Hypothesis: Complications more than six months after wrist arthrodesis using dorsal plate fixation are rarely reported. A retrospective chart review was designed under the hypothesis that long-term complications are both frequent and often involve screw or plate failure when the middle finger carpometacarpal joint (CMCJ) is not fused.

Methods: Between 1988 and 2012, we identified 205 wrists in 199 patients who underwent wrist arthrodesis with a dorsal plate. One hundred and twenty-two patients with a minimum follow up of six months were reviewed. Long-term complications were defined as any occurring or persisting more than six months following arthrodesis. Patients with inflammatory arthropathies, and patients who had arthrodesis following tumor resection of the distal radius and failed total wrist arthroplasty were excluded. Hardware-related complications were identified, and all operative notes and postoperative radiographs were reviewed to investigate completeness of fusion and whether failure to fuse the middle finger CMCJ contributed to the complications.

Results: Twenty long-term, hardware-related complications occurred following arthrodesis of 122 wrists (16%). These twenty complications included screw fracture (n=12), plate loosening (n=5), and plate fracture (n=3) and occurred at a median of 2.5 years following arthrodesis (range, 6 months – 19 years). Thirteen (65%) of the hardware complications occurred when the middle finger CMCJ was not included in the arthrodesis. The middle finger CMCJ did not fuse after attempted arthrodesis in an additional six wrists. We believe that persistent CMCJ motion was likely present in 19 of the 20 wrists (95%) that experienced hardware fracture or loosening. There was one radiocarpal nonunion following wrist arthrodesis and it was accompanied by a plate fracture over the nonunion site. Additional procedures to address the hardware complications were completed in seventeen of the twenty wrists. The additional procedures required included plate removal (n=16), repeat fusion and plating (n=5), and screw removal (n=1).

Summary:
- Wrist arthrodesis is an excellent salvage procedure; however long term complications frequently occur.
• Due to the severity of these hardware-related complications, secondary procedures are required.
• Long term, plate or screws can fail if the middle finger CMCJ is not fused.
• Given the occurrence of hardware failures centering on this joint, we recommend that, unless the plates are routinely removed within a given timeframe, the middle finger CMCJ must be formally fused.

♦ Nothing of financial value to disclose