

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.JournalofSurgicalResearch.com

Association for Academic Surgery

Substernal goiter: when is a sternotomy required?



Luke Nankee, MS,^{a,b} Herbert Chen, MD,^{a,b} David F. Schneider, MD, MS,^{a,b}
Rebecca S. Sippel, MD,^{a,b} and Dawn M. Elfenbein, MD, MPH^{a,b,*}

^a Section of Endocrine Surgery, Department of Surgery, University of Wisconsin, Madison, Wisconsin

^b Wisconsin Surgical Outcomes Research (WiSOR) Program, Department of Surgery, University of Wisconsin, Madison, Wisconsin

ARTICLE INFO

Article history:

Received 2 January 2015

Received in revised form

6 April 2015

Accepted 14 April 2015

Available online 18 April 2015

Keywords:

Substernal goiter

Sternotomy

Thyroidectomy

ABSTRACT

Background: Sternotomy for substernal goiters (SSG) is associated with greater morbidity than a cervical approach to thyroidectomy. We sought to identify predictors for sternotomy as a surgical approach for the removal of SSG and analyzed the preoperative and postoperative characteristics of patients with SSG compared with those with large goiters contained entirely within the neck or a cervical goiter.

Methods: A retrospective review of a surgical database was performed. We included patients with large (>100 g) thyroids or SSG, regardless of size. Between 1995 and 2013, 220 patients met these criteria. Comparisons were made between patients who had an SSG and patients who had a cervical goiter with particular focus on those who required sternotomy. **Results:** Of the 220 patients, 127 patients (58%) had SSG, of whom 7 (5.5%) required sternotomy. All patients who underwent sternotomy underwent preoperative computed tomography scanning and were more likely to have preoperative symptoms of chest pressure and voice complaints and have extension of the thyroid gland below the aortic arch. Sternotomy took an average of 2 hours longer than a cervical incision, was associated with significantly more blood loss (600 versus 190 mL, $P = 0.04$), and a longer length of stay (3.1 versus 1.8 d, $P = 0.03$) than cervical thyroidectomy.

Conclusions: Sternotomy for SSG is rare. All patients necessitating sternotomy had extension below the aortic arch and were more likely to present complaining of chest pressure and voice issues.

© 2015 Elsevier Inc. All rights reserved.

1. Introduction

A retrosternal or substernal goiter (SSG) is an enlargement of the thyroid gland that extends into the mediastinum posterior to the sternum. There is no uniform, widely accepted definition of SSG. One article has identified at least six different definitions [1] that may help explain why the prevalence of

SSG ranges anywhere from 2%–19% among all patients with a goiter [1–5]. Two of the most commonly accepted definitions of SSG are a goiter that has descended below the plane of the thoracic inlet and a goiter with more than 50% of its mass lying below the thoracic inlet [2,4]. Regardless of definition, continued growth of an SSG can lead to symptoms from compression of the great vessels, trachea, and esophagus

* Corresponding author. Section of Endocrine Surgery, Department of Surgery, University of Wisconsin, K4/729 Clinical Science Center, 600 Highland Avenue, Madison, WI 53792. Tel.: +1 608 263 1387; fax: +1 608 263 7652.

E-mail address: elfenbein@surgery.wisc.edu (D.M. Elfenbein).

0022-4804/\$ – see front matter © 2015 Elsevier Inc. All rights reserved.

<http://dx.doi.org/10.1016/j.jss.2015.04.045>

[3,6–11]. Medical management using exogenous thyroxine may reduce gland size slightly [6,12] but this is rarely sufficient [5,7,13]. For this reason, surgical treatment is generally indicated in symptomatic patients, and many advocate for the removal of retrosternal goiters before dangerous compressive symptoms appear [1].

Most thyroidectomies are performed through an incision in the neck, but this may prove challenging if a large portion of the gland is behind the sternum. An SSG may be managed through a cervical incision [14], but a thoracic approach such as a total or partial sternotomy may be required. Previous authors have reported it necessary in 1%–11% of patients with SSG [5,15]. The potential complications of a thoracic approach include hematoma, mediastinitis, abscess, osteomyelitis, chest bone fracture, and sternal dehiscence. Recovery can also take longer and be more painful in comparison with a cervical approach.

Accordingly, predicting which patients will have a difficult operation and potentially require a sternotomy is desirable for preoperative planning, to assure proper personnel and resource allocation and provide information for better informed patient discussions regarding operative risk [5,16]. We performed a retrospective review of our endocrine surgery database to identify pathologic, clinical, or radiologic factors associated with a thoracic approach. There were two objectives of this study. The first was to compare preoperative and postoperative characteristics of patients with SSG compared with those with large goiters contained entirely within the neck or a cervical goiter (CG). The second was to identify predictors for sternotomy as a surgical approach for the removal of SSG.

2. Materials and methods

A retrospective review of our institutional review board-approved endocrine surgery database was performed. We included all patients who underwent a total thyroidectomy who had large thyroids (>100 g) or any mention of a substernal component during their preoperative workup, regardless of the size of the gland. SSG was defined as an enlarged thyroid gland descending below the plane of the thoracic inlet [1,2,17] as this definition is the most inclusive and refers to consistent anatomic landmarks that are easily recognized both radiologically and during surgery [1]. Between 1995 and 2013, 3233 thyroidectomies were performed, and 220 patients had very large or SSG. Demographic data were then compared between patients who had an SSG and those whose thyroid glands were contained entirely within the neck. Further comparisons were made between those with an SSG who required sternotomy to excise their thyroid and those who underwent cervical incision only.

The groups were compared using the chi-square test for categorical variables and the Student t-test for continuous variables. To identify predictors of sternotomy, bivariate comparisons were made and *P* values of ≤ 0.05 were determined to be significant. All statistical analyses were performed using STATA version 12 (StataCorp, College Station, TX). Data are expressed as mean \pm standard error of the mean or as a number (%) as appropriate.

Table 1 – Patient characteristics, SSG versus CG.

Variable	Patients with substernal goiter (n = 127)	Patients with cervical goiter (n = 93)	P value
Male	38 (30)	27 (29)	0.886
Female	89 (70)	66 (71)	
Age, y, mean \pm SD	61.7 \pm 14.6	50.8 \pm 16.7	0.001
BMI, mean \pm SD	35.4 \pm 9.7	34.4 \pm 9.1	0.506
Previous neck surgery	13 (10)	5 (5.4)	0.194
Sternotomy	7 (5.5)	0 (0)	0.021
OR time (min)	246.2 \pm 129.9	226.7 \pm 115.5	0.451
Thyroid weight (g)	170.9 \pm 120	172.2 \pm 97	0.932
Estimated blood loss (mL)	204.9 \pm 391.2	144.7 \pm 180.8	0.185
Length of stay (d)	1.87 \pm 1.59	1.5 \pm 1.69	0.116

Values are presented as number of patients and percentages.

BMI = body mass index; OR = operating time; SD = standard deviation.

3. Results

Of the 220 patients, 127 patients (58%) had SSG, of whom 7 (5.5%) required sternotomy. The remaining 93 patients (42%) were classified with CG that were not substernal. On bivariate analysis, there were no differences in gender, thyroid weight, estimated blood loss, body mass index, preoperative symptomatology, postoperative complications, operation time, incidence of previous neck surgery, or length of stay for patients who had SSG versus CG. However, patients with SSG were older (62 versus 51 y, $P < 0.001$) than patients with CG. These features are outlined in Table 1.

The most common preoperative symptoms for patients with CG were dysphagia and shortness of breath, which occurred in 49 patients (54%) and 37 patients (40%), respectively. The preoperative symptoms for patients with SSG were dysphagia in 64 patients (52%), shortness of breath in 64 patients (52%), voice issues in 13 patients (11%), and other complaints such as chest pressure in 15 patients (12%). Postoperatively, 15 patients (17%) with CG had hypocalcemia and 9 hypocalcemia (10%) complained of voice issues. For patients with SSG, postoperative bleeding requiring immediate reoperation occurred in 4 patients (3%), postoperative hypocalcemia occurred in 11 patients (9%), and postoperative voice issues occurred in 13 patients (10%). These features are outlined in Table 2.

Bivariate comparisons were made for patients with SSG who required sternotomy to those with SSG who had their thyroid removed completely through a cervical incision. Patients who underwent a sternotomy showed no difference in terms of gender, age, body mass index, thyroid weight, operating time, incidence of previous neck surgery, preoperative hyperthyroidism, or permanent postoperative complications. All patients who underwent sternotomy underwent preoperative computed tomography (CT) scanning, and they were more likely to have other preoperative symptoms (43% versus 10%, $P = 0.01$) such as chest pressure and voice complaints (43% versus 9%, $P = 0.004$). Sternotomy took an average of 2 h longer than a cervical incision, was associated with

Download English Version:

<https://daneshyari.com/en/article/4299602>

Download Persian Version:

<https://daneshyari.com/article/4299602>

[Daneshyari.com](https://daneshyari.com)