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Removal of Foreign Body in the Maxillary Sinus: Case Report

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ABSTRACT
The jaw is often involved in maxillofacial trauma, such as facial trauma by penetrating instruments. Its complexity is determined by the size of the object and, mainly, by the anatomical structures affected. The present work aims to report an unusual case of umbrella cable removal, located in the right maxillary sinus region. According to the clinical examination and with the diagnostic aid of facial computed tomography, it was possible to observe the fracture of the anterior wall of the right maxillary sinus, without compromising other bone structures. Thus, taking into account the proximity to noble structures and the maintenance of the preservation of the function of the maxillary sinus, an adequate clinical and surgical management of the patient was necessary. For this, an early approach, qualified professionals, available and adequate equipment in the operating room, attention to possible complications and all associated anatomical structures was essential.

Keywords: Maxillary Sinus; Trauma; Penetrating Injuries.

I. INTRODUCTION

The maxillaisofteninvolved in maxillofacial trauma, suchas facial trauma causedbypenetratinginstruments. Its complexityisdeterminedbythesizeoftheobject, kineticenergyinvolved, degreeofcontamination, time of trauma and, mainly, bytheanatomicalstructures affected.[1]

They canbecausedbyseveraldifferentmechanismssuch as firearmprojectiles, woodenfragments, meleegun injuries, among others.[2]Usuallyduetophysicalaggression, trafficaccidents, sportsaccidentsorwork accidents.[3]

In traumas ofthemiddlethirdofthe face, themaxillarysinusis a regionoften affected.[4]. Because it performsimportantfunctions in thephysiologyoftherespiratory system and in theprotectionofnoblestructures, alongwiththeother paranasal sinuses, theproper management ofthevictimwiththistypeofinjuryisessential.
Therefore, themaxillarysinusescan serve to improve therespiratoryfunctionofthenose, are decisivelyinvolved in the productionofnitrogenmonoxide (NO) and, therefore, in supportingtheimmunedefenseofthe nasal cavity. As well as theprotectionoftheorbitandthebrain in case ofskullfractures, as well as thereductionoftheweightoftheskull.[5]

In additiontothe complete clinical-anamnesisexamination, it isessentialto use complementaryexams for its correctdiagnosisanddefinitionofthemostappropriatet reatmentplan. Thus, imagingtests are extremelyimportant.[6]

The incidenceof Waters and face profile allow a goodvisualizationoftheaffectedstructures. However, face computedtomography (CT), because it is a three-dimensional andsharperexamination, stands out againsttwo-dimensional techniquesandisthecomplementaryexaminationofch oice in these cases. CT canevaluatetheexact shape, sizeandlocationof a foreign body, as well as capture thintransversecutsandmultiplevisualizations. In addition, it isconsideredthemost beneficial imagingstudydueto its abilityto visualize boneand soft tissue. [6]

Thisreportdescribesanunusual case ofremovalofanumbrellacablehoused in therightjawof a patient, as well as alltheconductadoptedbythesurgeonteam. Therefore,

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it aimstopresentthecliniclandimaginaryaspectsofthe case in question, a briefanatomical review ofthemaxillarysinusandthestructuresassociatedwith it, anycomplicationsinvolved in thistypeof trauma andthecorrect management ofthevictim in thissituation.

II. CASE REPORT

Male patient, 58 yearsold, melanoderma, attendedtheemergency of the General Hospital of the State (HGE) in Salvador-Bahia, studyingwith facial trauma. He reportshavingsuffered a fallfromhisownheightfollowedbypenetrationoftheu mbrellacord, whichhecarriedwithhim, onhis face, in a regionoftherightmaxillarysinus.

Duringthefirstevaluationwiththehospital's BucomaxiccillofacialSurgeryandTraumatologyteam , it waslucidandoriented in time andspace, glasgow coma scaleequalto 15, withoutactivebleeding, withpaincomplaintsonthe face andreferringtohypoesthesia in the anterior middlethirdoftheright face. Onphysicalexamination, preservedupperandlowerthirdsofthe face wereobserved, withthepresenceoftheforeign body (chuva cable) housed in themiddlethirdofthe face ontherightside.

Onthetomographicexamination, a hyperdenseimagewasobserved, compatiblewithforeign body in therightmaxillarysinus, withruptureofthe anterior wallofthemaxillarysinus, withoutimpairmentofotherareas. Thus, antithetetanusprophylaxiswasimmediatelyinstituted and, beforethesurgical procedure, 02 gramsofCefazolinwereadministeredintravenously. Patientwasthentakentotheoperatingroomandunder general anesthesiawasperformedtheremovaloftheforeign body andfracturedbonefragments, cauterizationoftheinjuredvessels, debridement, cleaningofthewoundwith 0.9% saline and suture by planes withvicryl 4-0 and nylon 5-0.

Subsequently, thepatientcontinuedunderthecareoftheteam in the hospital, withoutcomplications, underthe use ofantibiotic (cephalotin), anti-inflammatory (dexamethasone) andanalgesic (dipirone), in additiontoperformingthepostoperativecontrolradiog raphy.

Aftertwodays, thepatientwasdischargedfromthe hospital andfollowed in outpatient follow-up, presentinggoodhealingofthesurgical site, withoutpaincomplaintsand no signsofinfection, butwithoutremissionofhypoesthesia in the anterior middlethirdofthe face totheright. Home antibiotictherapywasperformed with cephalexin. The anti-inflammatoryandanalgesicofchoiceweredexamethas oneanddipyrone, respectively.

III. DISCUSSION

Of the paranasal sinuses, the maxillary sinus is considered the largest and most commonly affected by injuries. It corresponds to a pneumatic space, that is, coated with mucosa and filled with air, which communicates with the nasal cavity, of large volume, located inside the maxilla, bilaterally. This mucosa consists of a ciliated columnar pseudostratified epithelium, mucosecretor, containing calciform cells.[7]

This region is related to noble structures of significant clinical relevance. Thus, in these types of trauma, ophthalmic, neurological, hemorrhagic and respiratory injuries can occur, which can produce substantial morbidity and mortality.[3,8]Understanding all the anatomy of the region in question is of fundamental importance for the professional to have the proper management of patients who are in this situation.[9]

The maxillary sinus is delimited by six walls: anterior, posterior, superior, inferior, lateral and medial. Thus, it is closely related to the orbit floor and lateral nasal wall. The vascular supply is provided by the posterior and infra-orbitary upper alveolar arteries and veins, supplemented by the arteries and major palatine and sphenopalatine veins. In addition, it is innervated by the maxillary division of the trigeminal nerve.[10]Therefore, it is possible to understand how the penetrating traumas in this region can have a clinically impact.

Given the above, primary attention to these patients should include the prevention of fatal complications, including airway maintenance, bleeding control and shock management. To identify the anatomical structures involved and the extent of the lesion, a thoughtful clinical examination and a face CT is indicated, as a first-choice complementary examination for diagnostic aid.[11]Thus, in the present case, the face CT allowed to evaluate the degree of extension of the lesion, with involvement only of the anterior wall of the maxillary sinus in question. However, it was possible to observe its proximity to deeper structures and its intimate relationship with noble structures, which clinically represented greater caution on the part of the maxillofacial surgery team.

Soon, after the conclusion of the diagnostic suspicion, all the clinical and surgical planning of the case was carried out. Thus, the need

for antithetetanus prophylaxis was evaluated, which was performed, since the patient had received his last dose more than ten years ago. In addition, the removal of the foreign body was carried out under general anesthesia, through its course of penetration, in order to avoid further damage. In addition, the prescription of pre- and postoperative antibiotics was indicated in order to avoid a possible infection.

During the surgical procedure, as already observed in the CT of the face, it was noted that the lesion was limited to the fracture of the anterior wall of the right maxillary sinus. In this way, it did not reach large vessels and did not have respiratory or ophthalmological repercussion. On the other hand, due to the proximity to these structures, special care was needed during the removal of the object. In addition, it reached branches of the infraorbitary nerve, which it clinically represented in a hypoesthesia of the middle anterior region of the face, since it is responsible for the sensitive innervation of this region.

In this way, it is also important to understand the risks that involve the immediate non-treatment of this type of injury. The longer this time, the worse the prognosis of this patient will be. The present hemosinus can act as a culture medium for possible pathogens, increasing the risk of developing infectious processes.[6]

Therefore, patients may have mild fever, facial pain, headache, nasal obstruction and chronic nasal secretion. Thus, the foreign body should be removed to avoid tissue reactions and prevent sinusitis.[6]In addition, avoid the spread of infectious processes to the central nervous system, such as meningitis or brain abscesses. Therefore, lesions with the presence of a foreign body are classified as infected wounds and the use of the antibiotic is recommended.[1]

In addition, because it is a potentially contaminated lesion, after receiving hospital discharge, it is interesting to do the outpatient follow-up of this patient until complete healing and remission of postoperative signs and symptoms.[2]Thus, the preservation of the patient was carried out, which evolved with significant improvement in the clinical condition. For this, general and local care was maintained, in addition to the medicines necessary for better healing. Thus, because it will be a trauma involving skin tissue, the antibiotic of choice was Cefalexin, accompanied by the anti-inflammatory dexamethasone for having a very effective action with a reduction of the formation of edema and dipyrone as an analgesic for possible pain complaints.

IV. CONCLUSION

The maxillarysinusis a structureofintimaterelationshipwithnoblestructuresa ndamongtheother paranasal sinuses it isthemostaffected in facial trauma, including injuries bypenetratinginstruments. Because of this, it isnecessary, in additiontoanefficientclinical-anamnesisexamination, animagingexaminationthat makes it possibletoevaluatethedimensionsoftheselesions. Thus, face computedtomographyisthecomplementaryexaminat ionofchoice for diagnosticaid. In addition, for anefficienttreatment it isessentialanearly approach, qualifiedprofessionals, availableandadequateequipment in thesurgical center, attentiontopossiblecomplicationsandallassociatedan atomicalstructures, offeringthepatient a betterprognosis, as in thepresent case.

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Figure 1: Patientwithanumbrella in therightmaxillarysinus in both figures A and B.

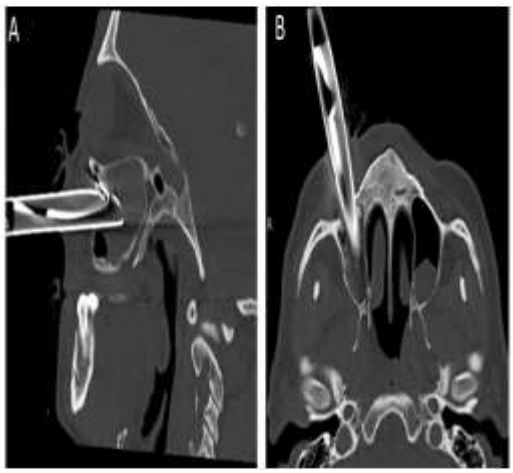

Figure 2: Sagittal (A) and axial (B) cutsoftheComputedTomographyofthe face withhyperdensestructurecompatiblewithforeign body in therightmaxillarysinus, withruptureofthe anterior wallofthemaxillarysinus.

Figure 3: Preoperative 3D reconstruction.

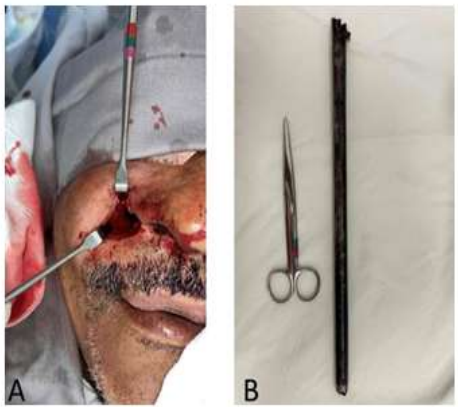

Figure 4: Injuryobserved in thetransoperativeperiod, generatedbytheforeign body after its removal in figure A, while in figure B theremovedumbrellahandleisobserved.

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Figure 5: Immediatepostoperativeimagewith sutures in position.

Figure 6: Postoperativecontrolradiography.