Are Orthopaedic Foot and Ankle Surgeries Undercompensated? An Assessment of Work Relative Value Units Compared to Other Orthopaedic Subspecialty Procedures

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INTRODUCTION:

The fee-for-service model in the United States healthcare system relies on work Relative Value Units (wRVUs), established by the Centers for Medicare and Medicaid Services (CMS). wRVUs are assigned to various clinical activities, including procedures and office visits, serving as a key metric for physician reimbursement and procedural valuation. While the number of wRVUs is reflective of multiple factors, physicians' work such as effort, time, and technical expertise remain the primary determinants. Many orthopaedic foot and ankle (FA) procedures require substantial technical expertise, yet the adequacy of their compensation remains largely unexplored. This study evaluates whether orthopaedic FA surgeries are fairly compensated compared to other orthopaedic procedures.

METHODS:

The National Surgical Quality Improvement Program (NSQIP) database from 2020 to 2022 was utilized for this study. Orthopaedic procedures performed by orthopaedic surgeons were identified using Current Procedural Terminology (CPT) codes. The CMS RVU dollar conversion factor was obtained from the 2025 CMS fee schedule. Identified procedures were categorized into orthopaedic FA group and non-FA group based on CPT codes. Exclusion criteria for this study were (1) cases if they were missing data for wRVU, CPT code, or operative time; (2) cases with a wRVU value less than 1.0; (3) cases with an operative time greater than 300 minutes or less than 10 minutes; (4) cases involving more than one CPT code; (5) cases that were performed fewer than 50 times in one year or fewer than 150 times over three years. All cases involving foot and ankle fractures were categorized under FA. In addition, tibia fracture cases excluding tibia plateau fractures but including pilon fractures, were classified under FA. Except for above-knee amputations, all other amputation cases were also placed under FA. Compensation adequacy for FA procedures was assessed by comparing wRVUs, operative time, wRVU per hour (wRVU/h), and reimbursement rate ($/hour). Additionally, perioperative complications, including mortality, readmission, and reoperation, were analyzed, along with secondary complications such as infections, thromboembolic events, respiratory complications, renal failure, transfusion, cardiac events, and sepsis, to compare procedural risk profiles between the two groups. Furthermore, propensity score matching was conducted from age and sex variables to perform sensitivity analysis with the FA group as a reference. Matched cohorts were constructed by finding patients with the same sex with an age within 1 years from each other. An analysis of covariance including postoperative complications and preoperative comorbidities was performed to adjust for their effect on the valuation of compensation metrics such as operative time, wRVU/hour, and reimbursement rate.

RESULTS:

A total of 19 CPT codes representing 24,469 cases were identified for orthopaedic FA procedures, while 156 CPT codes accounted for 485,598 orthopaedic non-FA cases. Propensity score-matched cohorts included 24,469 patients each in the FA and non-FA groups. In the total cohort, patients in the non-FA group were significantly older: 49.18 vs. 63.87 years, P<.001, and had higher rates of comorbidities such as dyspnea, hypertension, congestive heart failure, COPD, history of immunotherapy, bleeding disorders, and disseminated cancer. In contrast, the FA group had higher ASA classification, and increased rates of comorbidities including diabetes, smoking, ventilator dependence, acute renal failure, dialysis, preoperative transfusion, and preoperative sepsis.

In terms of compensation metrics, the FA group demonstrated significantly longer operative time compared to the non-FA group (96.65 vs. 88.86 minutes, P<.001) but received a lower mean wRVU (11.28 vs. 17.75, P<.001). Additionally, the FA group had markedly lower wRVU/hour (8.87 vs. 16.87, P<.001) and reimbursement rate ($286.94 vs. $545.67 per hour, P<.001). These disparities in compensation persisted even after adjusting preoperative comorbidities and postoperative complication rates, with all metrics, including operative time, wRVU, wRVU/hour, and reimbursement rate, remaining significantly different between the two groups (P<.001).

Regarding primary postoperative outcomes, the non-FA group had significantly higher rates of readmission: 3.83% vs. 4.88%, P<.001, and mortality: 0.48% vs. 0.67%, P<.001. No significant difference in reoperation was noted between the two groups. For secondary outcomes, the non-FA group had significantly higher rates of PE (0.24% vs. 0.36%, P=.002), urinary tract infection (0.63% vs. 0.99%, P<.001), postoperative transfusion (0.88% vs. 2.57%, P<.001), myocardial infarction (0.22% vs. 0.39%, P<.001), and cerebrovascular accident (0.08% vs. 0.14%, P=.017). However, postoperative wound complications (2.54% vs. 1.35%, P<.001) and organ space infections (0.50% vs. 0.41%, P=.023) were significantly more common in the FA group.

DISCUSSION AND CONCLUSION:

Our results show that the current wRVU scale does not adequately compensate for orthopaedic FA procedures. Compared to orthopaedic non-FA procedures, FA procedures have significantly lower wRVU/hour and reimbursement rates ($/hour) despite requiring significantly longer operative time. This trend persisted even after adjusting preoperative

comorbidities and postoperative complication rates, highlighting the need to reevaluate wRVU allocation for orthopaedic FA procedures more accurately.

Table 3: Compensation outcomes in the Total Cohorts and Propensity Score Matched cohorts

	FA*	Other	*P* value	^Adjusted *P* value	^^Adjusted *P* value
Total cohorts					
Number of CPT codes	19	156			
Operative time (min), mean ± SD	96.65±41.79	88.86±48.29	<.001	0.042	<.001
wRVU	11.28±2.53	17.75±4.83	<.001	<0.001	<.001
wRVU/hour, mean ± SD	8.87±6.37	16.87±13.87	<.001	<0.001	<.001
Reimbursement rate ($/hour), mean ± SD	286.94±205.98	545.67±448.70	<.001	<0.001	<.001
Propensity Score Matched cohorts					
Number of CPT codes	19	156			
Operative time (min), mean ± SD	96.65±41.79	87.01±45.75	<.001	<.001	<.001
wRVU	11.28±2.53	14.14±6.27	<.001	<.001	<.001
wRVU/hour, mean ± SD	8.87±6.37	14.11±14.21	<.001	<.001	<.001
Reimbursement rate ($/hour), mean ± SD	286.94±205.98	456.55±459.62	<.001	<.001	<.001

*FA: Foot & Ankle

^ Adjusted *P* value after analysis of covariance to account for the effect of complication rate

^^ Adjusted *P* value after analysis of covariance to account for the effect of preoperative morbidities