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Ranula Plunging Cervical Approach a Case Report

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Abstract **Case Report**

Background: Ranulas are pseudocystic lesions resulting from an obstruction or disruption of the sublingual gland duct. They may be of congenital origin or occur secondary to immunological disorders, sialolithiasis, trauma or tumor lesions. The symptoms they cause may be pain or difficulty when speaking or swallowing. Treatment is removal or sclerosis of the pseudocyst. In the present work we present the case of a teenage patient with a ranula that extends to the right submandibular region. A cervicotomy was indicated that allowed the total resection of the ranula simultaneously with the sublingual and submandibular glands without affecting the hypoglossal and marginal nerves mandibular or lingual.
Keywords: Ránula, case report, head and neck surgery.

INTRODUCTION

Salivary glands are structures whose main function is the production of saliva. They are divided into major salivary glands, which have an even configuration, and minor glands, located in the submucosa of the upper aerodigestive tract. The sublingual gland has a non-encapsulated configuration located in the floor of the mouth, superior to the mylohyoid muscle [1]. Ranulas are pseudocysts caused by obstruction or disruption of the sublingual gland duct, presenting as a translucent mass on the floor of the mouth. They are called simple ranulas when they are enlarged by the mylohyoid muscle and Plunging ranula when they surpass the mylohyoid muscle and can extend up to the cervical region [2]. Therapeutic options include sclerosis or resection of the pseudocyst with an intraoral or cervical approach [1].

We present the case of a young patient with no history of previous diseases with a mass located in the floor of the mouth with extension towards the right cervical region, diagnosed with a Plunging ranula and opting for the cervical approach for complete excision of the ranula. together with the sublingual and submandibular gland since they were attached to the pseudocyst, with the cervical approach the complete resection of these structures and the adequate identification of the adjacent nervous components was achieved. In her post-surgical follow-up, the patient has no nerve deficit, and no recurrence of the injury.

CASE REPORT

A 13-year-old female patient with no previous medical history presented with, without apparent cause, a cervical mass of approximately one month of evolution which had increased in size days prior to the medical evaluation. The physical examination revealed a cystic mass of 3 centimeters in diameter located in the right sublingual region directed towards the ipsilateral submandibular region. Oroscopy revealed a right sublingual cystic mass (Figure 1).

The ultrasound study reports a lesion measuring 7.7x3.7x3 centimeters with a volume of 39 millimeters medial to the right submandibular region. The MRI indicates a cystic lesion in the right sublingual space measuring 6.2x3.7x7.9 centimeters with an approximate volume of 94.2 cubic centimeters located on the floor of the mouth in the right sublingual space with extension towards the submandibular space ipsilateral (Figure 2 & 3).

We concluded with the diagnosis of a Plunging ranula and decided to perform a cervical approach with a surgical time of 1 hour and 30 minutes allowing excision of the ranula, the right sublingual gland and the right submandibular gland with placement of a cervical drain, among the findings. During surgery, a 12x8x6 centimeter mass was recognized firmly adhered to the right submandibular gland, the hypoglossal nerve, the right lingual nerve and the right sublingual gland, allowing with the cervicotomy adequate exposure of the structures for a complete resection and avoiding injury to the nervous structures. (Figure 4 & 5).

The patient was discharged 24 hours after surgery without evidence of nerve deficit with adequate pain control. In the immediate post-surgical control after 5 days, the cervical drainage is removed and adequate functionality of the lingual, hypoglossal and mandibular marginal nerve is confirmed. The histopathological report reports a right submandibular gland consisting of a preserved acinar structure with fibrous and congestive septa in addition to a chronic mononuclear infiltrate plus a right sublingual gland and a mass consisting of a cavity without epithelial lining delimited by granulation tissue with underlying fibrosis and granulation tissue.

Figure 1: A-B) Cystic mass located in the right submandibular region; C) Oroscopy demonstrates a right sublingual cystic lesion

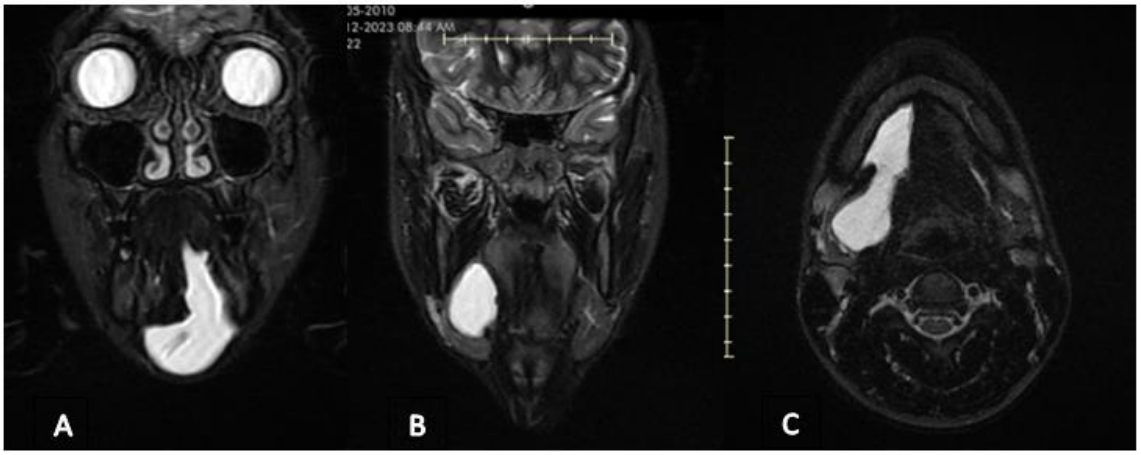

Figure 2: A-B. Simple nuclear magnetic resonance imaging of the neck, A-B coronal section in T2, C axial section in T2, indicates a cystic lesion in the right sublingual space measuring 6.2x3.7x7.9 centimeters with an approximate volume of 94.2 cubic centimeters located in the floor of the mouth in the right sublingual space with extension to the ipsilateral submandibular space

Figure 3: Simple MRI of the neck coronal section in T1 shows a cystic lesion in the right sublingual space measuring 6.2x3.7x7.9 centimeters with an approximate volume of 94.2 cubic centimeters located in the floor of the mouth in the right sublingual space with extension into the ipsilateral submandibular space

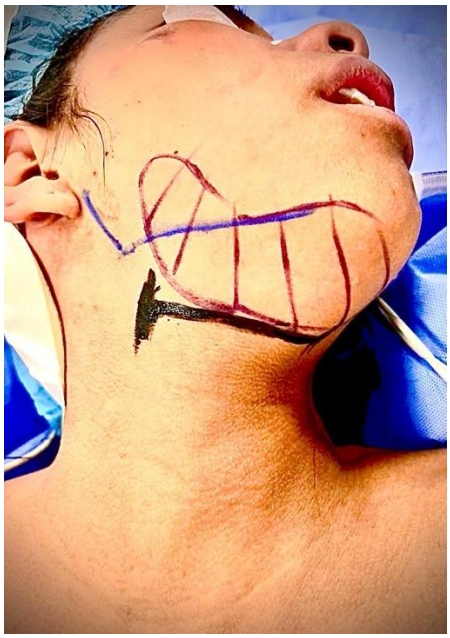

Figure 4: Cervicotomy 3 cm below the angle of the mandible planned for exceresis of the ranula to protect the mandibular marginal nerve

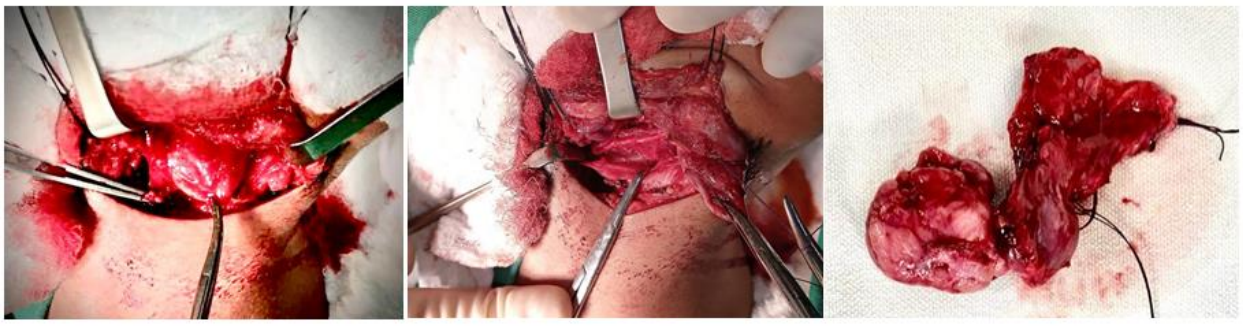

Figure 5: Cervical approach for excision of the pseudocyst, a 12x8x6 centimeter mass is observed firmly adhered to the right submandibular gland, the hypoglossal nerve, the right lingual nerve and the right sublingual gland

DISCUSSION

The salivary glands are divided into major salivary glands, which are paired structures (parotid, sublingual gland, and submandibular gland), and minor salivary glands, which have a submucosal location throughout the upper aerodigestive tract from the nasal cavity and lips to the esophagus and trachea. Embryologically, they are tubuloacinar structures that are derived from the ectoderm and endoderm of the foregut. Their main function is the production of saliva

through various stimulating factors such as chewing or nervous stimuli from the autonomic or sensory nervous system, that is, smell, palate and thought [1].

The sublingual gland is the smallest of the major salivary glands, it is a non-encapsulated structure, it joins the mucosa of the floor of the mouth in its upper portion, the mylohyoid muscle in the lower part, laterally the lower jaw, medially the muscle Genioglossus and the submandibular gland posteriorly, lesions arising from the sublingual gland may extend to the submandibular region and parapharyngeal spaces [1, 2].

These glands contain between 5 to 15 minor excretory ducts known as ducts of Rivinus that carry saliva to the mouth through small mucosal folds in the floor of the mouth, in cases where the ducts merge into a larger tube it is called Bartholin's duct draining directly into the submandibular duct with exit through the sublingual caruncle [1, 2].

The sublingual gland is irrigated by branches of the lingual and facial artery, producing a constant flow of saliva whose content is rich in proteins, contributing 10% of the total saliva production [1].

Congenital anomalies are the product of errors in embryogenesis or intrauterine events that affect embryonic and fetal growth [3].

Ranulas are pseudocysts associated with obstruction or disruption of the sublingual gland duct. The term ranula comes from the Latin rana, which refers to the belly of a frog, since this lesion appears as a translucent mass of a bluish tone on the floor of the mouth. They can be congenital due to inadequate drainage of the sublingual glands or acquired after oral trauma [1, 3].

They occur between the second and third decade of life, with a predilection for the female sex [1].

It appears as a simple ranula or Plunging ranula depending on the location in relation to the mylohyoid muscle, a simple ranula being the one located above the muscle, resulting from the obstruction of the salivary duct forming a mucosal retention cyst [2, 4].

A Plunging ranula refers to a pseudocyst located below the level of the mylohyoid muscle, and in up to 20% of cases they have an intraoral component. They are caused by an obstruction, injury to the duct or rupture of an acinus which is caused by inflammation of the mucosa, immunological anomalies, sialolithiasis, trauma, very rarely by a tumor or congenital anomalies when there is a dehiscence of the mylohyoid muscle that causes a herniation of a portion of the sublingual gland or pseudocystic sac towards the submandibular space, or they may occur when there is no fascial boundary between the mylohyoid and hypoglossal muscles. This pseudocyst is a collection of mucus that extravasates into the adjacent tissue, producing an inflammatory response that forms an apparent capsule that encompasses the mucosal collection [1, 3].

Histologically, the pseudocyst is formed by mucin that is surrounded by vascularized fibroconnective tissue similar to granulation tissue that contains macrophages without presenting epithelial tissue in its wall. The biopsy of the cystic wall at the time of excision of the sublingual gland is recommended to confirm the diagnosis, as in the case of our patient who, after resection of the cystic lesion, the sample was sent for pathological analysis where the diagnosis [1, 3].

The symptoms they cause depend on the size and anatomical situation, causing difficulty when speaking, chewing, eating or swallowing [2].

On physical examination, simple ranulas are seen as fluctuating edema or a mass lateral to the midline on the floor of the mouth that causes discomfort or difficulty speaking; In cases of Plunging ranulas, they present as a fluctuating masses that extend to the cervical region, generally to the submandibular space, although cases of ranulas have been described that can reach the parapharyngeal, retropharyngeal space and even the mediastinum [1, 4].

The diagnostic suspicion is established with a history, physical examination and diagnostic images, with the histopathological study confirming the diagnosis [1].

Among the differential diagnoses of simple ranula we have lymphatic malformations, dermoid cysts and in cases of Plunging ranulas there are cysts of the thyroglossal duct, branchial cysts, epidermoid cysts, laryngocele, lymphatic and vascular malformations as well as solid masses such as lipomas, dermoid masses or neoplasms of the submandibular gland or lymphadenopathy [2, 3].

Surgical indication is given in cases of airway compromise, discomfort when speaking or swallowing, and recurrent infections [3, 4].

Among the treatment options we find sclerotherapy with bleomycin or the use of OK 432 (Picibanil), a sclerosing substance from group A Streptococcus pyogenes, producing fever or pain as adverse effects and in half of the cases it is necessary to repeat the procedure sclerosant. You can opt for incision and drainage, marsupialization and cystic resection with or without removal of the sublingual gland via intraoral, transcervical or double approach. Recurrence is variable but it is considered to be 70% in cases of incision and drainage of the pseudocyst, 53% with marsupialization, up to 50% when the sublingual gland is not removed and

less than 2% when joint resection is achieved of the sublingual gland [1].

In cases of simple ranulas, the approach of choice is the intraoral one. For Plunging ranulas, an intraoral or cervical approach or a dual approach can be chosen. Resection of the salivary gland regardless of the approach is recommended to prevent recurrence, in addition to performing a careful dissection since it can cause injury to the lingual nerve and the submandibular duct. In the case of presentation, the cervical approach was selected, which allowed us adequate exposure of the surgical bed with a complete resection of the ranula, the right sublingual gland, the right submandibular gland and the identification and preservation of the hypoglossal, lingual and marginal mandibular nerve [1, 3].

Complete excision of the pseudocyst wall is not required since it represents an inflammatory response with extravasation of mucus that must subsequently be absorbed [4].

Post-surgical complications include edema, infection, recurrence, injury to adjacent structures such as damage to the lingual nerve and the submandibular canal [1, 4].

"Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Declaration of Competing Interest:

The authors declares that there is no conflict of interest regarding the publication of this article.

Ethical approval: The authors declare that = we obtained permission from the ethics committee in our institution.

Consent: The authors declare that written consent was obtained from the patient before publication of this case.

Registration of research studies:

The authors declare that the patient gave his consent to publish this case, and as this is a case report not human participants were involved in a study.

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