Safety of day-case thyroid surgery in the Egyptian population

Sameh Mikhail[a], Mohamed A. Hanafy[a], Ahmed A. Mohsen[b], Victor Farouk[c], Ahmed M. Hassan[a]

[a]Department of General Surgery, Faculty of Medicine, Cairo University, [b]National Research Centre, [c]Department of Anaesthesia, Faculty of Medicine, Cairo University, Cairo, Egypt

Correspondence to Sameh Mikhail, MD, FRCS, Department of General Surgery, Faculty of Medicine, Cairo University, Cairo, Egypt.
e-mail: samehmikhail@kasralainy.edu.eg

Received: 30 November 2021
Revised: 10 January 2022
Accepted: 18 January 2022
Published: 10 October 2022

The Egyptian Journal of Surgery 2022, 41:387–391

Background
Day-case thyroid surgery is practiced in some centers mainly in the United States. Potential life-threatening complications make surgeons apprehensive. Data published mainly from the American centers suggest that the approach is clearly feasible and the outcomes are encouraging.
Patients and methods
The study is a case series that was conducted on 75 participants who were indicated for thyroid surgery. Data were collected prospectively at Cairo University Hospitals from June 2018 to February 2019. Patients, fulfilling inclusion criteria, had their surgery and were discharged on the same day, only if the discharge criteria were met.
Results
Ten (13%) out of 75 patients fulfilling the discharge criteria refused to leave the hospital due to anxiety. Four patients were not eligible for the same-day discharge due to operative complications. 61 patients (81%) were patients were discharged safely and were contacted the next day for follow-up. Around 20% of those who were safely discharged on the day of surgery were not satisfied by the service.
Conclusion
With proper patient selection, day-case thyroidectomy is safe and applicable in the Egyptian health service. Awareness campaigns, supporting day-case surgery, are needed to increase public acceptance.

Keywords:
day-case surgery, day-case thyroidectomy, thyroidectomy

Egyptian J Surgery 2022, 41:387–391

1110-1121

Introduction

Over the last few decades rising numbers of surgical operations have been carried out on an outpatient basis. In 2000, the National Health Service in England set the target of achieving a level of at least 75% day-case surgeries for all elective procedures [1]. In 2001, the British Association of Day Surgery decided to include thyroidectomy in the group of operations that are legible for this policy. Despite the passage of years since this decision, same-day thyroidectomy has been applied by a minority of British centers [2].

During periods of economic pressure on health-care systems, hospital management may legitimately question why patients undergoing thyroidectomy cannot be discharged on the day of their surgery to improve cost-effectiveness [3].

Most of the evidence supporting day-case thyroidectomy come from North America, where data suggest that the approach is clearly feasible and the outcomes are encouraging. In addition to the complications that may follow any general anesthetic surgical procedure, thyroidectomy is associated with three specific postoperative risks: hypoparathyroidism, recurrent laryngeal nerve (RLN) palsy, and postoperative hemorrhage. Only recently with the publication of national endocrine surgical registries has the true incidence of post-thyroidectomy complications become clearer [4].

Permanent RLN paralysis occurs after 1–2% of thyroidectomies and is seven times more common following reoperations. Airway-compromising bilateral nerve injury is rare (0–2%) and is apparent immediately after surgery. Postoperative hypocalcemia occurs in up to sixth of cases, but the risk of clinically significant hypocalcemia is much lower, and the condition is treatable and rarely life-threatening if appropriately managed. Furthermore, there are accurate predictors of high risk for hypocalcemia, which, if available and employed appropriately, allow prevention or timely intervention with prophylactic or therapeutic calcium and vitamin D supplementation [5].

The third potential complication is postoperative airway-compromising hemorrhage. This makes thyroid surgery unique among the list of approved day-case operations in that hypoxic brain injury or death may result within minutes rather than hours without prompt intervention. It occurs after 0.9–2.1% of all thyroidectomies. A quarter of these patients require immediate life-saving neck decompression and 0.3% may require a tracheostomy. Mortality from inpatient post-thyroidectomy bleeding is unknown, but the 30-day mortality rate after thyroid surgery in the United Kingdom is at least one in 50 011, equivalent to a minimum of 20 deaths per annum. It is a reasonable guess that a percentage of these mortalities are caused by postoperative bleeding [6]. The key question is whether discharging patients home a few hours after thyroidectomy will increase the risk of death, or whether patients at risk of bleeding can be identified and excluded from the day-case pathway. Certain situations, such as thyrotoxicosis, concomitant lateral neck dissection, retrosternal goiter, and recurrent disease, are unsuitable for short-stay surgery let alone same-day discharge. Present evidence indicates that, beyond experienced clinical judgement, reliable criteria to risk stratify patients for post-thyroidectomy bleeding remain elusive [7].

Patients and methods

The study is a case series one that was conducted on 75 participants who were indicated for total or hemithyroidectomies. Data were collected prospectively at Cairo University Hospitals from June 2018 to February 2019. The study proposal was approved by the Research Ethics Committee of the Faculty of Medicine at Cairo University in April 2018.

Inclusion criteria:

(1) Adults (16–75 years).
(2) Euthyroid patients.
(3) Benign thyroid lesions.
(4) Uncomplicated thyroidectomy.

Exclusion criteria:

(1) Airway problems.
(2) Chronic medical diseases.
(3) Patients who are living outside Cairo.
(4) Previous neck surgery.
(5) Retrosternal goiters.
(6) Concomitant lateral neck dissection.
(7) Vulnerable groups (children, pregnant women, prisoners, and mentally disabled persons).

Patients who presented to Cairo University Hospital (Kasr Al Ainy) and fulfilled the inclusion criteria were identified. The nature of research was explained and preoperative workup started. Patients were assured that they can change their minds, if they felt uncomfortable at any stage. Date of surgery was set and exchange of contact details was done.

Preoperative outpatient clinic visit:

(1) Informed written consent for participation in the research.
(2) Routine laboratory tests including coagulation profile.
(3) Thyroid function tests.
(4) Serum calcium level.
(5) Laryngoscopy.
(6) ECG.

Admission day

Patients were instructed to come to the ward at 7 a.m. on the same day of the operation. Day-case thyroidectomies were the first cases in the operation lists. After admission, consent paper, medical data, and laboratory test results were revised. Preoperative vital signs were documented.

Intraoperative

Any patient with an eventful operation (e.g. unusual bleeding, suspected nerve injury, or anesthetic problem) was excluded from the study.

Routine examination of vocal cord mobility by the end of operation was done.

Postoperative

Patients were transferred to the ward for close observation for 6–8 h. Patients were assessed before discharge for the following:

(1) Full recovery from anesthesia.
(2) Pain severity.
(3) Airway compromise, hoarseness of voice, and wound hematoma.

All patients who underwent total thyroidectomy received empirical oral calcium and vitamin D replacement on discharge. Those with suction drains were instructed to visit a local doctor or come back for drain removal after 48 h. They received a discharge card including the medications, warning signs, and the on-call surgeon's telephone number in case of emergency. Patients were instructed to come to the ward directly for any of the listed problems. They were asked to attend one outpatient clinic visit for follow-up to receive their

histopathology result. During this visit, patients got instructions regarding hormone replacement.

Discharge criteria:

(1) Vitally stable.
(2) Dry wound.
(3) No airway compromises.
(4) Tolerable pain.

Patients were contacted by telephone in the following day and asked about shortness of breath and about the presence of circumoral and extremity numbness. In addition, they were asked about their satisfaction with the day-case experience.

Outcome parameters:

(1) Occurrence of complications.
(2) Failed discharge.
(3) Readmission.

Statistical analysis

Data were summarized using mean and SD for quantitative variables and frequencies (number of cases) and relative frequencies (percentages) for categorical variables.

Results

Ten patients refused same-day discharge because of mere anxiety, though they have had fulfilled the criteria of safe hospital discharge.

Urgent reexploration and evacuation of hematoma was needed in three patients of wound hematoma who were not discharged and underwent urgent evacuation under general anesthesia.

One patient with suspected unilateral RLN injury was not discharged on the same day. The patient was discharged on the next day, on oral steroids after being reviewed in the otolaryngology clinic.

Sixty-one patients were discharged 8 h postoperatively; three of them were readmitted for correction of hypocalcemia and then discharged on oral calcium and vitamin D (Tables 1 and 2).

There were no mortalities.

Table 1 Sex of patients, extent of thyroidectomies, and complications

	Count	%
Sex		
Male	21	28.0
Female	54	72.0
Operation		
Right hemithyroidectomy	23	30.7
Left hemithyroidectomy	12	16.0
Total thyroidectomy	40	53.3
Complications		
Yes	7	9.3
No	68	90.7
Complications details		
Wound hematoma	3	4.0
Hypocalcemia	3	4.0
Hoarseness of voice	1	1.3
No	68	90.7

Table 2 Incidence of complications with different types of thyroidectomies

	Count	%
Complicated		
Total thyroidectomies	6	8.0
Hemithyroidectomies	1	1.3
Total	7	9.3
Complications		
Noncomplicated	68	90.7

Discussion

Over the past four decades there has been a radical change in surgical practice. A combination of new surgical techniques, advances in anesthesia, collection and publication of comparative data, and increasing awareness of the financial aspects of health service have all led to a switch to day-case surgery protocols which have encouraging results [8].

Day-case surgeries have been identified as the number one high-impact change to improve productivity; in the UK, health-care guidelines advise for a target of 'treating day surgery (rather than inpatient surgery) as the norm for elective surgery' [2].

The advantages of day-case surgery are shorter inpatient stays, lower incidence of hospital-acquired infections, reduced waiting lists, and less expense than surgery requiring an overnight stay. Reduction of infection has an added importance in periods of epidemics. The COVID pandemic is a striking example.

These advantages are reflected on the number of publications that address this policy (Table 3). While these publications arise for Western countries, the less developed part of the world seems less interested. This study is a probe into the acceptance and safety of day-case thyroidectomy in Egypt.

Our study was conducted on 75 patients, 21 males and 54 females. Seventy cases were ASA grade I and five cases were grade II.

Table 3 Previous studies [9]

Study and location	Patient number	Drain	Length of hospital stay	Complications and mortality
Steckler, USA [10]	48	ND	41 discharged same day	No major complications or death
Lo Gerfo *et al.*, USA [11]	134	ND	76 discharged same day; 53/59 discharged the following day	RLN palsy (1 P); ↓ Ca (8 T); bleed (0); re-admissions (0); deaths (0)
Marohn and LaCivita, USA [12]	150	ND	145 patients discharged <23 h after surgery	RLN palsy (1 P); ↓ Ca (3 T, 1 P); bleed (1); re-admissions (1); deaths (0)
Mowschenson and Hodin, USA [13]	100	ND	61 discharged same day	RLN palsy (0); ↓ Ca (2 T); bleed (0); re-adamissions (0); deaths (0)
Samson *et al.*, Philippines [14]	809	ND	All discharged <23 h after surgery	RLN (19 T); ↓ Ca (16 T); bleeds (1); re-admissions (1); deaths (1)
McHenry, USA [15]	80	ND	71 patients discharged <23 h after surgery	RLN (2 T); ↓ Ca (8 T); bleed (1); re-admissions (1); deaths (0)
Lo Gerfo *et al.*, USA [16]	203	ND	Mean LOS of 0.41 days; 66% discharged ≤6 h after surgery	RLN (1 P); ↓ Ca (3 T); bleeds (2); re-admissions (0); deaths (0)
Specht *et al.*, USA [17]	175	ND	LA: 53 patients discharged ≤24 h after surgery; GA: 90 patients discharged ≤24 h after surgery	RLN (2 T); ↓ Ca (1 T); bleeds (1); re-admission (1); deaths (0)
Spanknebel *et al.*, USA [18]	1025	ND	96% (*n* = 984) discharged <24 h; 80% (*n* = 820) DC after 6 h observation. 41 patients DC >24 h	RLN (20 T, 10 P); ↓ Ca (1 P); bleeds (5); re-admissions (0); deaths (0)
Spanknebel *et al.*, USA [19]	1194	ND	LA: 703 patients discharged after 6 h, 124 at ≤24 h; GA: 75 patients discharged at 6 h, 108 at ≤24 h	RLN (20 T, 9 P); ↓ Ca (1 P); bleeds (8); re-admissions (1); deaths (0)
Snyder *et al.*, USA [20]	58	ND	88% (*n* = 51) discharged <8 h after surgery	RLN (2 T); ↓ Ca (6 T, 1 P); bleeds (2); re-admissions (7); deaths (0)

ND, not documented; P, permanent; RLN, recurrent laryngeal nerve; T, temporary.

A striking outcome was that 10 (13.3%) out of these patients have changed their minds about leaving hospital the same day, just because of their anxiety about the possible occurrence of complications at home. This happened despite the facts that they have been fully informed and originally approved to be enrolled in this research, and despite fulfilling criteria for same-day discharge. This reflects deep insecurity, and possible distrust in controlled research. It is a cultural point that seems to take a long time to get over.

We found that seven patients out of 75 who underwent thyroidectomy, either total or hemithyroidectomy, developed complications. Wound hematoma cases were three out of seven complicated cases. They were reoperated upon urgently for wound exploration and hematoma evacuation, with no mortalities. Discharge from hospital was postponed. In addition, there were three cases of hypocalcemia, who presented by symptoms of manifest tetany, therefore readmitted for IV calcium gluconate 10% and then discharged on oral calcium and vitamin D. There was a single case of nerve injury, who developed hoarseness of voice.

An important finding was that 45 cases were performed by trainees at the end of the training years. Within this group there was a single case of postoperative wound hematoma. The remaining 30 thyroidectomies were performed by junior trainees. The lower incidence of complications with senior, compared with junior trainees, supports the growing evidence that outcomes correlate with surgeon's experience. Better outcomes are obtained when surgeons subspecialize in their field and achieve high-volume surgery.

Table 4 Comparison with complications in previous studies

	Previous studies average	Current study
Hematoma	1–2%	4%
Hypocalcemia	2.5%	4%
RLN injury	0–1%	1.3

RLN, recurrent laryngeal nerve.

Comparing the results of the current study with those cited in Table 3 shows a slightly higher incidence of complications (Table 4).

The current study has its pros and cons. The study being prospective and a leading one in this part of the world are certain advantages. One of the main limitations of the study is that surgeries were performed by supervised trainees (at different levels of training). This might be the cause of higher complication rates. We recommend – especially for day-case thyroidectomy – that surgeries have to performed by fully trained surgeons.

On the other hand, the sample size is not big though larger than a previous study published in 2006 [20]. Cultural factors were certainly deterrent to recruitment of participants, and so is the lack of hospital-related adjacent hotel rooms.

Conclusions

(1) Day-case thyroidectomy is safe and applicable in the Egyptian health service.
(2) The successful results of this study reflect mainly proper patient selection.
(3) Proper patient selection, preoperative preparation and postoperative planned follow-up and patient awareness and education represent the cornerstone for the success of this policy.
(4) Among the 61% patients who were discharged at the same day, still 20% were unsatisfied.
(5) Advantages of day-case thyroid surgeries are the following:
    (a) Decreasing the cost of hospital stay.
    (b) Reduction of hospital-acquired infections.
    (c) Shortening the waiting list and increasing availability of beds.

Financial support and sponsorship
Nil.

Conflicts of interest
Nothing to declare.

References

1 Russon K, Thomas A. Anaesthesia for day surgery. J Perioper Pract 2007;17:302–307.

2 Doran HE, England J, Palazzo F; British Association of Endocrine and Thyroid Surgeons. Questionable safety of thyroid surgery with same day discharge. Ann R Coll Surg Engl 2012;94:543–547.

3 Trottier DC, Barron P, Moonje V, Tadros S. Outpatient thyroid surgery: should patients be discharged on the day of their procedures? Can J Surg 2009;52:182–186.

4 Dhillon VK, Russell JO, Al Khadem MG, Tufano RP. Preoperative information for thyroid surgery. Gland Surg 2017;6:482–487.

5 Dedivitis RA, Pfuetzenreiter EG Jr, Castro MA, Denardin OV. Analysis of safety of short-stay thyroid surgery. Acta Otorhinolaryngol Ital 2009;29:326–330.

6 Adigun TA, Afuwape OO, Afolabi AO, Daniel A. Airway complications and outcome after thyroidectomy in Ibadan: a 15 year review. Arch Med 2016;8.

7 Chen E, Cai Y, Li Q, Cheng P, Ni C, Jin L, *et al*. Risk factors target in patients with post-thyroidectomy bleeding. Int J Clin Exp Med 2014;7:1837–1844.

8 Bhattacharyya N, Fried MP. Assessment of the morbidity and complications of total thyroidectomy. Arch Otolaryngol Head Neck Surg 2002;128:389–392.

9 Mirnezami R, Sahai A, Symes A, Jeddy T. Day-case and short-stay surgery: the future for thyroidectomy?. Int J Clin Pract 2007; 61:1216–1222.

10 Steckler RM. Outpatient thyroidectomy: a feasibility study. Am J Surg 1986;152:417–419.

11 Lo Gerfo P, Gates R, Gazetas P. Outpatient and short-stay thyroid surgery. Head Neck 1991;13:97–101.

12 Marohn MR, LaCivita KA. Evaluation of total/near-total thyroidectomy in a short-stay hospitalization: safe and cost-effective. Surgery 1995;118:943–947.

13 Mowschenson PM, Hodin RA. Outpatient thyroid and parathyroid surgery: a prospective study of feasibility, safety, and costs. Surgery 1995;118:1051–1053.

14 Samson PS, Reyes FR, Saludares WN, Angeles RP, Francisco RA, Tagorda ER Jr. Outpatient thyroidectomy. Am J Surg 1997;173:499–503.

15 McHenry CR. “Same-day” thyroid surgery: an analysis of safety, cost savings, and outcome. Am Surg 1997;63:586–589.

16 Lo Gerfo P. Local/regional anesthesia for thyroidectomy: evaluation as an outpatient procedure. Surgery 1998;124:975–978; discussion 978–979.

17 Specht MC, Romero M, Barden CB, Esposito C, Fahey TJ 3rd. Characteristics of patients having thyroid surgery under regional anesthesia. J Am Coll Surg 2001;193:367–372.

18 Spanknebel K, Chabot JA, DiGiorgi M, Cheung K, Lee S, Allendorf J, *et al*. Thyroidectomy using local anesthesia: a report of 1,025 cases over 16 years. J Am Coll Surg 2005;201:375–385.

19 Spanknebel K, Chabot JA, DiGiorgi M, Cheung K, Curty J, Allendorf J, *et al*. Thyroidectomy using monitored local or conventional general anesthesia: an analysis of outpatient surgery, outcome and cost in 1,194 consecutive cases. World J Surg 2006;30:813–824.

20 Snyder SK, Roberson CR, Cummings CC, Rajab MH. Local anesthesia with monitored anesthesia care vs general anesthesia in thyroidectomy: a randomized study. Arch Surg 2006;141:167–173.