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TO KNOW THE EFFICACY OF THYROIDECTOMY FOR THE MANAGEMENT OF MULTINODULAR GOITER

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Abstract:

Objective: *To evaluate the thyroid surgery results of multinodular goiter and compare total and subtotal thyroidectomy operations.*

Study Design: *A Prospective Study.*

Place and duration: *In the Surgical Unit I in collaboration with Head and Neck Surgery department of Services Hospital Lahore for six months duration from August 2018 to January 2019.*

Methods: *Sixty multinodular goiter patients were included in the study. Into 2 groups, patients were divided. In 1st group subtotal thyroidectomy was done and total thyroidectomy done in other group. Data was analyzed and recorded in terms of demographic data, hospital stay, type of surgery and postoperative complications.*

Results: *There was no vast variation between these two groups in terms of age, gender, hormonal status or goiter duration (P = 0.73, P = 0.64, P = 0.73 and P = 0.59, respectively). In both groups, the important manifestation for surgery was sudden increase in compression symptoms and size of goiter. The mean hospital stay and duration of surgery in cases of subtotal thyroidectomy was short, but there was no statistically significant variation (P> 0.06). The frequency of postoperative transient hypocalcemia was higher significantly in total thyroidectomy (P = 0.004). Although, postoperative hypocalcemia was not significantly permanent between 2 groups.*

Conclusion: *In total thyroidectomy, permanent complications incidence is not more than subtotal thyroidectomy. Therefore, if for the first time total thyroidectomy is done for multinodular goiter, the possibility of disease recurrence can be decreased and the operation can be avoided for the second time.*

Key words: *Subtotal thyroidectomy, total thyroidectomy goiter.*

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INTRODUCTION:

Goitre is the most common endocrine disease encountered by general surgeons and otolaryngologists. WHO report, 5% of the population globally is suffered from goitre and 76% of them reside in areas with deficiency of iodine [1-3]. Thyroidectomy is the 1st line of management for the treatment of large goiter, multinodular goitre especially for suspicious malignancy or compression symptoms [4]. The thyroidectomy procedure was discovered by William Halsted and Theodore Kocher. Since then, it is an effective, safe and complete procedure [5]. By proper management of tracheal problems and control over bleeding, mortality and morbidity from thyroid surgery decreased [6]. The total thyroidectomy has been used increasingly since last decade, and now for the treatment of multinodular goitre is the preferred option. The total thyroidectomy incidence increased from 9% to 50% for multinodular goiter [7]. For the large multinodular goitre treatment, total thyroidectomy is an appropriate procedure where whole gland is complicated, because it prevents from additional surgical risk for disease recurrence and the related risks are high [8,9].

MATERIALS AND METHODS:

In a six-month prospective case series held in the Surgical Unit I in collaboration with Head and Neck Surgery department of Services Hospital Lahore for six months duration from August 2018 to January 2019; 60 patients were enrolled and into two groups were divided equally. In 1st group subtotal thyroidectomy was done and total thyroidectomy done in other group. These two groups were evaluated according to ultrasound evaluation, intraoperative macroscopic findings, nodularity types and preoperative clinical. Total thyroidectomy was performed in patients who had suspicion of diffuse tissue or malignancy of the disease in fine needle aspiration cytology (FNAC) while the other group underwent subtotal thyroidectomy. In a pre-designed format, data was analyzed. Preoperative examination included thyroid function tests, F.N.A.C and neck ultrasound. By indirect laryngoscopy, the recurrent laryngeal nerve poreoperative status was evaluated. All the tissues of the thyroid were resected in total thyroidectomy by a dissection procedure, while 4 g of thyroid tissue remained on both sides of the subtotal thyroidectomy. Endotracheal intubation was performed under general anesthesia for an incision in the neck for thyroidectomy. Sub-platismal flaps were elevated below the level of the clavicle and above the thyroid notch. The strap muscles are divided into the midline. The middle thyroid vessels were excised and ligated. The upper vessels of the thyroid were also splitted and ligated. Recurrent laryngeal nerves were secured and identified. Upper and lower parathyroid glands were saved from injury. After subtotal or total thyroidectomy, tissue dissection was done appropriately. For 24 hours, the drain was placed in the wound and covered with layers after the aseptic bandage. After 4-5 days, the patients were discharged. Serum calcium was measured during hospital stay. For 6 months, calcium supplements were advised if found below normal, hypothyroidism was considered to be temporary. Indirect postoperative laryngoscopy was performed with total thyroidectomy to determine thyroxine replacement and nerve state in all cases.

RESULTS:

60 total subjects were selected for the study. Each group was divided into two groups of 30 patients. One group had total thyroidectomy and the other group underwent subtotal thyroidectomy. The total thyroidectomy group was 19 female, 11 male and the mean age was 35 ± 10.99. Mean goiter duration was 5.67 + 2.46 in both groups. During thyroid surgery, all patients were euthyroid. There were no static variation between the two groups in terms of age, gender, hormonal status or goiter duration ($P = 0.69$, $P = 0.60$, $P = 0.63$ and $P = 0.70$). Recurrent and Compression symptoms of thyroid hypertrophy are the most common indications for surgery (Table 1).

Table 1: Indication for thyroidectomy (n=60)

Symptom	Total thyroidectomy	Subtotal thyroidectomy
Compression symptoms	48.33%	42.65%
Recurrent hypertrophy of gland	31.42%	34.87%
Suspicious on FNAC	17.14%	20.35%
Cosmetically	3.11%	2.13%

The operation time was recorded from incision to closure of skin. In subtotal thyroidectomy, mean surgical time was less in than in total thyroidectomy patients. Similarly, the hospital stay mean length was less in subtotal thyroidectomy group. The mean operative time was 1.35 and 2 hours for subtotal and total thyroidectomy, while the hospital stay mean length was 3.6 and 2.6 days, respectively irrespective of the short duration of hospital stay and operation.

The incidence of postoperative transient hypocalcemia was higher significantly in total thyroidectomy (P = 0.00). However, postoperative permanent hypocalcemia was not different significantly among 2 groups (P> 0.06). Response to bleeding control was performed in two patients (6.66%) who underwent total thyroidectomy. There was no significant statistically variation among 2 groups in terms of wound infection. (Table 2)

Table 2: Post-operative complications in both groups

Complication	Total thyroidectomy	Subtotal thyroidectomy
Transient RLN palsy	9.11%	8.54%
Permanent RLN palsy	-	-
Temporary Hypocalcaemia	19.23%	10.41%
Permanent hypocalcaemia	3.33%	-
Reoperation for haemorrhage	6.66%	3.33%
Wound infection	3.33%	3.33%

DISCUSSION:

In the past, the 1st line treatment option for multinodular goiter is subtotal thyroidectomy. Because, it is stated that the remaining thyroid tissue is enough for the patient to be in euthyroid state rather than thyroxine given for life [10,11]. Subtotal thyroidectomy is thought to be a safe procedure in terms of minimal complications postoperatively such as recurrent hypoparathyroidism and laryngeal nerve palsy. Hypocalcemia was the most common complication following thyroidectomy (3.6%), followed by injury to recurrent laryngeal nerve (2.7%) [12]. In our unit Subtotal thyroidectomy was usually preferred minimal postoperative complication according to total thyroidectomy [13]. Although there is an unlimited discussion on the comparison of total thyroidectomy with subtotal, However, the two main problems are recurrent laryngeal injury and

hypocalcemia [14]. The incidence of recurrent laryngeal injury varies from one surgeon to another and from one country to another. In this study, the transient laryngeal laryngeal recurrent laryngeal lesion was 9.11% and 8.54% in the total and subtotal groups without any statistically significant difference. Our results could be compared with other studies conducted by Gulcelik who did not report significant differences in recurrent laryngeal nerve injury in patients with total and subtotal thyroidectomy [15]. In this study, no statistically significant difference was found between the reported laryngeal nerve injury cases or the two procedures in both groups. The same result was also elaborated by other studies. In the previous studies, transient hypocalcemia was reported between 1.61% and 21.9% after subtotal thyroidectomy and 23.79% to 33% after total thyroidectomy. In this study, temporal hypocalcemia (19.23%) was significantly higher in subtotal thyroidectomy (10.41%) than in total thyroidectomy. However, the incidence of persistent hypocalcemia was consistent with previous studies reporting an incidence of persistent hypocalcemia in the subtotal group from 0% to the total thyroidectomy group (3.33%). However, this difference is not important for 3%.

CONCLUSION:

In total thyroidectomy, the incidence of permanent complications in is not more than subtotal thyroidectomy. Therefore, if total thyroidectomy is done for the 1st time for multinodular goitre, the possibility of the disease recurrence can be decreased and the operation can be avoided for the second time.

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