

Relative Value Units Correspond with Lower Reimbursement for Reverse Total Shoulder Arthroplasty for Proximal Humerus Fracture

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INTRODUCTION:

Reverse shoulder arthroplasty (RSA) is now used at an increasing rate for the treatment of proximal humerus fractures. Compared with RSA for alternative indications such as rotator cuff arthropathy, cases for fracture tend to be more complex and correspond with longer mean operative times. However, this procedure is currently categorized under the same Current Procedural Terminology (CPT) code as RSA for all other indications. This study evaluates reimbursement for RSA for proximal humerus fractures compared with RSA for all other indications according to relative value units (RVUs).

METHODS:

Patients who received RSA at a single institution between 2013 and 2023 were identified using CPT codes and stratified according to their diagnostic indication for surgery. The Centers for Medicare & Medicaid Services (CMS) dollar/RVU conversion factors were used to obtain the reimbursement per minute for each procedure. Assumptions of a 10-hour workday and 160 operative days per year were used to calculate daily, monthly, and annual reimbursement. Additionally, two alternative coding methods were evaluated: one where the -22 modifier was applied to all RSA cases for fracture, and one where the CPT code for greater tuberosity fixation was added to the CPT code for primary arthroplasty.

RESULTS:

Three-hundred and seventy patients were identified for analysis. In total, 185 patients received RSA for proximal humerus fracture and the remaining 185 patients received RSA for alternative indications. RSA for fracture corresponded with significantly lower reimbursement per minute ($\$6.33 \pm 1.07$ vs. $\$8.05 \pm 2.02$; $P < 0.001$), in addition to lower reimbursement on a daily, monthly, and annual basis (Table 1). The annual reimbursement difference was $\$179,942.36$. The addition of the CPT code for greater tuberosity fixation resulted in statistically similar reimbursement per-minute ($\$7.84 \pm 2.20$ vs. $\$8.05 \pm 2.02$, $P = 0.330$). However, neither the addition of this CPT code or application of the -22 modifier equalized reimbursement differences on a daily, monthly, or annual basis (Table 2, Table 3).

DISCUSSION AND CONCLUSION:

RSA for proximal humerus fracture corresponds with significantly increased operative time and decreased reimbursement compared to RSA for all other indications. Alternative coding methods, such as utilization of the -22 modifier or the addition of CPT code for greater tuberosity fixation, do not adequately close the reimbursement gap. This suggests that a separate CPT code for RSA performed for fractures is indicated.

Table 1: RSA for Fracture Versus RSA for All Other Indications

Factor	RSA For Fracture (n=185)	RSA for All Other Indications (n=185)	Difference	P Value
Age (yr)	72.7 (7.9)	71.5 (7.9)	-	0.134
Sex (% female)	82%	56%	-	<0.001
BMI	29.5 (6.5)	30.6 (6.9)	-	0.133
RVU	22.13	22.13	-	-
Op Time (min)	132.2 (26.5)	103.2 (29.1)	-	<0.001
RVU/min	0.18 (0.05)	0.23 (0.06)	-	<0.001
Reimbursement/min	\$6.33 (1.77)	\$8.05 (2.02)	\$1.72	<0.001
Reimbursement/case	\$76.73 (13.17)	\$76.73 (13.17)	\$0.00	-
Reimbursement/day	\$3,165.45 (253.65)	\$4,290.09 (730.63)	\$1,124.64	<0.001
Reimbursement/month	\$42,205.97 (3,382)	\$57,201.16 (9,741.78)	\$14,995.20	<0.001
Reimbursement/year	\$506,471.60 (40,583)	\$686,413.95 (116,901)	\$179,942.36	<0.001

Table 2: Addition of Greater Tuberosity Fixation

Factor	RSA For Fracture + Greater Tuberosity Fixation (n=185)	RSA for All Other Indications (n=185)	Difference	P Value
CPT Codes	23472, 23630	23472	-	-
RVUs	27.415	22.13	-	-
RVU/min	0.22 (0.06)	0.23 (0.06)	-	0.344
Reimbursement/min	\$7.84 (2.20)	\$8.05 (2.02)	\$0.21	0.330
Reimbursement/case	\$92.22 (41.99)	\$76.73 (13.17)	\$15.49	<0.001
Reimbursement/day	\$3,914.41 (114.23)	\$4,290.09 (730.63)	\$386.68	<0.001
Reimbursement/month	\$52,285.43 (4,189.67)	\$57,201.16 (9,741.78)	\$4,915.73	<0.001
Reimbursement/year	\$627,425.16 (50,276.07)	\$686,413.95 (116,901)	\$58,988.79	<0.001

23472: primary arthroplasty; 23630: greater tuberosity fixation

Table 3: Addition of -22 Modifier

Factor	RSA For Fracture with -22 Modifier (n=185)	RSA for All Other Indications (n=185)	Difference	P Value
RVU/min	0.18 (0.05)	0.23 (0.06)	-	<0.001
Reimbursement/min	\$7.59 (2.13)	\$8.05 (2.02)	\$0.46	0.034
Reimbursement/case	\$932.07 (198.80)	\$776.73 (13.17)	\$155.34	<0.001
Reimbursement/day	\$3,798.54 (304.38)	\$4,290.09 (730.63)	\$491.55	<0.001
Reimbursement/month	\$50,647.16 (4,058.40)	\$57,201.16 (9,741.78)	\$6,554.00	<0.001
Reimbursement/year	\$607,765.92 (48,790.76)	\$686,413.95 (116,901)	\$78,648.03	<0.001

Application of the -22 modifier is calculated as a 20% increase in base reimbursement