

Expanded Use of Telemedicine for Thyroid and Parathyroid Surgery in the COVID-19 Era and Beyond



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OBJECTIVE

The objective of this study was to compare the safety and efficacy of telemedicine with in-person visits in patients undergoing thyroid and parathyroid surgery.

BACKGROUND

The COVID-19 pandemic has greatly expanded the use of telemedicine in healthcare. Surgical thyroid and parathyroid diseases are uniquely suited for being amenable to comprehensive telemedicine. However, there is a lack of research on the utilization of telemedicine in the preoperative assessment of these patients.

MATERIALS AND METHODS

This is a prospective cohort study of patients who underwent thyroid and parathyroid surgery with head and neck surgeons at a tertiary care academic center in a COVID-19 hotspot from March 2020 to September 2020. Patients were divided into a telemedicine cohort, in which pre- and postoperative care was exclusively conducted through telemedicine, and a conventional cohort, in which at least a portion of the clinical care was in-person. Clinical data were collected for demographic information, preoperative work up, disease factors, and outcome measures.

RESULTS

Of 94 patients enrolled, 24 were in the telemedicine cohort and 70 in the conventional cohort (Table 1). There were no differences between the two cohorts in duration of surgery, postoperative length of stay, or postoperative complications. (Table 2). Sixty patients were preoperatively seen in-person, 28 via telemedicine, and 6 had their preoperative visit

TABLE 1. Patient demographics, characteristics, comorbidities, and surgeries.

(Values indicate number of patients and percentage of study population unless otherwise stated)

Variable	All Patients (n=94)	Conventional (n=70)	Telemedicine (n=24)	p value
Age, mean (SD)	51.5 (17.8)	53.6 (18.1)	45.2 (15.4)	0.04*
Sex				
Male	27 (28.7)	22 (31.4)	5 (20.8)	0.44
Female	67 (71.3)	48 (68.6)	19 (79.2)	0.44
Race				
White	37 (39.4)	28 (40.0)	9 (37.5)	1.0
Hispanic	25 (26.6)	16 (22.9)	9 (27.5)	0.19
Black	1 (1.1)	1 (1.4)	0	1.0
Asian	11 (11.7)	7 (10.0)	4 (16.7)	0.46
Other	20 (21.3)	18 (25.7)	2 (8.3)	0.09
Insurance Status				
Private	54 (57.4)	39 (55.7)	15 (62.5)	0.64
Public	38 (40.4)	29 (41.4)	9 (37.5)	0.81
Uninsured	2 (2.1)	2 (2.9)	0	1.0
Pre-Op Diagnosis				
Compressive Goiter	14 (14.9)	11 (15.7)	3 (12.5)	1.0
Indeterminate Nodule(s)	15 (16.0)	14 (20.0)	2 (8.3)	0.23
Thyroid Cancer	38 (40.4)	30 (42.9)	8 (33.3)	0.48
Parathyroid Disease	29 (39.2)	17 (24.3)	12 (50.0)	0.02*
Imaging				
Within Institution	63 (67.0)	51 (72.9)	12 (50)	0.05*
Outside Institution	27 (28.7)	17 (24.3)	10 (41.7)	0.12
Laryngeal Exam				
Scope	45 (47.9)	42 (60.0)	3 (12.5)	<0.001*
Comorbidities				
Any Comorbidity	48 (51.1)	40 (57.1)	8 (33.3)	0.06
HTN	32 (34.0)	30 (42.9)	2 (8.3)	<0.01*
Diabetes I or II	16 (17.0)	12 (17.1)	4 (16.7)	1.0
Non-H&N Malignancy	5 (5.3)	5 (7.1)	0	0.32
Liver Failure	4 (4.3)	3 (4.3)	1 (4.2)	1.0
ESRD	8 (8.5)	5 (7.1)	3 (12.5)	0.42
Other	14 (14.9)	14 (20.0)	0	0.02*
Procedure				
Thyroid Lobectomy	18 (19.2)	13 (18.6)	5 (20.8)	1.0
Total Thyroidectomy	10 (10.6)	10 (14.3)	0	0.06
TT + Neck Dissection	26 (27.7)	20 (28.6)	6 (25.0)	0.80
Completion Thyroidectomy	15 (16.0)	12 (17.1)	3 (12.5)	0.75
Parathyroidectomy	28 (29.8)	17 (24.3)	11 (45.8)	0.07
Revision Surgery	21 (22.3)	17 (24.3)	4 (16.7)	0.57
Path Diagnosis				
Thyroid Cancer	48 (51.1)	38 (54.3)	10 (41.7)	0.35
Benign Goiter	17 (18.1)	14 (20.0)	3 (12.5)	0.75
Toxic Nodule	1 (1.1)	1 (1.4)	0	1.0
Parathyroid Disease	27 (28.7)	16 (22.9)	11 (45.8)	0.04*

Abbreviations: SD, Standard deviation; Pre-op, Preoperative; HTN, Hypertension; H&N, Head and neck; ESRD, End-stage renal disease; TT, Total thyroidectomy; Path, Pathologic.

*Indicates statistical significance p<0.05

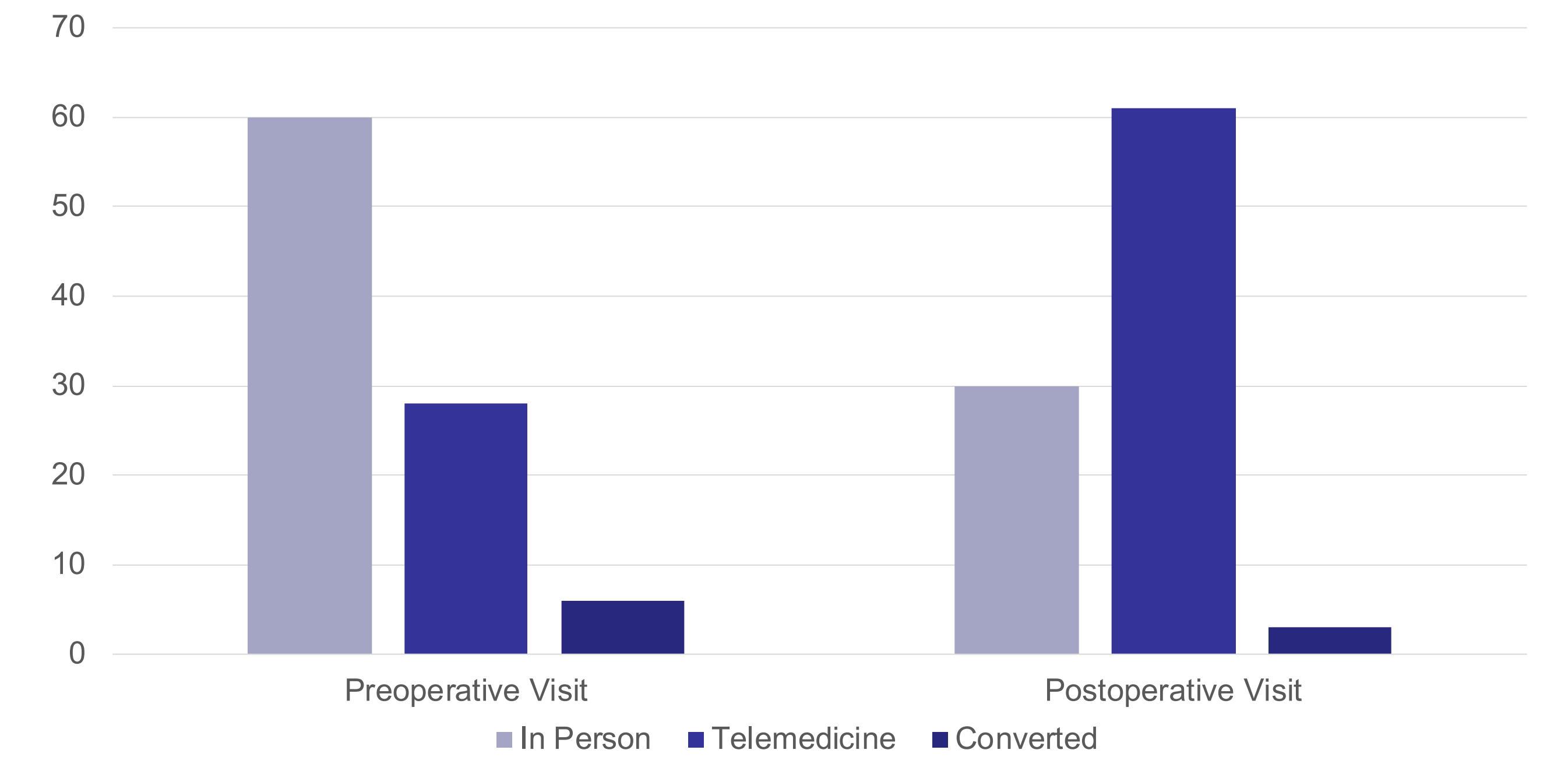
TABLE 2. Summary of surgical metrics and postoperative complications between cohorts.

(Values indicate number of patients and percentage of study population unless otherwise stated)

Variable	All Participants (n=94)	Conventional (n=70)	Telemedicine (n=24)
Intraoperative Blood Loss (mL), mean (SD)	30.3 (49.6)	35.8 (56.1)	16.0 (19.2)
Surgery Duration (min), mean (SD)	105.1 (45.1)	106.5 (46.7)	101.1 (39.6)
Length of Stay (days), mean (SD)	1.2 (2.0)	1.3 (1.9)	1.1 (2.2)
Postoperative Complication, any	8 (8.5)	7 (10.0)	1 (4.2)
Persistent Hypocalcemia	1 (1.1)	1 (1.4)	0
Permanent vocal fold paralysis/ RLN Transection	0	0	0
Vocal fold paresis	3 (3.2)	3 (4.2)	0
Transient dysphonia	4 (4.3)	3 (4.2)	1 (4.2)
Swallow Changes	0	0	0
Post-op Infection (e.g. UTI, PNA)	0	0	0
General Medical Complication	0	0	0
Readmission	0	0	0

Abbreviations: mL, milliliters; SD, Standard deviation; min, minutes; RLN, Recurrent laryngeal nerve; Post-op, Postoperative; UTI, Urinary tract infection; PNA, pneumonia.

Figure 1: Dispositions of Pre- and Postoperative Visits



converted from telemedicine to in-person. Among postoperative visits, 30 patients were seen in-person, 61 via telemedicine, and 3 had their postoperative visit converted. (Figure 1). Preoperatively, two patients were converted to in-person evaluation for substernal disease, two for vocal complaints, and one for high-risk thyroid cancer, for a total of five conversions. Three patients were postoperatively converted to in-person evaluations: two for vocal complaints and one for neck swelling (Table 3).

TABLE 3. Clinical Reasons for Conversion from Telemedicine to In-Person by Surgeon

	No.
Preoperative Conversions	5
Substernal Goiter	2
Vocal Complaints	2
High-Risk Cancer	1
Postoperative Conversions	3
Vocal Complaints	2
Neck Swelling	1

CONCLUSION

With careful selection, patients undergoing thyroid and parathyroid surgery may be safely cared for using comprehensive remote care via telemedicine including both consultation and postoperative visits.

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