

Editorial

Surgery for wrist fractures in the elderly: for better form or better function?

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Distal radial fractures account for 14% of all extremity injuries and may be caused by either high-energy trauma (likely resulting in functional impairment) or low-energy injury (commonly seen in osteoporotic elderly patients). While comminuted intra-articular distal radial fractures have always been challenging to surgeons, obtaining a stable fixation in the osteoporotic bone can be equally difficult.

Normally the articular surface of the distal radius has a radial tilt of 20° and a volar tilt of 10°. Radial shortening, dorsal and volar displacements, and residual articular step or gap are all possible after a fracture. Such malreduction can result in a painful, stiff, and dysfunctional wrist, as well as carpal instability.

In the past, fractures of the fragile distal radius in the elderly were often treated with manipulation and casting, despite the fact that most subsequently heal with significant shortening and malalignment. The generally accepted concept (first proposed in 1814 by Abraham Colles) is that after a certain period of time, the compromise in functionality is not too significant in patients with low functional demand. The need for better outcomes has recently been revisited as newer methods of treatment have been devised. The minimally invasive technique of injecting calcium phosphate cement, such as Norian skeletal repair system (Norian, Cupertino [CA], US), has been shown to accelerate rehabilitation, although little effect is seen in the final radiological appearance. Would it be inadequate to just concentrate on the final functional recovery? In other words, have we all been oblivious to the length of time required to return to a

satisfactory functional level, which may be crucial to elderly patients?

Addressing these issues, various locking screws and implants are rapidly gaining popularity for these patients in certain regions. Such implants come with screws that directly engage the plate to create fixed-angle bolts, thus offering better fixation in osteoporotic bone. Volar application of such locking implants can be used even in dorsally displaced or comminuted fractures. Indeed, the time has come to rethink our treatment strategy when dealing with these common injuries.

Which fractures are unstable?

Clinicians who can predict which fractures end up with significant deformities are in a better position to advise their patients on the need for surgery. Recently, certain patient-related and radiological features, such as excessive dorsal or volar tilt and marked radial shortening, have been used as predictors of instability, with a goal of developing guidelines for treatment by manipulation and casting or by surgery. Among these, age has been shown to be the only consistent risk factor predicting secondary displacement and instability.

Is it just for better form?

With the introduction of locking screws and fixed-angle implants, a good alignment can often be achieved and maintained with volar plating. The surgical technique is easier than that of dorsal plating

and is associated with less tendon irritation. It also permits early wrist rehabilitation without the need for additional splintage. Biomechanical studies show that, in terms of load transmission, volar fixed-angle plating restores a level of stability comparable to that of the intact radius, and is superior to conventional volar or dorsal plates.¹

It is debatable whether the pursuit of anatomical alignment is necessary: an acceptable alignment on radiography is not necessarily associated with better functional outcome. This has been shown in recently published articles in both conservatively treated patients and those treated with the Norian skeletal repair system as augmentation. How the deformity, functional outcome, and patient satisfac-

tion affect one another remains a conundrum. Moreover, non-injury-related items such as self-motivation, family support, and home environment may have equally important influences on clinical results and patient-reported outcomes.

Is volar fixed-angle plating overkill for a relatively minor injury, or is it a genuine advance which has shed new light on a long neglected area? The standard practice and general consensus is still quite variable among different countries. My advice is that the decision made for each patient should be based on individual needs and the risks of surgery. However, an increasing number of osteoporotic wrist fractures will likely be treated with surgery in the near future.

REFERENCE

- 1 Leung F, Zhu L, Ho H, Lu WW, Chow SP. Palmar plate fixation of AO type C2 fracture of distal radius using a locking compression plate—a biomechanical study in a cadaveric model. *J Hand Surg Br* 2003;28:263–6.