans) were assessed at regular intervals all the way up to one year. There was no difference between the results of this series[1] and a very similar series of 52 patients published two years ago by the same authors in the same journal.[2] Other than adding twice the numbers of patients, we would comment that this slightly bigger study adds little to what has already been reported by the same group. It appears that EMF does not help in acute scaphoid fractures.

Proximal interphalangeal joint replacement: the good, the bad and the ugly

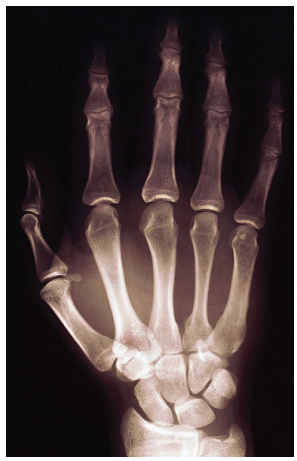
■ Proximal interphalangeal joint (PIPJ) arthroplasty in the hand remains a considerable problem, patients typically present with considerable pain, instability and disability. Implants often present failed and stiff. The PIPJ contributes a huge amount to total digital motion (around 0° to 110°), and fusion in an otherwise well-functioning hand is not a functionally attractive option despite excellent results in terms of effective pain relief. Isolated symptomatic post-traumatic PIPJ arthrosis in a high demand young hand represents the most challenging and unsolved clinical issue in hand surgery. Treatment often results in early implant failure and, in small published series, poor pain relief. While an anatomic joint replacement superficially and logically is likely to give better movement, it actually suffers from terrible surgical tolerances – a few millimetres of excessive bone cut, barely visible, might equate to over 1 cm loss in a knee replacement which would be associated with a poor outcome in both circumstances. To make matters worse, PIPJ replacements depend on tendon glide, and the joint capsule - once affected by post-traumatic or primary arthrosis - seems to irreversibly stiffen. These pages in *360* have devoted (like the journals they comment on) a seemingly endless number of words to discussion of the pros and cons of the anatomic and spacer (usually silastic) devices. Silastic joint replacement, best known for use in the rheumatoid patient, acts as a spacer and can afford pain relief with a relatively reliable 40° range of movement in primary osteoarthritis (up to 70° range) previously published. However, these devices are far from anatomic and will frequently break down although generally they are easily revised. Anatomic joint replacements have the alluring potential to give a greater range of movement as well as pain relief. The reporting of small patient cohorts and the technical difficulty of the surgery are key factors in the variability of published results. There also appears to be a lack of consensus, however, about what constitutes a 'good' result. Two papers in the Journal of Hand Surgery (European) exemplify this variation in results. Looking on the bright side is the report of a ten-year experience with the use of a pyrocarbon prosthesis to replace the proximal interphalangeal joint. Investigators from **Lund (Sweden)** present their prospective clinical and radiographic follow-up. Amazingly, despite the allure of the ten-year follow-up in the title, the authors only follow up their patients to five years, with radiographic results in 89 joints.[3] Their results suggest that by the five-year mark, 19 of the 21 patients still in the study were pain free, although around 85% of joints had changed position i.e. migrated (defined as failure of course in large joint arthroplasty!). In terms of revisions, ten of 89 joints were re-operated (all occurring within the first two years). The clinical outcomes determined in terms of composite range of motion did not really improve at all from pre-operative, with a mean combined flexion of 53 degrees throughout the study. The 18 patients available for five-year follow-up had a composite flexion of 54°. In this particular study, the authors conclude that "patients were content with the results and we believe that the prosthesis is a step towards improved treatment of pain in PIP osteoarthritis. Based on our results, patients can expect a good outcome from the operation regarding pain relief, but should not expect increased ROM."

■ The contrast to this is made by colleagues from **Zurich (Switzerland)** who published their article in the same edition of the Journal of Hand Surgery (European). Their smaller series was a true ten-year follow-up cohort, but consisted of just 12 patients with 15 joints replaced. Outcomes in terms of pain were excellent, with VAS pain scores falling from 7.6 to 0.7 by final follow-up. However, radiographic outcomes were similar to those presented in the previous paper, with nine implants migrating and one requiring revision. Composite flexion was poor

both pre- and post-operatively, with composite flexion falling from 36° pre-operatively to 29° by ten years. Despite a very similar outcome (given the additional five years of follow-up), these authors make a strikingly different set of conclusions. "The only moderate clinical results and the relatively high potential for complications, especially implant migration owing to a lack of osteointegration, mean that we no longer use this kind of implant. We stopped implanting the prostheses in 2003." It seems that the results of these pyrocarbon implants in the longer term are consistent between these two papers, allowing for differences in follow-up length and study populations. What is strikingly different is what is considered by the surgeons to be a good result![4] How can this problem be solved? The small numbers of small joint arthroplasties used mean many centres would be needed in a study and the corresponding large number of surgeons performing the cases would be a significant confounder. An implant registry would be the first step (although asymptomatic joint migration with necessary repeat radiograph and the need for accurate range of movement measurement would mean patients would all require clinical review) but, as with anything, the sooner we start the sooner we will have some answers.

One at a time or both at once?

■ Carpal tunnel syndrome is frequently bilateral and patients often present asking to have both hands released at the same time. This causes a dilemma for the surgeon – will the patient manage with both hands out of action? Clearly the advantage is of just a single convalescence period but is bilateral surgery so disabling that it should never be done? As with many things in surgery, everyone has an opinion, but surprisingly these opinions are not based upon evidence. Surgeons from **St Louis (USA)** set out to establish what exactly happens to patients with bilateral decompressions. Are they significantly more disabled than patients having staged unilateral procedures? The study team designed a prospective cohort study with the aim of collating patients who had undergone either bilateral or unilateral release, and assessed their difficulties in performing activities of daily living in the early post-operative period using a number of patient outcome measures (QuickDASH, and the Boston Carpal Tunnel Questionnaire). Outcomes were assessed at baseline and both post-operative check visits.



The study team were able to recruit 88 patients (47 bilateral and 41 unilateral) into their study, and in addition patients were asked to rate their difficulties performing 15 activities of daily living each day for the first seven days. Really quite surprisingly, there were no differences in ability to perform activities of daily living, QuickDASH or Boston Carpal Tunnel score at the first post-operative visit. The activities of daily living were more difficult in the bilateral group only as far as day 2 for jar opening, housework activities and cooking. None of the other activities required for personal hygiene or personal care was different at any time point.[5] It does seem from these results that the fear that a lot of patients have about being disabled in both hands and becoming dependent is completely unfounded. It looks to us as though patients would be better advised to elect for bilateral surgery as it is not significantly more disabling and it avoids two periods of disability.

Trapeziometacarpal arthrodesis in the young patient

■ Younger patients are said to be more suitable for arthrodesis of the thumb than trapeziectomy. The loss of pinch strength is cited by both textbooks and many opinion leaders as a primary reason to arthrodese the first carpometacarpal in young patients or manual workers with osteoarthritic changes. However, in the older patient, these two treatment options are used interchangeably and critical appraisal of the evidence seems to suggest that this is a practice with a very poor evidence basis. Researchers in **Zwolle (The Netherlands)** designed a well-controlled study to evaluate this practice with a randomised controlled trial to compare the outcomes of trapeziectomy with ligament reconstruction and trapeziometacarpal arthrodesis. The study was designed to include women over the age of 40 and patients were randomised to either treatment, with outcomes assessed at three and 12 months by both the Patient-Rated Wrist/Hand Evaluation (PRWHE) and Disabilities of the Arm, Shoulder and Hand (DASH) scores. In addition, assessments were made of joint movement, strength, complication rates and patient satisfaction as secondary outcome measures. The study cohort consisted of 43 patients who were enrolled. The study, however, was stopped following an interim adverse events analysis, due to a significantly greater rate of adverse events in the arthrodesis group, with 70% of patients developing a complication as opposed to less than 30% in the trapeziectomy group. Although not reaching power due to early termination of the study, significantly more patients were satisfied in the trapeziectomy group than in the arthrodesis group (86% *versus* 53%), however, the outcome scores were equivalent in the group comparison.[6] Given the significantly higher rates of complications in the arthrodesis group, we would agree wholeheartedly with the authors of this study that in light of the higher complication rates and poorer satisfaction rates in the study population (women over 40), there is no indication for arthrodesis in this patient group.

Tamoxifen and Dupytren's disease

x-ref Research

■ Dupytren's disease has been the subject of much basic science research. The combination of a genetic predisposition, early identification of MMP involvement and the increasing general scientific interest in matrix diseases and turnover has led to a flurry of research projects into this disease. Despite improved understanding, there is still no medical cure for Dupuytren's, and although surgery yields excellent short-term results there are high risks of complications and potential issues with recurrence rates. TGF-β is one of the growth factors implicated in Dupuytren's and is known to modulate fibroblast activity in the disease. Experimental studies with Tamoxifen have demonstrated effectiveness on fibroblast activity *in vitro* and *in vivo*, and researchers from **Pellenberg (Belgium)** set up a study to establish its potential efficacy in the treatment of Dupuytren's. The research team designed a double-blinded randomised controlled trial to establish the efficacy of Tamoxifen (a synthetic non-steroidal anti-oestrogen) in improving outcomes following surgery for Dupuytren's disease. Thirty patients with fibrotic type disease were randomised to either placebo or Tamoxifen (80 mg/day) after subtotal fasciectomy. Outcomes were assessed with passive extension deficit and patient satisfaction scores. Treatment was started six weeks prior to surgery and continued to three months after, with follow-up to a two-year point. Amazingly, the patients in the Tamoxifen group were seen to have a significantly smaller extensor lag and higher satisfaction rates at three-month follow-up, despite the small size of this study. This positive effect was lost by two years of follow-up.[7] This is certainly a study that requires further investigation. While the beneficial effect conveyed by Tamoxifen seems to be short-lived, a further study with a larger group of

patients is certainly justified here to further quantify the relationship. We wonder at *360* HQ if a lower maintenance dose of Tamoxifen could be used to maintain gains associated with Tamoxifen therapy.

Endoscopic or open for de Quervain's syndrome?

■ The hand surgery fraternity has been busy recently with randomised controlled trials, and researchers from **Seoul (South Korea)** have reported the results of their trial designed to establish if there are differences in outcomes between open and endoscopic de Quervain's release. An unusual question, and not one we are sure would come at the top of most research priority-setting exercises. Nonetheless, the research team designed a randomised controlled trial aiming to establish whether there are any differences in outcomes between open and endoscopic approaches for this condition. Outcomes were assessed at 12 and 24 weeks using scar satisfaction (VAS) and functional scores (DASH). In addition, complications and pain scores were also collected. Their study involved 52 patients, randomised to either open (n = 25) or endoscopic (n = 27) release of their isolated de Quervain's tenosynovitis. At initial three-month follow-up there were significant improvements in both pain and DASH scores in both groups, with the endoscopic group faring marginally better. However, at final (24 week) follow-up there were no differences in any outcome measure bar scar satisfaction between the groups. While there were no long-lasting serious complications, there was a lower incidence of transient radial nerve palsy (nine *versus* three cases) in the endoscopic group.[8] We might not be as effusive over the benefits of endoscopic release as the authors of this paper (remember, by final follow-up there were no differences at all other than the look of the scar), here at *360* we would agree that patients do appear to get better more quickly following endoscopic release and that this should be taken into consideration when choosing surgical technique.

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