Staged Thyroidectomy for Large Substernal Goiters

INTRODUCTION

Multinodular goiter (MNG) is the most common benign thyroid disease. The prevalence in the United States is approximately 4%.1 The incidence of nodular disease is 0.1%.2 Risk factors for the disease are obesity, African-American ethnicity, and female gender.3,4 Large substernal goiters are worrisome due to symptoms such as dyspnea, stridor, and upper extremity swelling.5,6 The morbidity of large substernal goiters is high, with instances of recurrent laryngeal nerve (RLN) injury.7 Furthermore, the increased size of these glands can result in RLN injury during the course of resection.8

METHODS

Two-stage thyroidectomy was initiated at our institution over the last five years for many patients with large substernal goiters. The two-stage model was developed to help reduce operating time, and to achieve shorter hospital stays with fewer ICU admissions.9

DISCUSSION

Patient Characteristics

The two groups had similar patient characteristics. Comorbidities were similar between the two-stage and single-stage group (Table 2). In addition, there was no significant difference in the number of patients that had more than one type of operation. The number of patients undergoing operations was 88 ± 53.6 days in the two-stage group (Figure 1).

Thyroid Characteristics

When examining the entire group, the average thyroid volume was 53.6 ± 80.5 cm³. 175 patients (56.8%) had thyroid deviations. 86 (47.3%) had received thyroid compression and 66 (45.2%) reported compressive symptoms. 84% of resected thyroids had a benign pathology and 16% were found to be malignant for the entire patient group. Statistically, there was a significant difference between benign (84% [86%] vs. 41% [62%], p = 0.03) and malignant (14% [14%] vs. 59% [38%], p = 0.001) groups with respect to the size of the gland. The size of the gland was significantly larger in the single-stage group (41.4 ± 42.5 cm³ vs. 57.3 ± 47.4 cm³, p = 0.014). There was no difference in the number of patients with right-sided deviations between the two-stage (51.55%) and single-stage groups (40% [p = 0.8]). There was also no difference in the number of patients with left-sided compression (40% (40%) vs. 16 (86%), p = 0.07) or compressive symptoms (43 [47%] vs. 23 [65%], p = 0.46) between two-stage and single-stage groups.

Thyroid Related Perioperative Outcomes

Average hospital stay was significantly less in the two-stage group (133.5 ± 59 minutes vs. 182.2 ± 79.4 minutes, p = 0.003). Furthermore, the incidence of single-stage total thyroidectomy in the management of large substernal goiters was significantly increased compared to our cohort (65%) in the two-stage group (Figure 1).

RESULTS

Staged thyroidectomy is a safe, feasible and cost-effective alternative to single-stage total thyroidectomy in the management of large substernal goiters.

METHODS

A chart review was conducted for 135 patients that underwent a total of 150 surgeries between 2008-2013 for substernal goiters. Charts and available imaging (CT scans, MRI, chest x-rays, and ultrasonograms) were retrospectively reviewed. Inclusion criteria were defined as 18 years of age or greater, thyroidectomy for substernal goiter with extension to the cervical space, and that patients were able to delay resuming the remaining thyroid and avoid the risk of simultaneous bilateral nerve injury.9

We hypothesize that in select patients staged thyroidectomies will result in better patient outcomes, improved hospital utilization and an overall cost savings.

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