Reviewer's report

Title: Relationship between distal radius fracture malunion and arm-related disability: A prospective population-based cohort study with 1-year follow-up

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Reviewer: William Cooney

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Overview: This is a very good study that points out what many clinicians observe. The study demonstrates that the results of distal radius fracture treatment are correlated with accuracy of the reduction and maintenance of reduction to prevent malunion. It is important that the review was conducted at one year after the fracture as improvement clinically can occur up to that point. Another important point is that the older patient desires high levels of activity and should not be discounted as one needing excellent anatomic and functional outcomes

Abstract: None

Background: Good discussion of the controversy. Past studies have suggested that anatomy and function do not necessarily coordinate with outcome. This prospective study helps to better answer the question.

Methods and Material

1. Why was the study delayed in presentation when the data was developed in 2002?
2. How were the fractures classified? Was classification used in determining treatment options?
3. How was successful reduction assessed and how were some patients switched in treatment after closed reduction and casting?

Treatment Methods

1. How was the decision made to treat in ET Unit with local anesthesia vs. surgical fixation in the operating room?
2. Classification or fracture grading used?

Assessment of Disability

1. Interesting to use a DASH in the immediate post operative period with patient recalling levels of function. Has this technique been used before and validated to accuracy?
2. Were any patients to receive the DASH during follow-up assessment or all mailed the DASH? How was the success in returning of the DASH?
3. Why was a wrist score such as the Mayo Wrist Score or Krimmer score or Gartland –Werley score not used in patient assessment? In Europe there is
excellent correlation between DASH and Mayo Wrist Score.

4. Radiographic assessment. Assume that the AO Score was measured at the time of the fracture as was dorsal tilt of distal radius? Were all films available?

5. Non-respondents: How significant is the loss of 28% of patients in follow-up?

Statistical analysis: No issues

Results

1. Good presentation of results of malunion and function. Which was more important dorsal tilt or shortening (positive ulna variance)?

2. How did complications affect the outcome in patients with excellent radiographic outcomes (lack of malunion)?

Discussion

The discussion is well presented. Correlation with functional outcome (DASH) and radiographic outcome is very nicely demonstrated. The only question relates to lack of a wrist score which the authors address. Studies from Europe demonstrate that there is a good correlation between wrist scores (Mayo score, Krimmer score) and the DASH. These should be referenced if possible. The only other question is whether 1 mm of ulna variance (positive with radial shortening) is significant. Other studies suggest 2mm or more. Did positive ulna variance effect forearm rotation as a measure of upper limb function? Otherwise, an excellent study.