

Acute Nasal Trauma: Emergency Room Care of 250 Patients

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The completeness of the Emergency Room evaluation of the injured nose was determined by reviewing 250 cases of acute nasal injury. A recorded examination of intranasal structures was found for only 42 (21 percent) of 200 patients with blunt nasal trauma. In another group of 50 patients with roentgenographically documented nasal fractures, only 21 (42 percent) had a recorded intranasal examination. Failure to examine the internal nose thoroughly will leave undiagnosed such serious pathologic conditions as septal hematomas, mucosal tears, and fractures and dislocations of the bony and cartilaginous septum, which may cause permanent functional disturbances (nasal airway obstruction) and cosmetic deformities.

Ideal Emergency Room evaluation of the injured nose should include the recording of a detailed history and a thorough examination of external and internal nasal structures. Incomplete examination can leave undiagnosed pathologic conditions such as lacerations, hematomas, and fractures (of the septum or bony and cartilaginous pyramid), which can lead to altered function or a cosmetic deformity of the nose. In the Emergency Room setting, the primary care physician rather than the otorhinolaryngologist usually manages the nasal injury. The purpose of this study was to determine the completeness of routine Emergency Room evaluation of the injured nose.

Methods

A random sampling of the charts of 250 patients was undertaken. Three distinct groups of patients with nasal trauma were evaluated. These patients were seen in the Emergency Rooms of two hospitals in Rochester, Minnesota, during the period 1970 to 1975. Group 1 included 100 children, ages 1 to 12 years. Group 2 included 100 adults older than age 21 years; the intent was to determine whether treatment of the adult population varied from that for children. Group 3 was composed of 50 patients of all ages with roentgenographically documented nasal fractures; these patients were included for evaluation of the influence of the presence of a nasal fracture on methods of treatment.

All patients suffered blunt trauma to the face or nose severe enough to warrant Emergency Room evaluation. Patients suffering simple lacerations of the nose or face by a sharp object were excluded from the study. Also excluded were those patients with extensive traumatic injuries in whom thor-

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Table 1. Frequency of Intranasal Examination			
Group	Number of Patients	Description of Group	Intranasal Examination Recorded on Chart (%)
1	100	Pediatric patients	20
2	100	Adult patients	22
3	50	Fracture patients*	42

*Roentgenographic evidence of fracture of the nasal pyramid

ough examination of the nose at the initial evaluation in the Emergency Room was not reasonable because of the presence of more severe or potentially life threatening injuries.

These patients were examined by resident physicians from various acute care specialties during the Emergency Room rotation of their residency programs and not by otorhinolaryngologists or otorhinolaryngology residents.

Findings

History

The precipitating event was a fall in 67 percent of the children in Group 1. The blunt trauma was sufficient enough to cause laceration of the nasal skin in 45 of the 100 patients in this group. The presence or absence of epistaxis, which usually indicates the presence of a mucosal tear, was recorded in only 31 percent of these children.

Trauma in the adult patients in Group 2 was caused primarily by vehicle accidents, sports injuries, and fighting. External lacerations were present in 52 of the 100 patients in this group. The presence or absence of epistaxis was recorded in only 28 percent of these adults.

The causes of the fractures in patients in Group 3 were mainly the same as the precipitating events listed for patients in Groups 1 and 2. The presence or absence of epistaxis was noted in only 38 percent of these patients.

Physical Examination

An intranasal examination was recorded in only 20 of the 100 pediatric patients in Group 1, in 22 of the 100 adult patients in Group 2, and in 21 of the 50 patients with nasal fractures in Group 3 (Table 1). The external nose was palpated in 49 percent of the children in Group 1 and 67 percent of the adults in Group 2.

Roentgenographic Examination

A roentgenogram of the nose was taken in 51 of the 100 children in Group 1; among this group, there were only two fractures, both in older children (ages 10 and 11 years). In 58 of the 100 adults in Group 2, nasal roentgenograms were taken; a fracture was present in 18 persons.

Treatment

Emergency Room treatment of the nonfractured nose usually was limited to closure of external lacerations and supportive measures such as application of ice packs. In the separate group of 50 patients who had roentgenographically documented fractures (Group 3), 23 fractures were severe enough to warrant reduction. Five of these 23 patients were treated in the Operating Room, only one of whom had an intranasal examination before the operative procedure. In the 18 remaining patients, reduction of the fracture was accomplished in the Emergency Room setting. Only 9 (50 percent) of these 18 patients had an intranasal examination before dismissal from the Emergency Room.

Discussion

The nose is the most frequently injured facial structure.¹⁻⁵ Accurate diagnosis of the injury is possible only when a complete history is recorded and a thorough physical examination is performed.^{1-4,6} Essential aspects of the history should include photographs of the injury, inquiry about the exact cause and time of the injury, and a record of the presence of pain, obstruction to nasal breathing, and epistaxis. The presence of epistaxis indicates that the injury has been severe enough to lacerate the nasal mucosa.

Examination of the external nasal structures (Figure 1) should include palpation of both the bony and the cartilaginous nasal pyramid in order to detect the presence of deformities, crepitus, and abnormalities in mobility. Photographs must be taken to document deformities, ecchymosis, edema, external lacerations, and the extent of the facial damage. The internal nasal examination requires use of a head lamp or head mirror lighting, suction, mucosal vasoconstriction, and topical anesthesia.³ Thorough visualization of intranasal structures is mandatory. Special attention should be given to the most common post-traumatic problems: mucosal tears, fractures and dislocations of the septum, and septal hematomas.³⁻¹⁰ The sequelae of these conditions—including septal abscess, necrosis of septal and pyramidal cartilage, and permanent distortion of the nasal architecture leading to nasal airway obstruction or cosmetic deformities (or both)—have been well documented.²⁻¹⁰ If the internal structures of the nose are not examined, the effects of external nasal trauma may be overlooked.

The present findings show that adequate nasal examination is not being performed in the Emergency Room setting. The primary reasons may be the lack of expertise in rhinologic examination and a failure to understand the complications and sequelae of nasal trauma. In this study, the internal nasal examination—the most important part of the examination—was accomplished in only 20 percent of the 100 pediatric patients in Group 1 and, although theoretically easier, in only 22 percent of the 100 adult patients in Group 2. Among the 50 patients sustaining sufficient trauma to fracture the nasal bony pyramid (Group 3), the internal nasal structures were examined in only 21 (42 percent).

Several authors have maintained that roent-

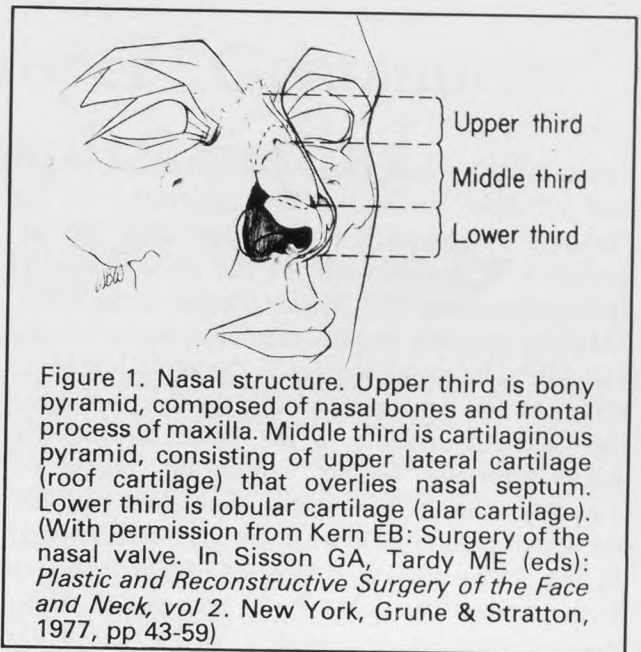


Figure 1. Nasal structure. Upper third is bony pyramid, composed of nasal bones and frontal process of maxilla. Middle third is cartilaginous pyramid, consisting of upper lateral cartilage (roof cartilage) that overlies nasal septum. Lower third is lobular cartilage (alar cartilage). (With permission from Kern EB: *Surgery of the nasal valve*. In Sisson GA, Tardy ME (eds): *Plastic and Reconstructive Surgery of the Face and Neck*, vol 2. New York, Grune & Stratton, 1977, pp 43-59)

genographic documentation of nasal fractures is much less useful than is clinical evidence of structural deformity.^{1-4,7,8,11} De Lacey et al¹¹ reviewed 100 roentgenograms of nasal injury and pointed out that the roentgenographic studies contributed nothing to the management, which was based solely on the functional and cosmetic findings. This is especially true in young children who normally have short nasal bones. Most childhood nasal injuries involve the cartilaginous portion of the nasal pyramid and are not evident on roentgenograms. The present study substantiates this finding. The only roentgenographically documented nasal fractures in the 51 patients in Group 1 who had roentgenograms taken were in two older children with well developed nasal bones. Roentgenographic examination, therefore, should be strictly an adjunctive technique used to determine the extent and severity of the injury. The history and physical examination of the external and internal nasal structures should not be supplanted by x-ray studies.

In the treatment of the displaced nose, closed

reduction has long been advocated as a safe and effective method of management.¹ To the rhinologist, however, it is evident that this approach is acceptable only in the most minimally traumatized nose.^{3,6,9} Severe trauma to the external nasal pyramid usually results in septal injuries as well.⁵ The nasal septum is the most important structure for determining both the functional and the cosmetic aspects of the nose. An external nasal deformity usually cannot be treated adequately without concurrent evaluation and correction of pathologic changes in the nasal septum.⁸ In the series of cases reviewed, 18 patients had closed reductions, only 9 (50 percent) of whom had an intranasal examination at the time of the reduction.

Intranasal structures, including the septum, must be examined before initiation of primary treatment. Open reduction is the most acceptable treatment for severe nasal septal injury. Hematomas must be evacuated. In patients with septal dislocation or fracture, the septum must be explored surgically and reconstructed as necessary, dictated by the extent of the injury.^{3,6,9} Septal dislocations and fractures must be realigned and the nose must be reconstructed in the controlled Operating Room environment in order to promote uncomplicated healing and to avoid nasal functional (respiratory) and cosmetic sequelae.

In children with nasal injuries, it may be necessary to examine the nose with use of general anesthesia. As in the adult, the pediatric patient should have the septal and external reconstruction that is necessary to prevent functional and cosmetic nasal deformities. The theory that nasal surgery in children causes subsequent facial deformities is not totally applicable to the question at hand.¹² Any nasal injury, if left untreated, can in itself cause a subsequent deformity.

Conclusion

An aggressive examination of patients with nasal injuries is advocated, regardless of the apparent severity of the injury. The primary care physician should become proficient in obtaining the history and conducting the physical examination in order to provide optimal care to the patient

with acute nasal trauma. The history should include an evaluation of prior nasal pathologic conditions and inquiry about post-traumatic nasal airway obstruction and epistaxis. The examination should include thorough palpation of both the bony and cartilaginous portions of the external nasal pyramid. Photographs of the injury should be taken in all patients with nasal trauma. The internal nasal structures can be examined adequately only with appropriate lighting that allows use of both hands for suction manipulation and complete visualization. Roentgenographic examination does not supplant the history and physical examination (including intranasal examination) in the management of the injured nose.

For any case of nasal trauma, intranasal examination is mandatory. Only with an accurate diagnosis at the initial examination can appropriate treatment be instituted.

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