

Management of Nasal Fractures

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KEYWORDS

- Nasal fractures • Nasal trauma • Nasal bone fractures
- Open reduction • Closed reduction

Because of the prominence of the nose and its central location on the face, nasal fractures are the most common facial fracture. They are estimated to occur in approximately 39% of patients with maxillofacial trauma.¹ The peak incidence of nasal fractures occurs in 15- to 30-year-olds, with a 2:1 male to female ratio. In this age group, altercations and sports injuries account for most nasal fractures, followed by falls and motor vehicle accidents. For the pediatric and geriatric group, most injuries are related to falls and accidents, with less sex predilection noted.²

Even though nasal fractures are the most frequently encountered facial fracture, controversies still exist regarding timing for repair, use of closed versus open techniques, and use of general versus local anesthesia for treatment. Before addressing these issues, however, it is important to know how to diagnosis nasal fractures.

DIAGNOSIS OF NASAL FRACTURES

The force required to fracture the nasal bones is less than that of other facial bones because of their prominent position and thinness. Strong forces from any direction can comminute the nasal bones, whereas fractures at the thicker root of the nose are often associated with concomitant facial fractures. With the intimate relationship of the skeletal and cartilaginous structures of the nose and septum, it would be unusual to see damage to one structure without damage to the others. Low velocity injuries usually result in septal fractures or dislocations along the vomerine groove, and high-velocity injuries often result in septal fractures through the thinner quadrangular

cartilages. A fractured septum unfavorably affects the alignment of the nasal bones during healing and should be addressed during the management of nasal fractures.³

Epistaxis can occur with relatively minor nasal trauma because of the dense vascular network that supplies the nose known as Kiesselbach's plexus. Bleeding may also result from other areas of the nose, with anterior bleeding usually caused by the anterior ethmoidal artery, a branch of the ophthalmic artery, and posterior bleeding caused by a branch of the sphenopalatine artery.⁴ The internal nasal structures are best visualized with a speculum examination after packing the nose with a vasoconstrictor for several minutes. All blood clots should be removed with saline irrigation and suction. Particular attention should be paid to the nasal septum for evidence of mucosal injury, perforation, or displacement. Mucosal lacerations may indicate an underlying nasal fracture. Understanding the mechanism of injury can be useful in the assessment of nasal fractures, in particular whether the vector of trauma was direct or from a lateral direction.

Plain radiographs generally are not helpful in the diagnosis of isolated nasal bone fractures, and they also do not provide imaging of the cartilaginous structures. Positive diagnosis of nasal bone fractures on such radiographs was reported to be only 82%, negative findings were 9.5%, and suspicion of fracture was 8.5% in a recent retrospective analysis of nasal bone fractures.⁵ The authors concluded that computed tomography (CT) scanning is necessary because of the number of undiagnosed fractures with plain films alone. CT scanning is also indicated when there are associated facial injuries.

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A thorough examination may be difficult in the presence of edema, ecchymosis, and dried blood or eschar. In these instances, it may be appropriate to re-evaluate the patient in several days, after the edema has resolved.⁶ It is important to always rule out septal hematoma in all patients with nasal fractures. Failure to diagnose a septal hematoma can result in loss of septal cartilage and a saddle nose deformity, which will require more extensive reconstructive surgery. When a septal hematoma is identified, it should be evacuated and drained, along with use of appropriate splinting or packing to prevent re-accumulation of blood (Fig. 1).⁷ The absence of a mucosal tear

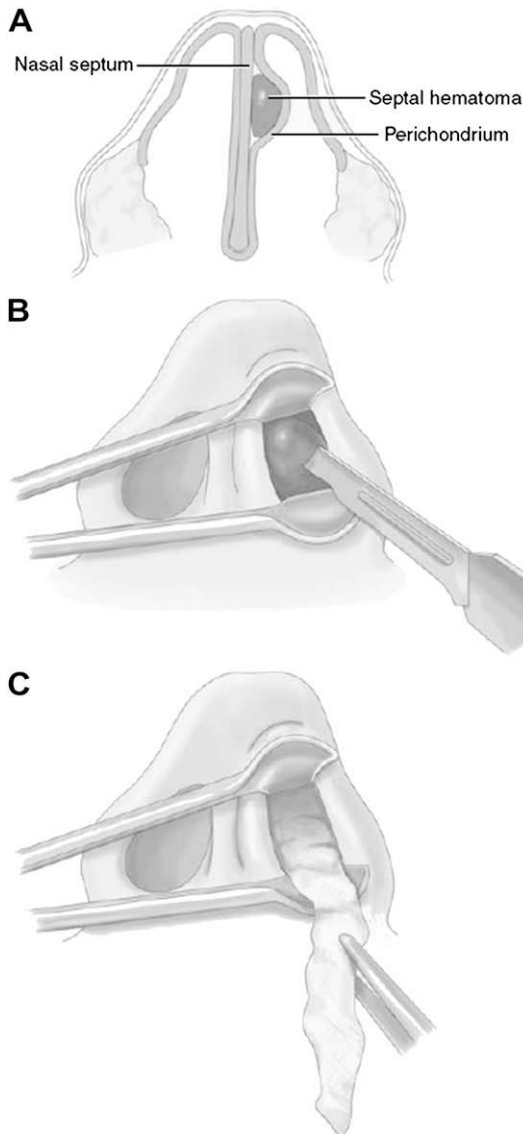


Fig. 1. Technique for evacuation of nasal hematoma. (A) Septal hematoma. (B) Incision and drainage of the hematoma. (C) Placement of drain.

or septal hematoma does not exclude septal damage. Septal injuries combined with nasal bone fractures are the major cause of nasal deformity and posttraumatic nasal obstruction.⁸

TIMING OF NASAL FRACTURE TREATMENT

There are differences of opinion regarding timing of the treatment of nasal fractures. If a patient is seen shortly after trauma, before significant edema develops, immediate treatment may be indicated. Other indications for immediate treatment include the presence of concomitant lacerations with exposure of the underlying skeletal or cartilaginous elements or the presence of a septal hematoma that requires immediate drainage. However, many surgeons opt to re-evaluate the patient in several days before performing definitive treatment. By re-evaluating a patient several days after the trauma, factors that may contribute to postoperative nasal deformity, such as acute edema, unrecognized pre-existing nasal deformity, and undetected septal fractures, can better be assessed before surgical intervention.⁹

Surgeons are aware of the difficulties encountered when attempting to correct nasal deformities after healing has occurred. Esthetic results are achieved more easily if full correction is performed early before significant scarring has taken place.¹⁰ Patients who were able to undergo surgical management of their nasal fractures within the first 10 days of injury are less likely to require a revision septorhinoplasty. Outcomes of nasal fracture treatment may be compromised by the fact that late morphologic changes can occur over 1 or more years because of scarring.

LOCAL VERSUS GENERAL ANESTHESIA

Reduction of nasal fractures may be performed under local anesthesia supplemented with intravenous sedation or under general anesthesia. Fracture reduction under local anesthesia is an attractive alternative to general anesthesia because hospitalization and operating room utilization are not required, and it is a safe and efficient method to deal with these injuries. Studies comparing both techniques have determined there are no differences in clinical outcome as far as patient satisfaction.^{11,12} Long-term satisfaction rates of more than 80% have been reported.¹³ In the presence of minor nasal bony deviation and no associated septal or nasal tip displacement, closed reduction under local anesthesia has been suggested as the first line of treatment. Such a procedure is a safe, convenient and cost-effective

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