

Condyle tumor excision through pre-auricular access

Excisão de tumor de côndilo por meio de acesso pré-auricular

Extirpación de tumores del cóndilo usando el acceso preauricular

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Abstract

Background: The surgical approach choice for diseases that affect the preauricular region has been subject of much discussion in the literature. **Methods:** Pre-auricular access, have been used with high success rate and, during surgery history various modifications of this approach were conducted in order to reduce irreversible sequelae. **Conclusions:** Therefore, this study is of relevance, since guide the surgeons about the care concerning anatomical structures involved in this surgical approach and describe, by means of a clinical case, its advantages and indications.

Descriptors: Facial Nerve; Ear Auricle; Temporomandibular Joint.

Resumo

Antecedentes: A escolha da abordagem cirúrgica para doenças que afetam a região pré-auricular tem sido objeto de muita discussão na literatura. **Métodos:** acesso pré-auricular, têm sido usados com elevada taxa de sucesso e, durante a história da cirurgia várias modificações desta abordagem foram conduzidas de modo a reduzir sequelas irreversíveis. **Conclusão:** Portanto, este estudo é relevante, uma vez que guia os cirurgiões sobre os cuidados a respeito de estruturas anatômicas envolvidas nesta abordagem cirúrgica no presente trabalho descrita por meio de um caso clínico. Suas vantagens e indicações também são discutidas.

Descritores: Nervo Facial; Pavilhão Auricular; Articulação Temporomandibular.

Resumen

Antecedentes: El abordaje quirúrgico de las enfermedades que afectan a la región pre-auricular ha sido objeto de mucha discusión en la literatura. **Métodos:** acceso preauricular, se han utilizado con una alta tasa de éxito y, durante la historia de la operación han llevado a cabo diversas modificaciones de este enfoque para reducir consecuencias irreversibles. **Conclusión:** Por lo tanto, este estudio es relevante como guía para los cirujanos sobre el cuidado acerca de las estructuras anatómicas implicadas en este abordaje quirúrgico descrito en este artículo a través de un caso. También se discuten sus ventajas y sus indicaciones.

Descriptor: Nervio Facial; Pabellón Auricular; Articulación Temporomandibular.

INTRODUCTION

The search for the best surgical approach for the treatment of fractures of the mandibular condyle and zygomatic arch, as well as temporomandibular joint disorders (TMJ) is still synonymous of controversies, particularly in relation to condylar fractures. Opinions range from the indication of surgical treatment for all fractures with displacement, to the conviction that no segment of fractured bone should be surgically treated¹.

When we opted for surgery as therapy, among many things to consider, the possible postoperative sequels are mainly aesthetic and functional, especially when we observe the abundant vascularization and innervation of the region in which the external carotid artery enters the parotid gland and sends its two terminal branches, the maxillary artery and superficial temporal artery²⁻⁵.

The facial nerve also travels a path inside the parotid gland, medially to the external carotid artery and retromandibular vein, dividing in the temporofacial and cervicofacial branches, that originates inside the parotid gland the terminal branches of the facial nerve: temporal, zygomatic, buccal, marginal mandibular, and cervical⁵⁻⁷.

Several approaches are described in the literature in order to treat the diseases in this region. Since the description of pre-auricular access, this has been used with high predictability of success and during surgery history, numerous modifications of this approach were conducted in order to reduce irreversible sequelae. Therefore, this study is appropriate for warn the surgeon about the noble structures involved in the surgical approach of this region, in addition to presenting a relevant clinical case.

CASE DESCRIPTION

A male patient sought treatment, presenting severe trismus, significant occlusal changes, with difficulty in excursive mandibular movements. We observed the presence of ankylosis of the right mandibular condyle (Figures 1 and 2).

From there, we opted to perform Ál-Kayat, Bramley⁸ approach with temporal extension. All steps prior to the procedure were performed, general anesthesia, nasotracheal intubation, antisepsis and placement of sterile drapes, the pre-auricular incision was done on the right side, following with divulsion by planes to access mandibular condyle. The incision was initiated in the temporal region, anterior-superior to the external ear delineating a semicircle to the superior

part of the outer ear in an inferior-posterior direction to avoid the main branches of the temporal vessels. It continued surrounding the anterior portion of the outer ear, the tragus cartilage and ear lobe.



Figure 1. Initial clinical aspect of the patient in front standard



Figure 2. Initial clinical aspect showing the patient's severe trismus

The divulsion was performed carefully and the entire thickness of the skin and subcutaneous tissue flap reflected together. Knowing that the temporal fascia bifurcates 2.0 cm above the zygomatic arch, from this stage, an 45° incision starting from the posterior portion of the zygomatic arch in an anterosuperior direction was performed in the superficial layer of temporal fascia posterior to frontal process of zygomatic bone. Then the zygomatic arch periosteum was incised and detached, reflecting the noble anatomical structures. The deep layers were sutured with polyglactin 910 and nylon 6.0 was used for skin closure (Figures 3 and 4).

In the post-operative controls, a good healing aspect of surgical approach was observed, with no motor deficit of the muscles innervated by the facial

nerve, as well as a satisfactory mouth opening and occlusion (Figures 5 and 6).

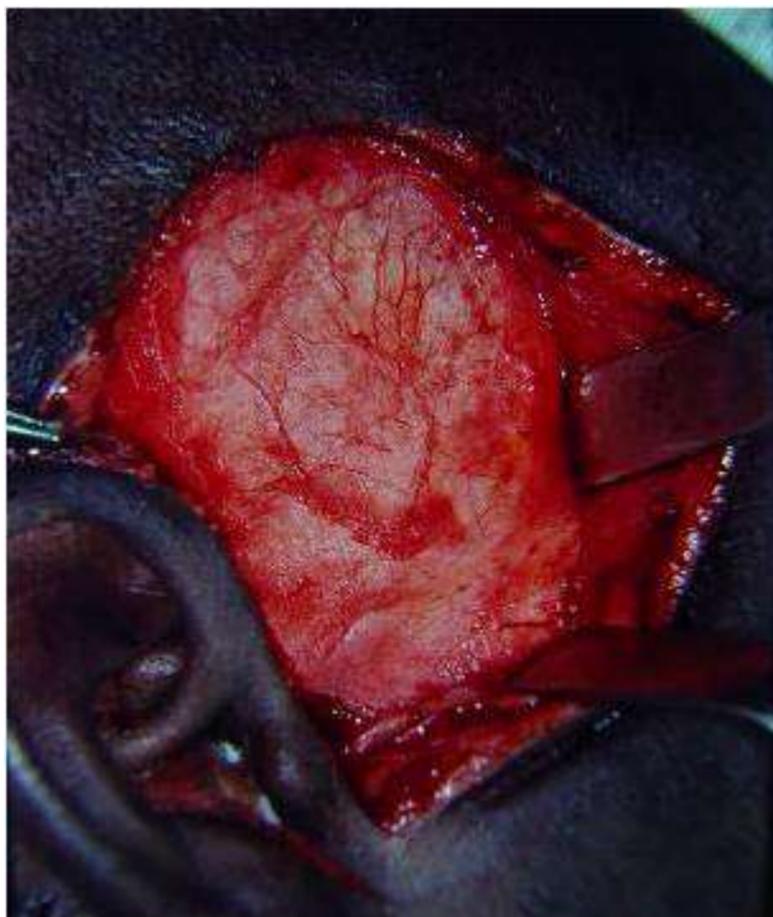


Figure 3. Pre-auricular incision with temporal extension

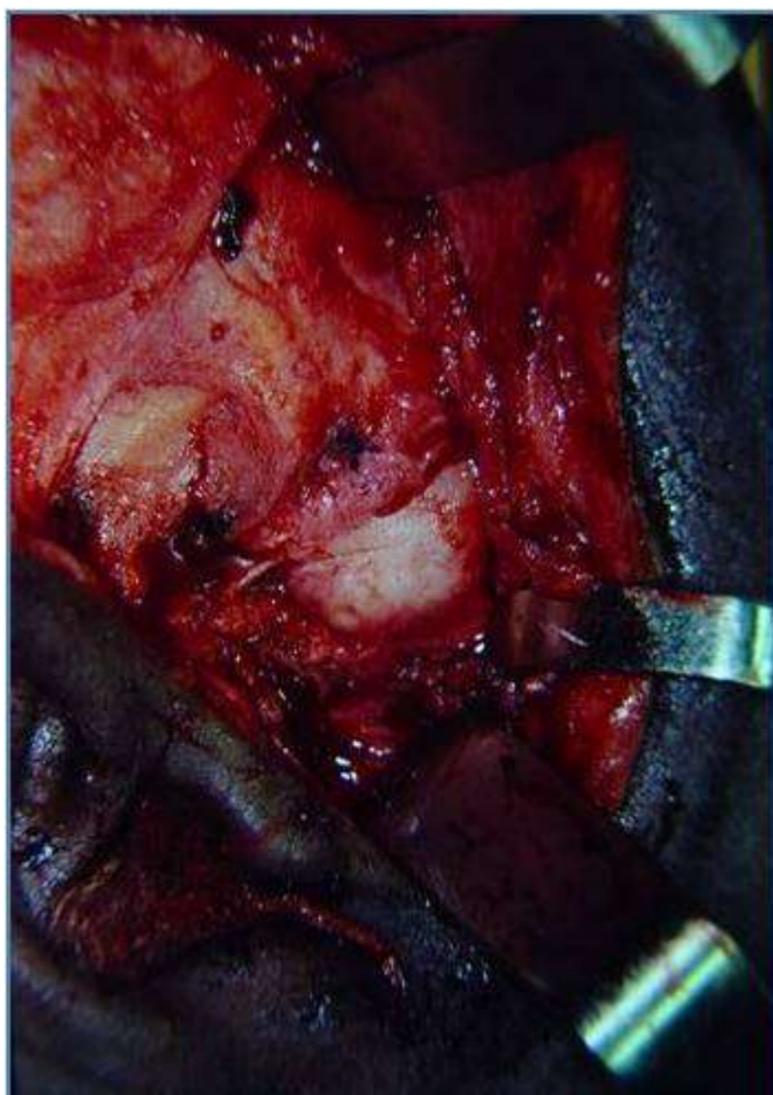


Figure 4. Pre-auricular incision by plans and access to the condyle



Figure 5. Improvement of mouth opening in the postoperative period of 15days

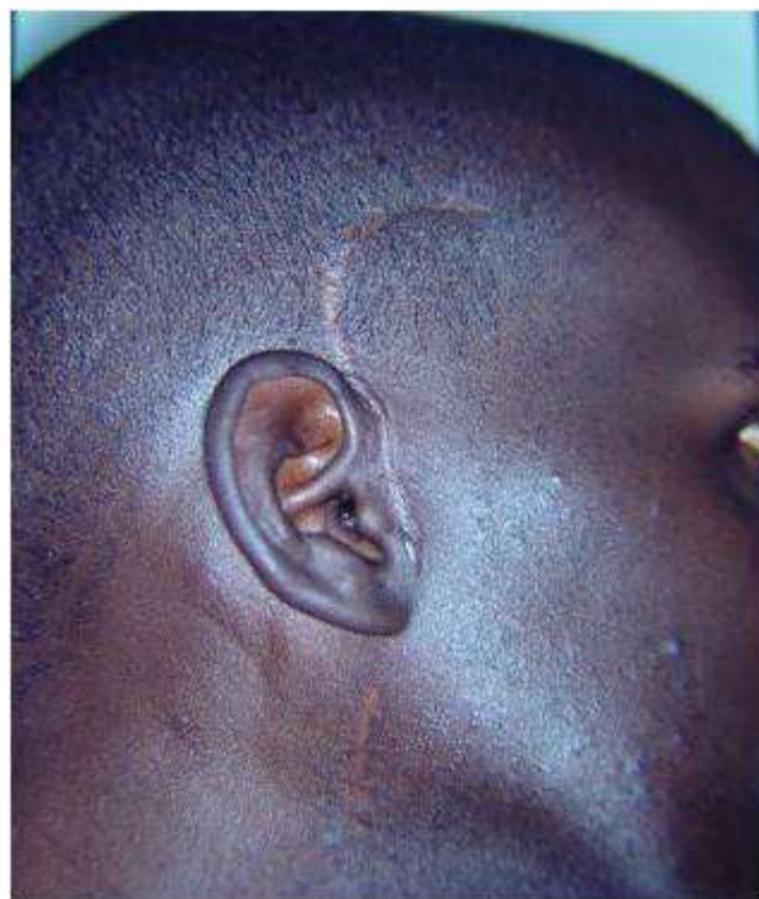


Figure 6. Satisfactory aspect of the surgical scar

DISCUSSION

As shown previously, it is essential that the surgeon knows in detail the local anatomy and perform a meticulous surgical technique, particularly in the dissection of the region near to facial nerve, to avoid any damage to it.

For proper exposure of the region several studies were made in order to asses patterns of branching and anastomosis of the facial nerve. It was speculated that the low incidence of facial nerve injury in pre-auricular access takes place because of its distal branch, in the branches that cross the zygomatic arch^{9,10}. These authors confirmed that in 63% of neurotmesis of the frontal branch of facial nerve, there was no loss of

function of the frontal belly of the muscle occipitofrontal, since there is more than one route of innervation of this branch. In the reported case the patient had deficits in their frontal branch of the facial nerve on the operated side, which decreased in the course of time.

In this context, the dissection involved in pre-auricular approaches can lead to paralysis of the involved muscles and, if there is paralysis of the eyelids, the consequences are serious. So there is a consensus in the literature, supported by the present authors, about the maximum protection of structures during the divulsion of the anatomic structures, with the intent of not injury it. Therefore, the determination of a large preauricular access avoids an excessive retraction of the structures adjacent to the facial nerve.

In the pre-auricular approach, the temporal and rarely zygomatic branches of facial nerve are the most predominantly injured. It are nerve fibers that cross the zygomatic arch in a caudal-cephalic direction and are encountered immersed in the condensation of the layers of the temporoparietal fascia, superficial layer of temporal fascia, parotidomasseteric fascia and periosteum of the lateral portion of the zygomatic arch. These structures can be damaged in any dissection technique that violates the integrity of this tissue^{8,11}, situation that we have not observed in this work.

It is well established in the literature that the temporal branch of the facial nerve crosses the zygomatic arch between 0.8 to 3.5 cm from the foremost point of the acoustic meatus, an average of 2.0 cm, the authors point out that even more important than observe the average is to consider the minimum values⁸. One important fact during dissection of the pre-auricular approach, is the vertical incision of the fascia and periosteum over the zygomatic arch should be performed less than 0.8 cm from the most anterior point of the meatus acoustic as illustrated in the clinical case presented¹¹.

In the pre-auricular approach is safer to stay in the subperiosteal plane to avoid damaging the temporal branch of the facial nerve, since these branches are superficial to this plane and are protected within the flap during surgery. For this to occur the incision is made on the superficial layer of the temporal fascia, being the divulsion made in this plan to the zygomatic arch, and the periosteum is incised in the crest of the zygomatic arch⁸. Without doubt, there is greater protection to the temporal and zygomatic branches of the facial nerve when the fasciocutaneous flap during the pre-auricular access is made.

In this way, to avoid excessive traction during surgery, with consequent neuropraxia¹², is essential to have a temporal extension of this flap, as described by various authors^{2,7,8,10,13}. This extension is a preventive maneuver for facial nerve injury cited by these authors, due to the reduction of the tensile forces of the flap, whose intensity is certainly transmitted to the nerve fibers.

Relative to injuries of facial nerve in this type of access, excessive tissue retraction during surgery was described at a rate between 9 to 18% of cases^{12,14}. Corroborating with the findings of this case, when the surgical approach is made cautiously and the surgical team is experienced facial nerve damage are not observed¹⁵⁻¹⁷.

Another possibility of injury to the facial nerve is through hematoma formation and swelling. Systemic and local measures should be taken to reduce the swelling, such as anti-inflammatory steroid prescription, good hemostasis and wound closed in layers. Moreover, the use of anesthetics with epinephrine for local hemostasis, providing a bloodless access, may cause paresis of one or more branches of the facial nerve¹⁸, not being used by the authors of this study, since the effect vasoconstrictor is not as effective as expected due to presence of large vessels, thus making their use more suitable to achieve postoperative analgesia.

As for the best aesthetic results on the different pre-auricular approaches, endaural access was described as an access that would bring excellent aesthetic results because the incision guide the surgeon to close the wound and cause a decrease in tension of the flap, differently that observed by some authors¹⁸⁻²⁰.

CONCLUSION

Therefore, we can conclude that when the pre-auricular approach is well indicated and performed, provides adequate exposure to the region of the mandibular condyles and related structures making the results more predictable. The extended access was effective because in addition to restoring the functionality of the joint, did not affected the patient's aesthetic.

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CONFLICTS OF INTERESTS

The authors declare no conflicts of interests.

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