Acute Implant Failure of Volar Rim Plate

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INTRODUCTION:

Volar rim plate is designed to allow fixation of difficult fracture configuration in far distal and volar rim of radius[1]. Since 2011, the variable angle – volar rim plate has been brought in by Synthes (DePuy-Synthes, Switzerland). This report shares an experience of mechanical failure encountered in this plate.

REPORT:

33 years old man with no known medical illness had motor vehicle accident and sustained multiple fractures involving bilateral femur and closed fracture volar rim right radius, right radial and ulnar styloid. The fracture was fixed using 7 holes volar rim plate under fluoroscopic guidance with 8 distal locking and 3 shaft screws. In same operative setting, patient was repositioned onto traction table and right upper limb strapped across to left side for intramedullary device right femur. Postoperatively next day, patient complained pain and deformity over right wrist. Post-op x-ray right wrist shows implant failure and fracture volar rim right radius with volar displacement. After revision surgery, the removed plate was found to have broken at the ulnar side of oblong combi-hole. There was no screw loosening, screw pull-out or broken screw. In revision surgery, the fracture was fixed with another volar rim plate with k-wire and splinted. Postoperatively, repeated x-rays show stable fixation and patient was discharged well.

Previous literature had similar report such as Shaerf et al in 2019 reported one case of mechanical failure of volar rim plate. Foo et al in 2013 reviewed 9 cases of implant failure in distal radius volar locking plate.

Figure 1: X-ray right wrist shows implant failure and fracture volar rim right radius with volar displacement.

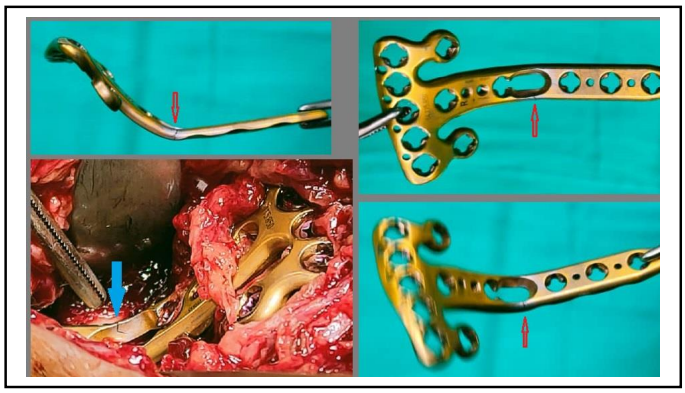

Figure 2: Plate was found to have broken at ulnar side of oblong combi-hole.

CONCLUSION:

Mechanical failure of volar rim plate can be contributed by implant factor (manufacture defect, repetitive reusage), biomechanic (mechanical overloading) or patient factor (fracture configuration, bone stock, compliance).

REFERENCES:

1. Spiteri, M. et al. (2017) “Distal radius volar rim plate: Technical and radiographic considerations,”