DEFORMITIES FOLLOWING NASAL FRACTURES IN CHILDREN AND ADULTS

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Fractures include the rupture of soft tissue as well as the tearing of cartilage and breaking of bone. Post fracture deformities in children and adults will be considered separately since they are different anatomically and in their growth potentials.

Children are unique as they are always changing anatomically, developmentally, immunologically, and psychologically. In infancy and early childhood the nose is composed of soft tissue and cartilage. The rudimentary nasal bones gradually grow and ossify while developing some projection by the seventh year. The cartilaginous septum 5 also gradually ossified until the adult septum becomes about 60% bone.

During birth a fracture frequently occurs with the resultant deformities of flattening, dislocation of the septum, distortion of the nostrils, and deviation of the external nasal pyramid and lobule.

Fractures of the bony vault in children result in a widening of the bony pyramid which may be symmetrical, and a relative hump may be present due to a separation of the upper lateral cartilages from the nasal bones which may be complete or partial; i.e., sagging or saddling.
The greenstick fractures are found unilaterally or bilaterally, and rotation of the pyramid with a long and short side of the nose and deformities of the related structures of the lobule and septum will be found.
Deformities which develop following fractures accompanied by hematomas of the cartilaginous vault and/or lobule are due to pressure necrosis or infection. A permanent loss of cartilage and replacement with fibrous tissue may incapacitate the nasal valve. The deformity of ballooning of the upper lateral cartilage with an open valve is a most common finding. Inspiratory collapse with deformed pinching is seen after loss of the cartilage in this area at times.

Septal fractures produce deformities of imbrication, comminution, displacement, bends, deviations and perforations. Loss of turbinal tissue with internal deformity is not uncommon.

A variety of pathologic anomalies may be found long after a fracture in a child has healed. This is due to an acceleration or arrest of the growth or differentiation of all or part of a nose. The deformity may be a baby's nose on an adult.
The growth of the child after fracture causes the distortions and obstructions

to worsen rather than improve with time. Significant functional and esthetic deformities may develop.

When the nose of a child is obstructed following a fracture he will become a mouth breather. This removes the counterpressure of the lower teeth and mandible and permits excessive growth of the alveolar processes of the upper jaw. This results in the deformity of a high arched palate and a narrowing of the maxilla. This, in turn, restricts the growth of the septum inferiorly. Diastema is a frequent finding. Variations in gravity may have an effect on the growth centers.

Arrest of growth of a maxilla will result in asymmetry and deformity of the nasal aperture.
Post fracture deformities in adults include:

1. Changes in the salience of the bony arch and/or cartilaginous vault
   a. Displacement of pyramid
2. Saddling of the cartilaginous vault and/or bony arch or sagging of the vault
3. Changes in relation of the lateral wall to the septum. The airway may be narrow or wide. Adhesions may form between the two.
4. Valve involvement
   a. Impaction
   b. Insufficiency
   c. Open
5. Thick septum
   a. Imbrication
   b. Scar
6. Thin septum
   a. Atrophy
   b. Perforation
7. Crowding of turbinates
   a. Middle
   b. Inferior
   c. Maxillary ostium insufficiency
   d. Stenosis
8. Vestibular and nostril distortion with dislocation of caudal septum
9. Shortening or retraction of the columella
10. Wide nose - round nostrils
11. Drooping tip
12. Alar collapse
13. Open roof

Secondary deformities may develop in the:

a. Psyche or
b. Cardiopulmonary system

The deformities following nasal fracture may occur singly or in multiples. They may be complicated by pre-existing deformities or congenital defects.

SUMMARY

Post fracture deformities in children and adults are considered separately since they are different anatomically and in their growth potentials.
Soft tissue injuries and greenstick fractures are found more commonly in children. The growth of the child causes distortions and obstructions to worsen rather than improve with time.
Fractures in adults result in multiple deformities which may be complicated by pre-existing deformities or congenital defects. They may include the psyche or the cardiopulmonary system.

RÉSUMÉ

Les déformations après fracture chez les enfants et les adultes sont considérées de façon séparée, par le fait même qu'elles sont différentes anatomiquement et dans leur potentiel de croissance.
Les lésions des tissus mous et les fractures en bois vert sont trouvées plus fréquemment chez l'enfant. La croissance de l'enfant entraîne des distorsions et des obstructions qui empirent plus qu'elles ne s'améliorent avec le temps.
Les fractures chez les adultes entraînent de multiples déformations qui peuvent être plus ou moins complexes. En cas de défauts pré-éxistants ou congénitaux, les conséquences peuvent être psychologiques et cardio-pulmonaires.

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