GRADING OF INTRAOPERATIVE CHALLENGES IN TOTAL THYROIDECTOMY: A PROSPECTIVE STUDY

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INTRODUCTION

The procedure of subtotal thyroidectomy was developed by Theodore Kocher and William Halsted. At around 21st century total thyroidectomy was established as the preferred operation for a range of thyroid pathologies. The indications for total thyroidectomy are thyroid cancers, multinodular goiters (MNG), Graves' disease and other less common conditions, such as thyroiditis. For MNG, the indications of surgery include suspicion of malignancy, either clinically or cytologically, thyrotoxicosis, pressure symptoms, retrosternal extension and occasionally cosmesis. In toxic goiters the indications of surgery may include the following: Moderate to large goiter, resistance to medical treatment, failure of radioactive iodine (RAI) treatment, contraindications for both and significant ophthalmopathy, which may worsen with radioactive iodine (RAI). Although the complications of thyroid surgery are rarely fatal, their consequences can be life-long, but still occurs in a minority of patients. The main complications associated with total thyroidectomy include injury of the recurrent laryngeal nerves, damage to the parathyroid glands and postoperative hematoma.

AIM OF THE WORK

The aim of this study was to develop a scoring system to predict the intraoperative challenges during the course of total thyroidectomy.

PATIENTS AND METHODS

The study was conducted on 100 adult patients admitted to the Head and Neck and Endocrine Surgery unit, Department of Surgery, Alexandria Main University Hospital indicated for total thyroidectomy. Following approval of the protocol by the ethics committee, informed consent was taken from the patients both written and oral.**All patients were subjected to the following: Thorough clinical evaluation:** Thorough history taking (medical, family and surgical), thorough general examination, thorough local examination of the thyroid and cervical lymph nodes. **Imaging:** Ultrasonography of neck with assessment of thyroid gland and cervical lymph nodes and fine needle aspiration cytology as seen necessary by the sonographer. Computed tomography (CT) scan neck with IV contrast if needed. **Laboratory tests:** Preoperative thyroid function test (TSH, Free T3, Free T4), anti-thyroglobulin antibody and anti-thyroid peroxidase antibody.

Evaluation forms: Two constructed evaluation forms "preoperative and intraoperative" were filled to assess intraoperative challenges such as anatomical aberrations, difficult identification of surgical planes, effect of previous treatments. Accordingly data collected from preoperative forms are used to predict the level of difficulty of surgery and compared with the intraoperative forms.

RESULTS

Table 1: Comparison between pre and intra-operative grade.

Intra operative grading	Preoperative grade						Total
	Easy		Intermediate		Difficult		
	No.	%	No.	%	No.	%	
Easy	26	83.9	3	16.7	1	2.0	30
Intermediate	3	9.7	10	55.6	1	2.0	14
Difficult	2	6.5	5	27.8	49	96.1	56
Total	31		18		51		
Kappa	0.632						
95.0% C.I.	0.40-0.71						
Percent of							
Sensitivity	83.9%						
Specificity	96.1%						
Accuracy	86.0%						

The sensitivity to predict intraoperative category (easy) from preoperative grading of category (easy) was 83.9%, while the specificity to predict the category (difficult) in intraoperative from preoperative grades was 96.1%, the overall accuracy of preoperative grades to predict intraoperative grades was 86.0%.
The strength of agreement between pre and intraoperative grade of complications was considered to be high (κ=0.632). The 95% CI was 0.40–0.71.

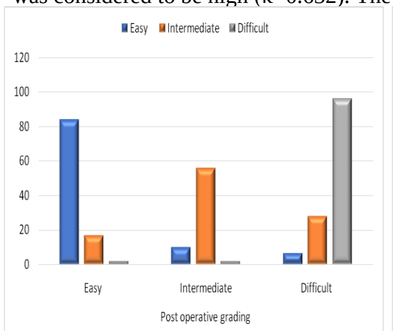

Figure 1: Comparison between pre and intra-operative grade

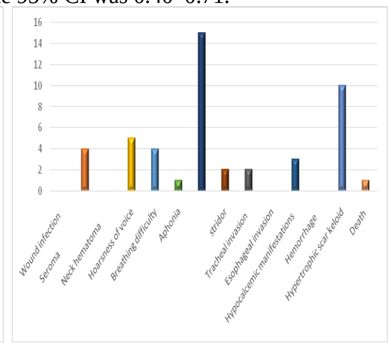

Figure 2: Distribution of the studied patient's group regarding post-operative complication.

Table (2) showed distribution of the studied patient's group regarding postoperative complications. Loss of high pitched voice external laryngeal nerve was higher 15(15%) followed by hypertrophic scar keloid 10(10%), Hoarseness of voice 5(5%) and Difficulty of breathing 4(4%).

Table 2: Distribution of the studied patient's group regarding post-operative complications.

Postoperative complications	No	%
Wound infection	0	0.0
Seroma	4	4.0
Neck hematoma	0	0.0
Hoarsness of voice	5	5.0
Breathing difficulty	4	4.0
Aphonia	1	1.00
Loss of high pitched voice external laryngeal nerve	15	15.0
Stridor	2	2.0
Tracheal invasion	1	2.0
Esophageal invasion	0	0.0
Hypocalcemic manifestations	3	3.0
Hemorrhage	0	0.0
Hypertrophic scar keloid	10	10.0
Death	1	1.0

CONCLUSION

From the results of this study it was found that the preoperative scoring system of challenges was a good predictor for intraoperative challenges in total thyroidectomy. In addition, the prediction of a difficult total thyroidectomy may be helpful for less experienced surgeons to increase the level of attention, especially in complex situations. The results of our study could be useful not only to predict the difficulty of a total thyroidectomy but also to optimize the schedule of the operating room, allocate proper team, reduce the costs and improve the management of the patients and the available resources.