

## Spreader Grafts: A Convenient Tool for Camouflaging Nasal Deviation

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### ABSTRACT

**Introduction:** The deviated nose is a deformity that commonly encountered in rhinoplasty. Its correction poses one of the greatest challenges in practice. Anatomical correction of deviated nose alone frequently leads to unsatisfactory cosmetic outcomes and hence high failure and revision rates.

**Aim:** After correcting all anatomical defaults that may result in deviation, current study aims at assessment of camouflage spreader grafts as a tool for hiding remaining crooking of the nose.

**Patients and Methods:** 35 patients with crooked nose were subjected to open rhinoplasty using an algorithm for classification and management of deviation. Camouflage spreader grafts were applied for hiding remaining crooking of the nose. Cases were assessed subjectively and objectively regarding air way improvement and their external appearance.

**Results:** Following-up patients from 18 months to 24 months post-operatively revealed evaluation values as follows: subjective evaluation of their external appearance showed 57% excellent results, 28% fair results, and 15% were unsatisfied. While objective evaluation of their appearance revealed that 85% of patients didn't need further revision while 15% of them needed another revision. Air way improvement was definite in 80% of cases, fair improvement was in 11% of cases, while 9% of them showed no air way improvement.

**Conclusion:** Correcting all anatomical defaults that may result in deviation is not enough in most of cases. Camouflage spreader grafts was found to be a convenient tool for hiding remaining crookedness of the nose.

### INTRODUCTION

The deviated nose is a deformity that commonly encountered in rhinoplasty. Its correction poses one of the greatest challenges in practice [1].

Resulting from a myriad of causes, the surgeon's first task is to elucidate the etiology of the asymmetric nose and then devise a therapeutic plan that takes into account balance, proportion, symmetry, and correction of nasal function [2].

Although numerous surgical approaches have been documented in the literature, there is still no

technique that can guarantee a successful outcome, and no technique has a clearly lower revision rate [3].

Anatomical correction of deviated nose alone frequently leads to unsatisfactory cosmetic outcomes and hence high failure and revision rates [4].

In current study, after correcting all anatomical defaults that may result in deviation, camouflage spreader grafts were applied for hiding remaining crooking of the nose.

### PATIENTS AND METHODS

Thirty five patients, (12 males and 23 females), were included in this study that performed in Kasr El Aini university, Suez Canal University and private practice of the authors. The period of current study was from January 2010 to August 2014 with a follow-up period ranging from 18 to 24 months. Age of patients ranged from 18 years to 44 years. The aetiology of the deviation was mostly trauma, less often resulted from previous rhinoplasty and few cases were idiopathic aetiology.

*All patients were evaluated preoperatively:*

- Air way evaluated either subjectively using a questionnaire in which each patient rated breathing quality from 1 (poor) to 10 (excellent). Or objectively using Differential nostrillar air entry, Cottle test, Nasal strip, and Nasal speculum examination. (The evaluation is repeated six months and two years post-operative).

- External appearance evaluation: Five classifications of deviated nose, depending on the orientation of two horizontal subunits (the bony pyramid and the cartilaginous vault) with respect to the facial midline. The classification used was first introduced by Jang et al., 2008. (Fig. 1) [5].

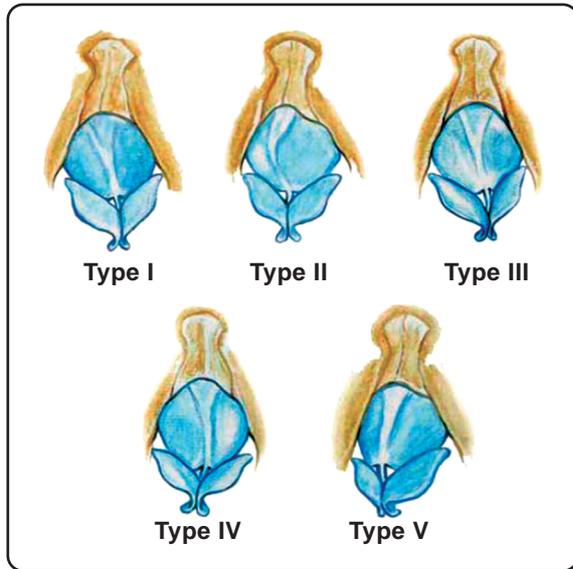


Fig. (1): External appearance classification of deviated nose. Jang et al., 2008 [5].

**Photographing** for all cases was done before surgery, six months and two years postoperatively in anterior, lateral, and cranio-caudal views.

**Surgical approach** was through an open technique in all cases.

**Surgica plan** was following the same classification system used in this study modified by Cho and Jang 2013 (Fig. 2) [6].

Camouflage spreader grafts were inserted in every case.

Number of the grafts, length either extending to the tip or limited to the septal length, and need to camouflage the empty side are all elements to be determined by preliminary use of custom made sizers (plastic material) (Figs. 3,4).

Alar rim grafts were used in all cases for enforcing the external valve structure.

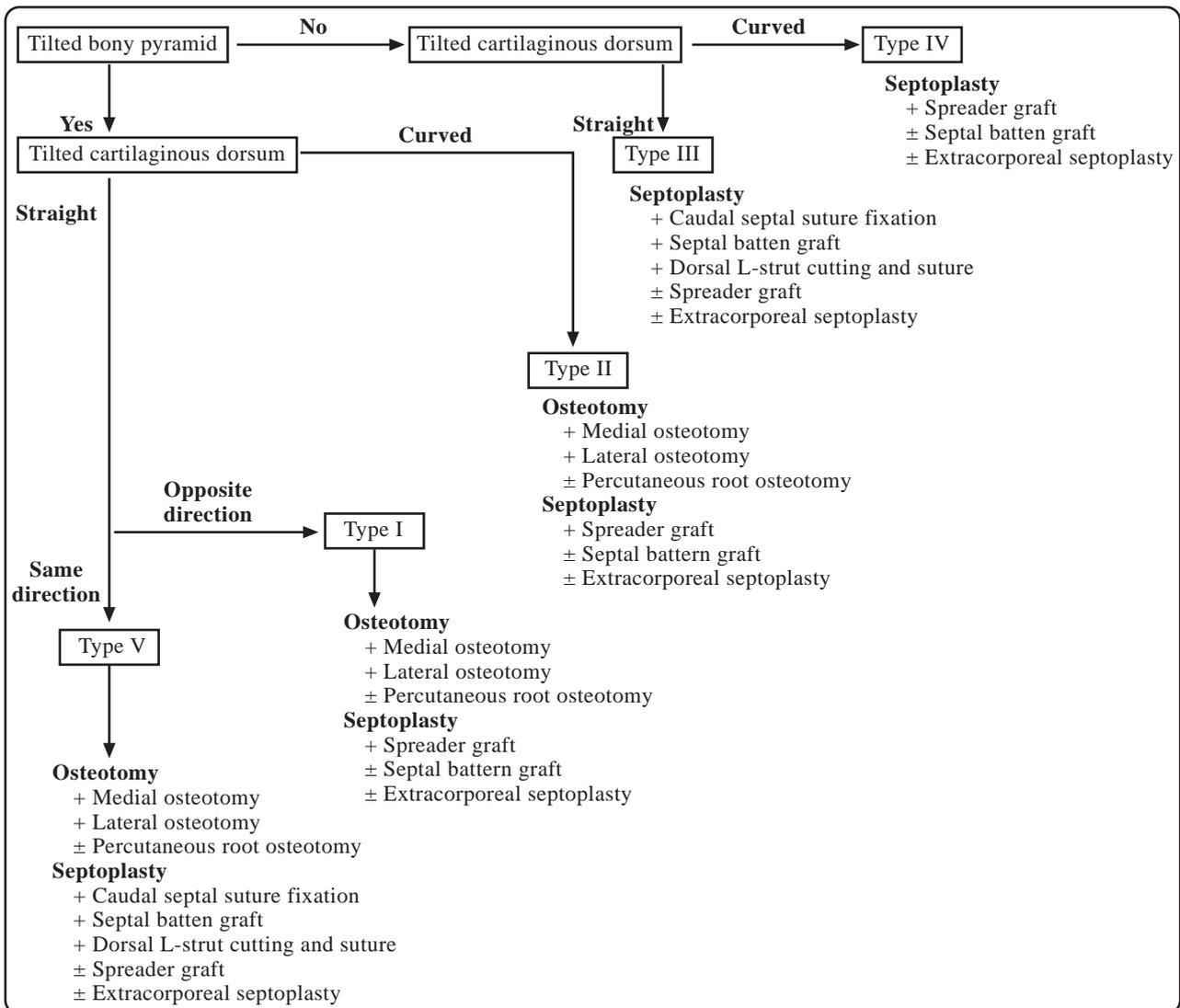


Fig. (2): Algorithm for managing crooked nose (Cho and Jang 2013 [6]).



Fig. (3): Plastic sizers used in the study, chemically sterilized using Cidex.



Fig. (4): Grafts obtained from septum and/or the conchae then tailored according to sizers.

**Follow-up** period was extending up to 2 years post-operative.

### RESULTS

*Aetiology*

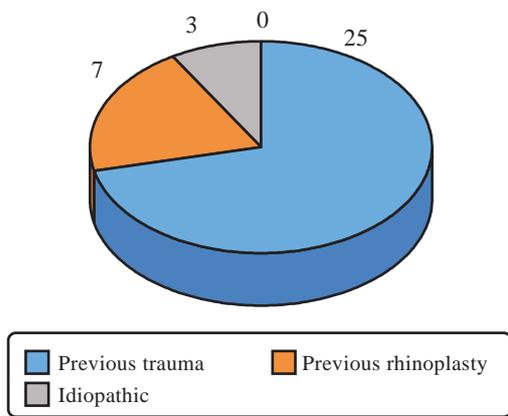


Fig. (5): Chart showing distribution of different etiologies included in the study.

*Pathological classification*

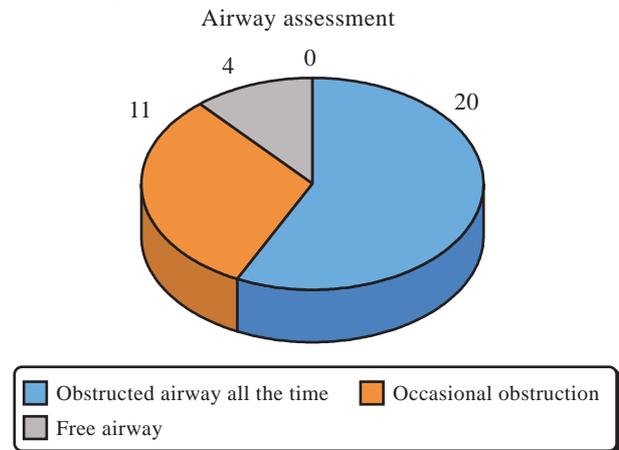


Fig. (6): Chart showing airway status of patients before surgery.

*External defect*

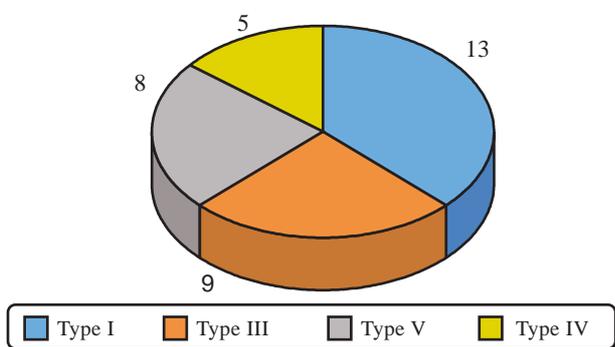


Fig. (7): Chart showing classification of patients according to their external appearance before surgery.

*Operative outcome:*

*External appearance:*

Subjective evaluation of their external appearance showed 57% excellent results, 28% fair results, and 15% were unsatisfied (Fig. 8). While objective evaluation of their appearance revealed that 85% of patients didn't need further revision while 15% of them needed another revision. (Fig. 9).



Fig. (8): Chart showing degree of satisfaction of patients regarding their appearance post-operative.

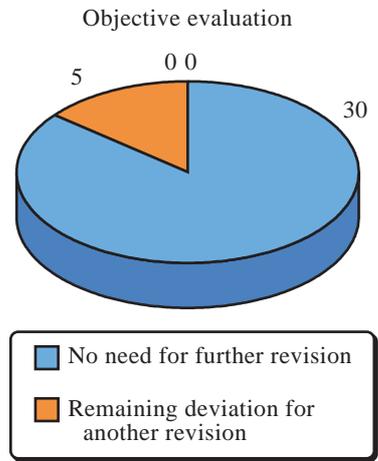


Fig. (9): Chart showing evaluating patients objectively to decide their need for further revision.

*Airway improvement:*

Air way improvement was definite in 80% of cases, fair improvement was in 11% of cases, while 9% of them showed no air way improvement (Fig. 10).

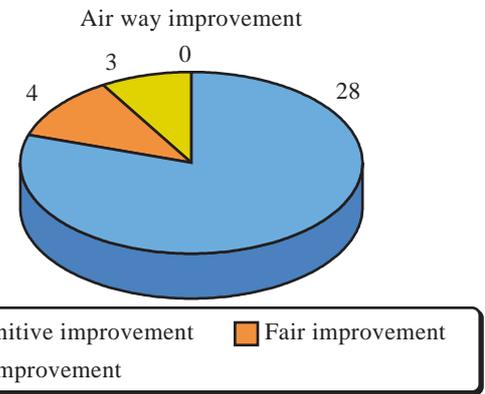
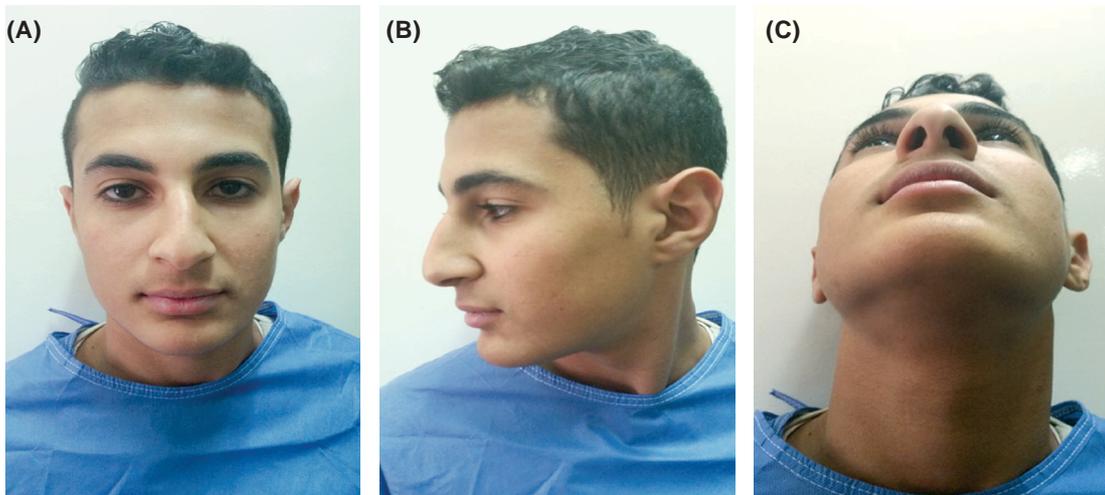


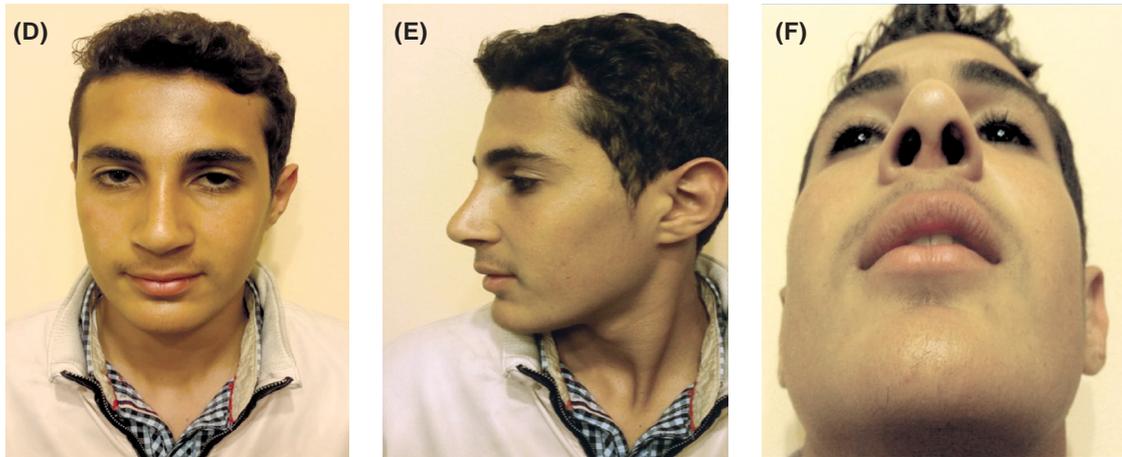
Fig. (10): Chart showing airway improvement after surgery.

**Clinical Cases**

Fig. (11)

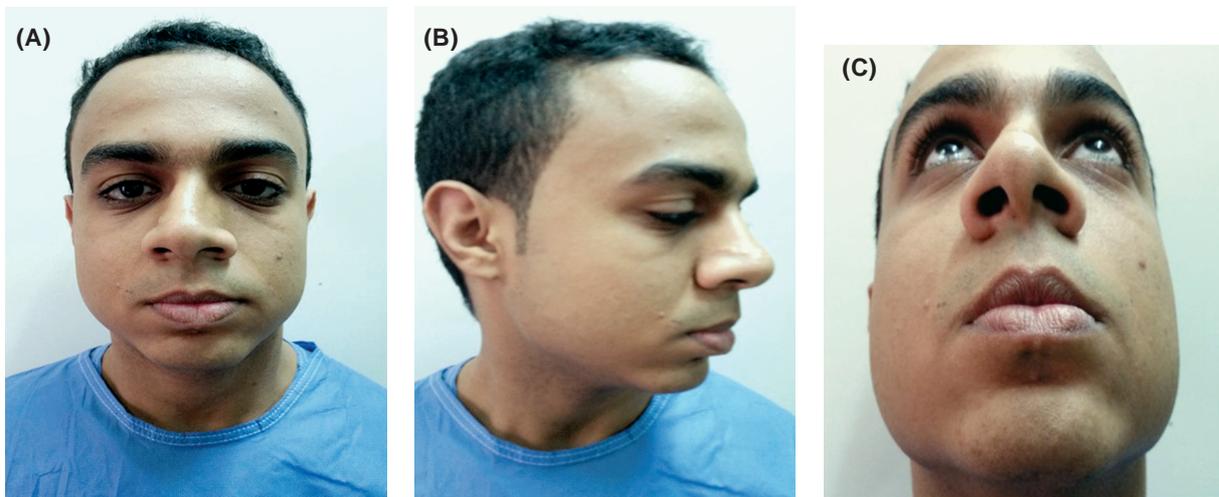


Pre-operative

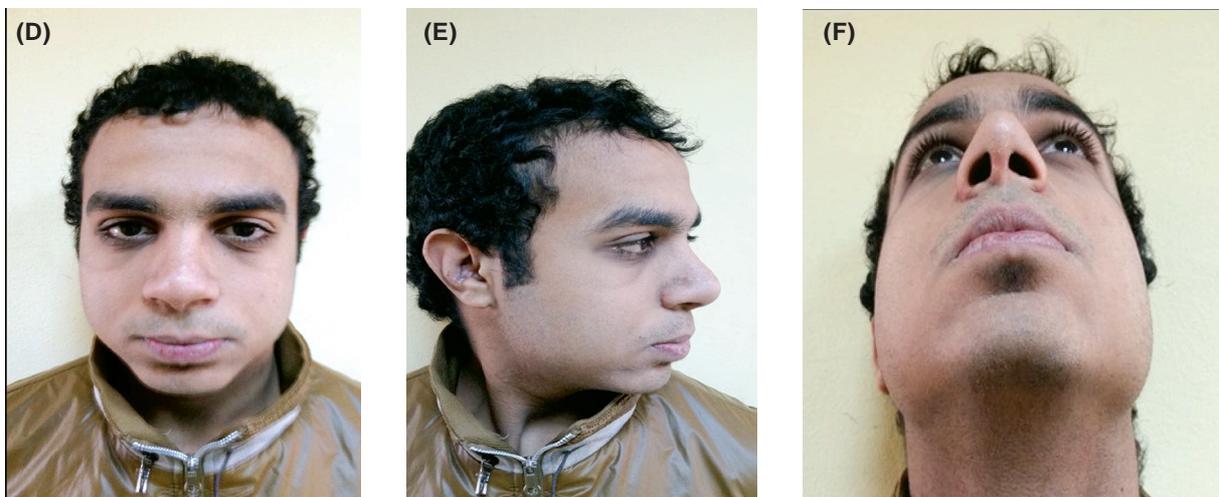


Post-operative

Case (1): Tilted bony pyramid ----- tilted cartilaginous septum ----- straight opposite direction → Type I (Pre and post-operative views).



Pre-operative



Post-operative

Case (2): Tilted bony pyramid ----- tilted cartilaginous septum ----- straight ----- same direction → Type V (Pre and post-operative views).

## DISCUSSION

Deviated nose is a deformity that resulted from a set of anatomical abnormalities, and for this reason there are many methods for correcting such defects. Therefore, only one single method shouldn't be used in all cases of nasal deformities.

It is extremely hard to classify the deviate nose, because it is not always that we have a concave and a convex side. The classical C-Shaped or S-Shaped, for nature own reasons, may have both the radix and the nasal tip located in the middle line, and in these patients this represents more of a nasal asymmetry than a true nasal deviation [3].

A study by Munroe over 125 patients for whom asymmetric/deviated noses were the reason for rhinoplasty revealed five broad categories of facial asymmetries; Left-Right difference in facial width, Left-Right difference of left-Right orbital level, Rotation displacement of upper jaw/piriform aperture, Isolated lateral placement of piriform aperture, Non-horizontal alar base. More pronounced facial asymmetry sometimes associated with cheek flattening and slanting of the whole midface to one side [7].

Jang et al., described also Five classifications of deviated nose, depending on the orientation of two horizontal subunits (the bony pyramid and the cartilaginous vault) with respect to the facial midline [5].

Cho and Jang then introduced a management strategy based on the previous classification [6].

The previous two studies were used in the methodology of current study to a great extent [5,6].

The surgical treatment is aiming mainly for anatomical reconstruction. While defect camouflage is a completing step that usually improves the surgical outcome.

Camouflaging in rhinoplasty is a quiet modern name that was really applied and modified many years ago before inserting the term.

Of course, considerable progress toward the correction of dorsal deviations came mainly with the use of spreader grafts.

The original technique devised by Sheen involved positioning a rectangular strip of cartilage on either side of the dorsal septum harvested from the central part of the same. This method served fundamentally to strengthen the middle nasal vault

during risky rhinoplasties, and hence prevent post-operative collapse. It also proved immediately useful in functional terms by broadening the angle of the internal nasal valve, and thus increasing the respiratory airflow [8].

Toriumi and Ries suggested positioning a spreader graft on the concave side in C-shaped deviations both to restore the respiratory function and to harmonize the esthetic line from the brow to the nasal tip. In the cases of linear deviation of the nasal pyramid, it is instead necessary to position the spreader graft on the side opposite to the deviation, where there is a gap between the septum and the upper lateral cartilages. In both cases, the use of spreader grafts makes it possible to secure lasting correction of the deviation and camouflage any residual crookedness [9].

Extracorporeal septoplasty for the correction of the severely deviated caudal septum was first reported by Gubisch [10].

Byrd, 1998 suggests the use of a "septal extension graft" in place of spreader graft on the concave side to control the projection and rotation of the nasal tip [11].

Rohrich, supports the technique of unilateral spreader graft [12], Guyuron [13] advocates the use of bilateral spreader grafts to firmly secure the septum in position and counter any future deviations caused by the residual septal cartilage memory.

Bocchieri proposed the "septal crossbar graft" to correct the crooked nose, where a rectangular graft of cartilage taken from a straight portion of the septum is embedded in the dorsal septum like a bar behind a door to prevent opening from the outside [14].

Mendelsohn, suggested use of porous high-density polyethylene (pHDPE) and expanded polytetrafluoroethylene (ePTFE) implants for deviation correction [15].

Emsen 2006 described a different approach to the reconstruction of the stubborn crooked nose with a different spreader graft: Nasal bone grafts harvested from the removed nasal hump [16].

Elbestar and Sakr, 2009 tried the dorsal osteo-cartilaginous Hump as an onlay graft in correction of the crooked nose [17].

Foda, tried correcting of the dorsal and caudal septum deviations using a merseillene mesh [18].

Erol, suggested use of diced cartilage describing as Turkish Delight as a pliable graft for camouflaging dorsum irregularities in rhinoplasty [19].

Filler, Botulinum Toxin were materials described, to introduce The Medical Rhinoplasty Concept [20].

In current study implementing use for spreader grafts as a camouflage for hiding crooking of the nose.

Spreader grafts are tailored using sizers to correct the deformity guided by length, extension, number, and position according to performed sizers.

Results of current study were quiet promising, for further evaluation and more variety and number of cases.

#### Conclusion:

Deformities of the deviated nose can differ from one patient to another, and therefore no one method can be used for every case. Correction requires a complete understanding of the three-dimensional pathology and the time-related changes that develop as healing occurs.

In the current study, after correcting all anatomical defaults that may result in deviation, camouflage spreader grafts was found to be a convenient tool for hiding remaining crookedness of the nose.

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