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(CASE REPORT)

Sistrunk technique as a surgical approach in thyroglossal duct cyst of His or Bockdalek

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Abstract

Thyroglossal duct cyst is one of the most common lesions in the midline of the neck and is found in around 7% of the population. It occurs equally in both genders and is detected in the first five years in 25 to 35%, between six to 10 years in 40 to 50% and in adolescence between 75 and 90% of cases and in some cases it preserves tissue. functional thyroid and in 0.17 to 1% it is the absolute ectopic thyroid. The diagnosis is fundamentally clinical, although an ultrasound may be useful. A thyroid scintigraphy is recommended not for a positive diagnosis of a thyroglossal duct cyst, but to demonstrate the existence of a normal thyroid gland and rule out the rare thyroid ectopias, whose inadvertent removal would cause permanent hypothyroidism. Diagnostic errors are the most frequent cause of inadequate surgical technique, which produces a high recurrence rate. Since its introduction in 1920, sistrunk surgery is the ideal treatment with the best results, with recurrence limits of 0.5 to 3%, this technique considerably reduces the risk of cyst recurrence to <3%, and one of the key points for the success of the surgery is the need to resect the medial third of the hyoid bone by approximately 1.5 cm. We present the case of a female patient who underwent resection of a thyroglossal cyst with the sistrunk technique to confirm the effectiveness of the technique in reducing the percentage of recurrences.

Keywords: Thyroglossal; Sistrunk; Cyst; Embryological; Duct; Hyoid

1. Introduction

The thyroglossal cyst is an embryological alteration that originates in the third week of gestation during the descent through the blind orifice at the base of the tongue to its position in the midline in front of the trachea and a defect occurs in the closure of the duct in the eighth week of gestation.[1]

Thyroglossal duct cyst is one of the most common lesions in the midline of the neck and is found in around 7% of the population.[2] It occurs equally in both genders and is detected in the first five years in 25 to 35%, between six to 10 years in 40 to 50% and in adolescence between 75 and 90% of cases and in some cases it preserves tissue. functional thyroid and in 0.17 to 1% it is the absolute ectopic thyroid.[1]

The classic finding of this lesion is a midline structure at or just below the level of the hyoid bone. It typically presents as a painless mass that moves with swallowing due to its remnant connection to the base of the tongue. The cyst may be found anywhere from the base of the tongue to a position behind the sternum and can sometimes present as a painful swollen erythematous mass if it has become infected. [2]

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The most frequent clinical presentation was that of a cystic mass without any inflammatory signs (65%), located in the mid-line at the hyoid level (75%) and Very rarely, they may extend intralaryngeal, occupy the posterior hyoid space, and present with dysphonia and/or dysphagia.[3,4] Since its introduction in 1920, sistrunk surgery is the ideal treatment with the best results, with recurrence limits of 0.5 to 3%.[2]

At the hospital General Regional #1 of Culiacán, Sinaloa, 2 sistrunk procedures have been performed in 2023, one of them is the case below where resection of the thyroglossal duct cyst was performed with the sistrunk technique.

2. Case reports

A 34-year-old female patient, with no history of chronic degenerative diseases, surgical history of instrumented uterine curettage and 2 cesarean sections. Her condition began 6 months ago with an increase in volume in the antero-superior region of the neck in zone II, superior to the thyroid cartilage. The patient only reported intermittent dysphagia, which is why he came for care. An ultrasound of the neck was requested, showing a thin-walled cystic image, anechoic, homogeneous content, with posterior acoustic reinforcement, with a diameter of 10x8x9 mm, and a thyroid gland was observed without pathological findings. It was decided to complete a surgical protocol to subsequently perform thyroglossal cyst resection with sistrunk surgery.

2.1. Surgical technique

It is decided to perform planned surgical intervention. The patient is positioned with hyperextension of the neck and rossier on the back for greater exposure of the surgical area (figure 1), asepsis and antisepsis are performed and a transverse incision is made over the cyst (figure 2), the cyst is dissected around its capsule with electrocautery, the canal is dissected until reaching the central region of the hyoid bone. 1.5 cm of the medial segment of the hyoid bone that contains the duct is sectioned (figure 3), the duct dissection is continued, it is ligated with 2-0 vicryl and cut at the level of the blind foramen of the floor of the mouth (figure 4), closure is performed in planes with absorbable suture 2-0 vicryl and subdermal stitch on the skin with 3-0 nylon, the procedure is terminated and the patient is scheduled 2 months later for post-surgical follow-up.

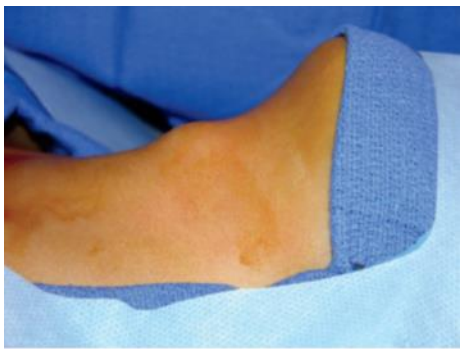

Figure 1 Thyroglossal cyst

Figure 2 Transverse wound in zone II of the neck anterior to cyst

Figure 3 Thyroglossal cyst with 1.5cm of hyoid bone dissected

Figure 4 Thyroglossal cyst and hyoid bone resected

Figure 5 Healed wound 2 months later

3. Results

The patient is evaluated 2 months after the surgical procedure where adequate clinical and post-surgical evolution is observed with the wound already healed (figure5), no signs of recurrence and total improvement of the patient. It is concluded that the sistrunk technique drastically reduces the recurrence rate of the thyroglossal duct cyst.

4. Discussion

Taking into the bibliography, the fact that we know Walter Sistrunk is mainly due to the fact that in 1920 he published a review of 31 patients who underwent surgery at the Mayo Clinic for thyroglossal cyst. In his article he stated that "the cure of thyroglossal cyst is a failure unless the epithelial-lined tract leading from the cyst to the foramen cecum is completely removed, including the central portion of the hyoid bone." Sistrunk recognized that above the hyoid bone the tract was small and friable, broke easily, and was very difficult to remove. After failing to cure patients by attempting to dissect the entire tract, he learned that best results were obtained by removing a core of tissue about one-eighth of an inch (about 3 mm) in size from around the canal between the hyoid bone and the foramen cecum. From the hyoid bone he would remove a central portion of "a quarter of an inch" and thus the dissection continued until the foramen cecum whose mucosa was also removed. The opening of the oral cavity was repaired and the muscles and hyoid bone were approximated.[5] Histologically, it is lined with stratified squamous or pseudostratified cylindrical respiratory epithelium with mucous glands, which secrete the mucinous content typical of these cysts. The repetition of inflammatory episodes can destroy the epithelium and make it difficult to recognize in the histological study. It is common to find multiple epithelial tracts, sometimes discontinuous, which would explain unexpected recurrences after technically correct surgical interventions. The diagnosis is fundamentally clinical, although an ultrasound may be useful. A thyroid scintigraphy is recommended not for a positive diagnosis of a thyroglossal duct cyst, but to demonstrate the existence of a normal thyroid gland and rule out the rare thyroid ectopias, whose inadvertent removal would cause permanent hypothyroidism. Diagnostic errors are the most frequent cause of inadequate surgical technique, which produces a high recurrence rate.[6]

Thyroglossal duct cyst resection surgery with the sistrunk technique considerably reduces the risk of cyst recurrence to <3%, and one of the key points for the success of the surgery is the need to resect the medial third of the hyoid bone by approximately 1.5 cm; Without this step the recurrence rate increases considerably to figures of 25% recurrence. The greatest recurrences are observed in the presence of infectious symptoms and for this reason surgery should be deferred until the inflammatory changes are resolved. recurrence in up to 3% in Sistrunk surgery and hypothyroidism due to being the only functional thyroid tissue in 1% of cases. Infection is inherent to the procedure, with a figure of up to 2% because in strict terms it is a clean contaminated wound.[1]

5. Conclusion

Although the thyroglossal duct cyst is a rare pathology found in only 7% of the world population, consideration should be given to the appropriate management and the appropriate technique since in the past recurrences of up to 25% were found until Dr. Sistrunk described his technique and mentioned that the only way to achieve the lowest recurrence rate was with the resection of the middle third of the hyoid bone, thus achieving recurrence rates of less than 3%. This case

report helps us understand the importance of performing the sistrunk technique as a surgical approach for resection of a thyroglossal duct cyst, which should be performed whenever possible so that patients avoid recurrences.

Compliance with ethical standard

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Disclosure of conflict of interest

There was not conflict of interest during the study, and it was not funded by any organization.

Statement of informed consent

Informed consents were obtained from all individual participants included in the study.

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