Case study

USE OF POST-AURICULAR APPROACH TO REMOVAL ANCHORS AFTER DISCOPEXY – CLINICAL CASE REPORT

Abstract

The mandibular temporomandibular joint (TMJ) is two diarthrodial ginglymus joints joined by a single bone, the mandible. Multiple approaches to TMJ are described in the literature due to the complexity of exposing them without damaging the noble structures in the region (facial nerve, temporal artery, and parotid gland) and causing aesthetic damage. This article will present a case report of a 21-year-old female patient. The post-auricular approach removed loose anchors in the right TMJ due to a fistula in the pre-auricular approach region. The post-auricular approachefficiently exposed the TMJ and healing, presenting superior aesthetic results compared to other TMJ approaches.

Keywords: TMJ, TMJ disorders, Temporomandibular joint disc displacement, Mandibular condyle.

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Introduction

Displacements of the articular disc are included as arthrogenous TMD or internal derangement of temporomandibular joint (TMJ), whereas patients may complain of TMJ pain, joint sounds during mandibular function. Treatment of TMD patients (in particular, those who are symptomatic with disc displacement) aims to reduce pain and recover normal mandibular movements in order to improve quality of life [14]. Clinicians have recognized that a sequential strategy or stepwise management has been recommended considering patients' progression from episodic signs and symptoms to refractory history of pain and dysfunction of TMJ in order to implement conservative treatment (patient education and psychological support, medication, occlusal splint, physiotherapy, and low-level laser therapy), minimally invasive procedures (intra-articular injection, arthrocentesis, arthroscopy), or invasive open surgery procedures (disc plication or discopexy, arthroplasty, and discectomy) [15]. The present case report aims to describe the use of the post-auricular approach to remove loose anchors in the right TMJ region due to the presence of an active fistula in the pre-auricular approach region.

Presentation of case

The anatomy of the TMJ is very characteristic of the diarthrodial ginglymus type, divided into upper and lower compartments separated by the articular disc. Dense collagen fibers cover the articular surface, the mandibular condyle, and the glenoid cavity; the cavities are filled with synovial fluid. The articular disc is also a complex

structure, with its central part comprising avascular collagen tissue and its posterior region comprising highly vascularized tissue [1].

Multiple indications require surgical treatment of the TMJ: internal derangement, arthritis, trauma, ankylosis, developmental disorders, and neoplasms [2]. Approach for TMJ surgical procedures can cause severe complications due to the noble structures present (facial nerve, temporal auricular nerve, superficial temporal artery and vein, and parotid gland). [3] Multiple approaches to TMJs are described in the literature due to the complexity of exposing them without damaging the structures present [4]. The most used surgical approaches are 1) pre-auricular, 2) endaural, 3) post-auricular, and 4) retromandibular. [2]

In the post-auricular approach, an incision is made behind the pinna to operate on an anteriorly located structure, the TMJ. It was described by Axhausen in 1931 as a technique in which the incision is made in the posterior region of the ear, followed by anterior dissection with division of the cartilaginous ear canal. The TMJ is exposed through the flap containing the entire auricle and the posterior part of the parotid gland spread anteriorly. The rectus auricularis technique is efficient, with predictability in joint exposure and postoperative healing, thus minimizing possible complications [5]. In addition to preserving the lateral ligaments of the TMJ during open intracapsular surgery [6].

The indications for the postauricular approachare replacement and osteosynthesis of condylar fractures, eminoplasty or eminectomy, and treatment of some ankyloses [6]. The risk of the technique is canalicular stenosis [7].

There are also several methods for managing TMJ articular disc dislocation. A commonly used method to reestablish the relationship between the condyle and the glenoid fossa is discopexy, which is repositioning the articular disc by anchoring the disc to the condyle using mini anchors[8]. The present case report used the post-auricular approach to remove loose anchors in the right TMJ region due to an active fistula in the pre-auricular approach region.

The patient, a 21-year-old female, attended the Trauma Surgery Service complaining of pain in the right TMJ region. The patient reports having undergone discopexy surgery, with a pre-auricular approach on the right side, to treat disc dislocation articulate. She reported that approximately 15 days after the first procedure, she experienced severe pain after forcing her mouth open, followed by clicking noises. Clinical examination revealed the presence of a fistula scar in the region of the pre-auricular incision (right side), with a small purulent output upon manipulation. This fistula had been present for four months since the previous surgical procedure.

On the panoramic radiography, it was identified that the anchors on the right side were loose; therefore, it was decided to remove them. The approach of choice for this case was post-auricular to avoid that after the fistulectomy (performed in the same surgical procedure), there would be little soft tissue available for suturing, which would cause a local aesthetic defect and the risk of injury to the facial nerve.

Description of the surgical procedure:

1. Incision posterior to the auricular flexure extended to a point 5mm posterior to the most superior anterior insertion of the auricle, up to the mastoid process, without extension;
2. Dissection in the region anterior to the auditory cavity;
3. Channel transection;

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4. Release of remaining tissue insertions to the canal and suture of the anterior surface of the canal, subsequently fixed to the mastoid fascia;
5. Dissection superior to the external auditory canal to expose the temporal fascia;
6. Incision of the temporalis fascia;
7. Dissection continues inferior to the arch;
8. Exposure of the capsular ligament;
9. Horizontal incision in the capsular ligament in the superior joint space;
10. The incision is extended to locate loose anchors;
11. Removal of loose anchors;
12. Suture ofthe joint capsule, remaining tissue, skin surface, and retro-auricular skin incision;
13. A fistulectomy was performed in the right pre-auricular region, washing with 0.9% saline, debridement, and suturing.

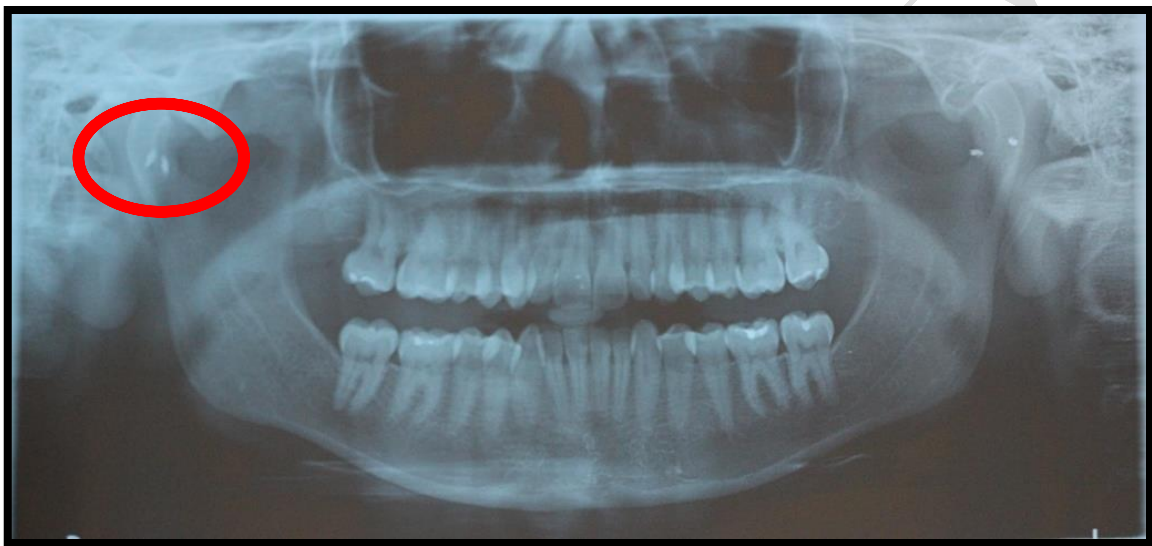

Figure 1: Initial panoramic radiograph with loose anchors on the right side.

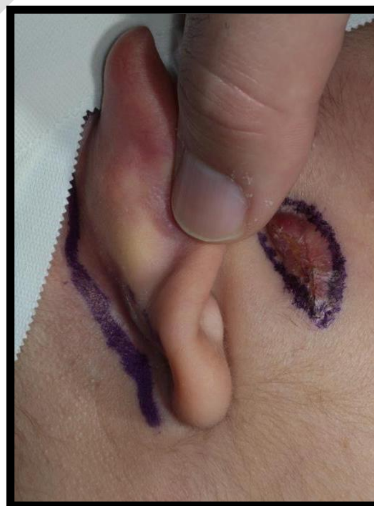

Figure 2: Demarcation for performing the fistulectomy and post-auricular incision, without extension, and inflammatory fistula scar in the pre-auricular region.

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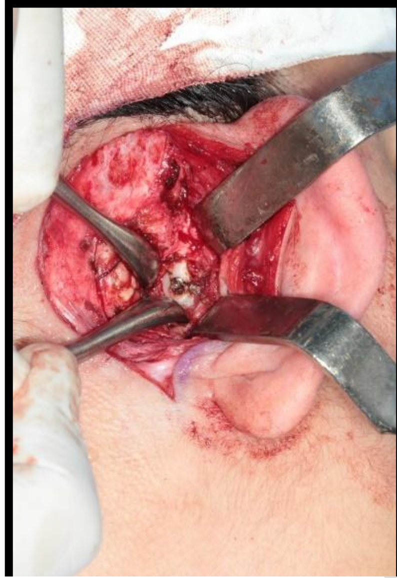

Figure 3: Right side anchors lose.

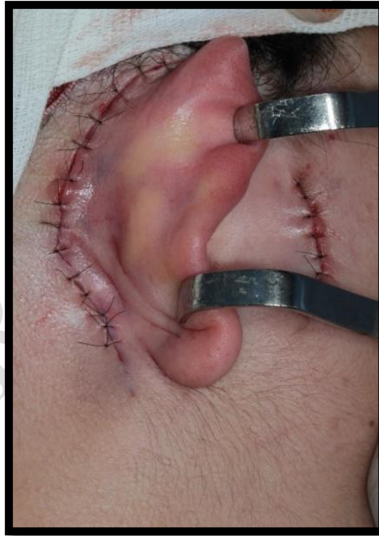

Figure 4: Suture in the post-auricular incision region and in the fistula region (pre-auricular).

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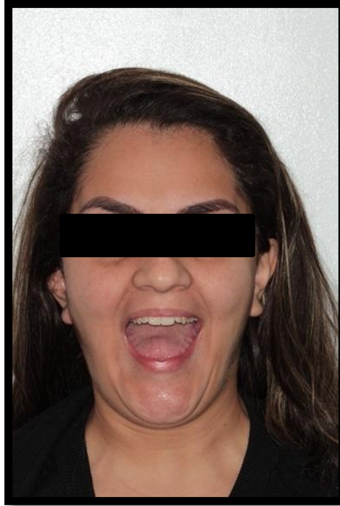

Figure 5: Patient without limitation, with 45mm of mouth opening post-operatory.

Discussion

Concern about the non-aesthetic position of the scar in approach to the TMJ (pre-auricular) is a constant in academia and the routine of surgeons. Many approaches, such as the endaural approach, are recommended to provide an adequate approach and an acceptable cosmetic result for the surgical scar[9]. But even so, there is a high risk of accidents/complications due to the set of noble structures present in the region (auriculotemporal nerve, superficial and middle temporal veins, parotid gland, facial nerve, transverse facial artery, and vein) [10], associated with pre-auricular and/or endoaural approaches. These adversities make the post-auricular approach an excellent alternative as it solves two problems: 1) it is in a non-aesthetic area, and 2) it does not directly affect noble structures.

Transmeatal retro auricularapproach is indicated in patients (1) with intracapsular fracture of the condyle head; (2) overweight patients with consequently excess soft tissue in the cheeks; (3) patients with a genetic predisposition to develop hypertrophic keloids; (4) patients who preoperatively do not accept any possible nerve injuries or visible facial scars; (5) patients who mentioned previous surgical procedures during the clinical examination, procedures in the pre-auricular region (facelift, parotid surgery) [11]; surgical indication which coincides with the surgical recommendation of our case report, due to the previous surgery to place anchors with pre-auricular approach and persistent fistula in the scar.

The post-auricular approach is technically more complex than approaches such as the pre-auricular or endoaural. However, this issue is overcome with the surgeon's experience [11], given that the pre-auricular approach is still preferred and used by many surgeons [3]. Furthermore, complications such as bleeding or conduit stenosis are rare, with adequate surgical technique [10]. The post-auricular approach extended to the temporal region presents good condylar exposure, mainly in its posterior region, with the pre-auricular approach being more suitable for accessing the lateral region [11]. The post-auricularapproach allows for a better cosmetic result due to the incision area being non-aesthetic, in addition to significantly reducing the occurrence of damage to the facial nerve. [12] However, the post-auricular approach can also present some disadvantages, such as hemorrhage, otitis, auricular canal stenosis, and temporary auricular anesthesia [13]; it can showmore significant postoperative discomfort due to

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the increased operative field and more remarkable preservation of the V and VIIIpairs of cranial nerves, which prevents paresthesia, resulting in painful sensitivity in the postoperative period[6]. There is a report of temporary weakness of the frontal branch of the facial nerve in a sample of 14 patients who recovered normal function after a short period (1.6 months) [11]. In this case report, no immediate or late accidents/complications are associated with the postauricular approach. The three pre-auricular, endoaural, and post-auricular incisions present an acceptable exposure of the TMJ with satisfactory functional and cosmetic characteristics[1]. When choosing the approach route, the surgeon's experience and the aesthetic issue of the patient's healing must be considered [13].

Conclusion

The post-auricular approachefficiently removed the anchors in the said clinical case. It resulted in a scar in a non-aesthetic region (post-auricular) and closed the active fistula without other complications.

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