

Original Research Article

Morbimortality and malignancy in patients treated with the Sistrunk procedure technique for the treatment of thyroglossal duct cyst in UMAE hospital de Especialidades Dr. Antonio Fraga Mouret Centro Médico Nacional La Raza

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ABSTRACT

Background: Describes the morbidity and malignancy in patients treated with the Sistrunk procedure technique for the treatment of thyroglossal duct cyst from 2017 to 2022 in UMAE specialty hospital "Dr Antonio Fraga Mouret" CMN La Raza.

Methods: Retrospective, cross-sectional, observational, descriptive and analytical study. The study population consisted of patients older than 18 years of age with a diagnosis of thyroglossal duct cyst, treated with the Sistrunk procedure technique between January 2017 and July 2022.

Results: The 31 patients were included. 21 of the female gender and 10 of the male gender. The average age was 41.29 years. The age range with the largest number of patients was 35-50 years. The most frequent presenting symptom was painless cervical enlargement. Comorbidities occurred in 48.37% of the patients. The average size was 3.64×2.59 cm. The most frequent location was the infrahyoid (51.61%). Morbidity was 9.67%, 3 patients presented immediate postoperative complications, of which 2 (6.45%) patients presented bleeding that required urgent surgical reoperation with adequate resolution and 1 (3.23%) patient presented solid dysphagia that was resolved with conservative treatment. No intraoperative or late postoperative complications were recorded. Mortality was nil. The average number of days of hospital stay was 3.06 days. The presence of malignancy was null.

Conclusions: Morbidity in this series of patients was 9.67%. Mortality and presence of malignancy were null.

Keywords: Sistrunk procedure, Morbidity, Mortality, Malignancy

INTRODUCTION

Embryology

The thyroglossal duct is a connection that serves as a pathway for the trajectory of the primordial thyroid gland, before its descent from the base of the tongue, in the foramen caecum, to the second and third cartilages of the trachea. The lack of involution and atrophy of the

same, results in the persistence of a cyst or remnant of the thyroglossal duct.^{1,2}

Epidemiology

The thyroglossal duct cyst is the most common congenital anomaly of the neck, with a prevalence of 7% in the population. They often occur in pediatric patients; however, they can be diagnosed at any age, from the neonatal period to old age.³

Clinical features

The classic clinical presentation is a palpable mass located in the midline, painless, that is mobilized when swallowing and when protruding the tongue. They are usually between 2 and 4 cm in diameter and gradually increase in size, becoming rapidly enlarged after an upper respiratory tract infection. Most are benign, but up to 1% can be malignant. Most of them are located in the infrahyoid region (80%), 8% in the suprahyoid region, 5% in the suprasternal region of the neck, and only 1-2% are located at the base of the tongue.^{4,5}

Diagnosis

Neck ultrasound represents the initial imaging study, showing a cystic lesion with well-defined borders. In addition, it allows to observe if the thyroid gland is present or not in its usual position. Computed tomography is rarely used, being more used in adults, which demonstrates a well-defined, thin-walled lesion with homogeneous fluid attenuation. Within laboratory studies, some surgeons advocate routine preoperative thyroid function tests. This may be helpful if ectopic thyroid tissue is expected.^{6,8}

Differential diagnosis

The differential diagnosis includes dermoid cyst, cystic hygroma, branchial cyst, hemangioma, lipoma, and lymphadenopathy.⁹

Treatment

The treatment of choice is Sistrunk procedures, which, when performed correctly, have recurrence rates of less than 3%.^{10,11}

Objectives

Objectives were reports of our experience in last 5 years, in terms of morbidity and mortality, surgical findings and malignancy in patients diagnosed with thyroglossal duct cyst, who underwent Sistrunk procedure.

METHODS

This is a retrospective, cross-sectional, observational, descriptive and analytical study. All adult patients diagnosed with thyroglossal duct cyst who underwent surgical treatment with the Sistrunk procedure technique were studied, during the period from January 1, 2017 to July 31, 2022; at the specialty hospital "Dr. Antonio Fraga Mouret" Centro Médico Nacional La Raza, México, City. Data from the clinical and electronic records, from the surgical record notes, as well as the histopathology results, were collected.

Sample size was chosen with the next formula:

$$Z \propto^2 \times p \times q/d^2$$

Where: Z=Confidence level (95%), obtaining a sample size of 32.

All female and male patients over 18 years of age with a diagnosis of thyroglossal duct cyst treated with the Sistrunk procedure technique were included. Patients under 18 years of age, with an alternative diagnosis to a thyroglossal duct cyst, patients treated with a technique other than the Sistrunk Procedure, as well as patients treated outside the study period, are not included. Patients with incomplete and lost records will be excluded.

Ethics approval was approved by the appropriate hospital committee.

The analysis of the data obtained was carried out using basic descriptive statistics, estimating simple frequencies and measures of central tendency, with the support of excel statistical software, using the latter for the creation of tables and graphs.

RESULTS

During the period between January 2017 and July 2022, a total of 31 adult patients with a diagnosis of thyroglossal duct cyst treated with the Sistrunk procedure surgical technique met the inclusion criteria, of which 21 (68%) patients were female and 10 patients (32%) were male. The average age was 41.29 years, the minimum age was 18 years and the maximum age 77 years, with a range of 59 years, median of 43 years and mode of 19 years (Table 1).

The age range with the largest number of patients was 35-50 years with 13 patients, which corresponds to 41.93% of all cases. The age range with the lowest number of patients was 66-77 years, with 3 patients, corresponding to 9.67% of the total cases (Table 2).

The most frequent presenting sign was only painless cervical volume increase in 24 patients (77.42%), cervical volume increase associated with dysphagia to solid foods in 3 patients (9.68%), cervical volume increase associated with odynophagia in 1 patient (3.23%), increased cervical volume associated with dyspnea in 1 patient (3.23%), increased cervical volume with local signs of infection in 1 patient (3.23%), and sensation of a pharyngeal foreign body and solid food dysphagia in 1 patient (3.23%) (Table 3).

Comorbidities occurred in 15 cases (48.37%), which were: systemic arterial hypertension in 5 (16.12%), diabetes mellitus in 4 (12.91%), subclinical hypothyroidism in 3 (9.67%), clinical hypothyroidism in 2 (6.45%) and unspecified cardiac arrhythmia in 1 (3.22%) (Figure 1).

Average anatomical dimension of cyst was 3.64×2.59 cm, with a minimum of 0.5×0.5 cm and a maximum of 8×8 cm. The location of thyroglossal cyst with respect to hyoid bone was suprahyoid in 12 (38.71%), infrahyoid in 16 (51.61%), and unspecified in 3 (9.68%) (Table 4).

Regarding morbidity, none of patients presented intraoperative complications. With regard to immediate postoperative complications, 3 (9.67%) presented them within the first 24 hours after surgery, of these, 2 (6.45%) presented bleeding that required urgent surgical reintervention with adequate resolution; 1 (3.23%) presented solid dysphagia that resolved with conservative treatment. Furthermore, none of them presented late postoperative complications. Finally, mortality was nil (Table 5).

The average number of days of hospital stay was 3.06 days, with a minimum of 2 days and maximum of 4 days.

The histopathological results of the surgical pieces sent to Pathology were collected, without finding evidence of malignancy in any of the 31 patients who underwent the Sistrunk procedure.

During the 6 months of follow-up after surgery, none of the patients had a recurrence of the thyroglossal cyst.

Table 1: Distribution by gender.

Gender	N	Percentage (%)
Female	21	67.74
Male	10	32.26
Overall	31	100

Table 2: Age range.

Age (in years)	N	Percentage (%)
18-35	11	35.48
36-50	13	41.93
51-65	4	12.9
66-77	3	9.67
Overall	31	100

Table 3: Clinical features.

Clinical features	N	Percentage (%)
Pharyngeal foreign body sensation and dysphagia to solids	1	3.23
Cervical volume increase and local signs of infection	1	3.23
Increased cervical volume and dyspnea	1	3.23
Cervical volume increase and sore throat	1	3.23
Cervical volume increase and dysphagia to solids	3	9.68
Cervical volume increase	24	72.42

Table 4: Position relative to the hyoid.

Position relative to hyoid	N	Percentage (%)
Not specified	3	9.68
Infrahyoid	16	51.61
Suprahyoid	12	38.71

Table 5: Morbidity.

Morbidity	N
Intraoperative	0
Postoperative	3
Immediate	3
Late	0

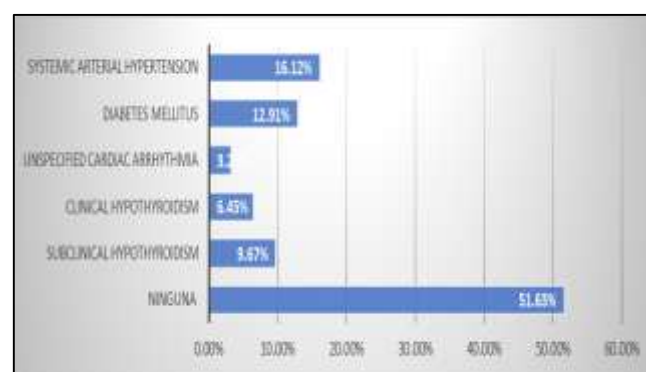


Figure 1: Distribution by comorbidities.

DISCUSSION

The thyroglossal duct cyst is the most common congenital anomaly of the neck, with a prevalence of 7% in the population. This pathology is more common in the pediatric population; however, it can occur at any age. Currently, the only treatment for this pathology is surgical, with the Sistrunk procedure being the surgical technique of choice, since, compared to other techniques, it presents a low rate of recurrence and other complications. Thompson et al, in 2016 reported a clinicopathological series of 685 patients diagnosed with a thyroglossal cyst, finding that the highest frequency of patients was found between the fourth and sixth decades of life, with a predominance of females. In this study, the comorbidities of the patients were not recorded.^{4,12}

Compared to our study, we found a similar age peak, since 42% of the patients were in the age range of 35 to 50 years, and the highest proportion studied was female, corresponding to 68% of the total of cases. Comorbidities were found in 48.67% of patients, systemic arterial hypertension being the most frequent comorbidity, being present in 16.12% of patients, followed by diabetes mellitus in 12.91%, subclinical hypothyroidism in 9.67%, clinical hypothyroidism in 6.45% and unspecified cardiac arrhythmia in 3.22%.

In the study by Patigaroo et al it was observed that the presenting symptom in 90% of patients was only painless

cervical swelling, cervical swelling associated with local signs of infection in 13.3% of patients and sore throat in 13.5%. It was also found that the cysts were located in different places. Most of the cysts had an infrahyoid location in 83.3% of cases, followed by suprahyoid location in 10%. Cyst size varied, with the majority (70%) of the cysts being between 1.6 and 3 cm in size, followed by 16.6% in the 0 to 1.5 cm size range. Only one cyst with a size greater than 4.6 cm will be observed.^{9,13,14}

In our study we found that the most frequent presenting symptom was painless cervical volume increase in 24 (72.42%) patients, followed by cervical volume increase associated with dysphagia to solids in 3 (9.68%) patients. The presence of increased cervical volume associated with local signs of infection occurred in 1 (3.23%) patient. Regarding the position of the thyroglossal cyst, a predominance of a similar position was observed, since the majority of our study population presented a thyroglossal cyst in an infrahyoid position in 16 (51.61%) patients, a suprahyoid position in 12 (38.71%) patients, and one unspecified position in 3 (9.68%) patients. Finally, the average size of the cysts was close to the range reported in that study, since the average size found in ours was 3.64 cm long×2.59 cm wide, with a minimum size of 0.5×0.5 cm and a maximum size of 8×8 cm.

Ubayasiri et al reported a case series that included 108 patients, of which 12 patients (11%) suffered postoperative complications, 6 of which were recurrences; Complications other than recurrence included 2 patients requiring evacuation of the hematoma (1 with an intensive care unit stay for ventilation and 1 case of hypothyroidism), 1 case of abscess formation requiring incision and drainage, and 1 case of postoperative sinus discharge, which resolved with conservative management. No mortality was recorded in the study.¹⁵⁻¹⁷

In our study we found a lower morbidity, which was 9.68%, since 3 presented early postoperative complications, of which 2 presented bleeding that required urgent surgical reintervention and 1 presented dysphagia to solids that resolved spontaneously on the 4th postoperative day. There were no intraoperative or late postoperative complications. Mortality and recurrence at 6 months of follow-up were null.

In a review of the literature, Carter and colleagues reported that cancer is identified in only 1% to 2% of thyroglossal duct cyst cases. Most of these malignancies share a common histology with those of the thyroid gland, with two-thirds of all thyroglossal cysts found to have normal thyroid cells. In our study there were no cases of malignancy.¹⁸⁻²⁰

The main limitations in this study were that the sample was too small to be significantly relevant, furthermore, no case of malignancy was found.

CONCLUSION

The morbidity in this series of patients who underwent the Sistrunk procedure was 9.67%. There were no intraoperative or late postoperative complications. There were only 3 immediate postoperative complications, of which 2 were due to bleeding that required surgical intervention, without increasing the days of hospital stay. Finally, 1 was due to dysphagia to solids, which was resolved with conservative medical treatment and increased the average number of days of hospital stay by 1 day. Mortality and presence of malignancy were null.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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