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Treatment of Distal Radius Fractures in Patients Over 80 Years of Age: Functional Outcomes After Open Reduction and Internal Fixation versus Nonoperative Treatment

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Treatment of Distal Radius Fractures in Patients Over 80 Years of Age

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Introduction

- Studies have shown that approximately 1.5% of ED visits are due to hand and forearm fractures.
- Of the 1.5% of ED visits, 44% are due to radius and ulnar fractures.
- Bone mineral density decline and thus risk of fractures have been observed with increased age of patients.
- Open reduction and internal fixation (ORIF) has been the widely accepted treatment for younger patients with distal radius fractures (DRF).



Introduction

- DRFs in the elderly have historically been managed non-operatively due to increased perceived surgical risk and decreased perceived functional demand.
- Recent studies have demonstrated good functional outcomes in patients over the age of 60 who undergo ORIF for a DRF.
- With increasing life expectancy and functional demands in the aging population surgical treatment of DRFs should be more closely examined.
- Current research has not thoroughly examined operative vs nonoperative treatment of DRFs in patients over the age of 80.

Objectives & Hypothesis

- Research Question
 - The question that we are posing is whether there is a difference in functional outcomes and complications in patient over the age of 80 who manage a DRF surgically vs non-surgically.
- Hypothesis
 - We believe that outcomes of patients above 80 year of age will be better for those whose DRFs are managed surgically vs non- surgically at 1 year of follow up.

Approach & Results

- The study is a retrospective cohort study
- Data collected on 1,328 patients who are 80 years of age or older who were treated for a DRF within the past 10 years by one of 22 Orthopedic Surgeons at Rothman
- The two cohorts are patients who had their DRF managed surgically vs non-surgically
- Outcomes will be measured using ROM (flexion, extension, radial and ulnar deviation, pronation, and supination), Quick Disabilities of the Arm, Shoulder, and Hand (Quick DASH), and visual analog pain scores (VAS)
- Data was collected using Common Procedural Terminology codes for Casting and ORIF from the Rothman database
- Analysis between the two groups are performed using t-tests and Chi-squared tests.
- Multivariate analysis is performed to control for selection bias tied to surgical candidacy
- Statistical significance will be determined using a p value greater than 0.05

Approach & Results

- Total of 695 patients ultimately included
- ROM @ final follow up
 - Wrist flex. 50 degrees op vs 45 non-op
 - No difference with ext, rad dev, uln dev, pro, or sup
- Quick DASH @ 1 year
 - Non-op 45 vs op 26
- VAS pain score and complication rates were similar in both groups

	Functional Outcomes			
	Mean	Operative	Nonoperative	<i>p</i> value
Flexion (degrees)	48.03	50.72	45.35	0.01
Extension (degrees)	51.91	53.98	49.81	0.07
Radial Deviation (degrees)	14.91	14.25	16.00	0.32
Ulnar Deviation (degrees)	23.65	23.10	24.58	0.43
Supination (degrees)	75.27	76.18	74.13	0.33
Pronation (degrees)	80.33	80.84	79.67	0.53
Initial QD scores	60.75	64.97	56.75	0.005
Final QD scores	33.02	25.56	44.69	<0.001
VAS pain	1.50	1.41	1.62	0.55
Complications (%)	12.23	10.55	13.10	0.41

Conclusions

- Our study demonstrates similar findings as existing body of literature extrapolated to the over 80 population
- Wrist flexion in the operative cohort was significantly better which is consistent with Saving et al., Beharrie et al., and Orbay and Fernandez
- Quick DASH finding overall were higher in both groups when compared to Saving et al., and Martinez-Mendez et al. however still showed significant differences between groups.
- A 19 point DASH score difference in this study is well above the 10 point minimal clinical important difference
- ORIF for DRFs in patients over 80 y.o have superior functional outcomes and comparable complication rates as compared to this treated non operatively



Future Directions

- Examine the type of fixation hardware used in ORIF (volar vs dorsal plating)
- Use radiological data to better classify outcomes based on fracture patterns and classifications



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