

# CLEFT RHINOPLASTY

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# Congenital Nasal Defect



## Cleft Nasal Defect



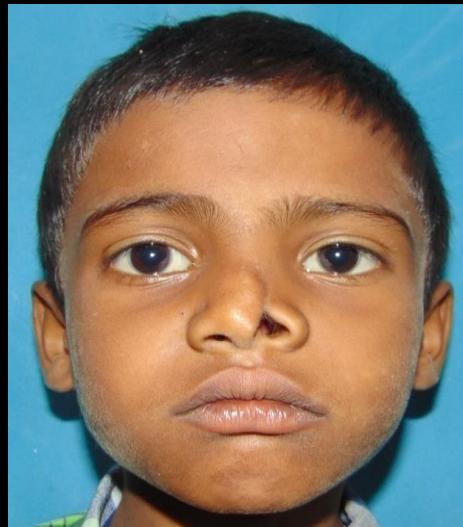
## Craniofacial Nasal Defect



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# Craniofacial Nasal Defect

Tessier # 2 facial cleft



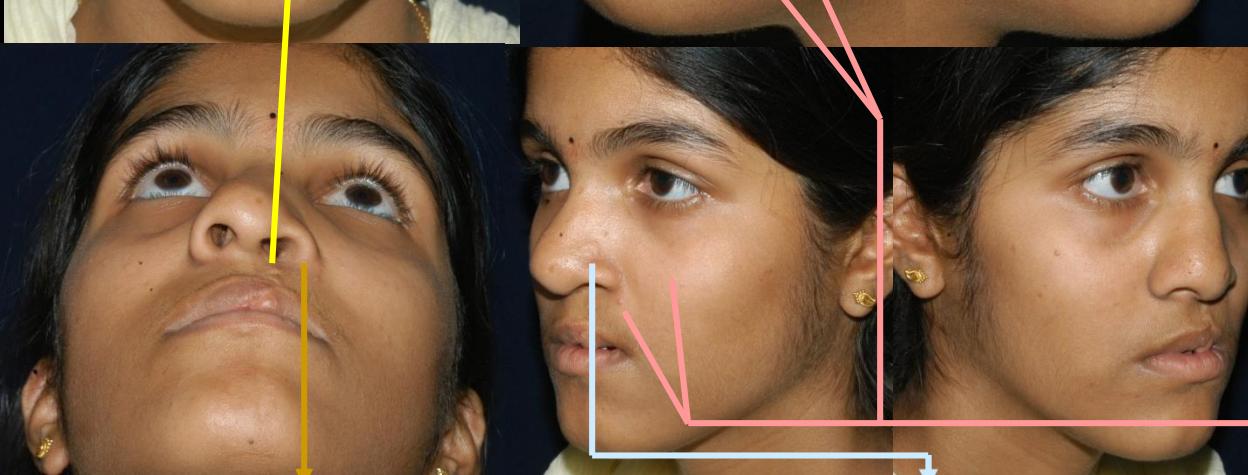
Tessier # 3 facial cleft



# Cleft Nose Defect



SEPTALDEVIATION  
towards non cleft side due  
to lateral position of  
anterior nasal spine



SCAR of the cleft lip  
surgery distorting the ala



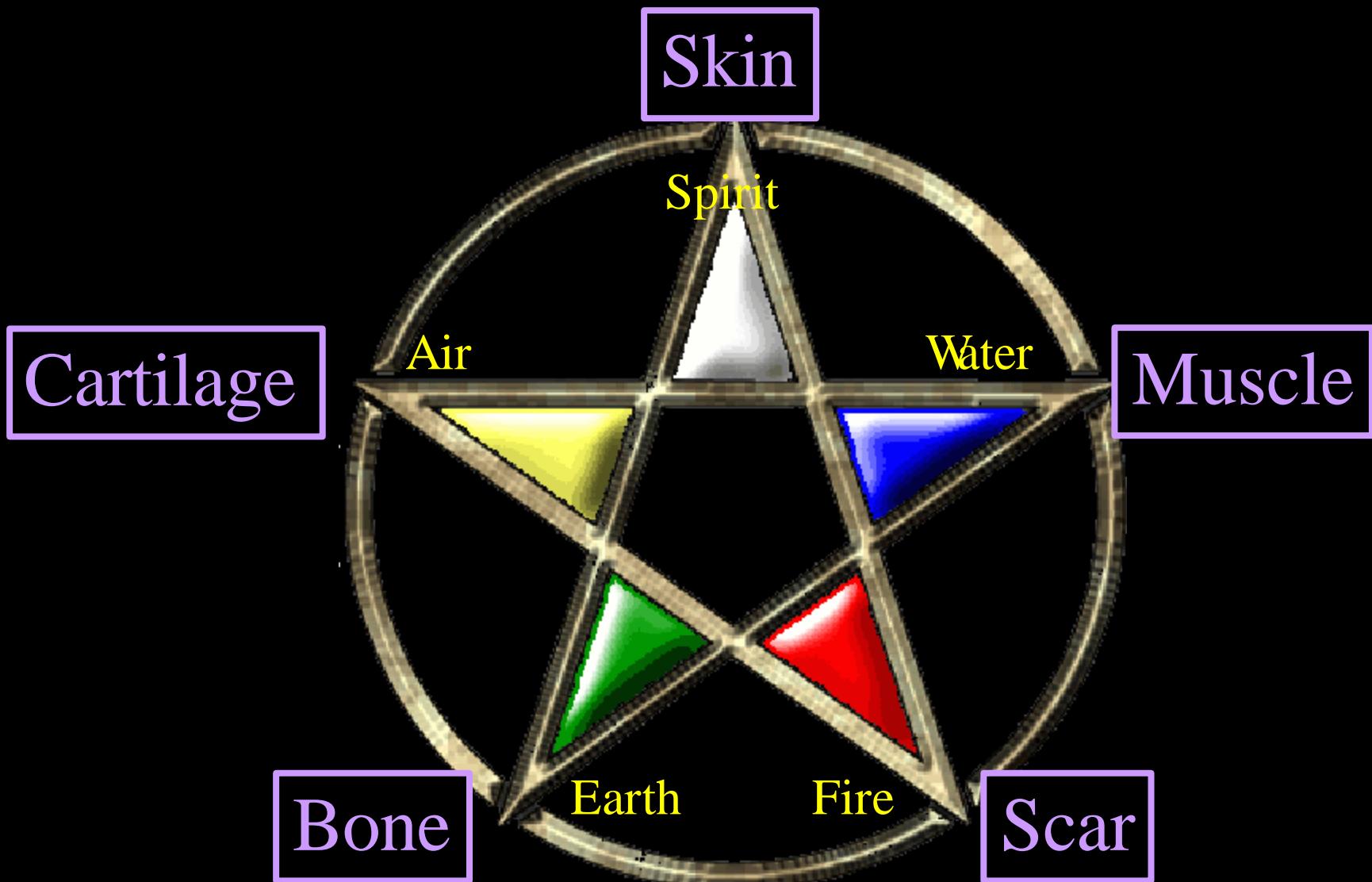
Underlying alveolar and  
piriform BONY DEFECT  
not stabilized  
Maxillary Hypoplasia on  
cleft side

NASALIS MUSCLE not  
positioned during  
primary lip repair

OVERLYING SKIN  
stretched over the nostril on  
cleft side



# Cleft Nose Defect: Problem Pentacle



# Cleft Rhinoplasty

Treatment for the cleft nose has to include all or some of the following

Rhinoplasty with

Secondary lip repair,

Alveolar bone grafting and

Maxillary advancement

We should call it **PROFILOPLASTY**



# Anatomy of cleft nose : Unilateral Cleft



- The alar cartilages will not be at the same level
- The septum will be deviated towards the non cleft side



# Anatomy of cleft nose : Bilateral Cleft



- The alar cartilages may be at the same level but will be buckled
- The septum will not be deviated but will also be buckled



# Surgical Approach

## Open Rhinoplasty

1. Using Septal Graft
2. Using Costo-chondral or alloplastic implants



# The Need for Maxillary Advancement

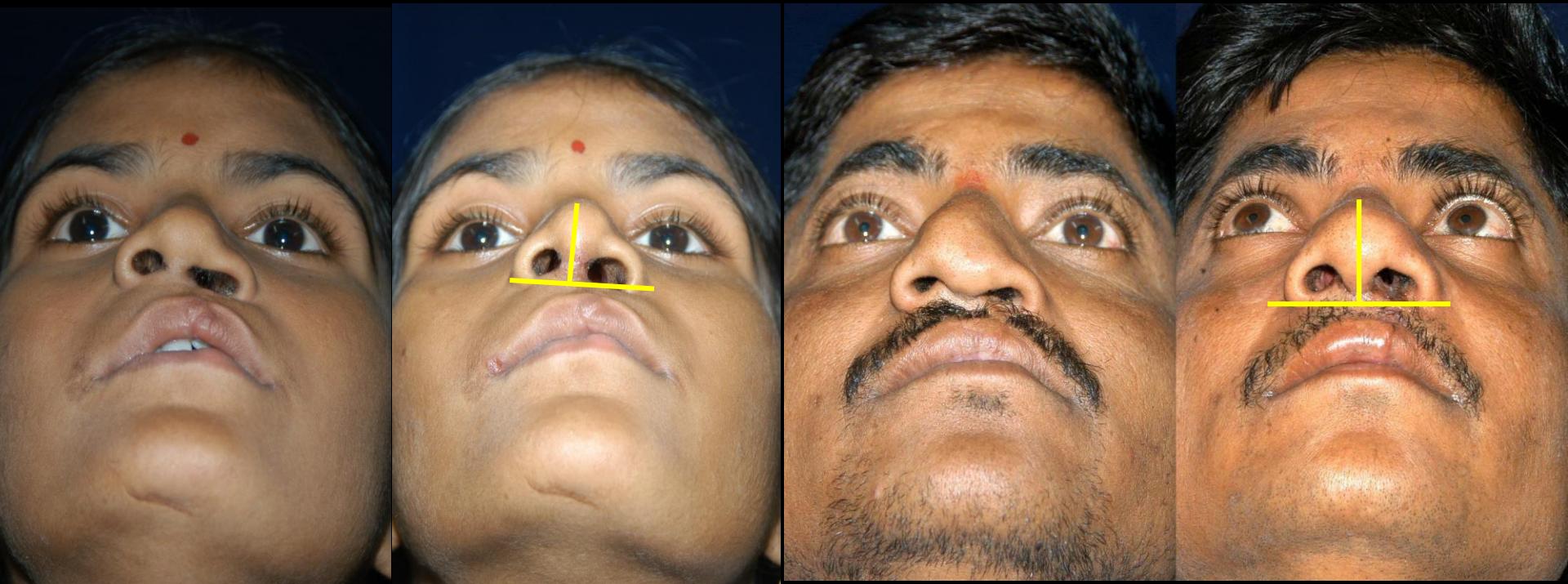
## Prior to Rhinoplasty



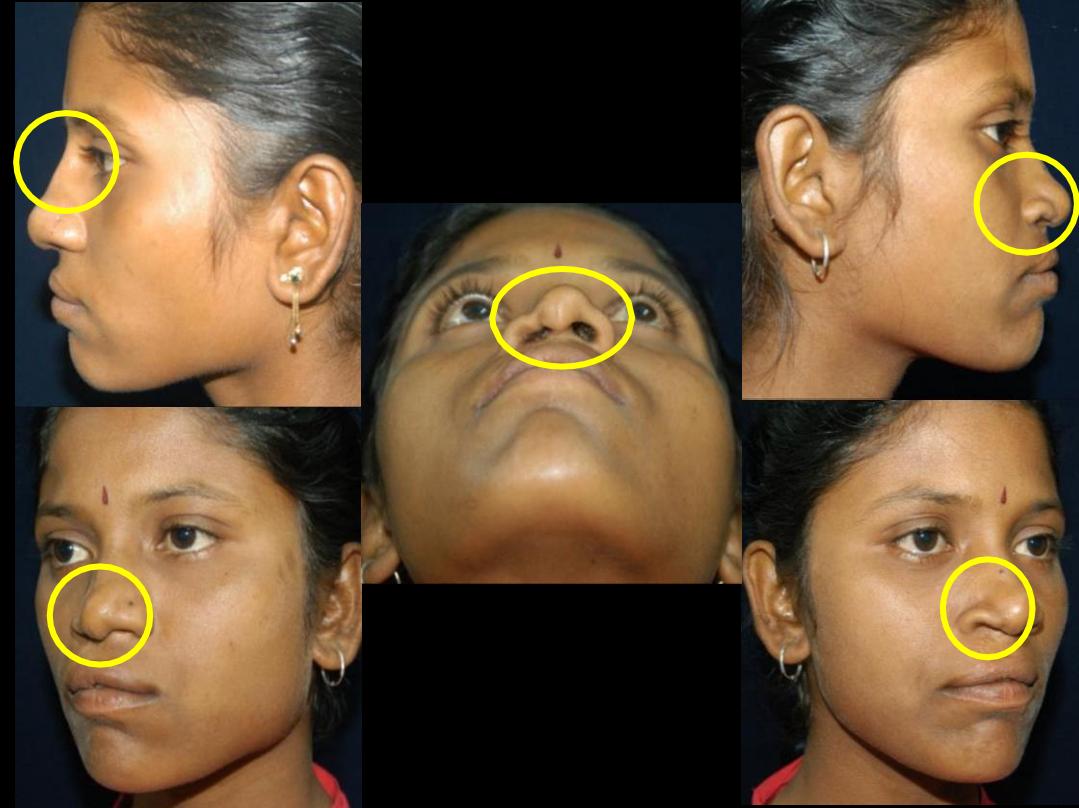
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# The Need for Bone Grafting

Prior to Rhinoplasty



# Surgical approach: Unilateral Cleft with Septal Grafting



- Columella Lengthening,
  - Septal Repositioning,
  - Radix Grafting,
  - TipAugmentation,
  - Lower Lateral Cartilage Repositioning,
  - Alar Base Wedge Resections,
  - PiriformAugmentation,
- Nasal Bone Osteotomies

S. Gosla Reddy et al. / Assessment of nostril symmetry after primary cleft rhinoplasty in patients with complete unilateral cleft lip and palate; Journal of Cranio-Maxillo-Facial Surgery 41 (2013) 147–152



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# Cleft Rhinoplasty

## Unilateral Cleft with Septal Grafting

### Marking



#### Tejima

- Decreases the excess soft triangle tissue and reduces the nasal web.

#### V-Y

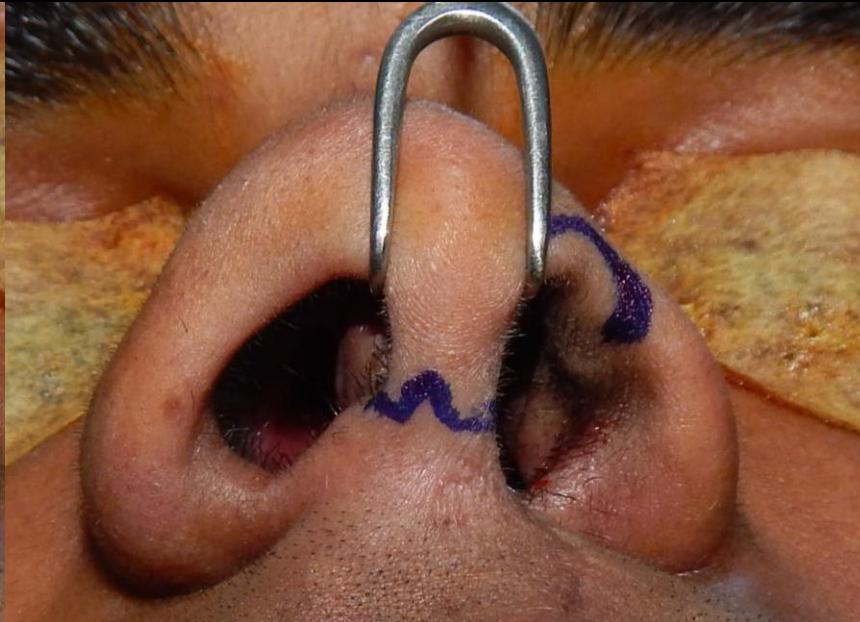
- Increases length of columella
- Especially increases length of medial crura
- Revise the cleft lip scar contracture.



# Cleft Rhinoplasty

## Unilateral Cleft with Septal Grafting

### Marking



#### Tejima

- Decreases the excess soft triangle tissue and reduces the nasal web.
- Medial rotation of tejima flap gives columellar length on cleft side

#### Transcolumellar

- Indicated in
- Narrowed cleft nostril
  - Scar at columellar base



# The rule of 5 R's for Deviated Nasal Septum

-Relieve,

-Resect,

-Reposition,

-Restructure

-Restrengthen



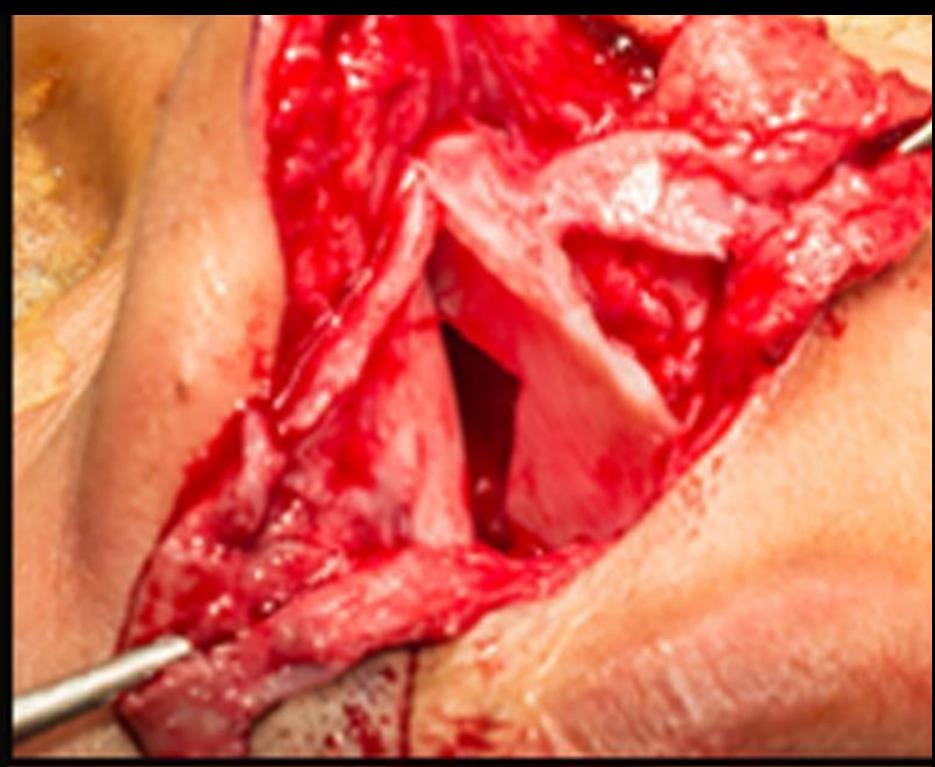
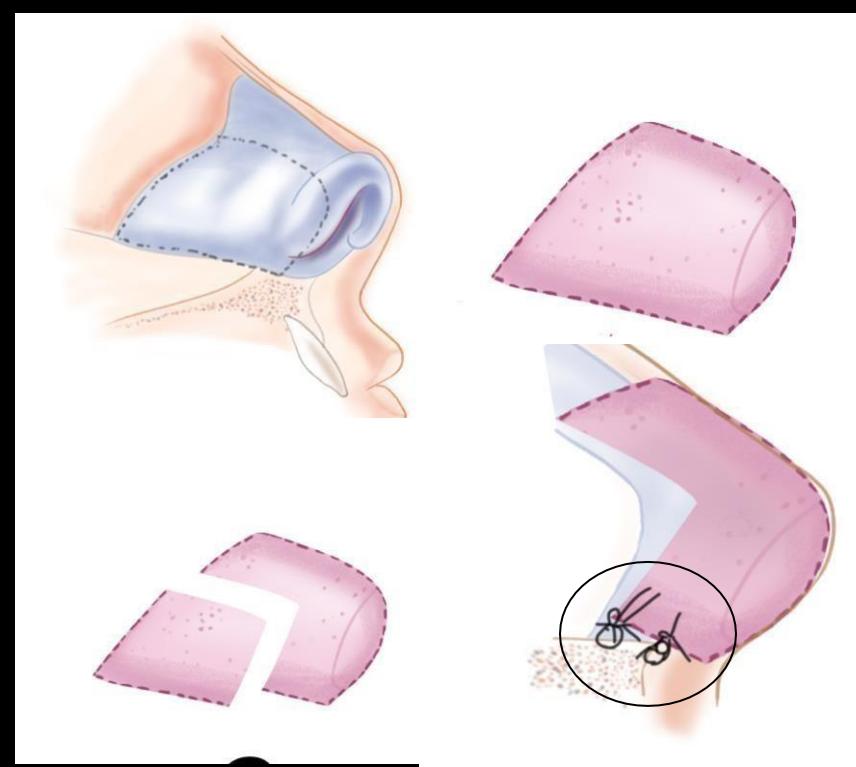
# Cleft Rhinoplasty

## Unilateral Cleft with Septal Grafting



- **Relieve**
- Exposing the septum
  - Note the extreme angle of caudal part of the septum due to its attachment to the anterior nasal spine which in cleft defects is lateralized towards the cleft side.





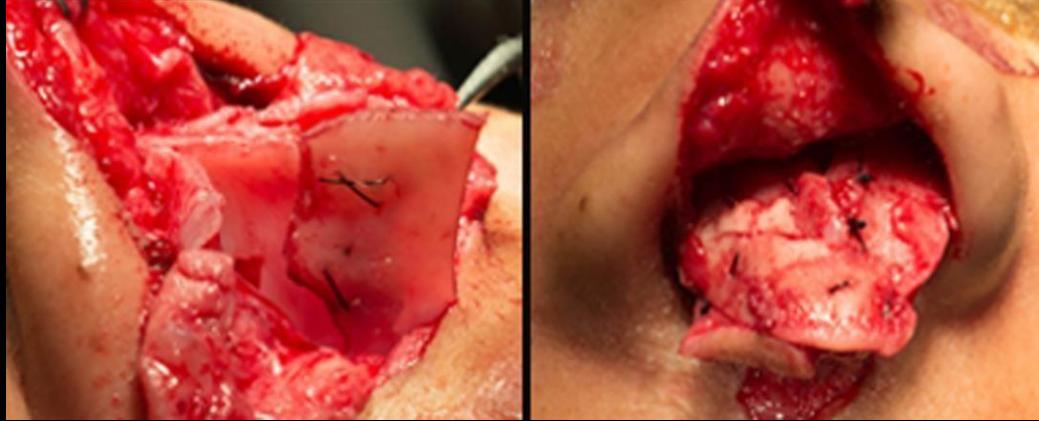
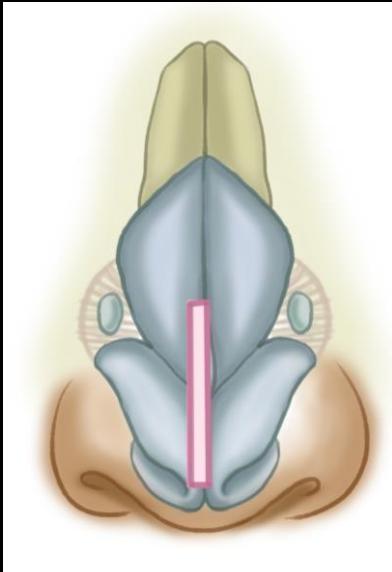
## Resection

- At least 1 cm should be maintained superiorly and anteriorly in an 'L' shaped configuration to provide support for the nose.
- Septoplasty is done by resecting the posterior and inferior end of the septum.
- The extended septal graft is then stabilised antero-caudally by drilling a hole into the bone on the cleft side.



# Cleft Rhinoplasty

## Unilateral Cleft with Septal Grafting



### Reposition

- The septal graft extends into the medial crura and rests upon the maxillary septal groove. The septal graft also acts like a spreader graft as it is placed on the cleft side in between the upper lateral and septal cartilage.
- Closing upper lateral cartilage
  - The upper lateral cartilage needs to be opened when there is gross deviation of septum to release the bend in the septum.





- **Restructure & Restrengthen**

- An 18-gauge needle is inserted through the skin at the level of alar base groove and exits at the antero-caudal part of extended septal graft.
- The antero-caudal part of septal graft is fixed in position by two bilateral alarnasalis muscle sling sutures using 4-0 polypropylenesutures.
- Medial crural footplates are sutured with septal cartilage using horizontal mattress sutures.



## Closure



Quilting sutures are placed using 3-0 vicryl sutures over the nasal septum to eliminate the dead space between the dissected perichondrium on either side.



# Cleft Rhinoplasty

## Unilateral Cleft with Septal Grafting



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# Cleft Rhinoplasty

## Unilateral Cleft with Septal Grafting



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# Cleft Rhinoplasty

## Unilateral Cleft with Septal Grafting



# Unilateral Cleft with Septal Grafting



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# Unilateral Cleft with Septal Grafting



# Cleft Rhinoplasty

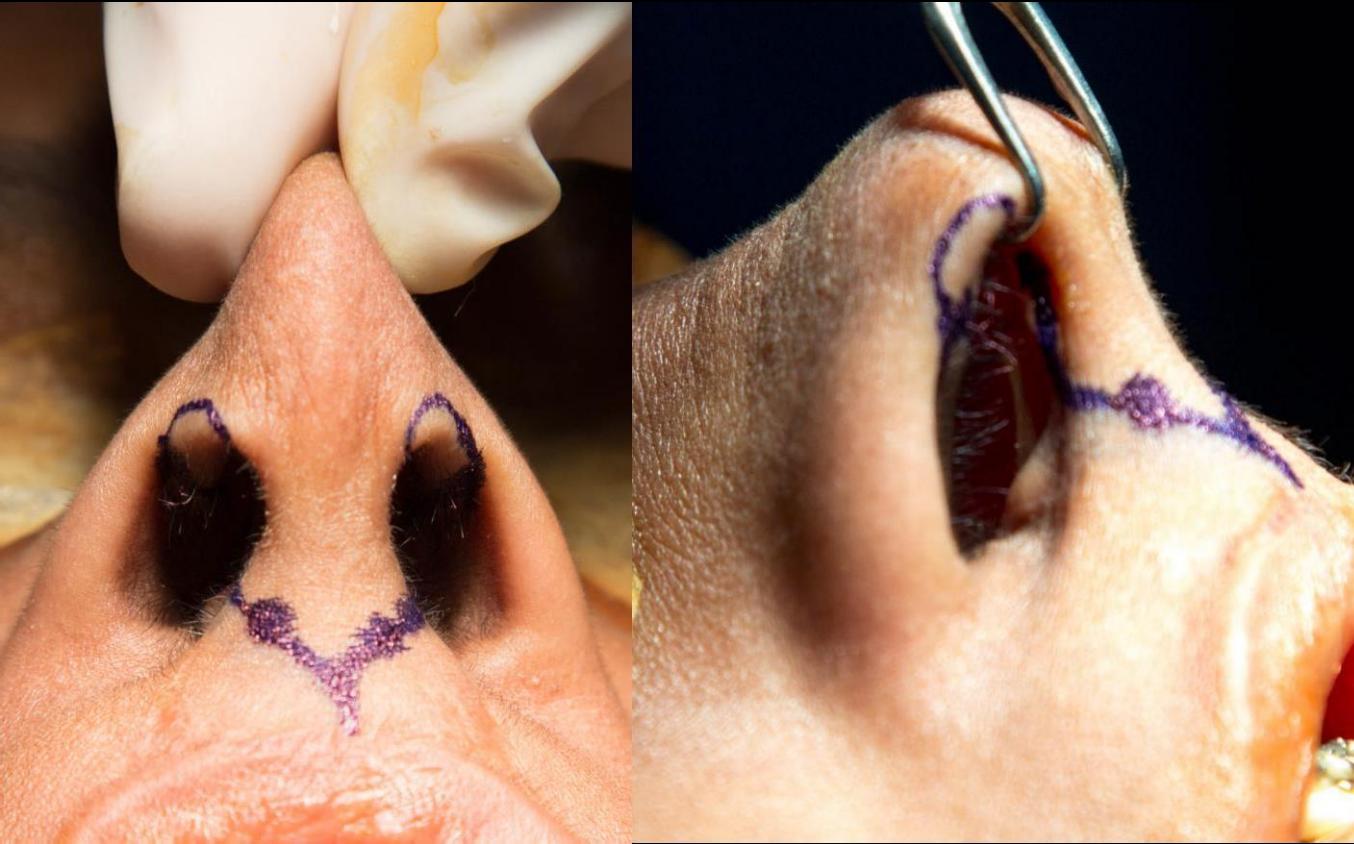
## Bilateral Cleft with Septal Grafting



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# Cleft Rhinoplasty

## Bilateral Cleft with Septal Grafting

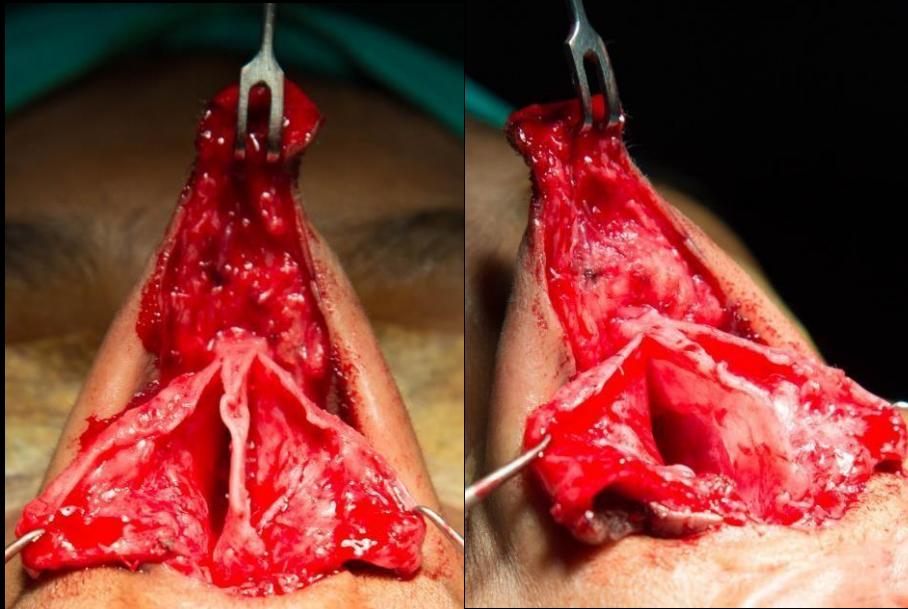


- Marking



# Cleft Rhinoplasty

## Bilateral Cleft with Septal Grafting



- Exposing the septum
  - Note the extreme angle of caudal part of the septum due to its attachment to the anterior nasal spine which in cleft defects is lateralized towards the cleft side
  - Septoplasty is done by resecting the posterior and inferior end of the septum



# Cleft Rhinoplasty

## Bilateral Cleft with Septal Grafting



- Positioning the strut made from the excised inferior and posterior part of septum
- Closing upper lateral cartilage
  - The upper lateral cartilage needs to be opened when there is gross deviation of septum to release the bend in the septum



# Cleft Rhinoplasty

## Bilateral Cleft with Septal Grafting



# Cleft Rhinoplasty

## Bilateral Cleft with Septal Grafting



# Cleft Rhinoplasty

## Bilateral Cleft with Septal Grafting



# Cleft Rhinoplasty

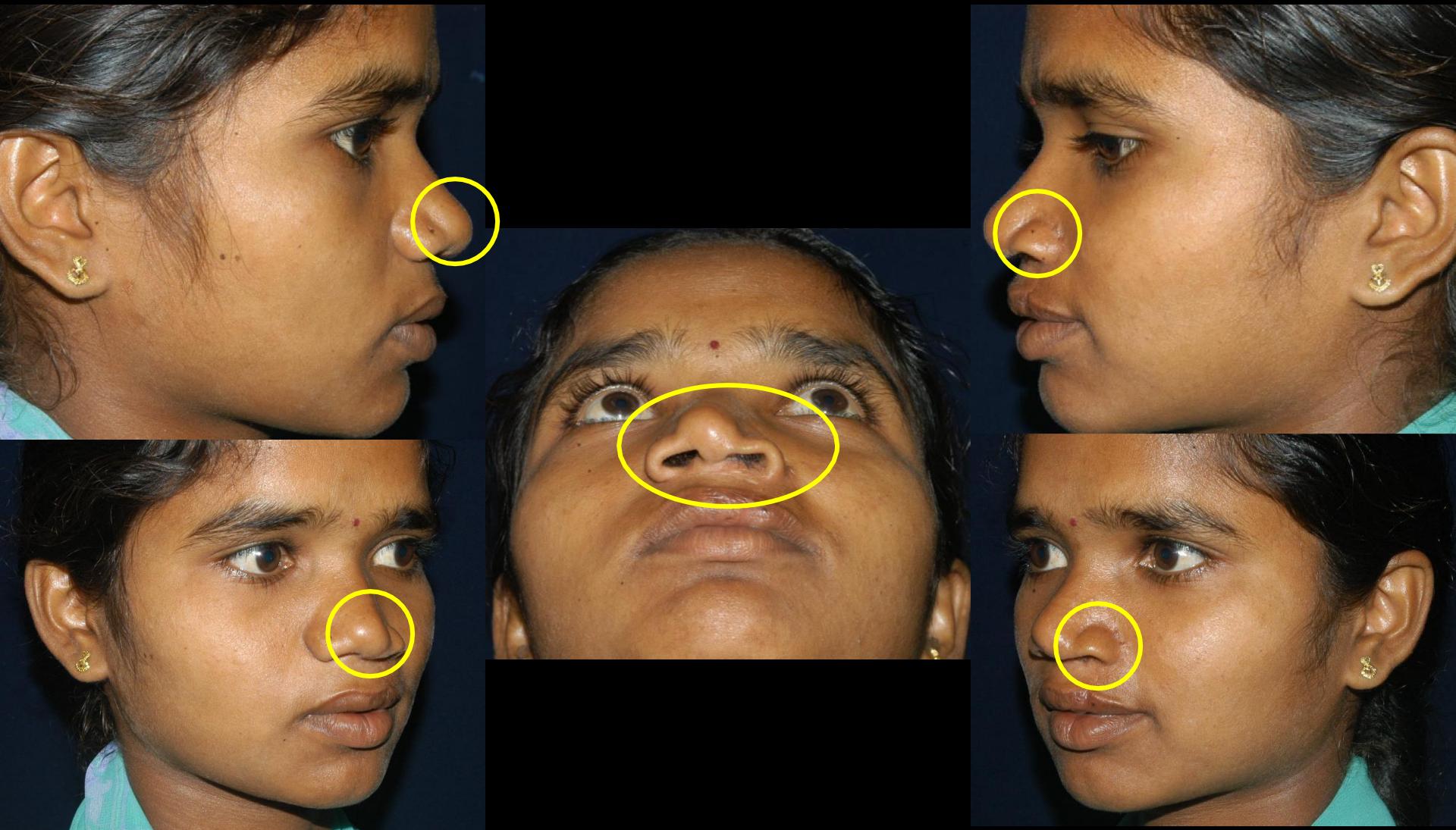
## Bilateral Cleft with Septal Grafting



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# Cleft Rhinoplasty

## Unilateral Cleft with Costo-Chondral Grafting



# Cleft Rhinoplasty

## Unilateral Cleft with Costo-Chondral Grafting



- Positioning and fixing the strut



# Cleft Rhinoplasty

## Unilateral Cleft with Costo-Chondral Grafting



- Positioning the Baton graft to strengthen the ala on the cleft side



# Cleft Rhinoplasty

## Unilateral Cleft with Costo-Chondral Grafting



- Closure



# Cleft Rhinoplasty

## Unilateral Cleft with Costo-Chondral Grafting





## Assessment of nostril symmetry after primary cleft rhinoplasty in patients with complete unilateral cleft lip and palate<sup>\*</sup>

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### ABSTRACT

The aim of this study was to assess the nostril symmetry following primary cleft rhinoplasty done with either a dorsal onlay or columellar strut graft in patients with non-syndromic complete unilateral cleft lip and palate. In this retrospective study 30 consecutive patients treated with autogenous or alloplastic dorsal onlay grafts and 30 consecutive patients treated with autogenous or alloplastic columellar strut grafts for complete unilateral cleft nose reconstruction were analyzed for nasal symmetry. The autogenous grafts used were costochondral or septal cartilage and the alloplastic graft used was high density polyethylene (Medpor®). Assessment of the nostril symmetry was done using a two-dimensional nasal analysis 24–30 months postoperatively. Ratios between cleft and noncleft side nostril for three parameters were used to assess symmetry namely nostril width, nostril height and nostril gap area. None of the three parameters showed statistically significant changes. A satisfactory, though not statistically significant, difference in symmetrical outcome could be achieved in both the groups with the exception of nostril width symmetry in group treated with dorsal onlay graft.

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### 1. Introduction

Despite a plethora of surgical approaches aimed at correcting the cleft nose defect, no one procedure has been universally satisfactory in the repair of nasal deformities associated with cleft lip abnormalities (Trenite et al., 1997). The various treatment options for the correction of cleft rhinoplasty include columella lengthening, septal repositioning, radio grafting, tip augmentation, tip grafting, lower lateral cartilage repositioning, alar base wedge resections, piriform augmentation and nasal bone osteotomies (Trenite et al., 1997). The typical problem with all the unilateral cleft nasal deformity which must be addressed is the nasal asymmetry. Each of the surgical techniques that have been used to correct the unilateral cleft nasal deformity has attempted to improve symmetry by translocation of the alar cartilage with its attached vestibular lining into a normal position, thereby establishing the normal vault and shape of the cartilage (Bashir et al., 2011). Several methods are reported in the literature to assess cleft lip nasal deformities, but difficulties in standardization make these studies less reproducible (Tanikawa et al., 2010).

The present study is an attempt to quantify and evaluate nostril symmetry achieved after primary rhinoplasty in patients with complete unilateral cleft lip and palate (UCLP) using a dorsal onlay and a columellar strut graft. The effect of these two techniques on the shape of the nostril was studied.

### 2. Materials and methods

To address the nasal deformity a retrospective study was conducted on patients operated for unilateral cleft nose deformity at our institute between January 2007 and February 2009. Thirty consecutive patients (11 males and 19 females) with dorsal grafting and 30 consecutive patients with strut grafting (11 males and 19 females) were enrolled in the study.

#### 2.1. Surgical technique

Open structured rhinoplasty was performed by a single surgeon on all the patients. After a transcolumellar incision approach, the alar cartilages were exposed and released from their mucosal attachments. A back cut was given in the cleft side nasal vestibular mucosa to ensure a satisfactory lift of the buckled cleft side alar cartilages.

Patients with a depressed nasal bridge, drooping nasal tip and short columella of the nose were treated with a dorsal onlay graft

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Assessment of nostril symmetry after primary cleft rhinoplasty in patients with complete unilateral cleft lip and palate;

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Group 1- 30 consecutive patients with

dorsal grafting

Group 2- 30 consecutive patients with  
strut grafting





Measurement of nostril width and height



Measurement of nostril gap area

Conclusion:-

A decrease in the cleft side nostril width less than that of the noncleft side was noted after using a dorsal graft inspite of a near perfect symmetrical outcome in terms of nostril height and nostril gap area.

Thus a satisfactory symmetrical outcome could be achieved in both the treatment groups with the exception of nostril width symmetry in group treated with dorsumgraft.

There was an improvement in the nostril symmetry in patients undergoing strut grafting. This improvement, however, was not statistically significant.



# 3 Dimensional Photographic Analysis



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3 Dimensional Photographic  
Equipment



3 Dimensional LASER  
Equipment



# 3 Dimensional Photographic Analysis



3D Stereophotogrammetric analysis supported by **Radboud University, Nijmegen** (Prof. Stefaan Berge) and **University Medical Center, Basel** (Prof. Hans Florian Zeilhofer)



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# Complex nasal deformities



# Complex Nasal Deformities



Nasal Duplication



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# Heminasal Aplasia



# Heminasal Aplasia



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# Complex Nasal Deformities

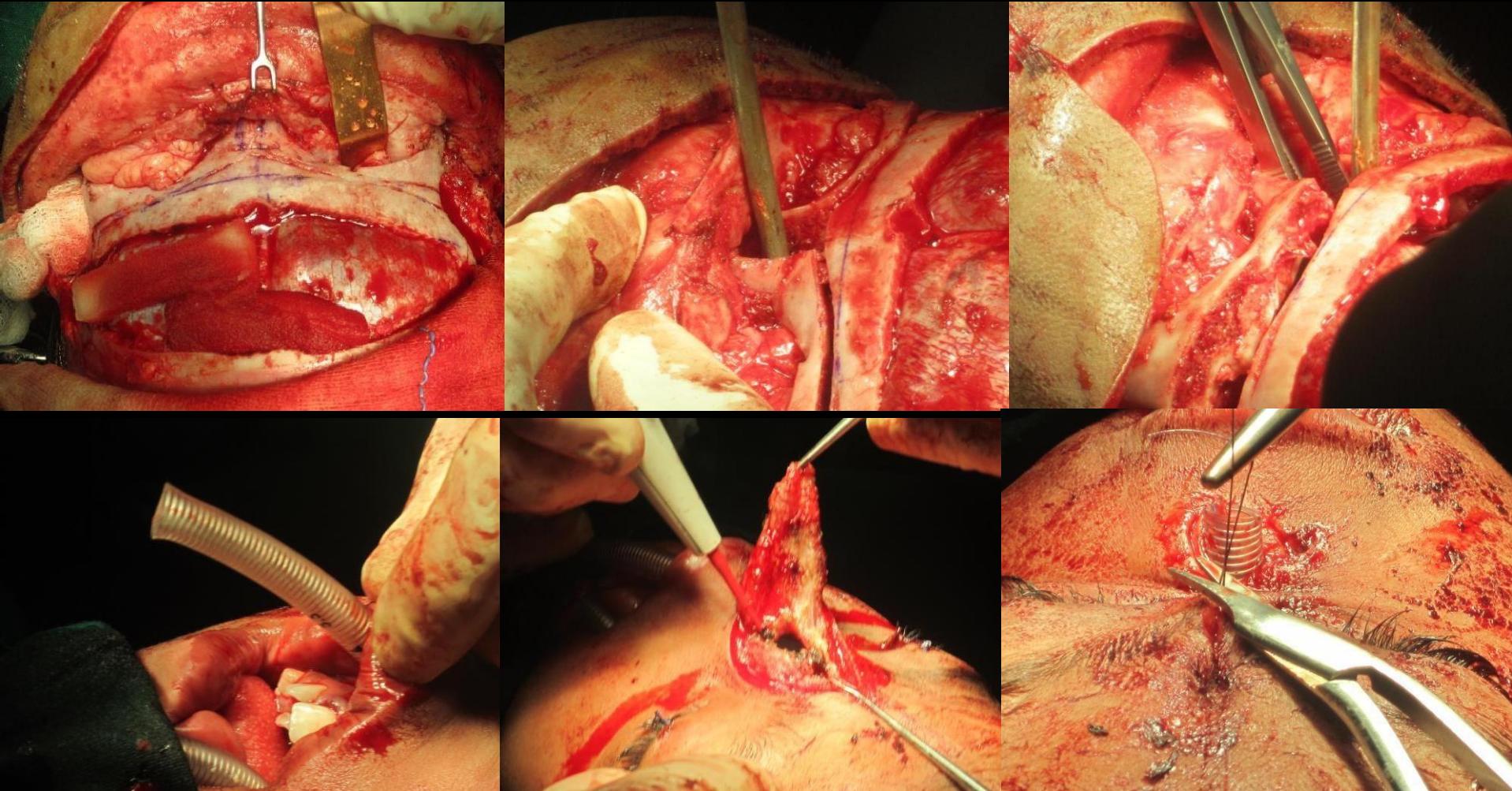


Nasal Aplasia



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# Complex Nasal Deformities



# Complex Nasal Deformities



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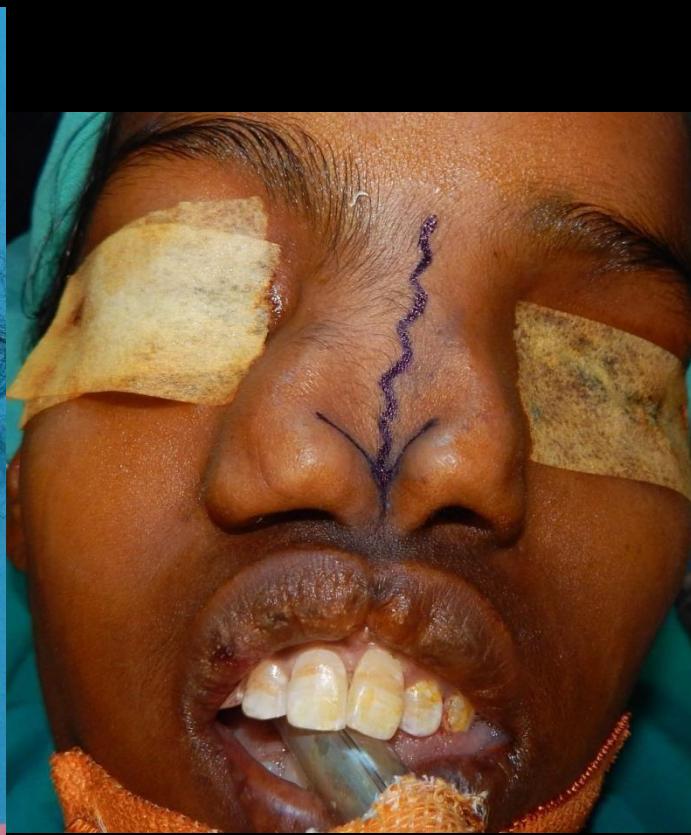
# Complex Nasal Deformities

## Tessier # 0 Facial Cleft



# Complex Nasal Deformities

## Tessier # 0-14 Facial Cleft



# Complex Nasal Deformities

Tessier # 2 Facial Cleft



# Complex Nasal Deformities

Tessier # 2 Facial Cleft



# Complex Nasal Deformities

## Tessier # 2 Facial Cleft



# Complex Nasal Deformities

## Tessier #3 Facial Cleft



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# Complex Nasal Deformities

## Tessier #3 Facial Cleft



# Complex Nasal Deformities

## Tessier #3 Facial Cleft



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# Complex Nasal Deformities

## Tessier #14 Facial Cleft



# Complex Nasal Deformities

## Lyophilised Cartilage Graft



# Complex Nasal Deformities



# Bring the Smile Back



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