

"SAME-DAY" THYROID SURGERY; FEASIBILITY AND OUTCOME OF DIFFERENT PROCEDURES AFTER 302 THYROIDECTOMIES

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Abstract

This study present and evaluate the feasibility and outcome of same-day different types of thyroidectomy in Sulaimania in the last 8 years.

From Jan. 1999 to Jan. 2007, all patients consecutively operated on for thyroid disease, were admitted on the day of operation and discharged the day after. A prospective study was performed for them, the clinico-pathological aspects of the disease and the outcome of the thyroid surgery were assessed regarding hospital stay, the time when the drains were removed, postoperative complications, interventions and readmissions and postoperative requirement for thyroxin.

Three hundred and two patients were consecutively operated on, with a mean age of thirty-seven years; they were 265 females and 37 males. All patients were hospitalized less than 24 hours with the mean hospital stay of 15.7 hours (10-23h). Complications were few with 1.6% minor wound infection; 1.3% seroma; 0.9% hematoma; 0.6% for both transient hoarseness of voice and transient stridor.

In conclusions, same-day thyroid surgery is a safe and feasible procedure with minimal morbidity and no mortality.

Introduction

Goiter is an endemic disease in the Kurdistan Region of Iraq, especially in Sulaimania territory, because of the mountainous nature of the area, with the lack of iodine in water¹.

Thyroidectomy is a common operation in our locality and also elsewhere^{1,2}. Although thyroid surgery is of low mortality², it still has a high rate of complications³. It is associated with specific morbidity²⁻⁴ which is related to the experience of the surgeon^{2,4}. The least surgical complications for thyroidectomy are reported in specialized centers^{2,4} In Iraq generally and in our locality in particular.

Most thyroid surgeries are performed in general hospitals.

Recently, a progressive decrease in the length of hospitalizations for common surgical operations has occurred and there is no doubt about the cost-effectiveness of ambulatory, same day or short stay major operations^{5,6}.

Thyroid surgical diseases are among those pathologies which can be operated on as short stay procedure⁷, but there is no consensus on the length of hospitalization for these cases⁶. There are publications from over ten years ago reporting good results with shorter stays^{8,9}.

Since 1999, we have started operating on thyroid diseases on the same-day surgery program, admission less than 24 hours. This regime is different from short stay surgery, where the patients

are discharged after 2-3 days¹⁰.

The main concern in same day thyroid operations is postoperative complications associated with re-admissions and/or re-operations such as wound hematoma or hypocalcemia^{11,12}.

The aim of this study is to evaluate the feasibility and outcome of same-day thyroidectomies in various thyroid diseases in our locality.

Patients and Methods

A prospective study of 302 patients diagnosed and surgically treated for thyroid pathology from Jan. 1999 to Jan.2007.

Preoperative preparations were done for them in outpatient clinics, including ENT checkup of the vocal cords, and assessment by anesthesiologists for GA fitness.

All patients were euthyroid pre-operatively and were admitted on the same day of operation usually one hour before surgery. They were operated upon in the morning in Sulaimania Teaching Hospital or in the evening in private hospitals. All the patients were informed preoperatively with regards to early discharge.

Modified capsular dissection technique was used in which; the tertiary branches of the inferior thyroid arteries were ligated on the capsule of the thyroid gland. This technique is performed so that not to endanger the recurrent laryngeal nerve (RLN) and/or jeopardize the blood supply of the parathyroid glands. In hemithyroidectomy, an entire lobe was removed. Approximately 4 g. of thyroid tissue was left in subtotal thyroidectomy.

In near-total thyroidectomy, we performed lobectomy on the larger or more nodular lobe or the side including the dominant nodule, with contralateral subtotal resection leaving an average of 1-2 g of thyroid tissue. Only absorbable sutures were used throughout the procedure. At extubation, vocal cords

were checked by anesthesiologist in all cases. Intravenous fluids were administered intravenously for 4-6 hours after operation. The patients were encouraged to start oral fluid intake and ambulation shortly after that. A single dose of intra-muscular Diclofenac was given as analgesia on need, followed by paracetamol oral tablets.

All patients were discharged the morning after operation.

Data were collected regarding age, sex, occupation, duration of the disease, preoperative investigations, diagnosis, preparation and management. Data were also collected regarding the operative procedure, blood transfusion, number of drain(s) used, duration after which the drains were removed and the hospital stay. Postoperative care, complications, and the histopathological results were recorded.

The patients were classified according to diagnosis within five different groups:

- 1- Benign colloid nodular goiter
- 2- Toxic goiter (diffuse or nodular)
- 3- Hashimoto's thyroiditis.
- 4- Follicular adenoma.
- 5- Malignant thyroid disease (thyroid cancer).

Furthermore, the same patients were classified according to the operations performed into three different groups:

- 1- Hemithyroidectomy (H/T).
- 2- Subtotal thyroidectomy (S/T).
- 3- Near-total thyroidectomy (N/T).

All patients were followed up as an outpatient clinically at one week and four weeks, then regularly at twelve weeks, both clinically and biochemically, for one year after operation for the detection and treatment of any complications and the requirement for thyroxin.

The hospital stay and the incidence of postoperative complications, the number of drains used, and the time when these drains were removed and thyroxin requirement postoperatively

were all analyzed and compared between diagnoses and the type of operation. The patients were discharged with the drain in situ (if necessary), and hence the hospital stay is not prolonged.

Statistical method

The data were collected prospectively and recorded in the computer database. The statistical analysis was performed using statgraph software. The analysis of the continuous variables was tested

using student's t-test and the chi-square test was used for nominal variables. A p value of less than 0.05 was considered significant.

This study was approved by the ethical committee in the Medical College, Sulaimania University.

Results

Demographic features:

There were 265 females (F) and 37 males (M) with F:M of 7.16:1 and the mean age of the patients was 37 years (15-78 years)

Table I: The number and percentage of patients with various thyroid diagnoses and surgical procedures which were performed.

Thyroid pathology No. and % of patients		Surgical procedure No. and % of patients	
BCNG	223 (73.8)	Hemithyroidectomy	40 (13.2)
Toxic goiter	34 (11.2)	Subtotal thyroidectomy	238 (78.8)
Hashimoto's thyroiditis	15 (4.9)	Near-total thyroidectomy	24 (7.9)
Follicular adenoma	15 (4.9)	Total	302
Thyroid cancer	15 (4.9)		
Total	302		

BCNG = benign colloid nodular goiter

Table II: The distribution of postoperative complications in total 302 patients:

Complications	Number and percentage (%) of patients
Minor wound infection	5 (1.6)
Seorma	4 (1.3)
Hematoma	3 (0.9)
Transient unilateral RLN palsy	2 (0.6)
Transient respiratory obstruction (stridor)	2 (0.6)
Total	16 (5)

RLN= recurrent laryngeal nerve, Complications-286 cases were uneventful (95%).
16 cases developed complications (5%)

Table III: The distribution of postoperative complications by the diagnosis in percentage (%).

Diagnosis	Minor wound infection	Seorma	Hematoma	Transient unilateral RLN palsy	Transient respiratory obstruction (stridor)
BCNG (n=223)	1.8	1.3	0.9	0.4	0.9 (S)
Toxic G (n=34)	2.9 (S)	0	2.9 (S)	0	0
Hashimoto's thyroiditis (n=15)	0	0	0	6.7 (S)	0
Follicular adenoma (n=15)	0	0	0	0	0
Thyroid cancer (n=15)	0	6.7 (S)	0	0	0

BCNG = benign colloid nodular goiter, S = significant differences between different diagnoses. Wound infection and hematoma were more common in patients with toxic goiter. Seroma was more common in thyroid cancer (p <0.05). Transient RLN palsy was statistically more significantly found in Hashimoto's thyroiditis.

Table IV: The distribution of postoperative complications by the type of procedure in percentages (%).

Complications	H/T (40)	S/T (238)	N/T (24)	P value
Minor wound infection	0	1.6	4.1	NS
Seorma	0	1.2	4.1	NS
Hematoma	0	1.2	0	NS
Transient unilateral RLN palsy	0	0.8	0	NS
Transient respiratory obstruction (stridor)	0	0.4	4.1	NS

H/T = hemithyroidectomy, S/T = Subtotal thyroidectomy, N/T = near-total thyroidectomy

NS = non-significant

Table V: The mean number of hospitalization hours (mean hospital stay) by diagnosis and procedure.

Diagnosis	Mean hospital stay (hours)	Procedure	Mean hospital stay (hours)
BCNG (n=223)	15.7 (10-23)	H/T	15.2
Toxic G (n=34)	15.7 (12-23)	S/T	15.7
Hashimoto's thyroiditis (n=15)	15.8 (12-18)	N/T	16.5
Follicular adenoma (n=15)	14.5 (12-23)		
Thyroid cancer (n=15)	15.8 (12-23)		

The mean hospital stay was 15.7 hours (range 10-23h)

Table VI: The percentage (%) of cases in which drains were used, the time these drains were removed and the percentage (%) of thyroxin (T4) requirement by surgical procedure.

	H/T	S/T	N/T	P value
Drain:				
Number (%)				
One	92.5	58	45.8	S
Two	7.5	42	54.2	S
Off (hours)	23.8	23.8	21.4	S
T4 requirement (%)	65	73.5	79.1	S

S = statistically significant (p value < 0.05), Drains- one drain was used in 186 cases, while 2 drains were used in 116 cases. The drains were removed in less than 24 hours.

Discussion

In this study, the age varied from fifteen to seventy years, with the mean age of thirty-seven years which is similar to other studies^{3,5}. As goiter is more common in females¹⁻³, consequently, thyroidectomy is more common in females as in our study with F:M = 7.16:1 which is similar to other studies³.

The percentages of every diagnosis are the expected ones, according to the epidemiology of this pathology in our locality¹. Benign colloid nodular goiters were the main pathology (41.25%), which is similar to other studies^{2,6}. There is a high percentage of subtotal thyroidectomy, due to the fact that until 2005, it was the standard operation for most benign thyroid diseases in our locality, but after that the new policy is to do near-total thyroidectomy for multinodular goiters to decrease the rate of recurrence of goiter after, similar to Antonio Rios et al study of postoperative complications after total and/or thyroidectomy for multinodular goiters by surgeons with experience in endocrine surgery at 2004¹³.

Although the overall complication rate in this study was low (5%), minor wound infection was the most common complication, which occurred in 1.6% of the cases and were encountered more significantly in patients with toxic goiter (table 3) and then in patients with benign colloid nodular goiter, but in the latter group, this was statistically not significant. This complication was found in patients for who subtotal or near-total thyroidectomy were performed. No infection was reported in hemithyroidectomy group. All the cases with wound infection were treated in outpatient clinic with no readmission. The incidence of wound infection after thyroidectomy varied in other studies from zero to 10%^{2,3,6,13}.

Insignificant seroma and mild localized wound hematoma were the next most

encountered complications in this study and were treated conservatively with needle aspiration on few occasions in outpatient clinic. Seroma was detected more frequently in patients with thyroid cancer, and hematoma in patients with toxic goiter. Seroma and hematoma occurred in subtotal and near-total thyroidectomy groups only (table IV). In other studies, the incidence of these two complications varied from zero to 7%^{2,3,6}.

Recurrent laryngeal nerve (RLN) palsy, manifested as hoarseness of voice, is the most feared complication after thyroidectomy, but it usually affects postoperative hospital stay when it is bilateral⁶. The reported incidence of transient unilateral RLN palsy in this study was 0.6 % (table II), which was less than other studies^{2,3,6}. The low incidence of this complication is attributed to the policy of avoiding damage to RLN by using modified capsular technique, as the nerve is always extracapsular¹⁴ and not manipulating or identifying the nerve, and this goes with the policy of Torre et al who do not consider identification of RLN necessary^{15,16}. In our study, transient unilateral RLN palsy occurred more in patients with Hashimoto's thyroiditis and this was statistically significant between different pathologies (table III), and this was attributed to the hardness of the gland that made resection difficult.

The postoperative airway obstruction (stridor) caused by laryngeal or subglottic edema, is a rare complication after thyroidectomy and when it is accompanied by significant cervical hematoma, it makes re-intervention necessary^{2,6,17,18}. This classically occurs when there is postoperative bleeding with an associated wound hematoma^{6,17,18}. However, it is important to appreciate that the complication can occur without hematoma¹⁸. In the present study, this

complication occurred in two cases (0.6%), both were females and had large BCNG, which were treated by S/T or N/T thyroidectomy. Immediate check up of the cords by an anesthetist revealed normal vocal cords, with mild laryngeal edema and no neck swelling. Both of the patients improved dramatically with conservative treatment and were discharged next day in a good condition.

In other studies, the most common complication after thyroidectomy is hypocalcemia secondary to transient hypoparathyroidism^{5,12,19,20}. In our present study, none of our patients developed hypocalcemia, which is attributed to our modified capsular dissection and tertiary ligation of thyroidal branches of inferior thyroid arteries, hence avoiding the inadvertent damage to the blood supply of parathyroid glands.

Our results regarding the duration of our admissions (table V) were very expressive, and all the cases were discharged within the next 23 hours after operation. There were significant differences (p value < 0.05) between the groups. A shorter hospital stay found in patients with follicular adenoma and in patients with hemithyroidectomy. A longer hospital stay was encountered in patients with Hashimoto's thyroiditis and thyroid cancer and also in near-total thyroidectomy procedure. Hence with our programmed protocols for thyroid surgery, all the procedures could be performed on a same day regime with good results. The incidence of readmission and/or re-intervention was nil.

We still do routinely use cervical drain(s) after thyroid surgery (table VI). The decision of draining or not draining cervicotomy after thyroid surgery remains controversial, and there are many authors who report systematic drainage^{7,21}, and others who don't^{6,22,23}. The efficiency of postoperative L-thyroxin (T4) suppressive treatment, in patients with benign colloid nodular goiter, is still controversial²⁴. In our study, there was significant differences among the three groups in relation to the type of operation (table VI). The highest percentage was in the near-total thyroidectomy group ($p < 0.05$), and the least requirement for postoperative T4 supplementation or suppression was in hemithyroidectomy group as the residual thyroid tissue was capable for production of sufficient thyroxine and this was comparable to other studies^{25,26}. In conclusion, the procedure hemithyroidectomy and the diagnosis thyroid adenoma do not usually have early postoperative morbidity and we believe that in all hospitals, this type of operation can be achieved on the same day basis or even as day case (ambulatory) surgery. Regarding other thyroid operations, they can be performed as same day surgery, either when there is a specialist surgeon with enough experience in thyroid surgery or the procedure is achieved in a specialist endocrine center, and under these circumstances the results will be excellent with minimal morbidity. Goiter size, toxic goiter, Hashimoto's thyroiditis and thyroid cancer are the independent risk factors for the development of complications.

References

1. Faruk Hasan. Goiter and Thyrotoxicosis in Sulaimani. Journal Of Zankoy Sulaimani (JZS) Part A, 2001; 4(2) 45-53.
2. TL Chow, W Chu, BH Lim, SPY Kwok. Outcomes and complications of thyroid surgery: retrospective study. HKMJ. 2001; 7(3) 261-265.
3. Adnan Hasanogulo, Mustafa Shahin, Ertan Bulbuloglu et al. Complications of thyroid gland surgery. Turgut Ozal Tip merkezi Dergisi. 1997; 4(1), 80-3.
4. Toby Gordon. Surgical Experiences improves thyroidectomy outcome. Johns hapkins Medical Institution. [http:// www. Sciencedaily.com /releases/ 1988/10/981007154239.htm](http://www.Sciencedaily.com/releases/1988/10/981007154239.htm).
5. McHenry CR "Same-day" thyroid surgery: an analysis of safety, cost savings, outcome. Am. Surg. 1997, 63(7): 586-9.
6. Ortega J., Cassinello N., Lledo S. Same day "fast-Track" thyroid surgery; Indications and complications after 730 thyroidectomies. Unit of Endocrine and Obesity surgery, Department of General Surgery. University of Valencia. Valencia, Spain. Cir Esp.2007; 82(2): 112-6.
7. Sahai A, Symes A, Jeddy T. Short-stay thyroid surgery. BJS 2005;92:3-4.
8. Marohn MR, Lacivita KA. Evaluation of total / near-total thyroidectomy in a short stay hospitalization: safe and cost-effective. Surgery 1995, 118(6): 943-7.
9. LoGerf P, Gates R, Gazetas P. Out-patient and short-stay thyroid surgery. Head and Neck 1991, 13(2): 97-101.
10. Calbo L, Gorgone S, Palmeri R, Pergolizzi G, Melita G. Surgery of the thyroid in a short- stay hospitalization. Chir ital 1997;49(1-2); 33-6.
11. DePasquale L, Schuko L, Bastagli A. Post-thyroidectomy hypocalcemia and feasibility of short –stay thyroid surgery. Chir ital 2000, 52(5);549-54.
12. Richards ML, Bingener- Casey J, Pierce D, Strodel WE, Sirinek KR. Intraoperative parathyroid hormone assay: an accurate predictor of hypocalcemia following thyroidectomy. Arch Surg 2003, 138(60); 632-5.
13. Antonio Rios-Zambudio, Jose Rodrigues, Juan Riquelme et al. Prospective study of postoperative complications after total thyroidectomy for multinodular goiters by surgeons with experience in endocrine surgery. Annals of Surgery. 2004, 240(1); 18-25.
14. Pelizzo MR, Toniato A, Gemo G. Zuckerkindl's tuberculum: an arrow pointing to the recurrent laryngeal nerve. J Am Coll Surg. 1998; 187: 333-6.
15. Torre G, Borgonovo G, Amato A, et al. Surgical management of substernal goiter: Analysis of 237 patients. Am Surg 1995; 61, 826-31.
16. Wheeler MH. Thyroid surgery and the recurrent laryngeal nerve. BJS 1999; 86: 291-292.
17. Thomusch O, Machens A, Sekulla C, Ukkat J, Lippert H , gastinger I, Dralle H. multivariate analysis of risk factors for postoperative complications in benign goiter surgery: Prospective multicenter study in Germany. World J Surg 2000, 24:1335-41.
18. Malcolm H Wheeler. The technique of thyroidectomy. JR Soc Med 1998; 91(33): 12-16.
19. Thomusch O, Machens A, Sekulla C, Ukkat J, Brauckhoff M, Dralle H. The impact of surgical technique on postoperative hypoparathyroidism in bilateral thyroid surgery: A multivariate analysis of 5846 consecutive patients. Surgery 2003, 133(2):180-5.
20. Bellantone R, Lombardi CP, Boscherini M et al. Total thyroidectomy for management of benign thyroid diseases: Review of 526 cases. World J Surg 2002, 26: 1468-71.
21. Cannizzaro MA, Caruso L, Costanzo M, Messina D, Sallemi R, Veroux M, Surgery of thyroid pathologies in one-day surgery. Ann Ital Chir 2002;73(5):501-3.
22. Jotinder Khanna, RS Mohil, Chintamani et al. Is the routine drainage after surgery for thyroid necessary? Aprospective randomized clinical study. BMC Surgery 2005; 5: 11.
23. Joudiond T, Corre FL, Pages JC, Renou G, Deraedt S. Drainage after thyroid surgery: 264 patients. Ann Otolaryngol Chir Cervicofac 2002;119(3) : 146-9.
24. Westmark K, Persson CP, Johansson H, Karlsson FA. Nodular goiter: effects of surgery and thyroxine medication. World J Surg 1986; 10: 481-7.
25. Ayhan koyomcu, Hatica Sebila Dokmetas, Mustafa Turan, Cengic Aydin et al. Comparison of different thyroidectomy techniques for Benign Thyroid Disease. Endocrine Journal 2003;50(6): 723-7.
26. Serdar Ozbas, Savas Kocak, Semih Aydentug et al. Comparison of the complications of subtotal, near-total and total thyroidectomy in the surgical management of multinodular goiter. Endocrine Journal 2005; 52(2): 199-205.