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Tongue and Lip Frenectomy in Spanish Medical Texts of the 16th-18th Centuries

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The frena of the tongue and lip are normal structures of the buccal cavity, and surgical resection is only necessary in cases of hypertrophy. This article looks at medical texts of the Early Modern Era to analyze the origins and quality of our knowledge on this topic and examine any therapeutic measures proposed. This review shows that while the indications for carrying out tongue frenectomy are very similar to those today (speech and breastfeeding difficulties), those for carrying out a lip frenectomy are very different. Interestingly, apart from purely surgical or medicinal treatments, some authors indicated the need to complement such treatment with educational intervention and what can only be called basic speech therapy.

Introduction

The frena of the tongue and lip are normal structures of the buccal cavity, and surgical resection is only necessary in cases of hypertrophy. The upper frenum should be operated upon only if a diastema between the upper incisors persists after the eruption of the cuspids,[1] and lingual frenum may cause ankyloglosia, difficulties in breastfeeding, and phonetic alterations. Surgery may be carried out during breastfeeding, but there are fewer risks when the child is a bit older.[2] This article looks at medical texts of the Early Modern Era to analyze the origin and quality of our knowledge on this topic, and to look at any therapeutic measures proposed.

At present, being "tongue-tied," as it is popularly known (hypertrophy of the lingual frenum), can be determined within days of birth, when the child shows difficulties in moving his tongue, particularly during breastfeeding. This problem may also be detected later, when the child is seen to have difficulties in pronouncing certain sounds, such as the phoneme /r/, where it is a vibrant voiced linguo-alveolar sound. In both cases, the usual treatment is lingual frenectomy, which in older children may also require consultation and treatment involving a speech therapist.

Regarding hypertrophy of the lip frenum, the purpose of frenectomy is encourage closure of an interstitial diastema, concomitantly with

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orthodontic treatment, and should not be performed until the upper canine teeth appear.

Tongue Frenum Hypertrophy and Its Treatment in Texts

Spanish texts prior to the 18th century contain few references to tongue frenum hypertrophy. Those that do refer to an author who had wide influence in European medicine, Guy de Chauliac (c. 1298-1368), whose *Chirurgia Magna* was published in 1363.[3] Born in Chaulhac (Lozère, France), de Chauliac is considered the father of medical surgery, since he received medical training in addition to being a surgeon. Indeed, he was the personal physician to several popes, and his *magnum opus* was translated into several vernacular languages. In Spain, it was first published in Latin[4] (c. 1479-80), then Catalan[5] (1492) and finally translated into Castilian,[6] in which language and in the hands of a variety of translators and commentators it ran through as many as nine editions between 1493 and 1596. It was still regularly published in the 17th century. In this work—see, for example the translation of Carnicer (1555, p. 241)[7] or that of Infante de Aurioles (1658, p. 507) a century later[8]—a brief mention is made of the recommended treatment, which consisted of tying a thread around the frenum and gradually tightening it until it was cut through after some days.

Among the original works that most mentioned this subject was that of Fragoso (1581, p. 169, second edition in 1607),[9] who assumed that the frenum was a normal structure with a specific function, that should only be treated when too big, and taking care not to damage nearby vascular or nervous structures:

> The frenum, which the Greeks called *Ankyglosson*, the Romans *ligatio lingua*, and modern people tongue tie or thread, is [formed of] a nervous substance. It arises from the tunic that covers the tongue and the mouth as a whole. Nature designed it to prevent the tongue from sticking out more that necessary. However, sometimes it is too much and speech and breastfeeding are impossible, so that wet-nurses frequently put their finger in the newborn's mouth to see if the tongue thread is too tight. But if it appears later it can be cut, taking care with some veins that Paulus [Paul of Aegina] says are hidden and avoiding (as Realdo [Realdo Colombo] advises) some nerves that come down there from the seventh pair of the cranial nerves.

Fragoso proposed surgical excision and washing the wound with rosewater or honey. However, he suggested not operating on newborns. He also proposed tongue exercises that would help overcome the limitations of this anatomical abnormality.

Although he does not mention the surgical technique to be used, he wrote that when the frenum is short and thick, given the risk of bleeding, the intervention should be substituted by a thread tied around the frenum, which will slowly break it through pressure, a technique described by the above-mentioned authors in previous centuries.

Another text, the posthumously-published work of Hidalgo de Agüero[10] (1604, p. 218), limited the discussion to an anatomical and functional description, already outlined in Fragoso, mentioning its thread-like appearance, its common nervous origin with the buccal mucosa, and its function to restrict tongue movements.

In the 18th century, publications appear that reference the concept of being tongue-tied. Porras (1716, p. 511), addresses[11] this abnormality by referring to a ligament that, joined from the tip of the tongue, prevents children from breastfeeding, and which surgeons usually cut.

Martínez (1730, p. 127-8) (*Fig. 1*), in an anatomical and functional description,[12] identifies the frenum as a ligament in the mid-anterior part of the tongue that should be "loose" to permit the tongue to move, while, if "short," will prevent the child from breastfeeding and may have to be cut. The author warns of the risk of complications such as convulsions if the nerves below the tongue are touched or bleeding, in the event that blood vessels that exist in the same area are cut. He also mentions the difficulty of breastfeeding and stuttering as indications for frenectomy. The technique uses scissors:

"[...] open the child's mouth by pressing the jaw with the thumb of the left hand, lifting the

Fig. 1. Title page of *Anatomía completa del hombre* (1730) by Martín Martínez. The engraving, an original by Matías de Irala, represents an anatomy lesson in the amphitheater of Madrid General Hospital.

tongue with the index finger to reveal the area, and in this position pass the scissors between the fingers to cut the frenum as close to the tongue as possible."[12]

Hervás (1789, vol. 1, p. 204-5) wrote[13] that wet-nurses frequently exaggerated the problem, and that many times when he had been called to deal with it, the frenum was seen to be sufficiently long and no treatment was necessary. Observing that /l/ and /r/ were the main sounds affected by frenum hypertrophy, he suggested that parents had an essential role in the problem and should play with the sounds and encourage their children to do the same. This physician, who was also a priest, was obviously a speech therapist ahead of his time.

Regarding surgical treatment, Hervás also described the scissors technique, followed by rinsing with wine. This author not only refers to classical and Spanish authors, but also to other European surgeons and anatomists, such as[14] Jean Louis Petit (1674-1750), director of the French Académie Royale de Chirurgie and Joseph Clement Tissot (1750-1826), who broke with classical doctrine by recommending mobility for surgical patients.

Velasco (1780, p. 373-374) describes[15] scissors surgery for this ailment, but warned of the danger of damaging nearby arteries with the scissors. To prevent any recurrence, he recommended that the wet-nurse touch the area two or three times a day and put ground salt under the tongue immediately after surgery.

Ginesta (1797, p. 4) opposed[16] the practice of trying to break the frenum by manipulating the tongue, or introducing any kind of instrument, and suggested that a surgeon be involved in both the decision and the procedure. This attitude may be well understood given the fact that wet-nurses frequently broke the newborn's frenum with their nails without thinking of the consequences; and the exaggerated reaction of the same group, who would attempt to cut the frenum as soon as the baby made a strange noise when breastfeeding (Demerson, 1989).[17]

Upper Lip Frenum Hyperthrophy and Its Treatment.

A review of the literature shows that the indications for labial frenectomy were completely different from present-day indications. Today, frenectomy and orthodontic treatment are combined to facilitate the closure of the diastema between maxillary central teeth. In the 15th and 16th centuries, labial frenectomy was basically associated with a cure for scrofula (*lamparón* in old Castilian).

Lamparones (plural of the word *lamparón*), therefore, would simply have been infracted ganglia,

which would explain why labial frenectomy was performed so often on children, in whom the disease is more frequent, as can be deduced from the following words of Francisco Díaz (1575, p. 147-8)18:

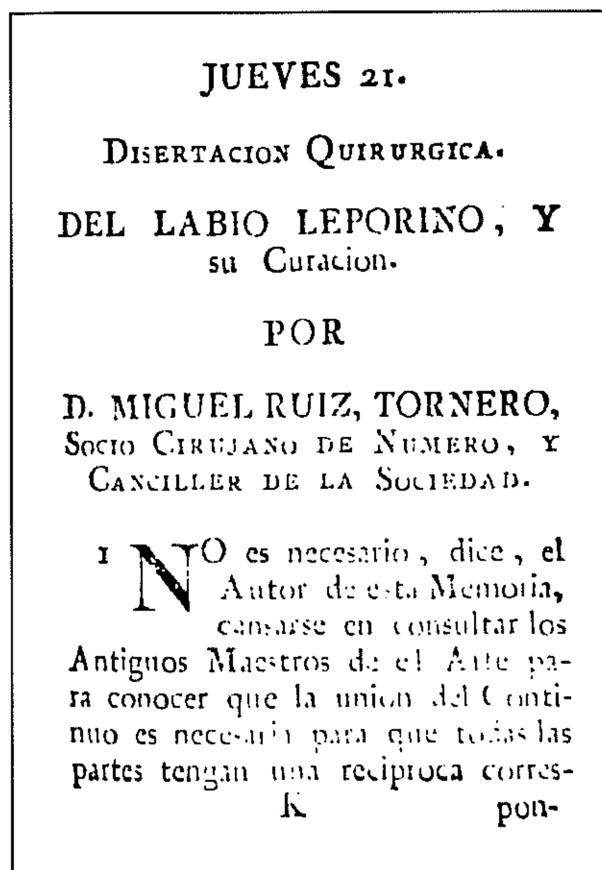
"*Lamparones* arise from the humor we call vitreous in any part of the human body, but mostly in the neck, armpits, groin and extremities. It is most frequent in the young."

Fragoso (1581, p. 247) is of the same opinion,[9] since, when asked whether this problem was contagious, he said that it was because it was common in children whose wet-nurse had buboes. Among the authors of the time who recommended frenectomy to treat *lamparones* were Arias Benavides[19] (1567, p. 160) and Díaz (1575, p. 153),[18] who recommended, in addition to frenectomy, other buccal treatments such as cutting the veins below the tongue, and even cauterizing ear cartilages (Fragoso, 1581, p. 247).[9]

Lip frenectomy was also recommended at this time, for example by Hidalgo de Agüero (1604, p. 121),[10] as a treatment for another buccal process called cracked lips or *perillas* in old Castilian. This problem gradually disappeared from the literature, and no Spanish author in the 17th century mentioned it. In the 18th century, only two authors mention lip frenectomy—in children with cleft palate, so that the presence of upper lip frenum hypertrophy would not complicate lip surgery. For example, speaking of harelip and cleft palate Velasco (1780, p. 383) writes:[15]

"If the division is in the centre of the lip, the frenulum which ties it to the gum should first be cut so that it does not inconvenience the operation, but if the division is not in the middle, this precaution will be useless."

Ruiz Tornero (1788, p. 152) (*Fig. 2*), mentions[20] the same in connection with harelip and cleft palate.



JUEVES 21.

DISERTACION QUIRURGICA.

DEL LABIO LEPORINO, Y su Curacion.

POR

D. MIGUEL RUIZ, TORNERO, Socio Cirujano de Numero, y Canciller de la Sociedad.

1 NO es necesario, dice, el Autor de esta Memoria, cansarse en consultar los Antiguos Maestros de el Arte para conocer que la union del Continuo es necesaria para que todas las partes tengan una reciproca corres-
K pon-

Fig. 2. First page of a *Memorandum* by Ruiz Tornero (1788) on the surgical treatment of of harelip and cleft palate.

Conclusions

A review of the medical texts of the era studied show that while the indications for a lingual frenectomy are very similar to those today (speech and breastfeeding difficulties), those for carrying out a lip frenectomy are very different. During the 16th-18th centuries, a frenectomy was recommended for *lamparones*/scrofula (infracted ganglia) or *perillas* (cracked lips), while presently it is performed in connection with orthodontic treatment to encourage diastema closure. However, this type of frenectomy gradually disappeared from the literature in favor of more functional and æsthetic surgical indication, such as the correction of a harelip, which is closer to modern-day recommendations.

It is particularly interesting that, apart from purely surgical or medicinal treatments, some authors pointed to the need to complement such treatment with educational intervention, and the exercise of what can only be called basic speech therapy.

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