

Original Research Article

A case-control study on thyroid surgery in geriatric patients

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ABSTRACT

Background: With the progressive aging of the population, thyroid pathology with surgical indication occurs at increasingly advanced ages. The authors aim was to analyze the forms of presentation of thyroid disease and rate of complications of thyroid surgery performed in geriatric patients and to compare it to the same parameters in younger patients.

Methods: This was a 7 year retrospective case-control study, with patients who underwent thyroid surgery. The study group included patients above 65 years old and a control group under 65 years old, who underwent thyroidectomy.

Results: A total of 81 patients were included. The mean volume of thyroid nodules at presentation was significantly higher in the study group compared to the control group, regarding the disease presentation, it was an accidental imaging finding in 59% of patients of the study group, while in the control group there were more compressive symptoms at presentation. The rate of postoperative complications in geriatric patients was 29% versus 20% in the control group, a difference that was not statistically significant.

Conclusions: Given the high number of comorbidities presented by geriatric patients, the symptoms of thyroid disease can be undervalued, explaining the greater number of accidental imaging findings and the greater volume of nodules at the time of surgery. Our results show that geriatric thyroid surgery is safe and has acceptable postoperative morbidity. The detection of thyroid pathology in these patients is a greater challenge, which can obscure symptoms, delay diagnosis and worsen prognosis.

Keywords: Thyroid, Thyroidectomy, Aged, Elderly, Postoperative complications

INTRODUCTION

The reality of the majority of developed countries is a progressive increase in average life expectancy.¹ With an increasingly aging population, it is therefore inevitable that we will see a need for all kinds of surgery in increasingly older patients and thyroid surgery is not an exception. Therefore, it is becoming essential to understand whether medical and surgical risks of thyroid surgery at these ages are greater than in younger patients.

It is known and scientifically demonstrated that age is an independent risk factor for the occurrence of postoperative complications in several types of surgery namely cardiac, vascular or colorectal, a risk that increases proportionally with increasing age. Based on this assumption, surgeons often choose to avoid or delay surgical treatment in the elderly, preferring conservative treatments and surveillance.²⁻⁴ However, the indications for thyroid surgery in the elderly are well balanced with the risks of surgery and usually postponed until severe symptoms occur, malignant cytology is obtained or a considerable nodule size is observed.

The international studies on thyroid surgery in the geriatric population are scarce, difficult to compare and have divergent results.^{1,5-8} Several questions remain unanswered: is there a greater difficulty in diagnosing geriatric patients with thyroid disease?; will surgical postponement have consequences?; will there be more postoperative complications in these patients?; and are these complications more serious?

Taking into account some of these doubts not yet clarified in the literature, this study aimed to characterize the geriatric population undergoing thyroid surgery at our department as well as to compare it to a control group of patients of a younger age.

METHODS

This was a 7 year retrospective case-control study that included patients who underwent partial (lobectomy), total thyroidectomy or totalization thyroidectomy between January 2013 and December 2020 in our ear nose and throat (ENT) department. A total of 111 patients were selected. From those, patients who underwent thyroidectomy in the context of head and neck cancer surgical treatment as well as those with insufficient clinical records were excluded (N=30).

Patients were then stratified by age, those over 65 years old (N=27) were included in the study group; those who underwent thyroidectomy in the same period were randomly selected to be included in the control group (N=54).

The following data were collected by the authors. They were demographic data, disease presentation, size of the nodules, cytological diagnosis, surgical extension, histological diagnosis of surgical specimens and rate and type of postoperative complications. Simple descriptive statistics were produced using SPSS version 25 (IBM Corporation, Armonk, NY, USA). Kolmogorov test was used for the analysis of normal distribution of continuous variables, Wilcoxin test was used for dependent variables and Chi-square was used for evaluation of categorical variables. $P < 0.05$ was considered statistically significant.

RESULTS

The results of our study are summarized in Table 1.

Demographic data

The average age observed in the study group was 71 years old (± 4.1), which was 45 years old (± 5.3) in the control group. The female:male ratio was 4:1, in both groups.

Disease presentation

Regarding the disease presentation, 12 patients of the study group were diagnosed through an accidental

imaging finding (44%), 7 patients had compressive symptoms (26%), namely dyspnea, dysphagia, the sensation of a laryngeal foreign body or chronic cough and the remaining cases were diagnosed due to the emergence of clinical or ultrasound alarm criteria during nodular follow up.

On the other hand, in the control group, the presence of compressive symptoms proved to be the most common form of presentation, affecting 32 patients (59%), diagnosis through accidental imaging finding affected only 18.5% of the total cases.

Size

The mean average volume of thyroid nodules at the moment of the surgical decision, always considering the largest of the nodular dimensions was 2.59 (± 1.34) cm in the study group and 1.34 (± 1.53) cm in the control group.

Preoperative cytology

There were no significant differences between groups regarding the preoperative cytological diagnosis of lesions, taking into account the Bethesda classification system (BS). In both groups, the most common cytological diagnosis was benign nodule (BS-II) and follicular neoplasm (BS-IV). BS-II accounted for 51.8% of cases in the study group and 41.4% of the control group. BS-IV affected 29.6% and 34.5% of the study and control group, respectively.

Surgical extension

We divided surgical extension into total thyroidectomy (TT), hemithyroidectomy (HT), TT associated with neck dissection (TT+ND), HT associated with neck dissection (HT+ND) and totalization thyroidectomy (total T).

As expected, hemithyroidectomy was the most frequently performed surgery in both groups (40.7% in the study group and 71.6% in the control group). We verified a slightly higher rate of more extensive procedures in the study group as TT and TT+ND, respectively 26% and 18.5% when compared with the control group.

Histological analysis of the surgical specimen

We obtained colloid specimens in the majority of cases in both groups (N=15 and N=20 in the study and control groups, respectively). Follicular hyperplasia was the second most common diagnosis, accounting for 17 of the cases in the control group. There were no statistical differences between the groups regarding the histological diagnosis.

Postoperative complications

The most frequently reported complications in the study group were transient hypoparathyroidism (N=3), cervical

hematoma (N=2), transient and definitive postoperative dysphonia (N=1 and N=1 respectively) and definitive hypoparathyroidism (N=1).

Regarding the control group, it was observed transient hypoparathyroidism in 4 patients, transient dysphonia in 3 patients, hematoma in 3 patients and definitive dysphonia in 1 case.

Thus, the total rate of postoperative complications was 29% in the study group and 20% in the control group. A small difference is verified, although not statistically significant. We had to take into account the different number of patients between each group, which made the relative results to become comparable.

Table 1: Sample analysis in the study group and in the control group; HT-hemithyroidectomy; ND-neck dissection; TT-total thyroidectomy; total T-totalization thyroidectomy.

Sample analysis	Study group	Control group
Age (in years)	71 (± 4.1)	45 (± 5.3)
N	27	54
Disease presentation	Accidental imaging findings (44%); compressive symptoms (26%); others	Compressive symptoms (59%); accidental imaging findings (18.5%); others
Mean nodule size (in mm)	2.59 (± 1.34)	1.34 (± 1.53)
Preoperative cytology (BS in %)	I-0; II-37; III-0; IV-25.9; V-3.7; VI-29.6	I-3.4; II-41.4; III-7.8; IV-34.5; V-1.8; VI-12
Surgical extension (%)	HT-40.7; TT-26; TT+ND-18.5; Total T-11.1; Total T+ND-3.7	HT-71.6; TT-10.3; TT+ND-6.9; Total T-10.3; Total T+ND-1.7
Histological analysis (N)	Colloid-15; follicular hyperplasia-3; papillary carcinoma-6; follicular carcinoma-1; medullary carcinoma-2	Colloid-22; follicular hyperplasia-19; papillary carcinoma-9; follicular carcinoma-2; medullary carcinoma-1; Hurthle cell carcinoma-1
Post-op complications (N)	Hypoparathyroidism transient-3; definitive-1; dysphonia transient-1; definitive-1; hematoma-2	Hypoparathyroidism transient-4; definitive-0; dysphonia transient-3; definitive-1; hematoma-3
Postoperative complication rate (%)	29	20

DISCUSSION

Thyroid pathology has a considerable incidence in the geriatric population. With the progressive increase in average life expectancy, thyroid surgery takes place at increasingly advanced ages.⁹

Thus, the eligibility of these patients for surgical treatment was a reason for growing concern, given the possible higher incidence of in and postoperative complications and subsequent morbidity. As previously mentioned, it was a topic that was still little addressed in the international literature and the few existing studies remained not consensual.

We verified that a large part of patients in the study group was diagnosed through accidental imaging findings (44%). Conversely, compressive symptoms motivated the visit to the doctor and enabled the diagnosis of thyroid disease in 64% of the patients in the control group of a younger age, in whom the accidental findings corresponded only to 18% of the cases.

Here was the explanation we suggested for these findings. Changes in thyroid function, when present, were

manifested in the form of nonspecific symptoms in all patients, but particularly in the elderly, in whom even the rare objective symptoms and signs were often wrongly attributed to age.^{9,10} In addition, the high number of comorbidities that these patients usually presented, can make the symptoms of thyroid disease to be undervalued or even masked. This could explain the high number of diagnoses made through accidental imaging findings observed in our results.

In this study, we also found that the average total volume of thyroid nodules at the time of the surgical decision was shown to be significantly higher in the study group compared to the control group.

We suggested that, as already mentioned, because it was believed that the patient's age may negatively influence the postoperative result, surgical indications were often delayed or even avoided in older patients. This may result in the need to perform surgery later, with larger tumors, as shown in our study. This delay in the surgical decision can mean a worsening of the patient's general conditions and the aggressiveness of the disease and therefore, mean a worse prognosis.

In our study, we found that postoperative morbidity was in fact, slightly more frequent in the geriatric population comparing to the control group (29% versus 20%). It was true that a small difference was verified, although not statistically significant. We had to take into account the different number of patients between each group, which made the relative results to become comparable. Besides, a larger nodule size led, generally, to more extensive surgery. The extension of the surgery was connected, in several previous reports, to a higher rate of postoperative complications in the general population. So, we can predict similar results in thyroid surgery in the elderly, in whom a larger thyroid nodule size can justify more extensive surgery and a slightly higher postoperative complication rate.

This result may demonstrate that thyroid surgery in geriatric age proved to be safe and to had postoperative morbidity comparable to that performed on younger patients and considered acceptable.

Despite our results, we underlined the importance of clinical sense, the surgeon should always consider the risk-benefit of surgery in these patients, taking into account the severity of the symptoms, the aggressiveness of the cytology and the patient's co-morbidities.

Limitations

As main limitations of our study, we can list the following: given the retrospective design, data collection was performed exclusively through the electronic medical record, carrying the risk of over or underreporting specific details about each patient; the small number of patients over 65 years old understudy, which limited the achievement of some statistically significant results.

CONCLUSION

The rate of postoperative complications of thyroid surgery in the geriatric population (considered above 65 years old) is not shown to be significantly higher than the rate of complications in younger patients. Thus, geriatric age thyroid surgery in the study population was found to be safe and to have acceptable postoperative morbidity.

Given the multiplicity of pathologies that these patients present, the manifestations of thyroid disease may be underestimated, which explains the occurrence of a large number of diagnoses made through accidental imaging findings in this age group.

Since age is an independent risk factor for the occurrence of postoperative complications in several types of surgery, surgical postponement is often made in these patients, to whom it is offered surveillance and

conservative treatment; this may explain the higher average total volume of thyroid nodules at the time of the surgical decision in older patients.

The detection of thyroid pathology in geriatric patients is a major challenge; the non-specific symptoms associated with the multiple co-morbidities that these patients present, may obscure symptoms, delay the diagnosis and worsen the prognosis.

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