

Complications of Thyroid Gland Surgery

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Thyroid operations still have a high risk of complications. The complications and association with the type of operation were evaluated prospectively in 88 patients. Seventy-nine of them were operated on for primary, 6 of them for secondary and 3 of them for thyroid cancer. Bilateral thyroidectomy was performed in 69 patients and 19 patients had unilateral thyroidectomy. The only permanent palsy of RLN occurred in a patient with thyroid malignancy following total thyroidectomy. In the 8 RLN nonidentified patients, 2 RLN injury occurred. Only 1 RLN injury occurred out of 80 RLN identified patients ($p<0.01$). Transient hypocalcemic patients were operated on bilaterally. Only one hypertrophic wound scar developed and no hemorrhage or wound infection occurred in all patients. RLN injury rate was 3.41% and hypocalcemia rate was 4.42% in our study. This study indicated that lower incidence of complication can be achieved by the identification of RLN and parathyroid glands during the operation by the experienced surgeons. [Journal of Turgut Özal Medical Center 1997;4(1):80-83]

Key Words: Complication, surgery, thyroid

Tiroidektomi komplikasyonları

Tiroid operasyonlarının komplikasyon riski hala oldukça yüksektir. Kliniğimizde tiroid operasyonu olan 88 hastada komplikasyonlar ve tiroid operasyonları ile ilişkileri prospektif olarak çalışıldı. Hastaların 77'sine primer, 6'sına sekonder ve üçüne de tiroid kanser operasyonu uygulandı. Rekürrent laringeal sinir felci tiroid kanseri nedeni ile total tiroidektomi olan bir hastada görüldü. Rekürrent sinir identifiye edilmeden yapılan 8 tiroidektomiden 2'sinde geçici rekürrent sinir hasarı olurken, identifiye edilerek yapılan 80 tiroidektomide yalnızca 1 rekürrent sinir hasarı oluştu ($p<0.01$). Geçici hipokalsemi oluşan 4 hastada bilateral tiroid operasyonu uygulanmıştı. Hastalarda kanama veya yara enfeksiyonu görülmedi. Yalnızca bir hastada yara yerinde skar dokusu oluştu. Çalışmamızda; rekürrent sinir felci oranı %3.41 ve hipokalsemi oranı %4.42 olarak bulundu. Bu çalışma; tecrübeli cerrahlar tarafından yapılan tiroid operasyonlarında, özellikle rekürrent sinirin ve paratiroid bezlerin identifiye edilmesi ile komplikasyon oranlarının düşük olacağını göstermiştir. [Turgut Özal Tıp Merkezi Dergisi 1997;4(1):80-83]

Anahtar Kelimeler: Komplikasyon, cerrahi, tiroid

Thyroidectomy still has a high rate of complication. The most frequent complication is Recurrent Laryngeal Nerve (RLN) injury. The reported incidence of RLN palsy, the most common complication of thyroid operations, varies from 0 to

14 percent. Identification of the RLN at every procedure during operation reduces the rate of morbidity (1,2).

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The second most frequent complication of thyroidectomy is parathyroid damage producing hypocalcaemia. Although usually it is temporary, 0.4-13.8% of permanent hypocalcemia is reported after total and 0.2-1.9% after subtotal thyroidectomies (1,3).

Hypothyroidism which occur after total thyroidectomy also increases in subtotal procedures according to the size of remnant. Postoperative hemorrhage is a rare but serious complication following thyroidectomy (3).

The purpose of this study was to evaluate the complications following thyroidectomies and the correlation of these complications with the type of the operation applied.

PATIENTS AND METHODS

Between September 1993 and November 1996, 88 patients underwent thyroid surgery at the University of İnönü, Turgut Özal Medical Center, Department of Surgery. Of these patients, 76 were female (86.36%) and 12 were male (13.64%) with a mean age of 37.42 ± 12.62 (range 17 to 80) years.

Operative procedures and postoperative courses were evaluated prospectively. All patients had preoperative and postoperative laryngoscopy to examine the vocal cord function. Preoperative and postoperative Ca, P, T₃, T₄, free-T₃, free-T₄, and TSH were evaluated.

During the operations the RLN was usually identified and identification was allied by the preliminary search for the nerve by the inferior thyroid artery. The parathyroid glands were also identified and undue manipulation was avoided.

If patients experienced voice changes following operation, patients were reexamined by indirect laryngoscopy to search the paralysis. If paralysis persisted one year after the operation, it was considered as permanent. The patients who had hypocalcemia after the operation were reexamined with periods and hypocalcemia was also classified

as transient and permanent.

Fisher's exact and chi-square tests were used for statistical analysis.

RESULTS

Identification of RLN was attempted in all patients and was identified in 80 patients. Thirteen of them were operated on unilaterally and RLN was identified at one side; 67 of them were operated on bilaterally and RLN was identified at both sides. Among these 80 patients only 1(1.25%) had RLN injury while 2 out of 8 patients whose RLN couldn't be identified had RLN injury ($p < 0.01$). Seventy nine of the patients had primary operation for benign disease, 6 patients were operated on for recurrent disease. Three of the patients were operated on for thyroid carcinoma (Table 1). Nine patients had voice changes before operation but only two of them had abnormal laryngoscopic findings. All of them recovered after the operation. Three (3.41%) patients had vocal cord paralysis after the operation, 2 (2.27%) of them recovered after 1 and 4 months; only 1 (1.14%) was permanent. The latter patient underwent bilateral total thyroidectomy for carcinoma (Table 1). The complications were more frequent in the bilateral thyroid operations than unilateral thyroidectomies ($p < 0.01$) as shown in Table 2. One (1.71%) transient RLN palsy and 3 (5.28%) transient hypocalcemia occurred among 57 (64.78% of thyroidectomies) bilateral subtotal thyroidectomies. One (12.5%) out of 8 patients who underwent unilateral total and contralateral subtotal thyroidectomy (9.09% of thyroidectomies in the study) had transient RLN injury postoperatively. This patient was operated on because of a recurrent nodular goiter.

The results of Ca and P were within normal limits preoperatively. Transient hypocalcemia developed in 4 (4.42%) patients and returned to normal levels between 2-4 weeks (Table 2).

There was no hemorrhage and wound infection postoperatively. Only one (1.14%) patient

Table 1. Recurrent laryngeal nerve injury and hypocalcemia in the thyroid operations

	n=88	RLN Injury		Hypocalcemia	
		Transient	Permanent	Transient	Permanent
Primary operation	79 (89.78%)	1 (1.26%)	-	3 (3.8%)	-
Secondary operations	6 (6.82%)	1 (16.67%)	-	1 (16.67%)	-
Thyroid cancer	3 (3.41%)	-	1 (33.33%)	-	-

Table 2. Complications according to the type of thyroid gland operations

Thyroidec- tomies	RLN Injury		Hypocalcemia		Hypo thyroidy	Scar	Wound infection	n= 88	%
	Transient	Permanent	Transient	Permanent					
Unilateral subtotal	-	-	-	-	-	-	-	14	15.91
Bilateral subtotal	1	-	3	-	-	1	-	57	64.78
Unilateral total	-	-	-	-	-	-	-	5	5.68
Bilateral total	-	1	1	-	-	-	-	4	4.54
Unil.total+ unil.subtotal	1	-	-	-	-	-	-	8	9.09
Total	2 (2.27%)	1 (1.14%)	4 (4.42%)	-	-	1 (1.14%)	-	88	100

developed hypertrophic scar during follow-up period.

Operation time was between 1 h and 4.30 h with a mean of 2.47 ± 0.62 h. The duration of hospitalization was between 1 and 10 days with a mean of 2.29 ± 1.14 days. The patient who was hospitalized for 10 days developed pneumonia postoperatively.

DISCUSSION

The reported incidence of primary paralysis by the centers specialized in thyroid surgery is between 1% to 7%. Wagner and Seiler's study showed that thyroid carcinoma, thyroiditis, Graves disease and recurrent goiter have 3 or 4 times greater risk of nerve damage than that for euthyroid nodular goiter and adenoma (4). In this study; the only permanent RLN palsy was following bilateral total thyroidectomy in a patient with thyroid carcinoma.

Overall incidence of permanent nerve palsy for total lobectomy was 4%. Transient RLN palsy accounts for 50% of the RLN injuries mostly in the literature. In the present series, we found 59% and it was slightly higher after subtotal resection. Transient paralysis is usually associated with stretching, postoperative edema, and inflammation (3,5). In this study, transient RLN palsy occurred in 2 of the 8 patients whose RLN couldn't be identified during the operation. Following total lobectomy, the risk of RLN palsy was 21% when the nerve was not exposed (1,2). Achieving a low morbidity rate

demands meticulous attention to operative technique and anatomical detail (6,7).

RLN is not the only nerve that may be injured during the operation; the external branch of the superior laryngeal nerve is also at risk during thyroidectomy and such injury may be minimized if the nerve is identified and preserved during ligation off the upper pole vessels (8, 9).

Hypocalcemia may be the result from a disruption of parathyroid blood supply which arises from the inferior thyroid artery. This vessel should either be handled gently and ligated near to the thyroid avoiding the parathyroid branches or should be left unligated. Parathyroid function usually recovers following a vascular injury or edema. Only extensive injury to four parathyroid glands results with permanent hypocalcemia (1,10,11). The most frequent underreported morbidity after thyroid resection is transient hypocalcemia. In comparison with the other life-threatening or permanent postoperative complications that could occur, transient hypocalcemia is relatively less important, and the significance of its identification is predominately economic (5). In this study 4 patients had transient hypocalcemia and only one was after the secondary operation, the others were after primary operations which were done bilaterally.

There was no hypothyroidy, hemorrhage, and wound infection in our patients postoperatively. Permanent RLN palsy rate was 1.14% which was lower than most of the series reported. This can be correlated with the identification of the nerves since in the two cases who had transient RLN palsy, RLN couldn't be identified.

In conclusion; thyroid lobectomies and subtotal thyroidectomies can be performed safely without increase in morbidity and mortality by surgeons who have completed a training program. Attention to operative technique and anatomical details such as identification of the RLN and parathyroid glands during the operation leads to lower rates of transient-permanent palsy and hypocalcemia.

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