

# Secondary dislocation of distal radius fractures is associated with cortical bone quality at the distal radius

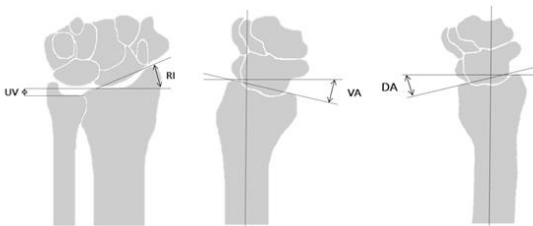
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## Distal radius fractures

By being able to anticipate early stage instability, unnecessary manipulation can be prevented and timely surgical treatment achieved.

The aim of this study was to investigate the associations of patient characteristics, bone mineral density (BMD), bone microarchitecture and calculated bone strength with secondary dislocation of a distal radius fracture (DRF) based on radiographic alignment parameters

## Radiographic alignment



Unacceptable position ( $\geq$  one of the following criteria):

- » Ulnar variance (UV) > 5mm
- » Radial inclination (RI)  $\leq$  15°
- » Dorsal angulation (DA) > 15°
- » Volar angulation (VA) > 20°

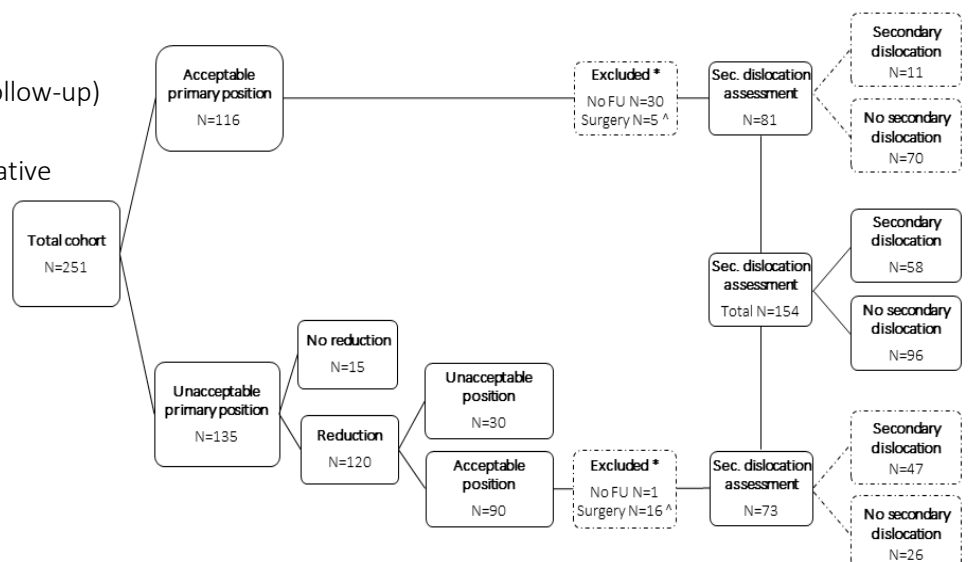
## Methods

Conventional radiographs

- » 251 patients (♀ 213 / ♂ 38)
- » DRF position (baseline and follow-up)

High Resolution peripheral Quantitative Computed Tomography (HR-pQCT)

- » 71 patients
- » Bone microarchitecture
- » Calculated bone strength



## Results

- » Characteristics of patients with and without secondary dislocation did not differ
- » Primary reduction » significantly associated with secondary dislocation [odds ratio 12.53]
- » After adjustment for primary reduction, **total and cortical volumetric BMD and cortical thickness** were significantly associated with secondary DRF dislocation in 30 patients with a HR-pQCT at the distal radius

## Conclusions

- » Patient characteristics were not associated with secondary DRF dislocation
- » Primary reduction was the most important determinant for secondary DRF dislocation
- » **Lower total and cortical vBMD and lower cortical thickness** at the distal radius were independently associated with secondary DRF dislocation
- » This indicates that besides primary reduction, **cortical bone quality** may be important for the risk of secondary DRF dislocation