Prospective Analysis of Payment per Hour in Head and Neck Reconstruction: Fiscally Feasible or Futile?

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Background: The authors assess the fiscal viability of complex head and neck reconstructive surgery by evaluating its financial reimbursement in the setting of resources used.
Methods: The authors prospectively assessed provider reimbursement for consecutive patients undergoing head and neck reconstruction. Total care time was determined by adding 15 minutes to the operative time for each postoperative hospital day and each postoperative follow-up appointment within the 90-day global period. Physician reimbursement was divided by total care time hours to determine an hourly rate of reimbursement. A control group of patients undergoing carpal tunnel release was evaluated using the same methods described.
Results: A total of 50 patients met the inclusion criteria for study. The payer was Medicaid for nine patients (18 percent), Medicare for 19 patients (38 percent), and commercial for 22 patients (44 percent). The average provider revenue per case was $3241.01 ± $2500.65. For all patients, the mean operative time was 10.6 ± 3.87 hours and the mean number of postoperative hospital days was 15.1 ± 8.06. The mean reimbursement per total care time hour was $254 ± $199.87. Statistical analysis demonstrated difference in reimbursement per total care time hour when grouped by insurance type (p = 0.002) or flap type (p = 0.033). Of the 50 most recent patients to undergo carpal tunnel release, the average revenue per case was $785.27.
Conclusion: Total care time analysis demonstrates that physician reimbursement is not commensurate with resources used for complex head and neck reconstructive surgery. (*Plast. Reconstr. Surg.* 137: 980, 2016.)

Reconstruction of head and neck defects is complex and resource intensive.[1,2] However, the benefit of these procedures for patients suffering from postoncologic or posttraumatic causes is without question. In addition, microsurgical reconstruction has become standard in the treatment of many of these challenging cases.[3] Use of free tissue transfer or complex pedicled options often requires technically proficient teams in specialized centers.

Head and neck reconstruction has been demonstrated to provide substantial financial benefit for hospitals, with a favorable contribution margin.[1,2] However, when considering provider reimbursement, these complex cases have the potential to represent a financial loss for surgeons.[1] As a result, many surgeons choose not to include complex head and neck reconstruction in their practice.[2] This environment of mismatched reimbursement puts patients in a vulnerable position as many qualified surgeons move away from these cases, and caseloads shift toward regional academic centers.[4]

Academic plastic surgery departments may be better suited to handle the negative financial

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impacts of these cases; however, a study of complex breast reconstruction in an academic practice demonstrated similar effects on physician reimbursement.[5] This has consequences beyond patient care and the associated shortage of centers that provide this reconstruction. As the number of surgeons in a region that perform reconstruction of the head and neck declines, patients are forced to seek treatment elsewhere. As a result, the revenue that those procedures bring the hospital will start to decline as well.[1]

Physician reimbursement is based on the relative value unit, part of a system that aims to quantify the time, skill, mental and physical effort, judgment, and stress involved in the procedure.[6] One important part of a relative value unit is the global period—the length of time the physician's reimbursement covers. For surgical procedures with a 90-day global period, the relative value unit and resulting payment reflect the procedure, the postoperative hospital stay, and postoperative office visits for up to 90 days. Thus, a long, complicated procedure with intensive and lengthy follow-up should be reimbursed more favorably than a short, relatively simple one if the relative value units are accurately set. The value of each relative value unit is determined and updated by physician surveys. Committees appointed by each specialty administer and interpret these surveys and make necessary changes.[7] Even with this system, some argue that relative value units correlate poorly with surgeon effort.[8]

The reimbursement of physicians and hospitals performing reconstruction of the head and neck has been evaluated in recent years.[1,2] However, these studies have limitations in only evaluating the relatively low compensation for these procedures. The authors set out to demonstrate how provider reimbursement relates to the operative time, hospital length of stay, and postoperative outpatient care. These measures are indispensable for a sound fiscal analysis, as all of these are good measure of resource use and are reflected in the lump physician relative value unit and reimbursement (as part of the global period). In addition, the authors hypothesize that a disparity exists in the average reimbursement depending on insurance type. Including all of these elements in the analysis will provide valuable information about the feasibility of head and neck reconstruction as the future of modern health care systems and physician reimbursement continue to evolve.

PATIENTS AND METHODS

The authors prospectively assessed financial reimbursement with clinical outcome of all patients undergoing major reconstructive surgery for upper aerodigestive defects. These patients underwent either free flap or pedicled pectoralis major muscle flap head and neck reconstruction. All reconstructions were performed by the same surgeons (N.T. or A.K.K.) at an academic teaching center with resident physicians. There were no physician extenders involved in the care of the patients.

The prospective study period was defined as 1 year. In addition, a control group of patients undergoing carpal tunnel release was evaluated using the same methods described below.

The age, sex, head and neck defect site, and operative procedure of all patients were recorded. The insurance status was classified as either Medicaid, managed Medicaid, Medicare, or commercial. Billed *International Classification of Diseases, 9th Revision, Clinical Modification* and Current Procedural Terminology codes were documented for all study participants. Exclusion factors included any patients without insurance or age younger than 18 years.

Outcome measures included physician reimbursement, operative time, hospital length of stay, and number of postoperative office visits. Physician reimbursement was defined as the cash collections received for the operation performed in aggregate (sum of all Current Procedural Terminology codes).

Physician reimbursement was analyzed by insurance and flap type. In addition, reimbursement was also assessed against operative time, hospital length of stay, and number of postoperative outpatient visits. Total care time was determined by adding 15 minutes to the operative time for each postoperative hospital day and each postoperative follow-up appointment within the 90-day global period. Physician reimbursement was divided by total care time hours to determine an hourly rate of reimbursement.

RESULTS

A total of 50 patients met the inclusion criteria for the head and neck group. The payer was Medicaid or managed Medicaid for nine patients (18 percent), Medicare for 19 patients (38 percent), and commercial for 22 patients (44 percent). The majority of patients received a free flap (64 percent).

The average provider revenue per case was $3241.01 ± $2500.65. For all patients, the mean

operative time was 10.6 ± 3.87 hours and the mean number of postoperative hospital days was 15.1 ± 8.06. The mean reimbursement per total care time hour was $254 ± $199.87.

By payer type, the mean revenue per total care time hour was $153 ± $93.92 for Medicaid, $174 ± $87.14 for Medicare, and $367 ± $244.40 for commercial. When grouped by type of flap, pedicled flaps were reimbursed at a rate of $179 ± $114.95 and free flaps at $299 ± $228.79 per total care time hour. Statistical analysis in SPSS (SPSS, Inc., Chicago, Ill.) revealed skewed distributions and thus the nonparametric Kruskal-Wallis test was used. A statistically significant difference was found in reimbursement per total care time hour when grouped by insurance type ($p = 0.002$) or flap type ($p = 0.033$).

The carpal tunnel release group included 50 consecutive patients to undergo this procedure. The payer was Medicaid or managed Medicaid for 10 patients (20 percent), Medicare for 13 patients (26 percent), and commercial for 27 patients (54 percent). The overall provider revenue per case was $785.27. For all patients in this group, the average operative time was 23 minutes and the mean number of postoperative hospital days was 0. The mean number of postoperative follow-up visits was 3.2. When grouped by insurance type and evaluated for reimbursement per total care time hour, Medicaid and managed Medicaid was reimbursed at a rate of $357 per hour, Medicare at $372 per hour, and commercial at $918 per hour. The data are compared in Figures 1 and 2.

DISCUSSION

It is well recognized that health care costs are rising. There is an appropriate level of concern and pressure to reduce or slow this rise in both government and industry.[9] Physician reimbursement is one of the many areas that is being scrutinized for potential savings. Understandably, physicians in many fields believe that the reductions in reimbursement are detrimental to the overall financial feasibility of their profession. Responding to the concern that reimbursements are trending toward Medicare rates, Zuckerman et al. demonstrated that an orthopedic surgery practice is not financially sustainable if Medicare is the sole payer for total joint arthroplasty.[10] Contributing to this dissatisfaction is the recognition that although physician reimbursement for these procedures has gone down, hospital revenue has gone up.[11] Increasingly, physicians now must consider the payer type of the patients in their practice. As part of this decision, surgeons must consider whether or not it is acceptable to decline select patients. Some argue that declining these patients is not ethical, even if it results in great difficulty sustaining a financially sound practice.[12–14]

Decisions about accepting insurance assume the surgeon is performing procedures reimbursed by insurance. The plastic surgeon possesses a somewhat unique option of performing procedures outside of the insurance arena, whereby patients pay directly. In this context, the opportunity cost of providing complex head and neck reconstruction is substantial, as the surgeon forfeits the additional revenue that primary cosmetic procedures provide.

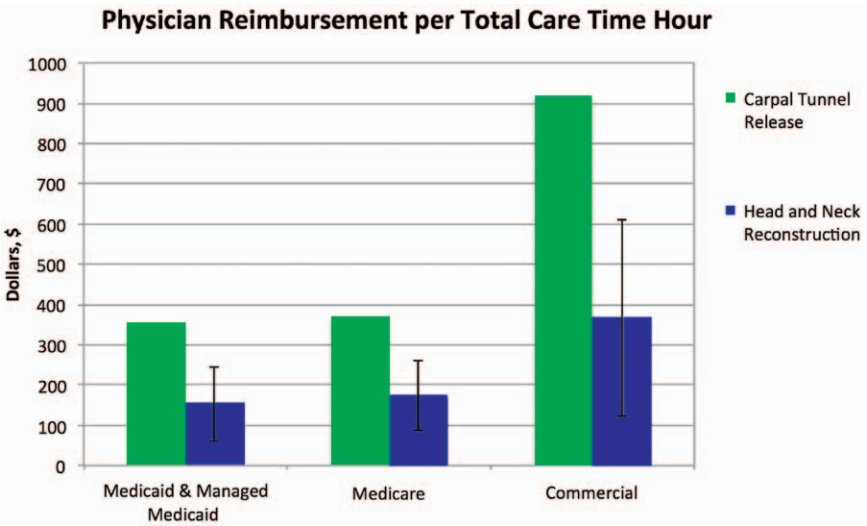

Fig. 1. The total care time hourly reimbursement is demonstrated to be less for head and neck reconstruction than for the control group of carpal tunnel release when compared across insurance types. *Bars* = SD.

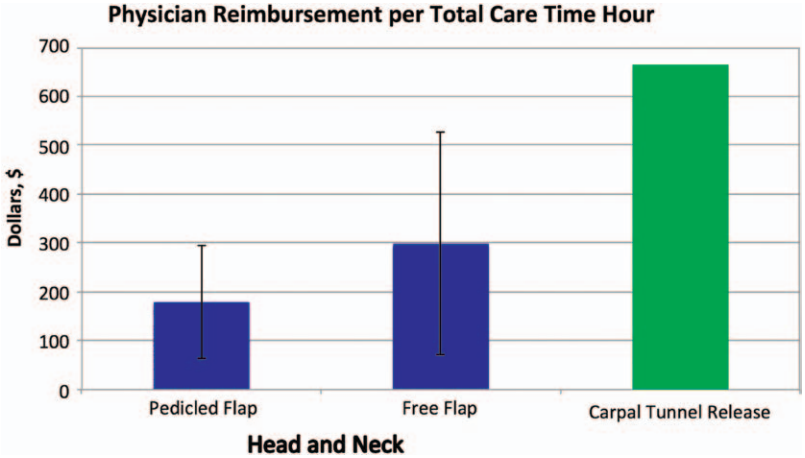

Fig. 2. The total care time hourly reimbursement is demonstrated to be less for both pedicled and free flap head and neck reconstruction than for the control group of carpal tunnel release averaged across all insurance types. *Bars* = SD.

One would think that there must be other benefits to the surgeon to account for this opportunity cost. Indeed, survey data show that personal and patient gratification are the most prominent factors that motivate microsurgeons in general. However, numerous stressors also exist, including the highly technical nature of the case and the intensive perioperative resources required for these patients. This workload can reduce personal time and affect relationships. Ultimately, the highest stressor revealed in a survey was the worry-over-work–to-reimbursement ratio.[15] Perhaps this worry contributed to survey data that showed primarily cosmetic or mixed practice types were both independent factors associated with greater career satisfaction compared with reconstructive practices.[16]

The data presented in this study substantiate the concern over reimbursement ratio. Building on previous work by Martin et al.[6] and Chatterjee et al.,[17] the authors have objectively quantified reimbursement through the lens of total hours dedicated to the care of the patient. Doing so has revealed some apparent inefficiency and inequity in the current reimbursement model.

The results presented above demonstrate that performing a carpal tunnel release on a Medicaid- or Medicare-insured patient is nearly equivalent, in reimbursement per hour, to performing a complex head and neck reconstruction on a commercially insured patient. This similarity is hard to justify given the stress, technical training, and skill required for head and neck reconstruction, especially when the same procedure is so fiscally positive for hospitals. This study objectively corroborated that the opportunity cost to perform complex head and neck reconstruction (mean operative time, 10.6 hours; mean length of stay, 15.1 days) far exceeds that in carpal tunnel surgery (average operative time, 23 minutes; average length of stay, 0 days), as the reimbursement was not commensurate with this increased level of resource intensity.

The reimbursement to hospitals and institutions performing complex head and neck reconstruction has been demonstrated to provide substantial financial benefit for hospitals with a favorable contribution margin.[1,2] As demonstrated in this study, the individual provider revenue, however, is not similarly fiscally favorable. This discordance between provider and hospital reimbursement has been shared by other specialties, including orthopedic surgery.[10,11]

If the current paradigm for head and neck reconstructive surgical reimbursement is to continue as is, incorporating this clinical discipline may not be sustainable in many surgeons' practices. The data presented in this article should support the notion that hospitals and institutions should work with surgeons to find collaborative ways for them to continue offering complex head and neck reconstructive surgery. Some examples of hospital support include hospitals working with insurance companies to negotiate higher provider rates for surgeons, potential subsidies of surgeon practices, or providing assistance in the form of physician extenders. Without collaboration and support, institutions and hospitals may find a dwindling number of these cases as an increasing number of surgeons stop participating in the care of these patients.

There are inherent limitations in this study. The study could have been stronger with a larger

sample size and examination of the actual hospital reimbursement for these cases. In addition, the authors assigned a time value of 15 minutes to each postoperative hospital day and to each outpatient follow-up visit. In previous studies using this model, durations of 15 and 30 minutes have been assigned to account for this postoperative care.[6,17] The authors determined that, although arbitrary, 15 minutes was a reasonable average time for these encounters and that including them was crucial to the model. Finally, there is bias in comparing two very different procedures with their own time and cost variations. However, this simple study model easily demonstrates that surgeon reimbursement of complex head and neck reconstruction is relatively undervalued.

The resulting situation forces surgeons to evaluate whether practicing in a field they are passionate about or technically adept at is financially sound. This should sound an alarm to the health care community that a separate payment algorithm should be seriously explored to preempt the logical shortage of reconstructive surgeons available for these complex and necessary procedures that may ensue if the current paradigm continues.

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