

Can We Reduce Fracture Nose Even After Years?

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Abstract

Objective: Trial of reduction of nasal bone fracture after several years beyond the usual timing for reduction which is one-two weeks. The reduction was done by the classical method of reduction using Walsham's and Asch's forceps.

Method: Retrospective study for fourteen patients 9 male and 5 female, with a different type of isolated nasal bone fracture type 1,2,3 underwent classical closed reduction of the nasal bone fracture after many years of trauma with encouraging results regarding the proper reduction of the fracture and good nasal patency. The procedure was done under general anesthesia. Closed reduction is easy and simple surgery by using Walsham's forceps for reduction of the bone and using Asch's forceps for reduction and mobilization of the nasal septum, but some patient need septoplasty or sept rhinoplasty to reach proper management of the deformity.

The study conducted from June 2015-June 2020.

Result: Encouraging results were obtained for all patient, we perform a successful reduction of old fracture for all 14 patients. In 21.42% of patients need only closed reduction. In 64.27% of the patients need closed reduction and septoplasty surgery. In 14.28% of the patients need closed reduction and sept rhinoplasty to obtain a satisfactory aesthetic result. Assessment of the result by pre and post-operative photography for all patients and by x-ray or CT scan for the nose before and after surgery according to facilities.

Conclusion: According to the results of this trial we succeed in reducing isolated nasal bone fracture by the classical method even after years of fracture time, a satisfactory result was achieved regarding the function of the nose and it is aesthetic appearance.

Keywords: Nasal bone fracture • Delayed reduction • Years

Introduction

The nose is a projecting triangular pyramid occupying a middle third of the face. It is inferior base directed downward, nasal septum divided the nasal cavity into two nasal fossae. The upper part of the nose is bony and formed by 2 oblique nasal bones united firmly with each other at the inter nasal suture to form nasal bridge of the upper third of the nose and extended superiorly to articulate with thick frontal bone at frontonasal suture and extended laterally to articulate with two bone of the ascending process of the maxilla (also called) nasal process of maxilla) on each side at Naso maxillary suture inferiorly they join the upper border of upper lateral cartilage which attached to the underside of the nasal bone for several millimeters [1]. This add recoil property in case of trauma. The nasal bone is thick superiorly and thin inferiorly. The nasal septum is formed by the anterior cartilaginous part and posterior bony part.

The external lower part of the nose is cartilaginous formed by two upper lateral cartilage and two lower lateral cartilages in between them small sesamoid bone, they united to each other and dorsally to form the dorsum of the nose which articulate with the bone at the Osseo cartilaginous junction (Figure 1).

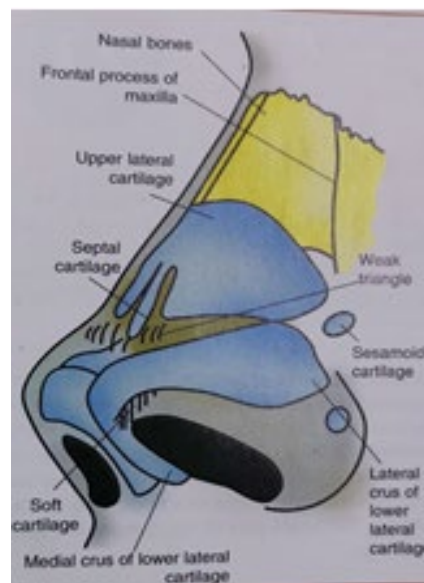


Figure 1. Skeletal framework of external nose showing its different parts.

Nasal bone fracture is the third commonest fracture in the human body due it is protuberant appearance in the face. It occupies the middle third of the face It is liable for different types of trauma including car accidents, falls from height, brawl, boxing and sports injury, etc. Management of fracture nose varies from no intervention to active intervention according to the resulted appearance after trauma and the functional impairment. A simple fracture of the nose may lead to deformity and reduction of nasal function. Management usually takes place within 10-14 days after trauma [2], but we try to reduce fracture even after a long period in the beginning after several months then extending our trial to several years. although there are some difficulties to achieve reduction after a long period of trauma we succeed to do that. other surgeons who did the reduction of fracture nose after a maximum of 41 days by Dr Han Young Yoon and Dong Gil Han were published their research under the title (Delayed reduction of nasal bone fracture) it was published in Archives of craniofacial surgery [3].

A simple reduction of nasal bone fractures can be done under local anesthesia or under general anesthesia it is the easier and simplest method for management.

Case Presentation

A retrospective study was done for all 14 patients who had undergone classical closed reduction of isolated nasal bone fracture (Table 1). It is a simple method that involves repositioning the bone in three dimensions involve depression of the elevated segment, the elevation of the depressed bone, then the restoration of the symmetry of the pyramid of the nose, and lastly augmentation to the midline.

Under general anesthesia with endotracheal intubation provides the best method of securing the airway to an able us for manipulation of nasal bone for reduction and septal augmentation [4] for all 14 patients. The patient positioned supine with a slight head-up tilt. Walsham's forceps were used for mobilization of the nasal bone and to achieve proper reduction. It is easy and applicable especially in female patients although there are some difficulties in male patients, mild nasal skin injury and simple laceration can happen in a few patients but this rapidly healed within a few days later. Depressed fractures can be reduced by Walsham forceps are used to dis impact the nasal bone. One blade introduced into the nasal fossa and rotated laterally to out fracture of bone [5]. Then nasal bones are in fracture by applying external thumb pressure to narrow and medialize the nasal bone. Asch's forceps were used for the reduction of septal fracture (it is composed of two parallel prongs to hold the nasal septum in between and manipulation to reset the septum to midline position.

Result

We have 14 patients, 9 patient are male 64.26% of patients, 5 are female

35.7% of patients with isolated nasal bone fracture type 1, 2, 3 [6]. Mean age incidence 23.46 years. Mean delayed time for reduction is 8 years. Fracture nose is common in male than female. Patients age ranged from 13-30 years old. After the reduction of fractured bones and reduction of cartilage then we checked the results, the cases need only closed reduction (21.24%) of patients. Septoplasty (64.26) of patients only limited resection of bony and or cartilaginous spurs. Only two patients need Rhinoplasty (14.24%) of patients.

The youngest one is a boy 13 years old after the reduction of fractured nasal bone he still needs more procedure Rhinoplasty by de humping of the dorsum of the nose. We are so conservative with this patient because he is young and his nose will continuously grow. We had found that most of the deformities of nasal bone were resulted from trauma even trauma during childhood or childbirth and can be managed by this method. In some cases we may excise the fractured part of the cartilage to ensure the proper reduction of nasal septum which is mandatory for the completion of satisfactory reduction of bone to restore appearance and patency of the nose.

Table 1. Details of patients with isolated nasal bone fractures and method of management.

No.	Sex/Age (YR)	Cause	Type	Delay (YR)	Management
1.	Male/18	Fall/Ground	3	16	Closed Red+Septoplasty
2.	Male/13	Unknown	3	10	Closed Reduction+Septoplasty
3.	Female/22	Fall/Ground	2	12	Closed Reduction+Septo rhinoplasty
4.	Female/25	Fall/Ground	2	12	Closed Reduction+Septoplasty
5.	Male/30	Unknown	2	15	Closed Red+Septoplasty
6.	Female/25	Fall/Ground	2	22	Closed Reduction+Septoplasty
7.	Male/27	Car Accident	3	2	Closed Reduction+Septoplasty
8.	Female/19	Fall/Height	2	2	Closed Reduction
9.	Male/20	Sports	2	4	Closed Reduction+Septoplasty
10.	Male/26	Car Accident	3	3	Closed Reduction+Septoplasty
11.	Male/28	Brawl	2	11	Closed Reduction
12.	Female/28	Unknown	2	15	Closed Reduction+Septorrhinoplasty
13.	Male/26	Brawl	3	2	Closed Reduction+Septoplasty
14.	Male/24	Sports	23	1	Closed Reduction

First patient

Was 18 years old boy from a rural city near the centre he was complained of nasal deformity curled buckled nose with severe nasal obstruction and headache [7]. On examination angulated nasal septum to the left side with bent external dorsum. Surgery was carried out under general anesthesia reduction of the old fracture was done by Walsham forceps click sound heard on manipulation, the elevation of depressed bone on the right side of the nose and dorsal augmentation then realignment of the nasal septum, followed by septoplasty for resection of the deviated cartilaginous and bony spur. The result of the surgery was good (Figures 2-5).



Figure 2. 18 years old boy complaining of nasal blockage, headache and nasal deformity (buckled nose) as a result of trauma during childhood.



Figure 3. After surgery.



Figure 4. A-P and lateral view X-RAY of this patient showing bilateral old fracture of nasal bone.



Figure 5. A-P view X-Ray 2 months after surgery show successfully reduced fractures of the left and right side of the nose.

Second patient

One of the patients was a young boy 13 years old who presented with severe nasal deformity, buckled nose, nasal obstruction, and snoring managed by this method. We performed a conservative procedure; classical reduction of fracture nose, septoplasty was done for the restoration of the septum to the midline position Closed rhinoplasty de humping and rasping of the wide lateral nasal bone was done.

Remodeling of the caudal end of the septum added satisfactory improvement of nasal appearance besides good nasal patency. That changed the patient's life for the better and improved his confidence in his self. This boy may need further surgery after puberty (Figures 6 and 7).



Figure 6. Before surgery.



Figure 7. After surgery.

Third patient

Young female 20 years old with nasal septal deviation and external deformity of the nose. She has a history of trauma (falling on the ground) before 12 years. Surgery was done for her nose by closed reduction with surprising ease of reduction besides septoplasty surgery. The result was good nasal patency and good improvement of nasal shape (Figures 8 and 9).



Figure 8. 20 years old female with a history of falling on the ground before 12 years resulted in nasal blockage and left-side nasal deformity.



Figure 9. After surgery.

Fourth patient

25 years old female from a rural area her complaint is nasal blockage and nasal deformity with depressed Left lateral nasal bone as a result of trauma to nose since childhood. Surgery was done for her. Classical reduction of old fracture site by Walsham forceps one blade inserted beneath depressed segment, outward fracture of the depressed segment with thumb pressure, then septoplasty procedure for alignment and augmentation. A good result was obtained and the patient was happy about the result of the surgery.

During surgery after reduction of fractures, we may need only simple removal of bony or cartilaginous spurs to complete the surgery. In other patients, still need more intervention like closed Rhinoplasty to obtain a satisfactory appearance of the nasal bone. After reduction, the patient should wear a dorsal splint for 7 days to hold the reduced bones in it is placed and to protect them from any trauma (Figures 10 and 11).

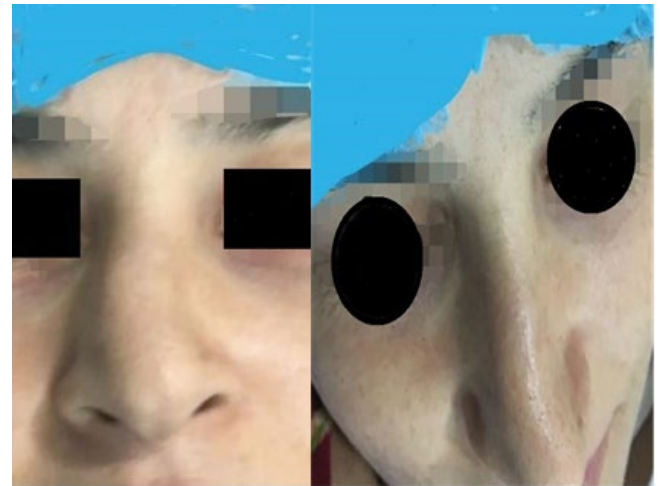


Figure 10. 25 years old female with a history of trauma to nose since childhood leads to bent nose with nasal blockage.

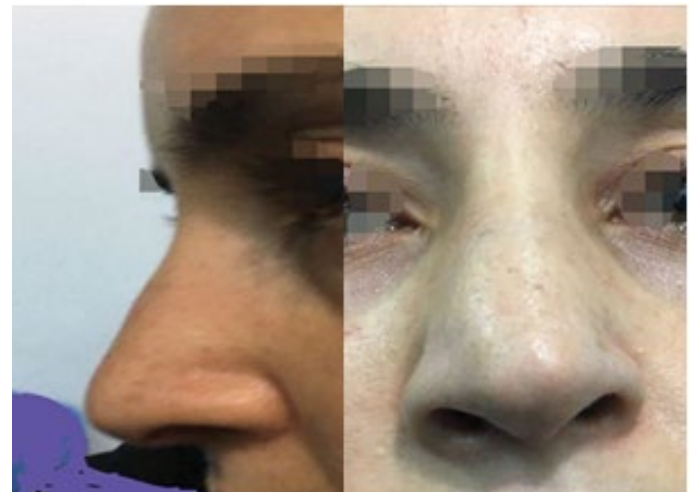


Figure 11. After surgery.

Fifth patient

30 years old post-graduate student complaining of nasal obstruction and headache. as a result of trauma before 15 years. We did a closed reduction of old fracture with septoplasty surgery. The result was good nasal patency and satisfactory improvement of nasal appearance (Figures 12-15).



Figure 12. 30 years old postgraduate student with a history of trauma to the nose before 15 years resulted in nasal deformity, headache.



Figure 13. After surgery.

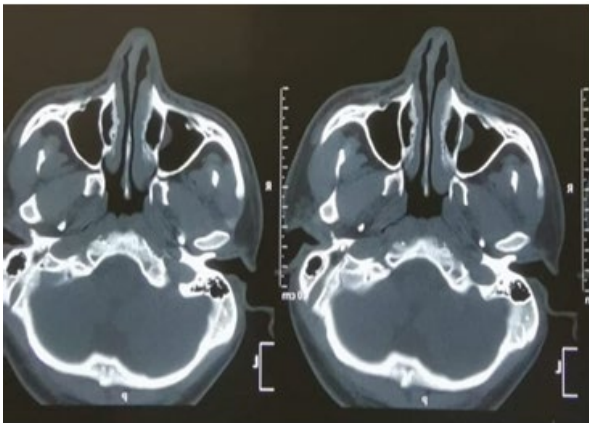


Figure 14. CT scan of 30 years old male patient shows a slight deviation of the nasal septum.

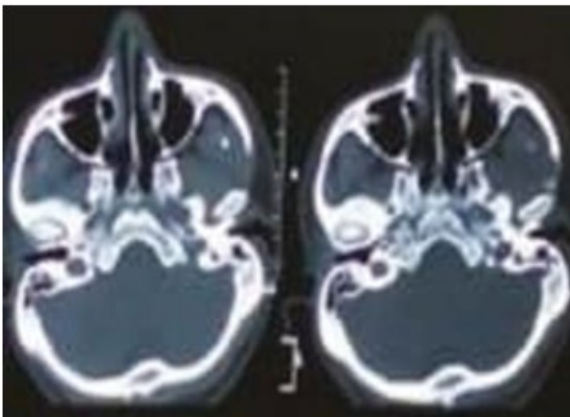


Figure 15. CT scan of the patient after surgery show straight nasal septum with good reduction of fracture.

Discussion

The usual timing for reduction of fracture nose is one week in child and two weeks in an adult after trauma, after this period we should wait for about six months then the patients may need a more extensive procedure (sept rhinoplasty) with osteotomies to restore the satisfactory shape of the nose [8]. But we tried reduction beyond this time. The study conducted from June 2015-June 2020. There is a trial for delayed reduction carried by DR Han Young Yoon and Dong Gil Han published in 2016 after a maximum of 41 days of trauma, it was published in Archives of craniofacial surgery 2016. They found that (delayed closed reduction can yield satisfactory outcome in patients with isolated nasal fractures for whom early reduction was not possible) [3].

My attempts to correct a fractured nose began in 2015, and at that time a young female came to me with a fractured nose as a result of an accident, and more than one month had passed since the fracture time, and she underwent surgery. to correct the fracture classically, the result was good. This patient returned to my clinic after 4 years and I noticed that the result was a beautiful nose. This result encouraged me to perform a fracture reduction operation even if months or years have passed since the accident, and even if the patient or his family did not remember the accident that lead to a fracture or deformation of the nose, which may have occurred during childhood or the childbirth (there is great deal of literature on management of nasal trauma at time of delivery by rubber coated forceps) [9].

The grandmothers who deal with pregnant women at the moment of delivery at the rural area far from hospital, they were molding the baby's nose as soon as he was born to return the broken nasal bone to its original place.

In many cases, management was delayed due to the family's lack of interest in the accident that the child is exposed to such strike or blows to the nose during play. Nasal trauma during childhood may leads to a disturbance in the development of the nose and It will affect the shape and the function of the nose in adulthood and might cause nasal obstruction, recurrent sinusitis, post-nasal secretions headache and possibly snoring and obstructive sleep apnea syndrome [10]. Maintaining the initial shape of the nose with reducing the old fracture and eliminating it is a bad effect on breathing while improving the external nose shape using the classic reduction method using Walsham Forces to reduce the bone, then using Asch forceps to modify and straighten the nasal septum, then evaluate the result, and the patient may need a septoplasty or sept rhinoplasty to match the aesthetic appearance. The result of this method is encouraging. In addition to it is a conservative method that allows preserving the bones and cartilage of the nose while restoring The original shape and function of the nose after reduction of the fracture, but it is not a substitute for rhinoplasty in cases that require this operation.

We have already proven that the fracture of the nose can be reduced even after many years, and this in turn will contribute to reducing the need for broader surgical interventions such as septoplasty and or rhinoplasty operations by 21.42%.

Conclusion

We conclude that delayed reduction of isolated nasal bone fracture is possible even after years. It is conservative surgery therefore it is suitable for correction of severe nasal deformity in young age group before puberty.

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