

Epidemiology and Complications of Total Thyroidectomy in Aseer Central Hospital

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ABSTRACT

Background: Total Thyroidectomy is common procedure among patients with thyroid disorders including malignancies, thyrotoxicosis, multi-nodular goiter and chronic thyroiditis. There are many complications that recorded after this procedure which is more related to surgeon experience and nature of disorder. Among these disorders, hematoma, recurrent laryngeal nerve injury and hypocalcaemia are the most frequent. Modern thyroidectomy is focused on the mortality of surgery by preventing damage to adjacent structures, such as parathyroid glands and recurrent laryngeal nerve.

Aim of the study: To assess the clinical presentation and post-operative complications among total thyroidectomy cases in Aseer Central Hospital [ACH].

Methodology: A retrospective record based descriptive approach was used through reviewing medical records of all cases that underwent total thyroidectomy for different indications in Aseer Central Hospital [ACH] during the period from 2000 to 2019. Data extracted through pre-structured questionnaire including patient's bio-clinical data, preoperative symptoms and complications of the procedure.

Results: The study included 150 cases. One hundred and thirteen cases [75.3%] aged above 40 years. The main complaint recorded for the cases was neck swelling which was recorded among 56% of the cases followed with dysphagia. About 91% of the cases recorded post-operative complications. Scar was the most recorded complication followed with hypocalcaemia.

Conclusion and recommendations: In conclusion, the study revealed that neck swelling was the most recorded clinical finding with dysphagia. Majority of cases recorded post-operative complications mainly scar and hypocalcaemia.

Keywords: Thyroidectomy; Total thyroidectomy; Thyroid surgery; Complications; Clinical presentations; Outcome; Thyroid removal

INTRODUCTION

Thyroidectomy is a type of surgery that means the surgical removal of all or part of the thyroid gland [1]. It is usually recommended when a patient has thyroid cancer or some other comorbidity of the thyroid gland including hyperthyroidism or goiter. There are many other indications for thyroidectomy

including cosmetic in case of a much enlarged gland, or obstructive symptoms causing difficulties in swallowing or breathing [2,3].

There are many complications that recorded on cases with thyroidectomy including: temporary or permanent change in voice, temporary or permanently low calcium, need for lifelong

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thyroid hormone replacement, bleeding, infection, and the remote possibility of airway obstruction due to bilateral vocal cord paralysis. Complications are uncommon when the surgery is performed by an experienced surgeon [4-7]. Postoperative hematoma with compressive nature besides acute dyspnea is uncommon but critical complication that may causes long term disability or even death. Many factors were associated with complications including patient-related factors (previous cervical surgery) [7], procedure related factors (lymph-node dissection) [8], thyroid pathology (thyroiditis or cancer) [9], or surgeon experience [10]. Therefor, most surgeons avoid the procedure due to the mentioned potential complications especially permanent recurrent laryngeal nerve palsy and permanent hyperparathyroidism; subtotal thyroidectomy has been the preferred alternative for benign thyroid disorders [11-13].

Due to this variety of complications natures and severity, it's essential to identify the epidemiology and post-operative complications of total thyroidectomy. This was the main aim of the current research targeting total thyroidectomy surgeries in Aseer Central Hospital, Abha city, Southern of Saudi Arabia.

METHODOLOGY

A retrospective record based descriptive approach was used through reviewing medical records of all cases that underwent total thyroidectomy for different indications in Aseer Central Hospital [ACH] during the period from 2000 to 2019. Aseer Central hospital is the main tertiary hospital in Abha city, the capital of Aseer region, Southern of Saudi Arabia where all cases for thyroidectomy are referred. Records with missing data were excluded. Data extracted throng pre-structured questionnaire including patient's bio-clinical data, preoperative symptoms and complications of the procedure.

Statistical analysis

After data were extracted, it was revised, coded and fed to statistical software IBM SPSS version 22[SPSS, Inc. Chicago, IL]. All statistical analysis was done using two tailed test. p value less than 0.05 was considered to be statistically significant. Descriptive analysis based on frequency and percent distribution was done for all variables including demographic data, clinical data, and surgery outcome. Univariant relations between patients' bio-clinical data and post-operative complications or revision surgery were tested using exact probability test due to small sample size.

RESULTS

The study included 150 cases of total thyroidectomy during the period from 2000 to 2019 in a tertiary hospital in southern region of Saudi Arabia. One hundred and thirteen cases [75.3%] aged above 40 years and 79.3% were females. The main compliant recorded for the cases was neck swelling which was recorded among 56% of the cases followed with dysphagia [36%], SOB [34%], and hoarseness of voice [24%] (Table 1).

Table 1: Bio-clinical data of cases that underwent total thyroidectomy in a tertiary hospital, southern Saudi Arabia.

Bio-clinical data	No	%
Age in years		
<40 years	37	24.70%
>40 years	113	75.30%
Gender		
Male	31	20.70%
Female	119	79.30%
Maincomplain		
Neck swelling	84	56.00%
Dysphagia	54	36.00%
Hoarseness of voice	36	24.00%
SOB	51	34.00%

With regard to the clinical outcome of the included cases (Table 2), 91.3% of the cases recorded post-operative complications. Scar was the most recorded complication [43.3%] followed with hypocalcaemia [37.3%], and hoarseness of voice [24.7%] while only 6.7% had wound infection. Nine cases [6%] needed revision surgery later on with follow-up.

Table 2: Clinical outcome of cases that underwent total thyroidectomy in a tertiary hospital, southern Saudi Arabia.

Clinical outcome	No	%
Post-operative complications		
No	13	8.70%
Hypocalcaemia	56	37.30%
Hoarseness of voice	37	24.70%
Wound infection	10	6.70%
Scar	65	43.30%
Revision surgery		
Yes	9	6.00%
No	140	94.00%

On relating post-operative complications with patients' bio-clinical data, Table 3 demonstrates that 92% of the cases above 40 years had complications compared to 89.2% of others below the age of 40 years with no statically significance [p=.593]. Also complications were recorded among 93.3% of the females compared to 83.9% of males [p=.097]. As for complications relation with the main complain, the highest percentage was

recorded for those who complained of dysphagia [98.1%] compared to 84.3% for those who complained of SOB [p=.001].

Table 3: Distribution of total thyroidectomy complications according to patients' bio-clinical data in a tertiary hospital, Southern Saudi Arabia.

Bio-clinical data	Post-operative complications				p value
	No		Yes		
	No	%	No	%	
Age in years					
<40 years	4	10.80 %	33	89.20 %	0.593
>40 years	9	8.00%	104	92.00 %	
Gender					
Male	5	16.10 %	26	83.90 %	0.097
Female	8	6.70%	111	93.30 %	
Main complain					
Neck swelling	13	15.50 %	71	84.50 %	.001*
Dysphagia	1	1.90%	53	98.10 %	
Hoarseness of voice	1	2.80%	35	97.20 %	
SOB	8	15.70 %	43	84.30 %	

P: Exact probability test; * p<0.05 [significant]

Finally Table 4 illustrates distribution of revision surgery history with patients' data. No statically relation was found for all cases with minimal insignificant higher rate of revision surgery in for young aged patients [<40 years], females, those with neck swelling, and those without complications [p>0.05 for all].

Table 4: Distribution of total thyroidectomy revision surgery according to patients' bio-clinical data in a tertiary hospital, Southern Saudi Arabia.

Bio-clinical data	Revision surgery		p value
	Yes	No	

	No	%	No	%	
Age in years					
<40 years	3	8.10%	34	91.90%	0.543
>40 years	6	5.40%	106	94.60%	
Gender					
Male	1	3.20%	30	96.80%	0.46
Female	8	6.80%	110	93.20%	
Main complain					
Neck swelling	5	6.00%	79	94.00%	0.801
Dysphagia	2	3.80%	51	96.20%	
Hoarseness of voice	1	2.80%	35	97.20%	
SOB	3	5.90%	48	94.10%	
Post-operative complications					
No	1	7.70%	12	92.30%	0.794
Yes	8	5.90%	128	94.10%	

P: Exact probability test

DISCUSSION

Total thyroidectomy is one of the common surgical procedures all over the world especially in patients with thyroid malignancies, thyrotoxicosis, multilocular goiter and chronic thyroiditis [14]. Thyroid neoplasm, inflammations and anomalies are very common which recorded among and affect nearly 11% of the general population. Total thyroidectomy is one of the most recorded therapies for thyroid disorders [15,16].

The current study was conducted to assess indications as well the post-operative complications of total thyroidectomy for cases admitted to ACH, Abha for 19 years' time period. The study revealed that two thirds of cases aged above 40 years and females. As for the main recorded clinical presentation, neck swelling was recorded among more than half of the cases followed with dysphagia due to swelling compression and SOB. Hoarseness of voice which means involvement of focal cords was recorded among one quarter of the cases which means that facial nerve palsy post operatively was highly probable.

Regarding post-operative complications, it was recorded for 91.3% of the cases. Hypocalcaemia was the most frequent as it was recorded for 1 out of each three cases. The primary cause of hypocalcaemia is due to hyperparathyroidism secondary to damage of one or more of the parathyroid gland during surgery. Another less probable explanation is erroneous parathyroid removal [17-19]. There are many studies which reported post thyroidectomy hypocalcaemia as the major complication [20-22].

A study was conducted by Tredici et al.[23] focused on the assessment of the drop in the post-operative calcium levels relative to the immediate pre-operative levels as a useful and simple predictor of hypocalcaemia in patients undergoing total thyroidectomy. The study revealed that Adoption of 1.1 mg/dl [12% of pre-operative level] as cut-off for detecting benefit to start prophylactic calcium replacement related with about 2 days earlier to discharge patient with a significant saving in costs.

Hoarseness of voice was recorded among 1 out of each four surgeries. This percentage most probably not due to the surgical intervention as it was recorded as the main complaint among 24% of the cases pre-operatively. Hoarseness of voice is mainly associated with recurrent laryngeal nerve injury which is not uncommon after thyroidectomy [24]. Neck nerves and their branches have mainly motor function on the laryngeal muscles which is responsible for both the motility of the vocal cords and of all the distinctive features of one's voice. The lesion for the main trunk of these nerves, or of their smaller motor branches, is responsible for the paralysis of different laryngeal muscles that might be clinically evident as a significant impairment of the voice either in its quality and intensity [25].

Safe thyroid surgery is a challenge for all head and neck surgeons as all may be burden by one of the complications but can be minimized by proper assessment and selecting the most appropriate technique based on pre-operative guidelines.

STUDY LIMITATIONS

Regarding the long period selected for reviewing the cases, the total sample size was questionable besides the lack of many important clinical data. Also the included cases since year 2000 which means that high rate of complications due to old techniques and post-operative medical care.

CONCLUSION AND RECOMMENDATIONS

In conclusion, the study revealed that neck swelling was the most recorded clinical finding with dysphagia. Majority of cases recorded post-operative complications mainly scar and hypocalcaemia but only nine cases needed revision surgery. Females with dysphagia were the most group experienced complications. An alternative approaches including partial thyroidectomy or palliative treatments are preferred if applicable such as benign cases.

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