

Fracture of the Styloid Process of the Temporal Bone Associated With Peripheral Facial Paralysis

Fratura do processo estilóide do osso temporal associada com paralisia facial periférica: relato de caso

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ABSTRACT

Fracture of the styloid process of the temporal bone is a rare complication of head injury; there are not more than 20 cases described in the literature. The authors report the first case of fracture of the styloid process caused by penetrating trauma and associated with facial paralysis. Interpretation of anatomical data was essential in defining the diagnosis. The facial nerve was transected near its exit from the stylomastoid foramen; neurorraphy was successfully performed.

KEY WORDS: fracture of the styloid process; facial nerve injury; head injury.

RESUMO

Fratura do processo estilóide do osso temporal é uma rara complicação de traumatismo craniano, não havendo mais que 20 casos descritos na literatura. Os autores relatam o primeiro caso de fratura do processo estilóide decorrente de trauma penetrante e associado com paralisia facial. A interpretação dos dados anatômicos foi essencial para definição do diagnóstico. O nervo facial mostrava-se seccionado próximo do forame estilomastóideo; uma neurorrafia foi realizada, obtendo-se bom resultado.

PALAVRAS-CHAVE: fratura do processo estilóide; lesão do nervo facial; traumatismo craniano.

There are not more than 20 cases of fracture of the styloid process described in the literature¹². These lesions are rare and the diagnosis is not easy^{8,9}. This is the first reported case, to our knowledge, of fracture of the styloid process caused by penetrating trauma and associated with facial paralysis.

CASE

A 32-year-old-man had a car accident, and was thrown out of the vehicle, receiving a strong impact over

his head. This man was unconscious when admitted to the hospital Emergency Room; wounds to the occipital and right retroauricular regions were sutured. A Computerized Tomography of the cranium was carried out and considered normal. There was good recovery, except for right peripheral facial paralysis, which was diagnosed already on the day of the accident; the paralysis was attributed to a lesion on the intrapetrous portion of the facial nerve, and a non-surgical treatment was adopted.

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The patient came to us for a second opinion; when in re-appraising the tomography we detected a fracture affecting the styloid process near its base, with caudal dislocation of the inferior fragment (Figs. 1 and 2). Consequently, we suspected a lesion in the extracranial portion of the nerve, which led us to recommend surgical exploration.

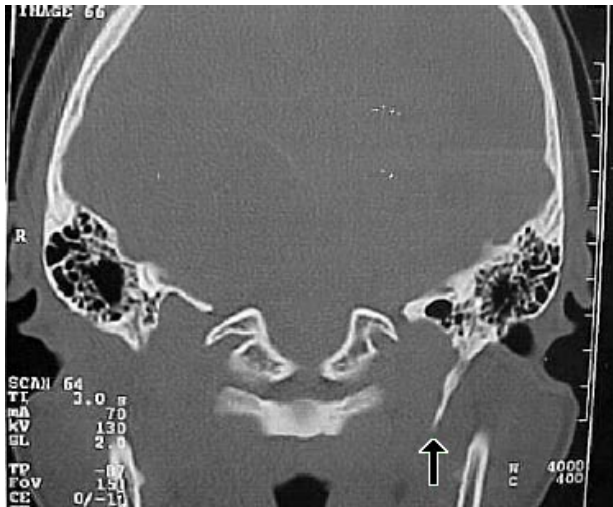


Fig. 1 - Computerized Tomography, coronal section. Intact styloid process on the left side.

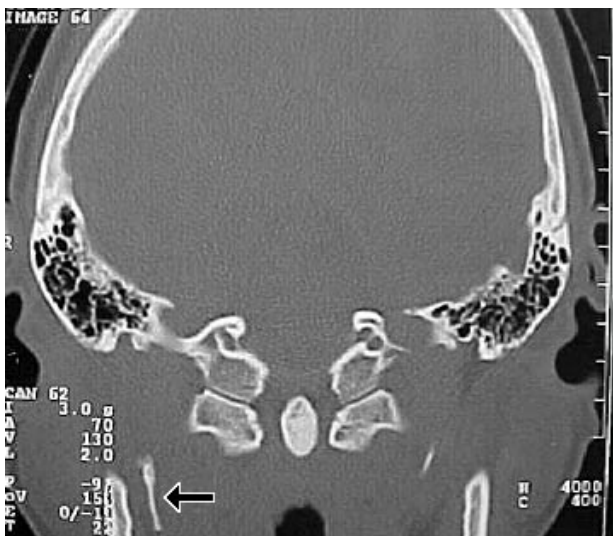


Fig. 2 - Computerized Tomography, coronal section. Fracture of right styloid process, near its base, with caudal dislocation of the inferior fragment.

It was confirmed that the facial nerve was transected near its exit from the stylomastoid foramen; a neurorraphy

was performed with good results (Fig. 3). A little splinter was found near the mastoid process, indicating the possibility that the lesion to the nerve and the fracture were both caused by the partial penetration of a sharp wooden piece through the retroauricular wound, this traumatic agent had stayed in the accident location.

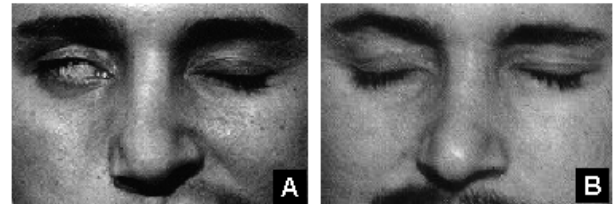


Fig. 3 - A. Pre-surgical aspect. B. Six months after the neurorraphy; good recovery of the muscle strength is observed, with total occlusion of the right palpebral fissure.

DISCUSSION

A discussion of injuries of the styloid process should begin with a review of anatomic points. The styloid process, the stylohyoid ligament and the lesser cornu of the hyoid bone, which together make the hyoid complex, coming from the development of the cartilage of the second branchial arch (Reichert's cartilage). The styloid process develops from two ossification centers: one is superior, which forms the tympanohyal portion, the other is inferior, which forms the stylohyal portion; eventually, the process of ossification does not result in a fusion of these two portions, the styloid process showing itself as separated, what can be misunderstood as a fracture¹⁴.

The dimensions of the styloid process vary from a long structure that can be palpable in the tonsillar fossa, to a very small projection, which is difficult to identify from a radiography^{5,6,7}; the styloid process is considered elongated if its is longer than 3 cm in length¹¹, in these cases, it is more vulnerable to fractures. In the case described here, the fractured styloid process size was normal, measuring 2.3 cm.

The stylohyoid and the stylomandibular ligament are fixed to the styloid process (together those structures form the complex called "white flowers' bouquet"); the stylohyoid ligament can be ossified as it is a cartilaginous tissue, and, in these situations, it can be subjected to fracture^{4,15}. The

stylohyoid, styloglossus and stylopharyngeus muscles originate from the styloid process (forming together the "Riolando's bouquet"); under the action of these muscles, the distal fragment of the fractured styloid process tends to dislocate downwards, as happened to our patient.

Even though spontaneous fracture may occur due to daily acts such as swallowing, yawning or coughing^{9,2,10}, fracture of the styloid process is usually linked to blunt trauma of the head or neck, being described as having occurred after traffic accidents, as well as complications of medical procedures in nearby regions, for example, tooth extraction and tonsillectomy^{14,1,3}; the case described is unusual because it is a fracture caused by penetrating trauma.

The signs and symptoms associated with the fracture of the styloid process are similar to those typical of Eagle's syndrome, which are: dysphagia, limited movement of the mandible, pain associated with head movement, pain and pharyngeal edema, pain in the tonsil area and around the ear, atypical facial pain, ocular pain¹².

Traumatic lesion of the facial nerve is the second most common cause of peripheral facial paralysis, following Bell's paralysis. When resulting from trauma, the lesion usually occurs in the intrapetrous portion of the nerve and the vast majority of patients recover spontaneously; this fact puts off the indication of surgical treatment¹³. Although no records of facial paralysis related to fracture of styloid process have been found in the medical literature, by giving value to the anatomical data led us not to ignore the proximity between the styloid process and the facial nerve; the suggestion that there was a possibility of the lesion being in the extracranial portion and not in the intrapetrous portion of the nerve was crucial to the success of the treatment.

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