

Economic Impact and Use of Head & Neck Surgeon-Performed Ultrasound in a Tertiary Care Clinic

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Abstract

Objective

Point-of-care ultrasound (US) is an invaluable tool in otolaryngology-head and neck (H&N) surgery due to its low cost, absence of radiation, and ability to facilitate procedures such as biopsy and therapeutic injections. While US is most commonly used for thyroid evaluation, it also has diagnostic and therapeutic applications in salivary disorders, cervical adenopathy, and other neck masses. Despite its utility, relatively few otolaryngologists regularly perform H&N US. We review the clinical and financial impact of point-of-care US within a tertiary H&N surgical practice.

Study Design

Retrospective review.

Setting

Single tertiary care H&N oncologic clinic.

Methods

Billing records from three surgeons at a single institute were reviewed for US procedures between July 1, 2019, and April 4, 2023. Visit type, diagnosis codes, and procedural data were de-identified, categorized, and analyzed.

Results

A total of 1,776 encounters representing 2,023 procedures were identified. Diagnostic US of H&N tissues was most common (n=1,594; 78.8%), followed by US-guided fine needle aspiration (FNA) (n=225; 11.1%). Thyroid disease was the most frequent indication (59.9%), followed by H&N mass (11.9%). Notably, 32.8% of ultrasounds occurred at the initial patient visit. The average net profit per encounter was \$294.30 (median \$247.88). Reimbursement was highest with Managed Medicaid (\$311 average) and lowest with the local county care plan (\$270). Average time from billing to payment was 60.9 days.

Conclusion

Point-of-care US provides substantial diagnostic and procedural utility across a wide array of H&N pathologies and is cost-effective for both healthcare systems and specialty practices.

Introduction

- Surgeon-performed Ultrasound (SUS) has a variety of applications in otolaryngology head and neck clinics
- SUS can guide clinical decision making, found to alter operative management in 45% of patients with thyroid cancer¹
- Ultrasound underused by otolaryngologists: in 2019 only 2.1% of head and neck diagnostic ultrasounds were performed by otolaryngologists²
- Objectives
 - Review the clinical applications and financial impacts of surgeon-performed ultrasound within a tertiary head and neck surgical practice

Methods and Materials

- Data for US appointments from our Department of Otolaryngology Head and Neck surgery was collected from July 1, 2019 to April 4, 2023.
- Patients were included based on CPT codes
 - Fine Needle Aspiration biopsy procedures
 - Ultrasound exam of the head and neck
 - Ultrasound guidance procedures
- Due to the large number of ICD codes, diagnosis codes were analyzed in broader categories (e.g. "endocrine" includes thyroid and parathyroid pathologies)
- Descriptive analysis was conducted using Microsoft Excel on the reimbursement, indications, and visit types

Results

Data collected

- 1729 unique patient encounters
- 2023 procedures
- 141 distinct codes
- Most common procedure: Ultrasound exam of the head and neck
- Most common indication for imaging: diagnosis of endocrine pathologies
- 32.8% of US procedures were performed at the initial patient visit
- 48.0% of Fine Needle Aspirations were performed at the initial patient visit
- 18.5% of Core Needle Biopsies Aspirations were performed at the initial patient visit
- Net profit \$502,950
- Average net payment \$294.37 per encounter
 - Highest reimbursement by Managed Medicaid
 - Lowest reimbursement by Hillsborough County Health Care Plan, a managed care plan in Hillsborough County, Florida for residents with limited income who do not qualify for Medicare or Medicaid

Table 1. Number of Encounters by Diagnosis Category

Diagnosis Category	Number of Codes Included	Number of Encounters	Percentage
Endocrine (Thyroid and Parathyroid)	33	1145	66.22
Head and Neck Mass	36	212	12.26
Salivary Gland	10	161	9.31
Lymph Nodes	9	137	7.93
Other	48	74	4.28
Total	136	1729	100.00

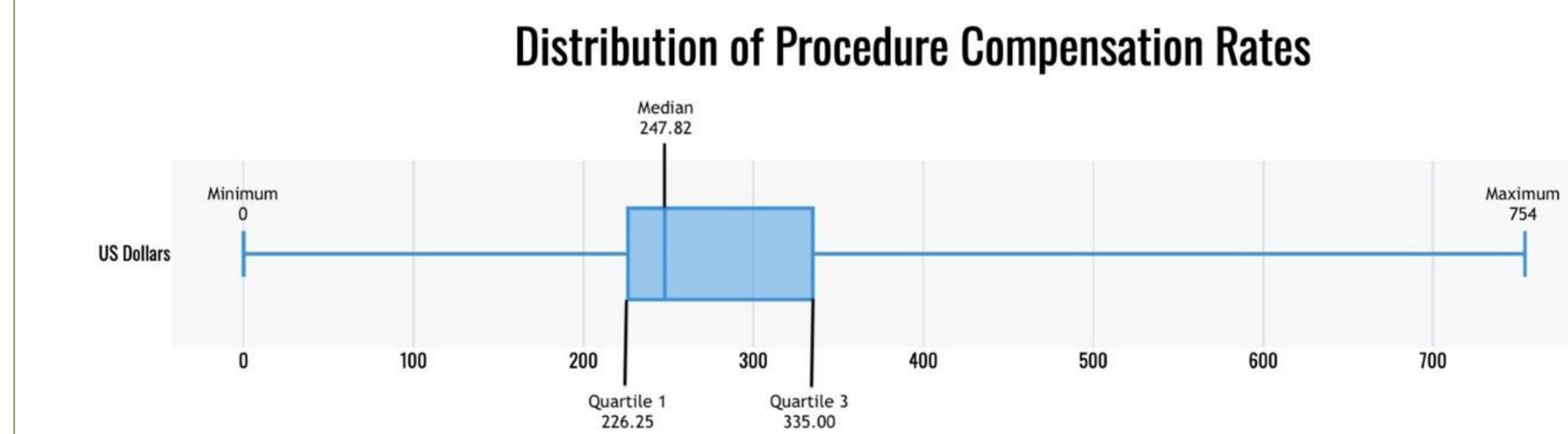
Table 2. Average Reimbursement by Insurance Type

Insurance Type	Percentage of Visits	Average Net Payment (\$)
COMMERCIAL INSURANCE	59.98%	283.96
MANAGED MEDICARE	15.62%	296.81
MANAGED MEDICAID	12.90%	313.67
VETERANS AFFAIRS	3.76%	280.85
MEDICARE	3.30%	301.13
MEDICAID	2.02%	309.79
SELF PAY	1.16%	304.84
COUNTY	0.98%	270.33
OTHER	0.29%	287.99
Total	100%	294.37

Table 3. Reimbursement by Encounter Procedures

Procedure(s)	Total	Average charge	Average Payment
US-guided biopsy	138	419.62	269.07
US-guided biopsy + Diagnostic US	235	675.02	468.66
Diagnostic US	1356	363.11	262.30

Figure 1. Box plot distribution of surgeon performed ultrasound compensation rates (\$)



Discussion

- Surgeon performed ultrasound has a wide range of applications in head and neck surgery.
- Surgeon performed ultrasound also gives direct information to the surgeon, which can guide clinical earlier decision making and planning.
- A significant portion of ultrasound procedures were performed at initial patient visits, decreasing the number of patient visits and time to diagnosis and management.
- Ultrasound is economically affordable, with low variability overall in reimbursement between commercial insurance vs Medicare and Medicaid, making this equally available to patients.

Conclusions

- SUS is a highly useful and cost-effective tool underutilized in head and neck clinics.
- SUS increases value to patients by decreasing number of visits and time to management.
- Appropriate training and familiarity with US is crucial for otolaryngologists.

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