

MANDIBULAR DISLOCATION AFTER STROKE: AN UNCOMMON SEQUELAE

LUXAÇÃO MANDIBULAR APÓS ACIDENTE VASCULAR CEREBRAL: UMA SEQUELA INCOMUM

Luis Gustavo Jaime PAIVA¹; Maiolino Thomaz Fonseca OLIVEIRA²; Flaviana Soares ROCHA³; Jonas DANTAS³; Marcelo Caetano PARREIRA²; Darceny ZANETTA-BARBOSA³

1 – DDS. Área de Cirurgia e Traumatologia Bucocomaxilofacial e Implantodontia, Faculdade de Odontologia – Universidade Federal de Uberlândia, Minas Gerais Brasil;

2 – DDS, MSc. Área de Cirurgia e Traumatologia Bucocomaxilofacial e Implantodontia, Faculdade de Odontologia – Universidade Federal de Uberlândia, Minas Gerais Brasil;

3 – DDS, PhD. Área de Cirurgia e Traumatologia Bucocomaxilofacial e Implantodontia, Faculdade de Odontologia – Universidade Federal de Uberlândia, Minas Gerais Brasil.

ABSTRACT

Temporomandibular joint (TMJ) recurrent dislocation is usually associated with jaw hypermobility or articular eminence anatomy. Patients who have stroke experience (CVA) can present joint and muscle tone changes, as laxity ligamentous and appearance of spastic muscle patterns in different parts of the body such as shoulder, elbow, wrist, hip, knee and face. This study

reported two cases of patients with stroke sequelae who developed chronic dislocation of the jaw. It was concluded that these two clinical conditions appear to have some correlation, further studies with more patients needed to confirm this correlation.

KEYWORDS: Stroke; Mandibular dislocation; Temporomandibular joint.

INTRODUCTION

The temporomandibular joint (TMJ) is a synovial joint that, in conjunction with muscle groups, allows mandibular rotation and translation^{1,2}. Maximum physiological translation in the TMJ occurs when the greatest convexity point of the mandibular condyle reaches the greatest convexity of the articular eminence. When this translation exceeds the physiological limit, the mandibular condyle is displaced anteriorly beyond the articular eminence. Some authors differentiate subluxation as displacement of the condyle that can be self-reduced by the patient, and dislocation as displacement that cannot be reduced by the patient¹⁻⁴. When dislocation in a patient becomes frequent and progressively worse, the condition is referred to as habitual, chronic or recurrent dislocation³. It is commonly associated with changes in the articular anatomy, laxity of the temporomandibular ligament or joint capsule and altered activity of muscles. However, to date, there is only one report in the literature describing the association between recurrent dislocation and stroke¹⁻⁵.

Patients who suffered a stroke often have residual motor and cognitive dysfunction⁶. Strokes are characterized by a rapid loss of neurological function caused by interruption in cerebral blood flow that lasts for at least 24 hours⁶⁻⁸. These injuries can cause serious disturbances within the neurological system, frequently resulting in permanent sensory, language and motor deficits. Among the motor impairments, there are muscle tone changes that could predispose the patient to recurrent TMJ dislocations⁵⁻⁸. This paper reports two clinical cases of patients with stroke sequelae who developed mandibular recurrent dislocation (MRD), and discusses aspects of this clinical condition.

CASE REPORT

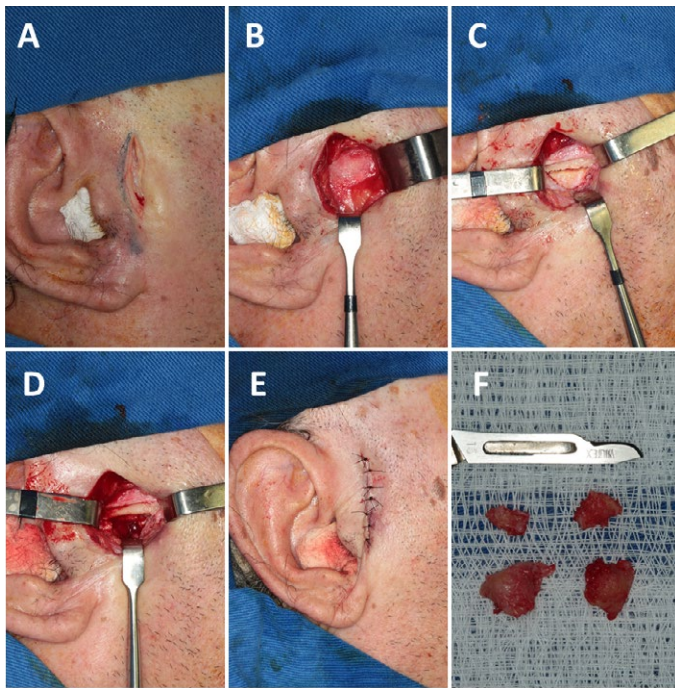
A fully edentulous 71-year-old, male Caucasian and a fully edentulous 65-year-old, female Caucasian were referred to the Oral and Maxillofacial Surgery Service of the Federal University of Uberlândia, MG, complaining of MRD. During anamnesis, a prior history of stroke was revealed (2 and 3 years prior to the first episode of dislocation, respectively). The families reported that the episodes had begun after the stroke, and that both patients had not had full prosthodontics prior to the stroke. Conservative treatment, such as analgesia, instructions for restricting mouth opening and face support bandages, had been ineffective. After failure of conservative treatment, bilateral eminectomy surgery was proposed to both patients.

Surgery was performed under general anesthesia, by means of bilateral pre-auricular access and osteotomy of the articular eminence with an oscillating saw. The osteotomy was concluded in the medial region with a chisel (Figure 01). During the 12-month follow-up period, there were no new episodes of mandibular dislocation.

The patients provided signed consent for participation in the study, which was approved by the ethical review board of the university.

DISCUSSION

Dislocation of the TMJ is the dislodgement of the head of the condyle from its normal position in the glenoid fossa located in the squamo-temporal portion of the cranial base. The mandibular dislocation itself may be either spontaneous or induced by trauma, such as forceful mouth opening during endotracheal



intubation with a laryngeal mask or tracheal tube, ENT/dental procedures, endoscopy, or excessive mouth opening during yawning, laughing, or vomiting¹⁻⁴. However, MRD is found more frequently in people with general joint laxity and in patients with unusual anatomy of the TMJ or with occlusal disturbances, such as loss of teeth and vertical height. It may be associated with neurologic diseases, increased muscular activity, and neuroleptic therapy. Mandibular recurrent dislocation may cause injury to the disc, the capsule, and the ligaments, leading to progressive TMJ internal derangement^{1,2,4,5,8}.

In the two cases reported in this article, the patients had anterior, bilateral MRD. Anterior dislocations are the most common and are usually secondary to an interruption in the normal sequence of muscle action when the mouth closes following extreme opening^{1,2,5}. The masseter and temporalis muscles elevate the mandible before the lateral pterygoid muscle relaxes, resulting in the mandibular condyle being pulled out of the glenoid fossa and anterior to the bony eminence. Spasm of the masseter, temporalis, and pterygoid muscles causes trismus and keeps the condyle from returning into the glenoid fossa^{1-5,9}.

A stroke is the sudden death of cells in a limited area of the brain caused by reduced flow of blood to that area. A stroke occurs when blood flow to an area of the brain is interrupted, and without a blood supply brain cells quickly begin to die⁴⁻⁹. The effects of a stroke depend on the areas affected and may include paralysis, speech problems, loss of memory or reasoning ability, coma or death. In stroke patients, the weakness or asynergia of the oral musculature is related to certain brain lesions. Cerebral lesions might disturb normal masticatory function and the voluntary control of bolus passage, and cortical lesions including the precentral area might result in declination of the contralateral lip and tongue movement, pharyngeal peristalsis, and delay of the swallowing reflex⁴⁻⁹.

According to recent statistics, stroke is more prevalent amongst older people; about 70% of stroke victims are edentulous and more than half of them experienced inadequate

prosthetic rehabilitation⁴⁻⁹. In addition, in patients who have had stroke, the incidence and the risk of stroke after-effects such as dysphagia, hypoesthesia, apraxia, and reduction in muscle tone, with a consequent reduction in control of mouth and tongue movements, are significantly higher than in those without stroke⁴⁻⁹. The two cases reported in this article were about old, edentulous patients with no adequate prosthetic rehabilitation, thus corroborating these findings.

Movements of the TMJ are limited by the action of ligaments that prevent displacement of the condyle out of the articular eminence. Some muscle tone changes caused by stroke can generate continuous joint changes in different body parts^{1-4,10}. According to Cook and Woollacott⁵, there is a greater predisposition for the emergence of laxity and subsequent joint dislocations in patients with stroke history. One of the features of stroke is that patients lose their muscular ability to control their dentures and therefore tend to leave them out, leading to overclosure of the mandible and TMJ ligament laxity. There is only one study that directly related MRD with TMJ ligament laxity as a result of stroke⁴. However, similar to other joints in the human body (shoulder and elbow, for example), the TMJ may also be susceptible to this change in stroke patients, as reported by both patients in the present study.

The stroke and recurrent dislocation of the TMJ appear to have some clinical correlation. Thus, studies seeking to evaluate these two clinical conditions should be carried out seeking to find ways to prevent the development of MRD.

CONFLICT OF INTERESTS

The author reports no conflict of interest

REFERENCES

- Shorey CW, Campbell JH. Dislocation of the temporomandibular joint. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 2000; 89(6): 662-668.
- Akinbami BO. Evaluation of the mechanism and principles of management of temporomandibular joint dislocation. Systematic review of literature and a proposed new classification of temporomandibular joint dislocation. *Head Face Med*. 2011; 7: 10.
- Cardoso AB, Vasconcelos BCE, Oliveira DM. Comparative study of eminectomy and use of bone miniplate in the articular eminence for the treatment of recurrent temporomandibular joint dislocation. *Rev Bras Otorrinolaringol*. 2005; 71(1): 32-7.
- Collins DR, Hogan J, O'Neill D, McCormack PM. Temporomandibular joint (TMJ) dislocation in association with stroke. *Ir Med J*. 1999. 92(1): 247.
- Thilmann AF, Fellows SJ, Ross HF. Biomechanical changes at the ankle joint after stroke. *Journal of Neurology, Neurosurgery, and Psychiatry*. 1991; 54(2): 134-139
- Mani S, Mutha PK, Przybyla A, Haaland KY, Good DC, Sainburg RL. Contralesional motor deficits after unilateral stroke reflect hemisphere-specific control mechanisms. *Brain*. 2013; 136(pt.4): 1288-303.
- Schimmel M, Leemann B, Herrmann FR, Kiliaridis S, Schnider A, Müller F. Masticatory function and bite force in stroke patients. *J Dent Res*. 2011; 90(2):230-4
- Cook AS, Woollacott MH. *Motor Control: Translating Research Into Clinical Practice*. Lippincott Williams & Wilkins; 2007.

09. Schimmel M, Leemann B, Schnider A, Herrmann FR, Kiliaridis S, Müller F. Changes in oro-facial function and hand-grip strength during a 2-year observation period after stroke. *Clin Oral Investig.* 2013; 17(3): 867-76.
10. Baur DA, Jannuzzi JR, Mercan U, Quereshy FA. A Treatment of long term anterior dislocation of the TMJ. *Int. J. Oral Maxillofac. Surg.* 2012; 42(8): 1030-1033.

RESUMO

A luxação recorrente da articulação temporo-mandibular ocorre quando o côndilo mandibular move-se para fora da cavidade glenóide e permanece travado anteriormente à eminência articular de forma repetitiva. Pacientes com histórico de acidente vascular cerebral podem apresentar alterações articulares e de tonicidade muscular. O presente estudo relatou dois casos clínicos de pacientes com seqüela de AVC, que desenvolveram

luxação crônica da mandíbula. Concluiu-se que essas duas condições clínicas parecem apresentar alguma correlação clínica, sendo ainda necessário estudos com mais pacientes para confirmar tal correlação.

Palavras-chave: Acidente Vascular Cerebral; Luxação mandibular; Articulação Temporo-mandibular.

CORRESPONDING AUTHOR

Luis Gustavo Jaime Paiva
Rua dos Garantãs Quadra 26B, Lote 18, Residencial Aldeia do Vale, Goiânia – Goiás. CEP 74680240
E-mail: lg.jp@hotmail.com