

PROSPECTIVE STUDY OF 111 CASES OF THYROID SURGERY FOR POST-OPERATIVE MORBIDITY AND MORTALITY

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Abstract

One hundred and eleven patients were operated for various types of goitre between December, 1985 to June, 1988. These were evaluated to assess the morbidity and mortality associated with thyroid operations. A mortality of 0.9% was noted, owing to advanced age and fatal laryngeal oedema. Recurrent laryngeal nerve damage was seen in one (0.90%) cases Transient Parathyroid insufficiency appeared in 8.10% cases while the permanent damage occurred in one (0.9%) case only. Wound complications, including haematoma formation were noted in 14.40% cases. This study indicates that the thyroid surgery can be performed with acceptable morbidity and mortality, under the prevailing circumstances (JPMA 39: 201, 189).

INTRODUCTION

The surgical treatment is an accepted and well established modality in many diseases of the thyroid gland. However, this treatment is not free of complications. Currently the rate of complications is very low because of proper pre-operative evaluations, well planned surgery, meticulous surgical technique and vigilant post-operative care. Some of the known complications are recurrent laryngeal nerve damage, hypoparathyroidism and hypothyroidism in addition to wound problems such as infection and haematoma. The purpose of this study was to assess the actual incidence of morbidity and mortality associated with operations of thyroid gland in our set up.

PATIENTS AND METHODS

A total of 114 cases with various varieties of goitre were admitted in the surgical unit A of Rawalpindi General Hospital between December, 1985 to June, 1988. There were 80 (72.07%) cases of multinodular goitre and 21 (18.91%) cases of solitary-nodule (Table-1).

Table I. Clinical varieties of Goitre.

Type of goitre	No. of Patients	Percentage
Multinodular goitre	80	72.07
Solitary nodule	21	18.92
Diffuse goitre	08	07.20
Recurrent goitre	01	00.90
Thyroglossal cyst	01	0.90
Total	111	100.00

Four cases were suffering from malignant goitre, one had acute thyroiditis and another had thyroglossal cyst. Two malignant cases were well advanced and unfit for surgery. Similarly the patient of acute thyroiditis settle down by medical management. The last three cases did not require surgery and were excluded from the study. Of the remaining 111 patients included in the study there were 96 (86.49%) women and 15 (13.51%) men. The ages of the patients ranged from 12 to 68 years, majority were under 30 years of age (Table- II).

Table II. Age spectrum of the Patients.

Age	No. of patients	Percentage
Less than 20 years	46	34.63
20 – 29	25	22.52
30 – 39	17	15.31
40 – 49	12	10.81
50 – 59	05	04.50
60 – 69	06	05.40
Total	111	100.00

A thorough pre-operative assessment was done in all the patients. After a detailed history and comprehensive physical examination, every patient was subjected to Tc99 isotope-thyroid scanning, serum free T3, T4 and TSH level estimations, laryngoscopic examination of vocal cords and radiological studies of neck in addition to the routine tests. Due to limited facilities pre-operative serum calcium monitoring was done in 27 (24.32%) cases only. As determined by clinical and biochemical parameters, 9 (8.11%) patients were toxic, 4 (3.60%) were hypothyroid and 98 (88.29%) were euthyroid. All the

toxic patients were made euthyroid by carbimazole tablets 10 mg/S hourly pre-operatively, followed by 10 drops of Lugol's iodine administered three times daily for seven to ten days before the operation. The indications for operations included compression symptoms (45.04%), cosmetic purposes (46.85%) and relapse of toxic symptoms following medical treatment (8.11%).

Operative Treatment

Sixty four (57.65%) patients had sub-total thyroidectomy and near total thyroidectomy was performed in 26 (23.43%) patients (Table-III).

Table III. Operative Procedures.

Name of Procedure	No. of Patients	Percentage
Subtotal thyroidectomy	64	57.65
Near total thyroidectomy	26	23.42
Lobectomy	19	17.11
Cystectomy (Thyroglossal cyst)	01	0.90
Excision of nodule in the isthmus	01	0.90
Total	111	100.00

The standard procedures of operation were adopted in all the patients. These included a collar crease incision, subplatysmal resection and splitting up of the precervical fascia. We preferred to divide the strap muscles in cases of huge goitres. The superior and inferior polar vessels were ligated by the silk sutures in most of the cases. Recurrent laryngeal nerves were visualized in all the cases preoperatively, except in 7 patients where this effort remained fruitless. The thyroid remnant after subtotal thyroidectomy was 5 to 10 grams and less than 5 grams after near total resections. Every specimen was submitted for histopathological examination and final diagnosis was based on these reports (Table IV).

Table IV. Histopathological Diagnosis.

Diagnosis	No. of cases	Percentage
Adenomatous colloid goitre	66	59.45
Colloid goitre with papillary Hyperplasia	42	37.83
Papillary carcinoma (Occult)	01	0.90
Oxyphilic carcinoma	01	0.90
Follicular carcinoma	01	0.90
Total	111	100.00

In all cases of wound infection, swab culture from the wound was sent to the hospital laboratory. Hoarseness of voice after operation was treated by symptomatic treatment including steam inhalation and saline gargles. Parathyroid insufficiency was treated with injections of 10 mls of calcium gluconate intravenously which controlled the symptoms within fifteen minutes. After two days oral calcium was instituted. Every patient was requested to visit outdoor clinic fortnightly. Oneacbvisit the patients were examined for signs and symptoms of hypocalcemia, wound condition, voice problems and hypo-thyroidism. Estimation of serum calcium was done after 2nd week and then six months in cases of near total resections. To every patient of subtotal and near total thyroidectomy, thyroxine was administered for a period of 6-12 months post operatively as a routine procedure.

RESULTS

Sixteen (14.40%) patients suffered from various types of wound complications. Haematoma formation was seen in 3.60% patients, who had near total resections. Three patients of haematoma formation needed tracheostomy. One patient was suffering from Myasthenia gravis and needed tracheostomy too (Table V).

Table V. Wound Complications.

Description	No. of cases	Percentage
Abscess formation	04	3.60
Haematoma formation	04	3.60
Stitch Granuloma	03	2.70
Hypertrophic scar	02	1.80
Adherent skin with underlying structures	01	0.90
Oedema of flaps	01	0.90
Iodine burns	01	0.90
Total	16	14.40

Eighteen (16.21%) patients suffered from hoarseness of voice after the operation. Only one (0.90%) patient sustained permanent injury to right recurrent laryngeal nerve. Laryngoscopic examination of this patient revealed paralysis of right vocal cord. All other patients recovered within one week by conservative management. Parathyroid insufficiency: manifested in 10 (9.00%) patients. All these patients presented clinically with perioral paresthesia, tingling and numbness of hands and feet. Three (8.10%) patients showed classical carpopedal spasm. It was transient in nine cases and disappeared within one month after treatment. In only one (0.90%) patient it was permanent who remained on oral medication twelve months after the operation. In all of these patients post operative serum calcium was

lower than the normal limits. Histopathology of the thyroid gland in these patients showed no parathyroid tissue in the resected specimens. No case of recurrent thyrotoxicosis or hypothyroidism was recorded. Only one (0.90%) patient died. She was a female of 52 years of age who underwent near total thyroidectomy for toxic goitre. She was made euthyroid before operation. She developed severe respiratory distress in the evening after surgery, followed by convulsions. Tracheostomy and assisted ventilation was carried out but she expired next

DISCUSSION

Surgical treatment of thyroid disease has become very much safer in modern times. It is associated with zero % mortality and very limited morbidity in majority of the current series.¹ Wound problems are among the most frequent complications of thyroid operations. These are usually in the form of haematoma, infection and improper wound healing resulting in ugly scars. Out of all these, haematoma is the most ominous one. In majority of the current series incidence of haematoma formation is not more than 1%². In the present study its frequency was 3.60%. This higher incidence is incriminated to be due to non-availability of expensive suction drains for general ward patients. Haematoma is common to occur after total thyroidectomies than lesser procedures³. Our results testify this statement. Another important aspect of haematoma formation is that it is insidious in onset and often manifests late in the evening, about 6-8 hours after operation. This is the time when patient is no more under vigilant observation of recovery room and can result in serious surgical emergency of respiratory obstructions.⁴ Higher incidence of stitch granuloma is also observed in our patients (2.7%). This owes to excessive use of silk for ligation of polar vessels⁵. As silk causes greater inflammatory reaction which remains more than 2 months⁶, therefore the chances of development of stitch granuloma can be reduced by using absorbable sutures like Vicryl. Post operative hoarseness is another important entity caused by multiple factors. Most important of them is laryngeal oedema⁷, which could be due to multiple futile efforts during incubation in cases of asymmetrical huge goitres⁸. Similarly a pretracheal haematoma could cause compression and laryngeal oedema⁹. Other causes of hoarseness include trauma to vocal cords during intubation, tracheolaryngitis, excessive dissection during the operation and manipulation of recurrent laryngeal nerves. In majority of our cases temporary hoarseness in early post operative period was due to laryngeal oedema as well as due to formation of tension haematoma. Permanent hoarseness is unequivocally caused by damage to the recurrent laryngeal nerves. Its incidence is not more than 1% in all those cases managed by experienced surgeons¹⁰. Numerous techniques have been evolved by different workers to identify the nerves and prevent its damage, but nothing can surpass the actual visualization of nerves peroperatively. Lahey¹¹ stressed the visualization of recurrent laryngeal nerves a necessary procedure to avoid its damage. Kartz¹² used an operative microscope to identify and stimulate the nerves in concordance with laryngoscopic examination to record the vocal cord movements. Davis¹³ inserted a double pronged electrode at midpoint of true vocal cords and monitored their movements by stimulation of recurrent laryngeal nerves. We impress upon proper dissection and visualization of the nerves as an important step to avoid its damage. One patient in our series who suffered from permanent paralysis of vocal cords was among those seven patients, in which the nerve was not identified during operation. Ibtany is a syndrome resulting from hyperexcitability at neuromuscular junction caused by hypocalcaemia. Wilkins¹⁴ and Escobar-jimiez¹⁵ ascribed this decreased level of calcium after thyroid surgery due to release of thio-calcitonin and impairment of parathyroid hormone release. Percival¹⁶ attributed it to a reduction in renal tubular reabsorption of calcium rather than calcitonin and P.T.H. release. Majority of the current studies agree that excessive manipulation of para-thyroids during surgery and ligation of the inferior thyroid arteries rather than its

individual branches are the major factors. The incidence of post operative hypoparathyroidism is reported to be 2% after total extirpation of thyroid gland¹⁷ and 1% after subtotal thyroidectomy^{3,10}. In a recent series conducted by Palestini¹⁸ incidence decreased to 1%. In our patients the permanent hypoparathyroidism is comparable to many of these workers, but transient hypo-parathyroidism is abit higher (8.10%). Meticulous dissection of para-thyroids and selective preservation of their blood supply can reduce the high incidence of post operative hypoparathyroidism¹⁰. Only one patient died after surgery. Foster³ reported that patients over 50 years of age had a higher mortality than the younger ones. Martis⁷ showed that frequent attempts during intubation may result in fatal laryngeal oedema. Another important cause of high mortality is coexisting systemic disease¹⁰. In conclusion it is recommended that use of suction drains, absorbable sutures, crafty technique, visualization of the recurrent laryngeal nerves, and avoidance to ligate the main inferior thyroid trunk can further improve the results of thyroid surgery.

REFERENCES

1. Custer, E.L., Krukowaski, Z.K. and Matheson, N.A. Outcome of surgery for Grave's disease re-examined. *Br. J. Surg.*, 1987; 74:780.
2. Kaplan, EL. Thyroid and parathyroid, in principles of surgery. Edited by Seymour I. Schwartz et al. 4th ed. Singapore, McGraw- Hill, 1984, p.1575.
3. Foster, R.S. Jr. Morbidity and mortality after thyroidectomy. *Surg. Gynecol. Obstet.*, 1978; 146:423.
4. Farrar, W.B. Complications of thyroidectomy. *Surg. Q. North Am.*, 1983; 63:1353.
5. Eldrige, P.R. and Wheeler, M.H. Stitch granulomata after thyroid surgery. *Br. J. Surg.*, 1987; 74:62.
6. Postlethwait, R.W. Long-term comparative study of non-absorbable sutures. *S. Ann. Surg.*, 1976; 171:892.
7. Martis, C. and Athanassiades, S. Post-thyroidectomy laryngeal edema; a survey of fifty-four cases. *Am. J. Surg.*, 1971; 122:58.
8. Hardy, J.D. Complications of thyroid and parathyroid surgery, in management of surgical complications. Edited by Artz, C.P., Hardy, J.D. Philadelphia, Saunders, 1975, p.298.
9. Rains, A.J.H. and Ritchie, H.D. Bailey and Love's short practice of surgery 19th ed. London, Lewis, 1984, p.628.
10. Max, M.H., Scherm, M. and Bland, K.I. Early and late complications after thyroid operations. *South Med. J.*, 1983; 76:977.
11. Lahey, F.H. Routine dissection and demonstration of recurrent laryngeal nerve in subtotal thyroidectomy. *Surg. Gynecol. Obstet.*, 1938; 66:775.
12. Kartz, R.C. The identification and protection of the laryngeal motor nerves during thyroid and laryngeal surgery a new micro surgical technique. *Laryngoscope*, 1972; 83: 59.
13. Davis, W.E., Rea, J.L. and Tempter, 3. Recurrent laryngeal nerve localization using a microlaryngeal electrode. *Otolaryngeal Head Neck Surg.*, 1979; 87:330.
14. Wilkin, T.J., Paterson, C.E., Islet, T.E., Crooks, T. and Beck, J.S. Post thyroidectomy hypocalcemia; a feature of the operation of thyroid disorders. *Lancet*, 1977; p. 821.
15. Escobar-Jimiez et al. Hypocalcemia and thyroid surgery. *Lancet*, 1977; 402.
16. Percival, R.C., Hargreaves, A.W. and Kanis, J.A. The mechanism of hypocalcemia following thyroidectomy. *Acta Endocrinol.*, 1985; 109: 220.
17. Cady, B., Sedgwick, C.E., Meissner, W.A., Bookwalter, J.R., Ramagosa, V. and Werber, J. Changing clinical, pathologic, therapeutic, and survival patterns in differentiated thyroid carcinoma. *Ann Surg.*, 1976; 184:541.
18. Palestini, N., Durrando, R., Modesti, M.S. and Rispole, P. Intra and post operative complications in

surgery. Chir et at (English abstract), 1985; 37: 367.