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Introduction

- Wrist arthritis affects nearly 2,000,000 wrists annually in the United States.
- The two major options for recalcitrant, advanced wrist arthritis include total wrist arthroplasty (TWA) and total wrist fusion (WF).

Objective

- The purpose of this study was to analyze data collected from the Nationwide Inpatient Sample (NIS) regarding TWA versus WF.
- We hypothesized that over a 10 year period utilization rates of TWA have increased.

Methods

- We reviewed temporal trends in the utilization of TWA and WF from 2001 through 2010 using the NIS. The NIS database is the largest all-payer database of hospital discharges in the United States. The database consists of approximately a 20% stratified sample of US hospitals.
- Nationwide Inpatient Sample (NIS) data from 2001 to 2010 were reviewed. Procedures were identified by ICD-9-CM codes 81.73 (TWA) and 81.25 (WF).
- Utilization rates, primary treatment diagnoses, patient demographic and medical comorbidity data, and procedure costs were compared between TWA and WF using χ^2 and student t tests for categorical and continuous variables, respectively.
- Linear regression modeling was used to determine national trends.

	TWA	WF	P value
Mean annual number of procedures	20	73.8	<0.01
Mean patient age	58.3	52	<0.01
Tx Dx: Rheumatoid arthritis	51%	16%	<0.01
Tx Dx: Posttraumatic arthritis	3%	12%	<0.01
Tx Dx: Malunion	3%	12%	<0.01
Deyo comorbidity index	0.97	0.54	<0.01
Mean LOS (days)	2.1	2.3	0.42
Mean hospital charge	\$34055	\$27079	<0.01
Rate of perioperative complications	7%	10%	<0.01

Table 1. Comparison of utilization, patient age, primary treatment diagnoses, comorbidities, LOS, hospital charges, and complications between patients treated with TWA vs WF.



Figure 1. National trends of volume of total wrist arthroplasty (TWA) and wrist fusion (WF) from 2001 to 2010.

Results

- There was a decrease in the number of TWA cases per year ($p<0.05$), while the annual number of WF procedures remained relatively constant ($p=0.13$) (Figure 1).
- Patients with malunion or traumatic arthritis were more likely to have undergone WF (malunion: 12% vs 3%, $p<0.001$; traumatic arthritis: 12% vs 3%, $p<0.001$).
- Rheumatoid patients were more likely to undergo TWA than WF (51% vs 16%, $p<0.001$).
- Patients receiving TWA also tended to be older and female.
- TWA patients also demonstrated a higher comorbidity burden and were more often insured by Medicare. Hospital charges were greater for TWA compared to WF (\$34,055 vs. \$27,079, $p<0.01$).

Conclusions

- Despite improvements in TWA ingrowth strategies, bearing surfaces, and the potential for preservation of wrist movement, WF was performed nearly four times more frequently.
- Overall TWA utilization decreased over the 10 year period despite being utilized more often in patients with underlying comorbidities. WF was associated with a higher risk of complications when compared to TWA during the index hospitalization period.
- Although LOS was similar between the 2 groups, TWA was associated with a higher hospitalization charge.

References:

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