Technical Note

Trauma

R. Martín-Granizo, J. L. Caniego, M. de Pedro, L. Domínguez
Department of Oral and Maxillofacial Surgery, Hospital Clínico San Carlos; Department of Radiology, Hospital Universitario de la Princesa, Madrid, Spain

Arteriovenous fistula after temporomandibular joint arthroscopy successfully treated with embolization


Abstract. Temporomandibular joint arthroscopy is a minimal invasive surgical procedure commonly used to effectively treat some internal derangement of the TMJ. However, this method is not free of complications. Arteriovenous fistula (AVF) is a lesion that communicates the high flow arterial system and the low flow venous network. We describe a new case of preauricular traumatic AVF successfully treated with external carotid embolization, along with a review of the medical literature.

Case report

A 21-year-old Caucasian female was referred with the complaint of a sudden limitation of the mandibular opening 6 months ago. She also mentioned facial pain while chewing. Her past medical history was unremarkable with no traumatic antecedents. On examination, an oral opening of 23 mm with deviation of the mandible toward the right side was assessed. An MRI of the TMJ was made, and an anterior right side disk displacement without reduction was found. A subsequent splint therapy was installed, without satisfactory results 6 months later. Therefore, the patient underwent an arthroscopy of her left TMJ. This procedure was uneventful using a standard posterolateral approach, performing a lysis and lavage technique. In the first visit 15 days after surgery the patient referred a pulsatile tinnitus not modified with changes of position. On examination a palpable thrill and an audible bruit were observed. A CT-angiography was made and a vascular lesion on the preauricular right area was found (Fig. 1). With the diagnosis of an AVF secondary to arthroscopy, the patient underwent a facial angiography through a femoral cannulation. This test revealed a high-flow AVF between the superficial temporal artery and the pterygoid venous plexus with an enlargement of the external carotid arterial system (Fig. 2). Therefore, an immediate embolization of the feeding vessels with two platinum coils was carried out (Fig. 3). Shortly after this procedure the thrill and the bruit disappeared. The panoramic radiograph showed the radioopaque titanium coils over the right TMJ area (Fig. 4), without recurrence of the fistula 6 months after the embolization. On addition, her articular symptoms improved with an oral opening of 45 mm without mandibular deviation.
Complications of arthroscopy of the TMJ are uncommon. The incidence varies from 1.7% to 10.3%\textsuperscript{3,6,12}. A study of CARTER and SCHWABER, classified these as neurologic, vascular, otologic, inflammatory, infectious, instrument failure and anaesthetic complications\textsuperscript{4}. Nevertheless, McCain suggested that intra-articular damage to the articular surfaces (scuffing) secondary to arthroscopic manipulation may be the most common unrecognized complication\textsuperscript{7}, and W\textsuperscript{ES}TE\textsuperscript{SS}SON et al., reported an incidence up to 50% of scuffing in fresh cadaver studies of patients having undergone TMJ arthroscopy\textsuperscript{13}. AV fistula is a high-flow vascular lesion that directly communicates the high arterial flow with the slow venous circulation. This high pressure produces a dilation of the weak wall of the venous vessels resulting in a mass with a palpable thrill and an audible bruit. The suspected mechanism for AVF after TMJ arthroscopy could be a blunt or sharp
trauma that connects the superficial temporal artery with the rich vascular venous pterygoid plexus. Therefore, an enlargement of the external carotid system, secondary to different blood pressures between arterial and venous circulation, can be expected. These findings have been described in all cases reported in the literature. A careful arthroscopic technique is mandatory to avoid such complication.

Therapy of AVF must include a previous study of the affected vascular territory in order to make an appropriate treatment planning. Nowadays, non-invasive imaging tests such as CT-angiography and MR-angiography are valid options, although the low-morbidity superselective arteriography is the most complete test. Treatment options include surgical ligation of the vessels, excision of the fistula, and arterial embolization whether alone or followed by surgical resection. Calwell et al., reported a case where an initial attempt of surgical ligation resulted in a recurrence and required a subsequent arterial embolization. Although superselective catheterization of the external carotid artery is not without inherent risks, seems to be the treatment of choice. The present case was successfully treated using this low-morbidity procedure.

References

Address:
Rafael Martín-Granizo
C/ Guzmán el Bueno 70, 4º A
28015 Madrid
Spain
Tel: 34-91-330 31 86
Fax: 34-987-26 44 42
E-mail: rmartinlo@wanadoo.es