EXPERT OPINION ON PUBLISHED ARTICLES

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Surgical treatment of distal radial fractures with a volar locking plate versus conventional percutaneous methods

A Karantana
***Journal of Bone and Joint Surgery* (American) 2013;95:1737-44**

Although this article was published in 2013, I regard it as a milestone paper. The research was done at a reputable centre, namely the Nottingham University in the United Kingdom.

The aim of the study was to compare the outcomes of displaced distal radial fractures treated with a volar locking plate with those treated with a conventional method of closed reduction and percutaneous wires fixation, with or without supplemental external fixation when required.

The conclusion was that the volar locking plate resulted in a faster early recovery of function at six weeks compared to the use of conventional methods. However, no functional advantage was demonstrated at, or beyond 12 weeks.

Other series have been reported both before and after this publication, which also indicate that conservative management of distal radial fractures is still a practical method of treatment, and the results compare favourably with surgical procedures.

The following pertinent points need to be stressed:

1. Volar plating of distal radial fractures has become fashionable recently. The number of different volar plates available is probably only outnumbered by the number of different hip prostheses!

2. Volar plating has definite disadvantages since we start seeing more and more long-term complications, such as flexor tendon ruptures, especially flexor pollicis longus and the flexor digitorum profundus to the index finger.
3. Volar plating often has pin or screw complications, being either too long (i.e. irritating the extensor tendons), or pins and screws protruding into the wrist joint. These plates need to be removed, which thus means a second operation.
4. The costs of volar plating which includes the plate itself, the operative costs (surgeon, hospital and anaesthetist), as well as rehabilitation, plus the possible second operation to remove the plate, need to be balanced against the advantages.
5. Bone healing takes a minimum of three to four months. This is a basic orthopaedic fact. Internal fixation, even with locking plates does **not** enhance or shorten the healing period. This is a myth. Fragment collapse also happens with internal fixation of distal radial fractures, especially with soft bone and in cases where the implant purchase in the fragment is inadequate.
6. Conservative management may not give a perfect anatomical reduction, but the same applies to internal fixation. One seldom gets a perfect anatomical reduction. The question still has not been fully answered whether perfect anatomical reduction is essential for a reasonable or good functional outcome. It does not seem to matter anyway!
7. Finally, rupture of the flexor digitorum profundus to the index finger, and especially the flexor pollicis longus, is a devastating complication and very difficult to manage. An early sign, which needs to be very closely monitored whenever volar plating of distal radial fractures is done, is when pain is experienced when the index finger or thumb is flexed, against resistance. In such cases these tendons are becoming vulnerable and the plate should be removed as soon as possible.

Summary

Volar plating of distal radius fractures does not give better results than conservative management over the long term. In fact, the morbidity is higher with plating and therefore careful and judicious selection of patients for internal fixation is advised.

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Long-term follow-up of flexor digitorum longus transfer and calcaneal osteotomy for stage II posterior tibial tendon dysfunction

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A common technique to reconstruct an adult acquired flat foot due to dysfunction of the tibialis posterior tendon in a flexible deformity is a flexor digitorum longus (FDL) tendon transfer and medialising calcaneal osteotomy. Transfer of FDL was first described by Mann.[1] This helped relieve pain but did not improve clinical and radiological correction of the flat foot.

Popularised by Myerson,[2] the addition of the medialising calcaneal osteotomy shifts the Achilles tendon medial to the sub-talar joint axis and assists the transferred FDL to invert the hindfoot. FDL is significantly weaker than tibialis posterior and requires the mechanical assistance of the bony procedure.

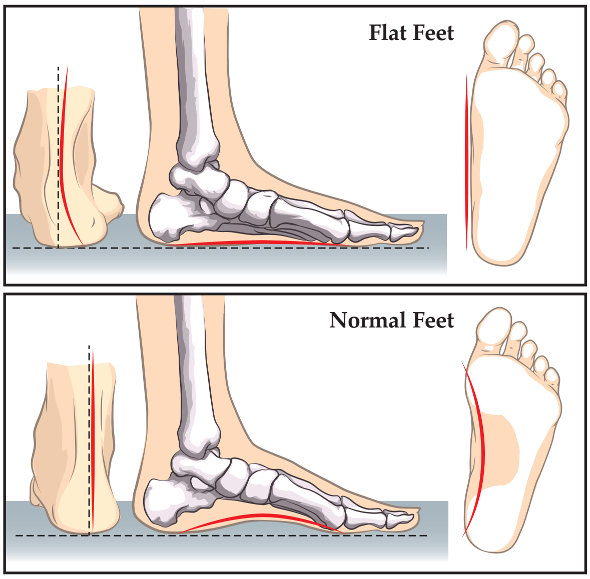
Good to excellent results have been published 3–5 years post-operatively,[3,4] but there is little literature describing the longer-term results.

In this study by Terry Saxby and co-workers, of the 48 patients included, 31 were available for review. The mean follow-up time was 15.2 years (11.4–16.5). The outcome measures were the American Orthopaedic Foot and Ankle Score (AOFAS), visual analogue sore (VAS), the Short form -36 Form, and whether the patient would have the same procedure again.

Of the 31 available for final follow-up, four were deemed failures as they had pain and loss of function requiring further hindfoot surgery; 27/31 (87%) remained pain-free and did not require further surgery. The AOFAS and VAS scores were significantly higher at final follow-up (p=0.001). Kaplan-Meier survival analysis demonstrated a 15-year survival of 88.9%. Other minor complications included pain around the calcaneal screw, sural neuritis, and minor wound infections. Eighty-seven per cent were totally satisfied, 10% were satisfied with reservations, and one patient (3%) was dissatisfied. Ninety per cent (28/31) would have the operation again.

A weakness of this study is the high loss to follow-up. Of the 48 patients included, only 31 were available at final long-term review. If all of them had a bad result (worst case scenario) then the satisfaction rate would drop to 66%. This was because of a number of reasons.

Another shortcoming: the radiological or clinical correction and maintenance of this over time was also not included, which is a pity, as we would be able to see if this deteriorated over time. Also, only 21 of the 31 patients had a clinical review. The other ten had a telephonic and postal questionnaire, making it difficult to draw firm conclusions.



Conclusion

Although this study has some serious limitations, it is encouraging to see a fairly high satisfaction rate and good survivorship at a mean of 15-years' follow-up. Progression of the disease without surgical intervention usually leads to a stiff deformity, sometimes threatening the ankle joint. This changes the reconstruction options to salvage procedures, with more inferior satisfaction rates than these.

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Perilunate dislocations treated with external fixation and percutaneous pinning

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J Wrist Surg. **2015;4(2):76-80**

This article from the *Journal of Wrist Surgery* reviews the results of 20 patients with perilunate dislocations, and perilunate fracture dislocations of the wrist, treated with closed reduction, external fixation, and percutaneous K-wire insertion. Reduction was achieved by ligamentotaxis following application of the external fixator, with traction being applied via the external fixator. K-wires were inserted after reduction across the scapholunate and lunotriquetral joints. Any fractures were also fixed with K-wires. The external fixator spanned the wrist with pins inserted in the distal radius and the second metacarpal.

Three cases out of the 20 failed a closed reduction, and an open reduction was performed. These were excluded from the results. The external fixator was removed at 6 weeks and the wires at 10 weeks post-operatively.

At mean follow-up of 39 months, range of motion and grip strength measured 80% and 88% respectively of the contralateral wrist. According to Cooney's scoring system, functional outcomes were rated as excellent in four patients, good in eight, fair in four, and poor in one. Two patients developed post-traumatic osteoarthritis. Fifteen patients returned to their former occupation.

At final radiographic follow-up, the mean scapholunate gap was 1.9 mm, the lunotriquetral gap 1.8 mm, and the mean scapholunate angle 58°. The authors concluded that this treatment method provides satisfactory functional and radiographic outcomes.

Our unit has a policy of treating these patients with closed reduction and percutaneous pinning with K-wires, and immobilisation in a cast rather than an external fixator

Perilunate dislocations and fracture dislocations are difficult problems to treat, with no best treatment method evident in the literature. Some patients have excellent results with full recovery, but others develop carpal instability and degenerative arthritis. Many authors recommend open reduction and repair of the scapholunate and lunotriquetral ligaments. Unfortunately some ligaments are not repairable, especially if there is a mid-substance rupture. Other authors recommend primary ligament reconstruction.

The varied outcomes in patients with this injury may be due to concomitant injuries to the secondary stabilising ligaments, namely the radioscaphocapitate, radiolunate, dorsal radiocarpal and dorsal intercarpal ligaments. Many biomechanical studies in the literature have shown no carpal instability with sectioning of only the scapholunate ligament, but with further sectioning of the secondary stabilising ligaments, carpal instability develops.

Our unit has a policy of treating these patients with closed reduction and percutaneous pinning with K-wires. We immobilise patients in a cast rather than an external fixator, and we are seeing good results in the majority of patients. It is important to ensure that both the scaphoid and the lunate are reduced in the scaphoid and lunate fossa of the distal radius respectively. If not, this will lead to point loading and post-traumatic osteoarthritis. If patients later develop carpal instability, a ligament reconstruction can be considered.

Of note in this article was that there were five patients with trans-scaphoid perilunate dislocations, all treated with K-wire fixation, and two developed a non-union. This suggests that percutaneous headless compression screw fixation may be a better option.

In summary this article shows that closed reduction and percutaneous K-wire fixation of perilunate and perilunate fracture dislocations, with external fixator immobilisation, shows satisfactory outcomes.

This approach is easier to perform than an open reduction and may be preferable for surgeons unfamiliar with the dorsal approach to the wrist.

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When is it safe for patients to drive after right total hip arthroplasty?

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During your training in becoming an orthopaedic surgeon, you study and read intensively, only to be asked a 'silly' question such as: 'Doctor, when can I drive after my hip replacement?'

Do you base your answer on research or do you say 6 weeks because it sounds right?

The question arises whether the 'contemporary techniques' employed in THA, i.e. muscle-sparing procedures, multimodal pain management and enhanced recovery after surgery, have changed the time to return to driving.

In this article the authors challenged the age-old notion of 6 weeks. According to them the ability to drive is based on the patient's sensory, motor and cognitive ability. That leads to the ability to have a secure grip on the steering wheel, and adequate strength to activate the brake pedal with an optimal reaction time. The brake reaction time is the time a person takes to apply the brake after receiving a stimulus to stop the vehicle. This brake reaction time (BRT) can be measured. In the study of 38 patients, they determined the baseline of the BRT of each patient and the patients were re-tested at 2, 4, 6 and 8 weeks post-operatively.

If the left leg was operated on, driving may be resumed one week after surgery, provided it is an automatic transmission vehicle.

The baseline BRT was achieved at 2 weeks after right-sided hip arthroplasty in 87% of the studied patients. The rest reached their baseline values at 4 weeks, but all the patients that did not reach their baseline values at 2 weeks, were still under the national recommended safe brake time, the latter based on several scientific studies.

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There are several limitations to this study, as acknowledged by the authors. They used a brake simulator instead of an actual vehicle. The BRT is not the only factor allowing patients to return to safe driving. No control group was involved. The use of narcotics may influence the BRT.

The type of vehicle might also influence the return to driving. Difficulty in getting in and out of the vehicle might delay the return. If the seat is very low, the hip might flex more than is allowed, with the increased risk of dislocation.

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