

Facial trauma complicated with challenging nasal fracture. Immediate reduction and reconstruction

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Abstract:

Nasal fractures represent one of the most common traumatic injuries to the face, with close to 40% of all facial fractures involving the nose. The most common mechanism of injury is blunt-force trauma, usually secondary to road traffic accidents, sports injuries, or physical assault. Treatment decisions must address the acute presentation of the injury while optimizing long-term functional and cosmetic outcomes. There are presently no robust, user-friendly tools that exist to allow standardized and efficient assessment and management of nasal trauma.

Objective: Report an early open surgical reduction of both nasal bones and septum and soft tissue reconstruction in a complex nasal fracture.

Clinical Case: 34 years old male patient with a Rohrich IVB nasal fracture treated with an early open surgical reduction and soft tissue reconstruction. Satisfactory evolution, with a correct stability of the osseocartilaginous skeleton, and actually in a continue follow up.

Discussion And Conclusion: There are three considerations to make when deciding on appropriate treatment for nasal bone fractures. The first is the timing of repair, the second is the choice of anesthetic, and the third is closed versus open reduction. The indications for open repair are: extensive fracture or dislocation of the nasal bones and septum (like the present case report), nasal deviation that is greater than one-half width of the nasal bridge, fracture and dislocation of the caudal septum, open septal fracture, and persistent nasal deformity after closed reduction.

keywords: nasal bone fracture; open reduction; blunt facial trauma

Introduction

Nasal fractures represent one of the most common traumatic injuries to the face, with close to 40% of all facial fractures involving the nose. [1] They can be part of more serious facial injuries or an isolated injury following physical alterations. [2] Also, they account for more than 50% of all facial fractures in adults, likely due to the anterior projection of the nose on the face. [3] Nasal fractures are most frequently seen in males between the age of 15 to 30 years. The most common mechanism of injury is blunt-force trauma, usually secondary to road traffic accidents, sports injuries, or physical assault. [3] Treatment decisions must address the acute presentation of the injury while optimizing long-term functional and cosmetic outcomes. [1] There are presently no robust, user-friendly tools

that exist to allow standardized and efficient assessment and management of nasal trauma patients thus presenting a challenge for junior doctors in deciding how to approach the patient. [2]

Case Report

34 years old male patient, chronic tabaquism antecedent, who came to the adult's emergency department with a blunt facial trauma after fall down through the stairs after a long party night. He was hemodynamic stable, with an important facial asymmetry, rinodeformity with an open laceration that compromise the right ala, the columela and the tip, with an

important bone step, and crepitation, the skin was partially avulsed with a partial loss of the left intermedia crura and dome. Well neurological approach. Was treated first as a polytraumatized patient, being examined by services like Neurosurgery, General Surgery, and Craniomaxillofacial surgery, ORL and Plastic and Reconstructive Surgery. Images did show a nasal bone fracture, with an important compromise of the septum and perpendicular plate of ethmoid, so was taken to the operation room to perform under general anesthesia an open reduction of both nasal bones and septum with the Walsham and Ash forceps and immediate reconstruction of the soft tissues. Was not necessary a cartilage graft. Satisfactory evolution, with a correct stability of the osseocartilaginous skeleton, and actually in a continue follow up in order to determine in the short and middle term the functional and aesthetic results.

Discussion

According Konstantinidis I, Malliari H [4] the current management in the majority of nasal injuries worldwide is closed reduction and, if required, a second operation at a later time. However, surgeons may have to reassess their treatment algorithm, and more often adopt an early full septorhinoplasty approach. This patient need an open approach taking in count the extended lesions of the skin, high exposure of the soft tissues and the irregularities at the osseocartilaginous skeleton after the trauma. Having relation with the published by Mondin V, Rinaldo A et al. [5] they said that indications for full surgical reduction could be extensive fracture-dislocation of the nasal bones and septum, nasal pyramid deviation exceeding one-half of the width of the nasal bridge, fracture and dislocation of the caudal septum and open septal fracture.

About the epidemiology, the present case was a male with a blunt facial trauma who was fall down to the stairs after a long night out, having relation to the published by Hope N, Young K [6] according them, there is a male to female propensity in nasal bone fractures. Mechanism of injuries for significant facial injuries varies, however the incidence of assault and excessive alcohol consumption are found to be on the rise.

When a patient with a severe facial trauma came to the emergency room, it is important not only to make an excellent physical exam and anamnesis, but also have the radiological resources in order to make a correct diagnosis and also to can planificate the adequate surgical or conservative approach. In the present case the patient was taken (after give him the correct primary support life) to the radiological room to a 3D reconstruction computed tomography and also a radiological projection

of the face and nasal bones that help the surgeons to make a correct diagnosis. Having those steps relation to the case published by Park J, Sik Yun I, et al. [7] they described a 14-year-old girl injured her face by hitting against an opening door, at presentation, she had no specific complaints except for mild swelling of the upper lip. Physical examination revealed mild tenderness on light palpation of the columella, without any discomfort with upper lip movement. However, a computed tomography (CT) scan of the maxillofacial bones with three-dimensional (3D) reconstruction revealed a fracture of the anterior nasal spine with severe leftward displacement, mild deviation of the caudal aspect of the nasal septum.

In the same order, according Seckin Aydin S, Ismail Erkan A [8] the radiological diagnosis is important for occult nasal bone fracture and is also a legal document objectively in criminal cases. In general, lateral nasal radiography is used as standard for supporting the clinical diagnosis of nasal fracture. However, computed tomography (CT) and ultrasonography can also be used to support the diagnosis. In the present case both the nasal radiography and the computed tomography were used.

According Kao K, Tang Ho [9] there are three considerations to make when deciding on appropriate treatment for nasal bone fractures. The first is the timing of repair, the second is the choice of anesthetic, and the third is closed versus open reduction. In addition, according to the same authors the indications for open repair are: extensive fracture or dislocation of the nasal bones and septum (like the present case report), nasal deviation that is greater than one-half width of the nasal bridge, fracture and dislocation of the caudal septum, open septal fracture, and persistent nasal deformity after closed reduction.

Finally, the patient was supported by an internal fixation with the plastic Doyle ferules in order to give support after the open reduction, and receive a postoperative analgesic and antibiotic, having relation with the published by Selvarajah J, Bin Saim A [10] when they described about post-surgical management of nasal wound healing, those interventions that have been used include intravenous antibiotics or steroids, nasal douching, and nasal packing to prevent infection and attenuate prolonged inflammation, thus collectively improving the nasal mucosa healing process.

Conclusion

Complex nasal bone fractures are entities that require a correct management in order to avoid functional and aesthetic complications.



Figure 1: Nasal open trauma: osseocartilaginous skeleton exposed.



Figure 2 and 3: Nasal bone Rx and 3D CT of the patient.



Figure 4 and 5: Exposed nasal fracture in the OR.



Figure 6: OR: after open reduction of both nasal bones, septum and soft tissue reconstruction.



Figure 7: 4 days post-operative, less edema and progressive start of the healing process.

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Conflicts Of Interest

The author declares no conflicts of interest.

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