

ACUTE NASAL TRAUMA

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Diagnosis of the injury is the key to treatment in acute nasal trauma. This is done by history and medical evaluation, including all systems, laboratory and x-rays.

Examination should include inspection, palpation, photography, and examination of pre-accident photographs if available. Since a traumatic experience includes emotional trauma it is best to complete the examination under local or general anaesthesia. When completely anaesthetized, one may palpate adequately, and when indicated, open surgical inspection may be performed in conjunction with treatment.

The history reveals the type of injury and the severity. It may suggest a possible foreign body such as glass, paint, wood, plastic, metal, etc. It will alert you to concomitant disease, such as diabetes, infection, allergy, etc.

General considerations include age, sex, ethnic origin, anatomical development, psychic trauma, or previous surgery.

Many cases require no treatment. Some of these will have minimal deformity and they may be reassured that if they are not satisfied with the results of the healing processes they may have surgical intervention after one year. The injury may be to any or all parts of the bony and cartilaginous structures. In automobile accidents we frequently see fractures of the facial bones and upper jaw so extensive that it creates a "floating face".

The trauma may be single or combined in the following structures, i.e. skin, muscle, nerve, cartilage, bone, mucosa, subcutaneous tissue, cilia, vessels, turbinates, nose, orbit, zygoma, maxilla, sinuses, mandible, teeth, intracranial, eye, or below the neck.

Hematoma is frequently occult and may be over the dorsum, in the cul de sac, or in the septum. It is often associated with fracture. It is treated with enzymes, aspiration, incision and evacuation, with internal and external pressure dressings, and repair of associated cartilaginous or bony injury.

Looking at the base of the nose with a good light and after trimming the vibrissa, one may frequently see the hematoma in the cul de sac. It may be noted as a fullness or swelling of the sides of the external bony pyramid. These hematomata are relieved through intercartilaginous incisions between the upper lateral cartilages and the lobular cartilages.

Hematomata may appear late and are frequently found in the septal envelope when they are not expected during correction of the septal deviation.

Lacerations may be simple and not associated with bony or cartilaginous injury. In this event closure with tape or interrupted 5-0 dermal will be all that is required. Those which are more extensive should be cleansed by scrubbing with soap and a soft tooth brush, after which irrigation with N.S.S. and picking up foreign material with forceps will prepare the tissues for repair. Lacrimal or salivary glands and/or ducts require special care.

Hemostasis with fine plain gut ties or mild electrocoagulation will assist in the repair and healing. Debridement, if any, should be ultraconservative. It should be indicated in less than 5% of the cases and then very minimal.

Bone and cartilage should always be saved. In referring cases to another physician send the loose bone and cartilage along in a sterile 4 x 4 gauze, or implant it in the wound with a loose gut suture. This is the best implant material available to the patient and is seldom rejected. Failure is usually due to infection which is infrequent, and, in some cases it will absorb. Even though it is lost through these complications the end result will be better than if it had not been used.

The tissues should be repaired in layers and implants or grafts placed after the lacerations have been closed with 5-0 dermal. Neosporin ointment is applied to the lacerations and non-waterproof tape is applied directly over the wound for pressure and fixation.

Tears of cartilage with or without displacement may be present in the cartilaginous pyramid, lobule, or septum. Many of the large hump noses will be composed of more cartilage than bone in their development and this must be considered in their repair.

Septal injury is difficult to diagnose and treat. It includes tears in the cartilage, fractures in the vomer, perpendicular plate of the ethmoid, maxilla, premaxilla, and sphenoid. The septum may be displaced to either or both sides. It may be imbricated or include spurs. Hematoma or perforation may be present. There may be loss of tissue.

Visual examination of the septum is performed with a good illumination and by looking through the light. Shrinkage of the erectile tissues permits better visualization and palpation with a moist cotton applicator readily differentiates polypi, secretions, crusts, clots, turbinates, deviations and spurs.

In those cases where the septum is thick or deviated after acute injury, the correct diagnosis is only obtained by open surgical inspection at the time of septal reconstruction and repair. General anaesthesia is necessary in children and desirable in adults. Local anaesthesia may be used over twelve years of age.

Loss of septal support may be reinstated by replacement of disorganized tissues and repair from above. Lacerations of the septal mucosa are approximated by suturing with 5-0 plain gut, and further supported by an internal splint of cod liver oil packing. Tension on the mucosa may be relieved by push down of the roof of the nose or by borrowing from the nasal floor in event of loss of tissue.

These cases require reassurance, analgesics, antibiotics, antihistaminics, parenzyme, hyaluronidase, steroids, pressure, ice packs, oral hygiene, heparin, fluids, diet (proteins) and vitamins.

Acute injury may be superimposed on previous injury or congenital deformity. Pre-existing deformities may be corrected at the same time and the patient

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Date & Hr.	PHYSICIAN'S ORDERS	Noted By	
		Nurse	Hr.
	Routine Post-op Rhinoplasty Orders		
	Adrenosem Amp 1 bid times 4 doses		
	Penicillin 600,000 U IM daily times 4 days		
	Morphine gr 1/6 stat on return from surgery		
	Phenergan 25 mg tabs bid		
	Codeine gr 1/2 q 3 hr prn		
	Ascriptin gr 10 q 3 hr prn		
	Diet as tolerated		
	Ice chips prn		
	Sparine 25 mg IM q 3 hr prn sneezing		
	Tuinal gr 1ss hs		
	Cepacol mouth wash qid		
	Morphine gr 1/6 q 3 hr prn		
	Parenzyme 0.5 cc } IM bid times 4 doses		
	Wydase 150 U		
	Eosinophil count stat and daily		
	Compazine 10 mg IM prn Nausea		
	Ice collar for 24 hours		

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is delighted to find that he can breathe better after the repair of the injury than he could prior to the accident.

Teleangiectases will be present in the skin which has been under tension over a hump or a deviation. This assists in the evaluation of pre-existing injury. Arrested development is also easy to recognize in an injured adult.

In crushing injuries there may be separation of the upper lateral cartilages from their attachment beneath the nasal bones. This will result in a saddle deformity which may be hidden for a week or more by hematoma and swelling. The nasal bones may be separated with a resultant open roof. One nasal bone may be fractured and the other one outfractured with a displacement of the bony external pyramid. In this event the long side of the nose will be on the side of the infraction. Both nasal bones may be in- or outfractured.

One must look for the type and extent of the injury:

- (A) It may be minimal with no loss of tissue, no hematoma, no fracture, and no dislocation.
- (B) Soft tissue injury is usually present.
- (C) Epistaxis source — simple or from lacerated mucosa with a fractured bone or cartilage.
- (D) Rhinorrhoea may be present indicating a fracture through the cribriform plate.

As a rule, treatable nasal fractures will have epistaxis, swelling of dorsum, ecchymosis of eyes, obvious deformity, crepitus, and tenderness on pressure.

The immediate treatment is to pack the nose to stop the hemorrhage, cold packs sedation, and x-ray the facial bones.

Nasal fractures may be depressed, greenstick, fracture plus dislocation, or outfracture and is usually associated with septal fracture. In fractures of the bony pyramid one must consider a fracture of one or both nasal bones, the ascending maxilla, the orbital rim, the maxilla, the zygoma, the antrum, and the orbital floor.

While fractures of the nasal bones usually show on x-ray, they may not. Tears in the cartilage are usually not visible in x-rays. X-ray diagnosis of septal deformity or posterior choanal obstruction is unreliable.

Nasal fracture alone may be treated less urgently than most other fractures as these are not articulated bones. They should be treated as soon as feasible and certainly within seven days of the injury. The facial bones are membranous bones and heal with fibrous tissue and not with callus. Wires are rarely, if ever, indicated, except in mandibular fractures with displacements. Interdental wiring with arch bars will suffice in the repair of the floating face. Plaster hats or caps to elevate the nose with wires or pins should be abandoned.

When the upper lateral cartilages remain attached to the unfractured nasal bones and there is loss of septal support due to interruption of the septum from the floor to the roof of the nose there will be a resultant sagging of the cartilaginous pyramid. This may occur with or without septal perforation. Repair of sagging requires septal reconstruction and roof support with implant or grafting techniques.

Severe cases require shock management, transfusion and tracheotomy. In cases of severe cranial injury, the nasal and facial bone repair is deferred until the patient has sufficiently recovered to withstand the procedure in the judgment of the neurosurgeon. Bleeding may be controlled by pressure, ligatures, and sutures in the interim.

Treatment of nasal fractures by the closed method requires pushing or lifting with a blunt instrument which is padded by several layers of sterile gauze. An outfracture may be reduced with the thumbs or fingers pressing on the pyramid externally through a 4x4 gauze. When this cannot be accomplished, an osteotomy or osteotomies with a saw and/or chisel in the appropriate place will return the nasal pyramid to the desired position. Osteotomy on the unfractured side is frequently necessary in the repair of an infraction. A satisfactory result is obtainable by the closed method only if **no** septal deformity exists.

Septal deformity is not amenable to any closed method of treatment when the nasal bones are in the midline. Pushing with an elevator or other instrument, gridding, cutting with scissors, splinting, and the use of vice like devices are all doomed to failure. Septal deformity may be successfully treated only by open surgical reconstruction, and then only about 95% of the time, depending on the skill and experience of the surgeon and the fabric of the patient. Tissue responses in different patients to the same accidental or surgical trauma are widely varied. Septal deformity continues to be a challenge to the rhinologist who relies on objective rather than subjective post operative findings. Many patients afflicted with a severe breathing problem have no complaints as they cannot compare with normal.

Acute nasal trauma patients may need no treatment or they may need a rhinoplasty. In cases with loss of tissue, flaps, grafts, and/or implants may be indicated. Boplant is of great value in these patients while waiting for infection or foreign body reaction to subside. Scar contraction should be expected and treated before it occurs.

Maintenance of a narrow lobule may be obtained through the use of base stitches with plain or chromic gut 3-0. Similar sutures just at or anterior to the naso-optic groove and at the caudal end of the nasal bones will elevate severely depressed and dysimpacted nasal bones so that projection of the bony pyramid will be maintained for ten to fourteen days when fibrous healing will be strong enough for a good permanent result without wiring.

Dressings internally with CLO packing and external splinting with adhesive and stent not only assist in maintaining the repair, but prevent the formation of hematoma and help the absorption of serum and fluids. Boplant or autogenous cartilaginous flakes stimulate fibroplasia in the subcutaneous space during healing and aid in the prevention of scar contractions.

Pressure over the eyes with eye pads, foam rubber and curlex along with an ice collar to the neck reduces swelling and hematoma in the facial tissues. Of especial importance in this period is the use of parenzyme, wydase, and morphine as listed in the post operative orders.

In event of an unsatisfactory result do not re-operate on any patient before an interval of one year. Always reassure the patient that his nose looks good and that it is going to breathe good. Tell him that if he is not satisfied after one year he may be re-evaluated and something further may be done for him.