

**ISOLATED FRACTURE OF HYOID BONE: ABOUT A CASE****Dr. Samuel Villeda Bojorque\***

Resident of Radiology, Hospital Regional de Occidente, Universidad de San Carlos de Guatemala. Doctor in Medicine and Surgery, Universidad Catolica De Honduras.

**\*Corresponding Author: Dr. Samuel Villeda Bojorque**

Resident of Radiology, Hospital Regional de Occidente, Universidad De San Carlos De Guatemala. Doctor in Medicine and Surgery, Universidad Catolica de Honduras.

Article Received on 11/06/2019

Article Revised on 01/07/2019

Article Accepted on 22/07/2019

**ABSTRACT**

The fracture of the hyoid bone is one of the fractures observed less frequently in clinical practice, this is because its incidence is low and in some cases it goes unnoticed by the evaluator's eye. The clinical importance of knowing these fractures is to achieve a timely diagnosis of this condition, to avoid possible complications and minimize the risk to life that can be generated by presenting this clinical condition. The following is a case report of a 16-year-old male patient presenting to the emergency room of the Hospital Regional de Occidente, Quetzaltenango, Guatemala.

**KEYWORDS:** Hyoid bone, cervical trauma.**INTRODUCTION****Presentation of the case**

Male patient of 16 years of age who is found unconscious in the garden of his house by relatives, being found on the ground with a rope tied to his neck, for which his family decides to take him to the emergency service of the Hospital Regional de Occidente Guatemala.

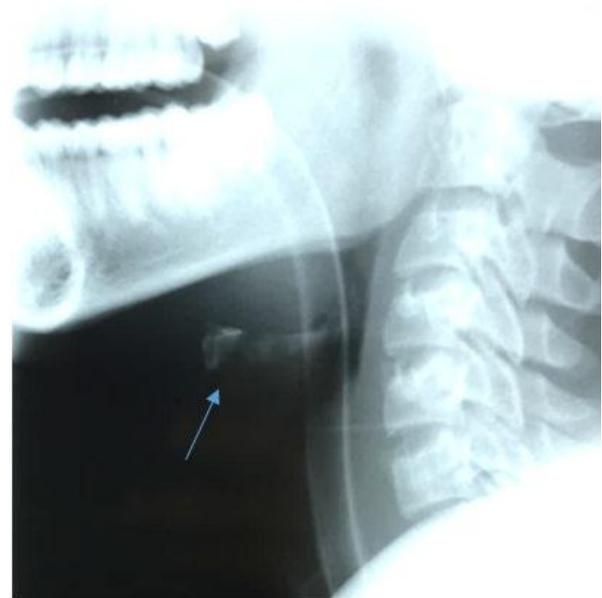
At the time of admission, the patient presented a Glasgow of 8, heart rate of 118 beats per minute, marked respiratory distress with respiratory frequency of 26 breaths per minute, temperature of 37.2 degrees Celsius.

We proceed to perform endotracheal intubation in emergency service, where it is admitted for management and observation of the airway.

It is observed to the physical examination excoriations and ecchymosis at the level of the anterior region of the neck, accompanied by edema in this area. It was decided to request a lateral x-ray of the cervical spine to rule out injury at this level. (Figure 1)

Therapeutic management with analgesics and corticosteroids is started, as well as soft cervical collar placement.

The patient remains hospitalized for 7 days where he evolves satisfactorily and proceeds to give medical discharge, with conservative management of hyoid bone fracture in addition to monitoring and surveillance by psychiatry service.



**Figure 1: Lateral view of the cervical spine, showing a complete oblique fracture line, with a slight displacement from the distal fragment to cephalic of the hyoid bone.**

**DISCUSSION**

The first description of the fracture of the hyoid bone dates from 1860, where the finding of this pathology was established for the first time. At the international level, there are very few reported cases in the literature and their incidence oscillates 0.002% of all fractures.<sup>[2,4]</sup>

At the time of performing the anatomical description of the hyoid bone, we must mention that it is a bony structure in the form of an "u", odd, located in the anterior region of the neck at the level of the third cervical vertebra.<sup>[1,3]</sup>

This is made up of three parts, the body, the greater antlers and the smaller antlers.

The embryonic development of this structure is established from the second and third brachial arches.<sup>[3]</sup>

The hyoid bone has an ossification pattern which consists of six centers, which start from a pattern where two centers of ossification are established for the body and two centers of ossification for the greater antler and also for the smaller antlers. The first signs of this pattern of ossification occur from the 4 month of intrauterine life, however during the fifth and sixth month of life begins to observe the ossification of the greater antlers.<sup>[5,6]</sup>

This presents insertions of structures that come from the pharynx, jaw and skull. Thirteen muscles that are grouped into two groups, which are the suprahyoids and the infrahyoids, are inserted into the hyoid bone.<sup>[7,8]</sup>

It also presents a region where the fascia of the pharynx is inserted, which is related to the digastric muscle that serves to increase the anteroposterior dimension of the oropharynx during swallowing, while the posterior belly of this muscle and the stylohyoid muscle participate preventing the regurgitation of food.<sup>[8,9]</sup>

In addition to the aforementioned functions, the hyoid bone participates in the maintenance of the airway, maintaining the function of the cervical fascia, decreasing the internal suction of the soft tissues, thus avoiding the compression of large vessels and the lungs in its apical portion.<sup>[10]</sup>

Hyoid bone fractures can be classified into two groups, in an isolated type and another group in which the fracture of this bone is associated with mandibular fractures.<sup>[11]</sup>

Within the mechanism by which this entity is produced, we have to mention that when isolated fractures occur, its main mechanism of production is due to the injuries produced by strangulation. Among the other mechanisms by which this pathology can occur is traffic accidents due to running over, impact against the steering wheel of a vehicle that does not have air pockets, violent cervical hyperextension or swallowing of the bolus.<sup>[11,12]</sup>

There are some cases in the literature where hyoid bone fractures have been reported secondary to cardiopulmonary resuscitation maneuvers or endotracheal intubation.<sup>[13,14]</sup>

Generally the clinical manifestations that are produced by the fracture of the hyoid bone do not put the patient's life at immediate risk. Most patients may present with acute dysphagia that may or may not be accompanied by pharyngeal laceration or respiratory obstruction. In some cases inflammation and edema can cause a compressive effect that leads to more serious clinical manifestations that compromise the patient's life.<sup>[3,15]</sup>

In some cases, the fracture can cause hemoptysis or laryngeal perforation as complications.

For the diagnosis of this entity, as a first point the doctor must have the clinical suspicion of a fracture of the hyoid bone and also evaluate within this the mechanism of trauma that produced the injury, then in most cases an X-ray is enough simple in lateral projection of the cervical spine to visualize the fracture, however in cases in which the fracture tract is not visualized, the computed tomography can be used to confirm the diagnosis.

## CONCLUSIONS

The isolated fracture of hyoid bone is an entity that should not go unnoticed at the time of evaluation of a patient with a history of cervical trauma. It is important to establish a timely diagnosis that helps us avoid the complications that can occur secondary to this fracture.

An adequate clinical evaluation, accompanied by a thorough radiological interpretation will allow us not to ignore this pathology and in this way be able to contribute to the favorable prognosis in the evolution of our patients.

## BIBLIOGRAPHY

1. Jorge Carrillo Rivera, Héctor Mastranzo Corona, Verónica Sánchez Pozos. *Revista Mexicana de Cirugía Bucal y Maxilofacial*, 2009; 5(2): 68-71
2. *Anatomia Humana*. Testut y Latarjet, 1972.
3. GRAY. H. *Anatomy descriptive and applied*. London. Longmans, Green and Company, 1997.
4. Kaufman HJ, Ciraulo DI, Burns P. Traumatic fracture of the hyoid bone: three case presentations of cardiorespiratory compromise secondary to missed diagnosis. *The American Surgeon*. September. Artículo medigraphic, 1999.
5. Ubelaker D. Hyoid fracture and strangulation. *J Forensic Sci.*, 1992; 37(5): 1216-1222.
6. Garamendi PM., Alemán I., Botella MC., Landa MI.. Estudio de la fusión del asta mayor del hioides en relación con la edad y revisión bibliográfica sobre las fracturas del hioides en medicina forense. *Cuad. med. forense [Internet]*. 2007 Oct [citado 2019 Jun 30]; (50):227242. Disponible en: [http://scielo.isciii.es/scielo.php?script=sci\\_arttext&pid=S1135-76062007000300001&lng=es](http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1135-76062007000300001&lng=es).
7. Black SM, Scheuer JL. *Developmental juvenile osteology*. Academic Press, 2000.

8. Freyschmidt J, Brossmann J, Wiens J, Sternberg A. Border- lands of normal and early pathological findings in skeletal ra- diography. 5th English edition. George Thieme Verlag, 2001.
9. Henríquez J., Sandoval P., Fuentes R. ANATOMÍA RADIOLÓGICA DEL HUESO HIOIDES. Rev. chil. anat. [Internet]. 2000 [citado 2019 Jun 30] ; 18(1): 117-124. Disponible en: [https://scielo.conicyt.cl/scielo.php?script=sci\\_arttext&pid=S0716-9868200000100016&lng=es](https://scielo.conicyt.cl/scielo.php?script=sci_arttext&pid=S0716-9868200000100016&lng=es). <http://dx.doi.org/10.4067/S0716-9868200000100016>.
10. Ramirez, mariana; carvajal, r.; paniagua, h.; zuñiga, a.; & zuaznabar,C. Relaciones verticales entre la lengua y el hueso hioides en el niño. Rev. Chil. Ortodoncia, 1992; 9: 7-28.
11. Maxeiner H, Ehrlich E, Schyma C. Neck injuries caused by being run over by a motor vehicle. J Forensic Sci., 2000; 45(1): 31-35.
12. Black SM, Scheuer JL. Developmental juvenile osteology. Academic Press, 2000.
13. Raven KP, Reay DT, Harruff RC. Artifactual injuries of the larynx produced by resuscitative intubation. Am J Forensic Med Pathol, 1999; 20(1): 31-36.
14. Gregersen M, Vesterby A. Iatrogenic fractures of the thyroid bone and the thyroid cartilage: a case report. Fo- rensic Sci Int, 1981; 17: 41-43.
15. Kaufman HJ, Ciraulo DL, Burns RP. Traumatic fracture of the hyoid bone: three case presentations of cardiorespira- tory compromise secondary to missed diagnosis. Am Surg, 1999; 65(9): 877-880.