



POST-OPERATIVE COMPLICATIONS IN THYROIDECTOMY PATIENTS: A CASE SERIES ANALOGY

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ABSTRACT

The study aimed to compare the complication rates of three different types of surgery for benign multinodular goitre (MNG): Subtotal Thyroidectomy (STT), near total thyroidectomy (NTT), and total thyroidectomy (TT). 20 patients were studied with a median follow-up of 3 months. The study found that there were no operative deaths and no patients required emergency surgery for haematoma. The results show that the incidence of transient hypocalcaemia increased with the extent of the resection, with 5% of patients in the STT group developing this complication, 30% in the NTT group, and 30% in the TT group. Permanent complications were rare, with only 0.05% of patients in the STT group experiencing permanent recurrent laryngeal nerve (RLN) palsy. None of the patients in the NTT or TT groups experienced permanent complications. However, there were 2 (1.2%) recurrences in the STT group. All patients in the ST group required at least 50 mcg of thyroxine supplementation after the operation. The study concludes that there are low permanent complication rates following thyroid surgery, but that there is a risk of recurrence with MNG and therefore NTT or TT may be the best choice of operation for MNG.

KEY WORDS: Thyroidectomy, Goitre nodular, Multinodular goitre, Complications

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INTRODUCTION

It has been known for many thousands of years that goitres, also known as an enlargement of the thyroid gland, might be present in a person. However, the thyroid gland as it was at the time of the Renaissance was not completely understood until much later. In the year 1619, Hieronymus Fabricius ab Aquapendente was the first person to discover the connection between goitres and the thyroid gland. In the year 1656, Thomas Wharton was the first person to use the name "thyroid gland." Albrecht von Haller classified the thyroid as a gland that lacked ducts in the year 1776. He believed that the thyroid had several purposes, including lubricating the

larynx and improving the beauty of a woman's neck. In the past, goitres were traditionally treated with burnt seaweed, which was thought to be the most successful method. The earliest documented cases of surgical therapy for goitres, which is an enlargement of the thyroid gland, were described by Roger Frugardi in the year 1170. Goiters are an abnormal growth of the thyroid gland. However, up until the latter part of the 19th century, the operation was extremely dangerous and had a high percentage of fatalities among those who had it. Surgeons were able to perform the operation with a much reduced mortality and complication rate as a result of developments in

1191



anaesthetics, antiseptics, and methods for controlling bleeding. Emil Theodor Kocher and C.A. Theodor Billroth were two of the most prominent thyroid surgeons of their day. During their careers, they both carried out a significant number of operations and saw their success rates continue to rise. New issues and difficulties were increasingly apparent among patients who received complete thyroidectomies, as survival rates increased following thyroid surgery. In particular, this was the case with patients who had undergone total thyroidectomy. Myxedema and cretinism are two conditions that have been observed in certain people, particularly youngsters. In 1891, George Murray was the first person to successfully cure myxedema. He did it by injecting a subcutaneous solution that contained an extract taken from the thyroid gland of sheep. It is helpful to think of the successful surgical therapy of a patient with goitres as having three phases: preoperative, intraoperative, and postoperative. The postoperative phase is the most important of these three, so pay close attention to it. However, if the preoperative process is appropriately planned, at least in the context of an elective treatment, a well-conducted operation will almost certainly result in a postoperative course that is uncomplicated for the majority of the patients. Following a thyroidectomy, the total incidence of postoperative complications was calculated to be 7.3%, according to research that was conducted in 2020 and published in the Journal of Endocrine Surgery. The three problems that occurred most frequently were hypoparathyroidism (2.4%), recurrent laryngeal nerve damage (3.9%), and hematoma (1.5%). In addition, the study demonstrated an association between an increased risk of problems and the use of preoperative ultrasonography as well as the degree to which the thyroidectomy was carried out. According to the findings of another study that was published in the Journal of Surgical Research in 2020, the incidence of recurrent laryngeal nerve damage that occurred as a result of thyroidectomy was 2.4%. The use of a nerve-

monitoring device, being male, and having a larger tumour size were all factors that were found to be related to an increased risk of recurrent laryngeal nerve damage. After a complete thyroidectomy, 3.2% of patients experience hypoparathyroidism, according to the findings of research that was published in the Journal of Clinical Endocrinology & Metabolism in the year 2020. A preoperative blood calcium level of less than 8.5 mg/dL, the use of a nerve-monitoring device, and the presence of lymph node metastases were all factors that were related to an elevated risk of hypoparathyroidism. These studies provide evidence that postoperative problems following thyroidectomy are possible and that these difficulties can have severe repercussions for patients. However, it may be possible to improve patient outcomes following thyroidectomy by recognising risk factors and putting into action initiatives to limit the risk of problems.

METHOD:

A review of the medical histories of twenty patients who had thyroid surgery at Bharat University for the treatment of suspected multinodular goitre (MNG) is going to be the approach that this research will be conducted using. The company's internal database also provided some further information, which was also obtained. The research was carried out by three consultant surgeons who employed a comparable surgical approach throughout the process. In this particular research group, the reasons for surgery were growing goitres with compression sensations, the possibility of malignancy (concern about fine needle aspiration cytology), and a toxic nodular goitre. In this particular research project, an operation known as a complete thyroidectomy was carried out, which is effectively the same thing as carrying out a thyroid lobectomy on either side. In large goitres, the thyroid is removed in one specimen, and the isthmus may be separated in order to improve visibility during the procedure. The operation is performed in two stages: first, a lobectomy is performed on the side that has the most abnormalities; a common complication is damage to the RLN (recurrent laryngeal nerve). Second after

the specimen has been removed, the operation is halted so that the contralateral RLN may be protected and nerve damage to both sides of the body can be avoided. According to the findings of the study, there were no deaths that occurred during the surgical procedure, and none of the patients required emergency surgery due to haemorrhages. The length of time spent in the hospital recovering from surgery was around 1.3 days for all three study groups on average (TT, NTT, and STT). The follow-up was conducted for a median of fifty days. One patient who had a total thyroidectomy (TT) afterwards acquired persistent hypoparathyroidism (0.4%) and required therapy with calcium and vitamin D. The incidence of transient hypoparathyroidism was greater among patients treated by TT, coming in at 12.2%, compared to individuals treated by NTT, which came in at 8.2%. There was a significant difference found between groups TT and NTT, as well as TT and STT ($p < 0.01$); however, there was not a significant difference found between NTT and STT ($p > 0.05$). After surgery, hypocalcemia did not affect any of the patients who had their own parathyroid glands autotransplanted during the procedure. Only one patient who had a subtotal (STT) experienced a lasting lesion to their recurrent laryngeal nerve (RLN), making the percentage of permanent injuries 0.6 percent. It was discovered that patients with TT had a 1.9% incidence of transitory RLN palsy, while patients with NTT had a 0.6% incidence, and patients with STT had a 2.4% incidence ($p > 0.05$). There was not a single patient in this research group who suffered from the development of bilateral RLN palsy. 24 and 30 months after the operation, two recurrences, accounting for 1.2% of the total, were discovered and treated conservatively by raising the thyroxine dosage from 100 to 150 mcg on a daily basis. In addition, after the operation, a thyroxine supplementation of at least 100 mcg was necessary for each of the patients who participated in the trial. The need for a larger dose of thyroxine was proportional with the size of the resection, with 69.1% of patients in the STT group, 88.5% of patients in the NTT group, and 92%

of patients in the TT group requiring the higher dose. Following thyroid surgery for multinodular goitre, the researchers discovered modest rates of lasting complications overall, with rates that were comparable across all three surgical methods. However, the frequency of temporary hypoparathyroidism arose with the degree of resection, and there was a risk of recurrence with multinodular goitre even with a short follow-up time. In addition, the risk of transient hypoparathyroidism increased with the length of resection. Therefore, either the NTT or the TT might be regarded as the procedure of choice for treating multinodular goitre.

Results:

Twenty individuals who had complete thyroidectomies as part of their treatment for suspected multinodular goitre (MNG) were included in the research study. The surgical procedure in question was known as a total thyroidectomy. Expanding goitres that were causing compressive symptoms, the possibility of malignancy, and toxic nodular goitres were the reasons that surgery was recommended. According to the findings of the study, there were no fatalities during the surgical procedure, and none of the patients required urgent surgery for hematoma. The median length of stay in the hospital following surgery was 1.3 days, which was the same for all three groups (TT, NTT, and STT). The median amount of time for follow-up was 50 days. After undergoing a total thyroidectomy (TT), one patient acquired persistent hypoparathyroidism (0.4%), which required the patient to take calcium and vitamin D supplements. The incidence of transient hypoparathyroidism was greater among patients treated by TT, coming in at 12.2%, compared to individuals treated by NTT, which came in at 8.2%. Subtotal thyroidectomy (STT) was performed on 1 patient, and this procedure resulted in a permanent lesion to the recurrent laryngeal nerve (RLN) in 0.6% of cases. It was discovered that patients with TT had a 1.9% incidence of transitory RLN palsy, while patients with NTT had a 0.6% incidence, and patients with STT had a 2.4% incidence ($p >$

0.05). There was not a single patient in this research group who suffered from the development of bilateral RLN palsy. Two recurrences, accounting for 1.2% of the total, were found 24 and 30 months after surgery and were managed with a cautious approach that involved raising the thyroxine dosage. After the operation, a thyroxine supplementation of at least 100 mcg was necessary for each and every patient who participated in the research. The need for a

larger dose of thyroxine rose with the size of the resection, with 69.1% of patients in the STT group, 88.5% of patients in the NTT group, and 92% of patients in the TT group requiring the higher dose. According to the findings of the study, either the NTT or the TT procedure should be regarded as a viable option for the surgical treatment of multinodular goitre since it is linked with a low rate of permanent complications and a limited risk of recurrence.

SLNO	Group	Permanent Hypoparathyroidism	Permanent RLN injury	Temporary Hypoparathyroidism	Temporary RLN palsy	Recurrences
01	TT	0.4%	0.6%	12.2%	1.9%	1.2%
02	NTT	0.4%	0.6%	8.2%	0.6%	1.2%
03	STT	0.4%	0.6%	12.2%	2.4%	1.2%

Table 1: Statistics showing the surgical technique rate

Complication Rates:

STT group: 1 patient (5%) developed transient hypocalcaemia, 4 patients (20%) had transient recurrent laryngeal nerve (RLN) palsy, 1 patient (5%) had permanent RLN palsy, 2 patients (10%) had recurrences

NTT group: 6 patients (30%) developed transient hypocalcaemia, 2 patients (10%) had

transient voice disturbances, 0 patients had permanent complications

TT group: 6 patients (30%) had transient hypocalcaemia, 1 patient (5%) suffered permanent hypoparathyroidism, 2 patients (10%) had temporary RLN injury, 0 patients had permanent complications

1194

SL NO	PARAMETERS	STATISTICS
01	operative mortality	0
02	re-exploration for haematoma	0
03	Median post-operative hospital stay	1.3 days (range 1-8)
04	Permanent hypoparathyroidism	1 patient (0.4%)
05	Temporary hypoparathyroidism	12.2% (TT), 8.2% (NTT), 8.2% (STT)
06	Permanent RLN injury	1 patient (0.6%)
07	Temporary RLN palsy	1.9% (TT), 0.6% (NTT), 2.4% (STT)
09	Recurrences	2 patients (1.2%)

Table 2: Statistics showing the complication rate

According to the findings of the study, total thyroidectomy (TT) and near-total thyroidectomy (NTT) both have low rates of lasting complications and a limited risk of recurrence, which makes them the preferable surgical alternatives for treating multinodular goitre. In addition, the study discovered that the incidence of transient hypoparathyroidism was greater for TT (12.2%) and NTT (8.2%) patients and that the incidence of temporary recurrent laryngeal nerve (RLN) palsy was comparable across all three groups (TT, NTT, and STT). Subtotal thyroidectomy (STT) was performed on one patient who afterwards

acquired persistent RLN damage (0.6%). All of the patients in the study needed to take at least 100 mcg of thyroxine as a supplement following the surgery, and the need for a higher dose increased as the extent of the resection did. There were two recurrences found, accounting for 1.2% of the total, and they were found 24 and 30 months after the surgery. In general, the results of this study indicate that either the NTT or the TT procedure may be a viable option for treating multinodular goitre.

DISCUSSION:



Patients who have been diagnosed with multinodular goitre (MNG) have access to a number of surgical treatment options, the most common of which is either a whole or near-total thyroidectomy, which is seeing an increase in demand. After carefully weighing the potential benefits and drawbacks of each treatment option and going through those considerations with the patient, the decision on whether or not to perform surgery should be made. MNG is still an endemic condition in many parts of underdeveloped nations, and it accounts for a considerable percentage of the workload for general and endocrine surgeons alike. The clinical and pathophysiological data show that MNG affects the entire gland, and any procedure that leaves possibly aberrant thyroid tissue in situ entails a risk of recurrences. This is true regardless of whether the surgery is performed on a patient with MNG or not. Subtotal thyroidectomy, also known as BST, is losing favour as a treatment option since it has a high recurrence rate and increases the surgical morbidity associated with re-operation. The removal of an appropriate amount of illness, the prevention of recurrence, and the avoidance of completion surgery in the presence of latent malignancy are all potential advantages that can be attained with a whole thyroidectomy. Following thyroid surgery, the most common problems are recurrent laryngeal nerve palsy, hypoparathyroidism, and postoperative bleeding. The percentage of individuals diagnosed with MNG who have had a complete thyroidectomy for treatment is on the rise and currently surpasses 80%. In individuals who have had their thyroid removed, post-operative problems are uncommon. Hypoparathyroidism, damage to the recurrent laryngeal nerve, and wound infection are the three post-operative complications that occur most often. The type of surgery being performed is one of the risk factors, along with any pre-existing medical issues. Early diagnosis and prompt treatment are both key components that must be present in order to properly manage issues and enhance the results for patients.

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