

Open reduction and internal fixation of modified Mason type III/IV radial head  
fractures with more than three fragments:  
An analysis of the clinical outcome and reoperation rate

Timothée Helmstetter

It is generally accepted that a radial head fracture (RHF) with more than three parts is not suitable for repair; therefore, most authors suggest straightforward radial head arthroplasty (RHA). With up to 20% risk for reoperation after RHA, improvement in reduction and fixation techniques may represent a valuable alternative before further extending the indications for arthroplasty. To determine the functional results and radiological failure rate after osteosynthesis of multi-fragmentary RHF with more than three articular fragments. We specifically determined (1) the one-year Broberg and Morrey functional elbow score, (2) duration of fracture healing, (3) complication rate, and (4) number of patients converted to RHA.

This study is a retrospective single-center case series. All patients who underwent primary osteosynthesis for RHF between 2012 and 2019 were included. Nine patients with an average age of 52 years had an average clinical and/or radiological follow-up of 49 months.

The preoperative imaging identified nine fractures with four fragments. Three patients underwent osteosynthesis with plates and screws, whereas six patients underwent osteosynthesis with only screws. The mean Broberg and Morrey score was 95 points. Overall, eight of the nine patients had satisfactory results. All patients retained their radial heads and showed radiological fracture healing. Only two patients presented with low-grade complications requiring no further surgery.

Our study showed that osteosynthesis of RHF with up to four fragments can achieve good functional results with a low complication rate and seems to be a valid alternative to RHA.

Jury:

Prof. Dr. med. Moritz Tannast (thesis supervisor, internal co-examiner)

PD Dr. med. Beat Kaspar Moor (external co-examiner)

PD Dr. med. Michael Schär (external co-examiner, independent expert)

Prof. Michael Walch (President of the jury)