

Modified trident technique for surgical approach to facial lipoma

Técnica tridente modificada para el abordaje de un lipoma facial

Nancy Trujillo-García¹, Irma Y. Castillo-López², Carmen A. Carrillo-López¹, and Diana P. Mariscal-Arellano^{3*}

¹Departamento de Cirugía Maxilofacial, Hospital General Regional 46, Instituto Mexicano del Seguro Social (IMSS); ²Departamento de Otorrinolaringología y Cirugía de Cabeza y Cuello, Hospital General Regional 46, IMSS; ³Departamento de Otorrinolaringología y Cirugía de Cabeza y Cuello, Centro Médico Nacional de Occidente, IMSS. Guadalajara, Jalisco, Mexico

Abstract

Introduction: Lipomas are the most common tumors of mesenchymal origin throughout the body. Although they have low incidence in the oral cavity, their surgical approach can be challenging. **Case report:** 10-year-old male with a giant lipoma in the buccal and masticator space, an intraoral surgical approach was chosen using by modifying trident technique of Ramírez-Oropeza. **Discussion:** The main advantages and limitations of this intraoral approach are examined. **Conclusions:** An intraoral approach was selected because of less possibility of injuring the facial nerve, better esthetic results and less invasive, obtaining excellent results.

Keywords: Bichectomy. Lipoma. Masticator space. Intraoral approach.

Resumen

Introducción: Los lipomas son los tumores de origen mesenquimatosos más comunes en todo el cuerpo. Aunque tienen una baja incidencia en la cavidad oral, su abordaje quirúrgico puede ser un enorme reto. **Caso clínico:** Varón de 10 años con un lipoma gigante del espacio geniano y masticador resecado mediante abordaje intraoral modificado de la técnica descrita por Ramírez-Oropeza. **Discusión:** Se describen las principales ventajas y limitaciones de un abordaje intraoral. **Conclusiones:** Se seleccionó este abordaje intraoral por la menor posibilidad de lesionar el nervio facial, los mejores resultados estéticos y ser menos invasivo, obteniendo excelentes resultados.

Palabras clave: Bichetomía. Lipoma. Espacio masticador. Abordaje intraoral.

*Correspondence:

Diana P. Mariscal-Arellano

E-mail: prismariscal@hotmail.com

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Introduction

Lipomas consist of mature adipocytes surrounded by a thin fibrous capsule¹ and typically develop superficially in subcutaneous tissue. They are soft, painless, and range in size from 1 cm to more than 10 cm. Malignant transformation into liposarcoma is rare².

Although they are the most common mesenchymal tumors throughout the body, they are very rare in the oral cavity, with an incidence of 1% up to 4%³. In a study by Studart-Soares et al.⁴ reviewing 450 intraoral lipomas, the most common sites were the buccal mucosa (38.7%), followed by the vestibule (7.8%), retromolar area (4.7%), and other locations (48.8%). No significant differences were found between men and women (52.2% were men, and 47.8% were women). Lipomas can appear at any age but are more commonly seen in individuals between the 4th and 6th decades of life⁵.

While the precise etiology remains unknown, primary theories suggest factors such as heredity, fat degeneration, hormonal changes, infection, accumulation of embryogenic lipoblastic cells at the site of origin, and chronic irritation⁶.

Diagnosis is primarily clinical, with imaging modalities aiding in differential diagnosis. Ultrasound can distinguish a lipoma from an epidermoid cyst or ganglionic cyst⁷, and MRI is highly specific for assessing extension and relationships with key anatomical structures. Differential diagnosis includes various conditions such as epidermoid cysts, hematomas, panniculitis, and other forms of adipocytic tumors^{7,8}. If a lipoma presents symptoms, such as pain, restricted movement, or malignancy characteristics (e.g., rapid growth or changes during monitoring), a biopsy along with histopathology is recommended for definitive diagnosis².

The primary treatment is surgery, with general risks including scar formation, seroma, and hematoma⁹. Alternative treatments include liposuction¹⁰ and low-concentration deoxycholate injections, which were successfully used in a study of 6 patients¹¹; however, further studies are required before recommending them systematically.

Various surgical approaches are available for tumors in the facial and neck regions. Medical criteria, based on the unique characteristics of each case, will determine the appropriate technique.

Several approaches for masticator space tumors have been described in the literature, including endoscopic surgery, extended submasseteric, transmandibular, transoral, and even combinations of these approaches in appropriate cases¹²⁻¹⁶.

Key aspects that should be considered in selecting an approach include tumor size, adjacent structure involvement, and tumor nature. In the case of a lipoma, the benign origin of the lesion means that a surgery that could cause major aesthetic or functional sequelae is not justified.

Case Report

A 10-year-old boy with childhood obesity as the only relevant past medical history (weight/height ratio +5 standard deviations) came to our consultation with a left-sided mass in the masticator region, which had been slowly, progressively, and painlessly increasing in size over the past 7 months, without apparent involvement of adjacent structures.

Physical examination revealed the presence of acanthosis nigricans, gynecomastia, and a left masticator region tumor that was soft, well-demarcated, non-painful, mobile, not adherent to deep planes without any trophic changes to the skin (Fig. 1).

A simple CT scan of the head and neck showed asymmetry of the left hemiface due to soft tissue expansion. This mass was encapsulated, located immediately under the buccinator muscle, and had an attenuation of -99 HU, indicating fatty tissue density. Its limits included the depressor anguli oris muscle anteriorly, mandibular lower border inferiorly, the masseter muscle laterally, and extended superiorly to the zygomatic arch. It branched towards the infratemporal fossa, surrounding the lateral pterygoid muscle, with maximum dimensions of 53 mm × 44 mm × 46 mm (Fig. 2).

We opted for a modified intraoral approach using the trident technique¹. Only buccopharyngeal chlorhexidine rinses were used as preoperative preparation. Following orotracheal intubation and balanced general anesthesia, Minnesota-type cheek retractors were placed for adequate exposure of the surgical site. Lidocaine with epinephrine was used for anesthesia and local vasoconstriction, providing hemostasis; a left high zygomatic block, left mandibular nerve block, and left C2 branch block were performed.

All techniques used 2% lidocaine with epinephrine in dental cartridges. The left high zygomatic block was achieved with a carpule syringe positioned obliquely from front to back and from below to above in the vestibular fold of the left upper second molar and maxillary tuberosity. For the left mandibular nerve block, a short needle was used at the left mandibular spix spine in an oblique anteroposterior direction.



Figure 1. Patient with a tumor located in the left masticator region.



Figure 2. Simple CT scan, coronal view, showing infratemporal extension of the lipoma.

Finally, for the masseter and C2 region, half a cartridge was used in the dental presentation in the vestibular fold towards the left mandibular angle, injected into the masseter muscle and the area of the homolateral mandibular angle.

Anatomic limits were then identified: the Stensen's duct papilla and the bite line on the cheek. A 1 cm incision was performed midway between these structures

using a No. 15 scalpel blade (Fig. 3); for better visualization, the incision was extended anteriorly to reach 4 cm in length, allowing access to the buccal and masticator spaces. Next, blunt dissection was performed until the buccinator muscle was visualized, continuing dissection through it, and separating the tumor from the left buccal, pterygoid, and infratemporal spaces (Fig. 4).

A complete lipomatous tumor was obtained (Fig. 5), fully encapsulated. Finally, simple sutures with 3-0 Vycril were used from deep layers, leaving a single surgical wound in the lateral wall of the oral vestibule (Fig. 6).

Discussion

The masticator space is a virtual area divided into 3 subsections: masseteric, pterygomandibular, and temporal¹⁷. This space houses the masticatory muscles, blood vessels, and notably, the terminal branches of the zygomatic and buccal facial nerves¹⁸.

Various lesions may affect this space through contiguity, direct origin, or even as metastasis due to distant malignant tumors¹⁹⁻²¹. Of all body lipomatous tumors, around 13% occur in the head and neck, making them the most common benign tumors in this region²². However, they may adhere so firmly to adjacent structures that resection of portions of the masticatory muscles may be necessary for complete excision²³.

We propose an intraoral approach as an excellent option, offering rapid and efficient results with good functionality and aesthetic outcomes²⁴.

During surgery, identifying and preserving Stensen's duct is crucial to reduce the risk of sialoceles or salivary fistulas. A sialocele is an inflammatory pseudocapsule containing salivary secretions within the soft tissues of the cheek, lacking proper drainage²⁵. Post-operative monitoring is essential to detect complications. Botulinum toxin injections, compressive bandages, and percutaneous aspiration are first-line therapies for these complications²⁶.

It should also be taken into account to adequately suture the flaps to avoid trauma, because the slow-growing mass creates a larger area of mucosa that, if not properly secured with the area of mucosa that, if not properly sutured, can fall off and become suture, can fall off and be injured during chewing²⁷.

Conclusions

The main limitation of the intraoral approach is the limited surgical field and potential contamination from

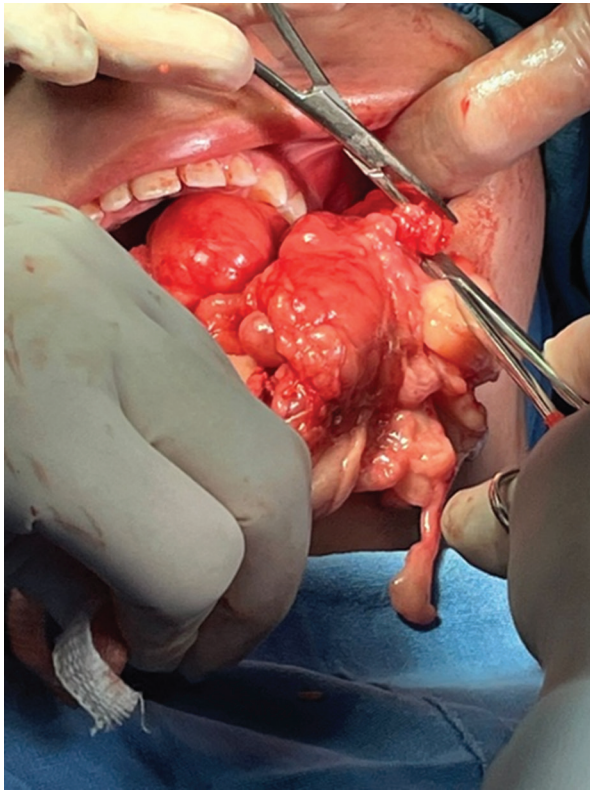


Figure 3. Blunt dissection reaching the buccinator muscle, allowing continued dissection through it.



Figure 5. Simple sutures with 4-0 Vycril.

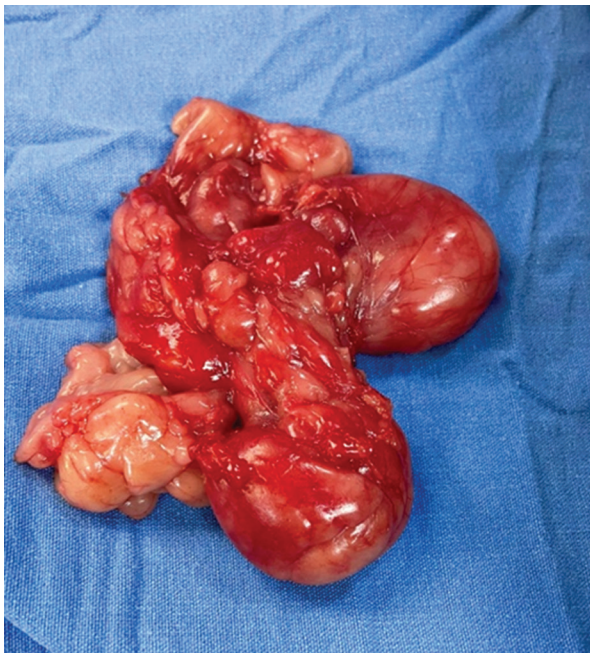


Figure 4. Tumor completely extracted with its intact capsule.

Balancing the surgery safety and aesthetic considerations, we chose an intraoral approach. By extending the incision anteriorly up to 4 cm, we expanded the surgical field for improved visualization. Digital and blunt dissection with gauze helped detach the tumor, yielding a clean surgical field. This approach allowed for complete tumor resection with an intact capsule (Fig. 6) and optimal aesthetic results without complications.

Although the extraoral approach is widely used for masticator space tumors, if anatomical characteristics allow it, the intraoral approach is an excellent option that should always be considered. We recommend this approach whenever there is experience and assurance that the limited surgical field will adequately access the tumor location.

We conclude that in similar cases involving a well-demarcated, easily accessible tumor, the intraoral approach offers superior aesthetic results, preserves functionality, promotes faster and more efficient healing, and is a safe alternative²⁹.

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oral microbiota, which often leads to preferring the extraoral approach²⁸, though this approach risks facial nerve injury and leaves a visible scar.



Figure 6. Immediate postoperative image, showing facial symmetry.

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Conflicts of interest

None declared.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

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