Background/Objectives
- Appropriate reduction of a distal radius fracture correlates with decreased long-term pain, and increased function and strength.
- Ultrasound (US) may be useful for determining fracture displacement during reduction attempts.
- Our objective was to compare fracture reduction success in US-guided distal radius fracture reduction versus a historical cohort of non-US-guided distal radius fracture reductions.

Methods
Design: Prospective, observational study of patients undergoing US-guided distal radius fracture reduction, compared to a historical cohort without ultrasound.

Setting: Level 1 trauma center ED with an emergency medicine residency program

Patient population: Patients with distal radius fracture were enrolled over a 2-year period.

Measurements
- Fracture characteristics, mechanism of injury, and orthopedic surgeons
- Primary outcome measure: Percentage of successful reductions
- ED physicians were also asked post-procedure, but prior to confirmatory radiographs, to rate the adequacy of fracture reduction
- Historical cohort assembled by random selection of ED patients with isolated distal radius fracture

Results
- 46 patients were enrolled in the US-guided fracture reduction group, and 44 in the non-US-guided control group.
- Fracture characteristics, mechanism of injury, and orthopedic surgeon assessment of pre-reduction difficulty were similar. (Table 1)
- More patients in the US group had undergone a prior unsuccessful reduction attempt (24% vs 2%).
- Fracture reduction success rates were similar between the US-guided and control group (83% and 80%, respectively). (Table 2)
- US had high sensitivity for detecting successful fracture reduction. (Table 3)

Limitations
- Use of a historical control group
- Could not compare need for further closed or open repair
- Unequal groups: US-guided had more patients who had undergone a previous unsuccessful reduction attempt
- Possibility of other unknown differences between groups
- Reduction success measured with subjective, rather than objective, measure
- May not be applicable to geriatric or pediatric populations, or to other fracture sites.

Conclusions
- Patients who underwent US-guided distal radius fracture reduction had the same success rate as non-US-guided reduction, despite having a larger proportion of patients who had undergone previous unsuccessful reduction
- The ED physicians’ sonographic assessment of reduction was highly sensitive for successful radiographic reduction