**INTRODUCTION**

A muscle hernia is a focal herniation of muscle tissue through a defect in its fascia. It is a rare condition that is usually located in the lower limbs. To our knowledge, only three cases of muscle hernia located in the facial area have been described. A muscle hernia should be considered when a swelling appears on top of a muscle while it is contracted and disappears when it is at rest. The diagnosis is confirmed using dynamic ultrasonography, and magnetic resonance imaging (MRI) can also be used. The treatment requires surgery, but the injection of botulinum toxin may be an alternative.

**CASE REPORT**

We present the case of a young patient who has been diagnosed with a hernia of the left masseter muscle. A fourteen-year-old girl presented a swelling of her left mandibular angle. The swelling has been present for two years, and no trauma or any other event could be associated with its first occurrence. It was not painful. Its size increased slightly over time. The patient did not have any medical history nor known allergies.

The clinical examination revealed a well-delimited swelling of 2 cm in diameter on the left mandibular angle. The swelling was clearly visible when clenching the jaws, and it disappeared when the patient was asked to open her mouth. (Figure 1) (Video 1). Facial sensitivity and mobility were preserved. Palpation was not painful, and it revealed a swelling of soft consistency that did not adhere to the deep plane. No cervical node was palpated. When the patient was asked to clench, the swelling became slightly larger and denser.

Intraoral examination showed healthy teeth and mucosa. Salivary flow of the parotid and submandibular glands was normal on both sides.

A dynamic muscle ultrasonography was performed and showed, during contraction, a muscle hernia at the base of the left masseter with an 8 mm collar confirming tear in the parotidomasseteric fascia (Figure 2).

The main request of the patient was to know the nature of the lesion. She also reported aesthetic concerns. Surgical treatment was discussed, and botulinum toxin injection into the masseter muscle was also proposed as a minimal-invasive treatment. Such treatment is used in masseter hypertrophy and is considered safe since the most common complications are temporary mastication force decrease and bruising.
The patient and her parents were reassured about the benign nature of the condition. In addition, since the treatment would only be performed for aesthetic reasons, they decided to wait at least until the patient’s 18th birthday, so she can take a decision herself. A follow-up including a dynamic ultrasonography once a year has been initiated.

3 | DISCUSSION

Muscular hernias are rare, are most common in the lower limbs, and are caused usually due to trauma or congenital weakness in muscle fascia after chronic stress. Various treatments have been described, which include direct primary fascial repair, fascial patch grafting using autologous fascia lata, and the use of synthetic mesh.

Swellings of the mandible are frequent. Differential diagnosis of such swelling of the mandibular region includes sebaceous cyst, lipoma, tumors of the parotid gland, masseter muscle hypertrophy, hemangioma, myositis ossificans, cystic lesions of the mandible, odontogenic lesions, and intraosseous tumors of non-odontogenic origin.

The correlation between the appearance of the swelling and the mouth opening suggested the implication of the muscular tissue.

Ultrasonography is the imaging test of choice because it is capable of examining the soft tissues dynamically. The muscle contraction typically increases the visibility of the muscle hernia and shows hypoechogenicity of the herniated and surrounding non-herniated muscle.

FIGURE 1 (A): Masseter muscle contracted. (B): Masseter muscle at rest

VIDEO 1 Appearance of the swelling while clenching the jaws. To view this video please visit https://onlinelibrary.wiley.com/doi/10.1002/ccr3.5883
MRI can also be used. If chosen, it may be required to perform it twice, once without contacting the muscle (open mouth) and a second time while contracting the muscle (close mouth).

To our knowledge, only two articles treating a muscle hernia of the masseter were published. Römer, in 1966, reported the first published case of hernia of the masseter muscle. It concerned a young female patient (her age was not mentioned) that presented a cherry-sized swelling on her mouth when closing the mouth, and especially when biting. The author reported palpating a delicate fascia rupture when the patient was biting crisply. He performed surgery under local anesthesia and visualized muscle fibers protruding through the ruptured facia, thus confirming the diagnosis of a masseteric hernia. The hernia was closed by five deep muscle-fascia sutures, and 6-month follow-up showed good functional and aesthetic results.

Urmösi, later in 1983, reported two cases. The first patient was a 24-year-old woman that presented a painless “peanut-sized” swelling apparently caused by a severe bite one year before consulting. When the patient was biting, the swelling became larger and harder but disappeared when the mouth was open. Sialography on the parotid showed negative results. Surgery involving submandibular skin incision was performed under local anesthesia. The hernia was treated by sliding the edges of the fascia over one other to form a double fascia flap that was closed without tension. The second patient was a 25-year-old female patient that presented with a bean-sized swelling above the angle of the mandible that hardened during chewing but did not cause any pain or tension. It also disappeared when the mouth was open. Surgery under narcosis was performed, but the edges of the fascia could only be approached and could not be slide over to form a double fascia layer. Thus, a fascia lata autograft was used to securely close the hernia using muscle-fascia sutures. Good cosmetic and functional results were achieved in both cases.

The risk-to-benefit ratio of a surgical intervention should be discussed with the patient. Most importantly, the path of the mandibular branch of the facial nerve near the hernia location represents a considerable risk of facial paralysis. The visible scar should also be taken into consideration, especially when the main concern of the patient is aesthetic. Other complications such as infection, bleeding, and wound dehiscence should also be discussed.

Botulinum toxin injection into the masseter muscle can be proposed as a minimal-invasive alternative treatment as it is used in masseter hypertrophy. Such treatment is safe, and the most common complications are temporary mastication force decrease and bruising.

CONCLUSION
Masseter muscular hernia is a very rare condition that affects mostly young women. It must be thought of when confronted with a mandibular swelling that appears while biting and disappears when the mouth is open. Dynamic ultrasonography is the diagnostic imaging technique of choice. Asymptomatic hernias do not necessarily need to be treated. Surgery is considered as the conventional treatment, but injection of botulinum toxin into the masseter muscle can be a minimal invasive therapeutic solution that must be explored.

AUTHOR CONTRIBUTIONS
FS (main author) wrote the manuscript. DP, RJ, and LE reviewed the final manuscript.

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CONFLICTS OF INTEREST
None.

DATA AVAILABILITY STATEMENT
Data sharing is not applicable to this article as no data sets were generated or analyzed during the study period.

ETHICAL APPROVAL
None.

CONSENT
Written informed consent was obtained from the patient to publish this report in accordance with the journal’s patient consent policy.

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