

## Cleft Rhinoplasty: Combining Erich open Rhinoplasty with the Dibbell and Tajima Techniques

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### Abstract:

**Objectives:** To determine the post-operative results in terms of patients' and surgeon's satisfaction of the combined Erich open rhinoplasty with the Dibbell and Tajima techniques.

**Place and duration of the study:** This study was performed in the department of Plastic & Reconstructive Surgery, PGMI Hayatabad Medical Complex Peshawar, Pakistan and Al-Shifa Healthcare Centre Peshawar, Pakistan.

**Study design:** Descriptive cross-sectional study.

**Material & Methods:** All the patients presenting for the secondary cleft rhinoplasty irrespective of their gender with the age above 12 years were included in the study. Those patients who had a nasal correction at the time of lip repair were excluded from the study. After informed consent, Erich open rhinoplasty combined with Dibbell and Tajima techniques was performed in all the patients. All the data were recorded in a proforma constructed with the help of a statistician. The data was analysed with help of a Statistical Package for Social Sciences version 17 (SPSS 17). The post-operative outcome was divided into good, average and poor on the basis of patients' and surgeon's satisfaction. The results were expressed in the form of tables and figures.

**Results:** A total of 21 patients including 15 (71.42%) male patients and 6 (28.57%) female patients were included in the study. As a whole the frequency of good post-operative result was observed in 66.6% (n=14). The individual good post-operative results in male and female patients were 60% (n=10) and 66% (n=04) respectively.

**Conclusion:** Being a complex anomaly, cleft lip nasal deformity correction requires a considerable surgical experience. The combination of open rhinoplasty with Tajima and Dibbell techniques is a safe and reliable method of correction of secondary cleft nasal deformities with low revision rates.

**Key words:** Cleft lip nasal deformity, cleft lip, rhinoplasty.

### Introduction;

Cleft lip nasal deformity offers a unique challenge to the reconstructive surgeons for many reasons. Firstly the clinical presentation of cleft lip varies. Secondly deformity being asymmetrical makes surgical correction difficult. Thirdly, patients with cleft lip may have been previously subjected to numerous procedures with a significant scar tissue on the operation site. Fourthly, the timing of rhinoplasty whether synchronous or staged with cleft lip repair is controversial. Lastly the growth in the paediatric population with cleft nasal deformity has some effect on the outcome. Conversely the surgery may adversely compromise the nasal growth<sup>1</sup>.

Correction of the secondary nasal deformity is really a challenging job for surgeons. The

severity of the nasal deformity depends upon the initial deformity of the nose, extent of primary correction of the nose at the time of lip repair and the width of the cleft lip. It is now a general trend to correct cleft lip nasal deformity at the time of the lip surgery<sup>2</sup>. A few decades ago most of the surgeons considered that repair of the cleft nose will interfere with mid-face growth. In 1963, Limberg described his technique for closing the unilateral cleft lip with correction of the associated nasal deformity<sup>3</sup>. In 1985, Mc Comb published his 10 years results and showed that the early nasal correction does not interfere with nasal growth<sup>4,5</sup>. It is believed that the greatest advance in cleft lip nasal correction is the nasal alveolar moulding (NAM)<sup>2</sup>. Grayson and colleagues described a technique for NAM which

is further refined and modified by Liou EJ. NAM helps in approximating the alveolar cleft and the alar cartilage and increase the length of the columella on the cleft side. In spite of all these efforts there is still residual nasal deformity in patients with cleft lip which needs secondary surgery to further modify the aesthetic appearance of the nose. Few years later after the primary cleft lip nasal correction, there are a number of factors which play an important role to exhibit the nasal deformity e.g. scar formation, growth in the facial skeletal and soft tissue structures. The natural anatomical development results in certain nasal deformities which justify the secondary rhinoplasty. Some of these changes include:

1. Shortened columella
2. Retro displacement of the dome on the cleft side.
3. Loss of tip definition
4. Alar collapse on the cleft side
5. Alar notching on the cleft side
6. Buckling of the lower lateral cartilage on the cleft side<sup>6</sup>

A limited rhinoplasty is now regularly performed by most of the plastic surgeons at the time of primary lip repair and it involves only dissection and medical mobilization of the cleft lower lateral cartilage. There are data demonstrating that the nasal growth is complete at the age of 13 years in girls and 14 years of age in boys<sup>7,8</sup>. Surgical correction of secondary cleft lip nasal deformities is mandatory after completion of nasal growth and it should be according to the severity of these deformities.

#### **Material and methods:**

This study was conducted in the department of Plastic and Reconstructive Surgery, Hayatabad Medical Complex Peshawar and Al-Shifa Healthcare Centre Peshawar, Pakistan. A single surgeon performed secondary cleft rhinoplasty in 25 patients. Patients eligible for inclusion in the study were older than 12 years and had no or limited previous nasal correction with lip repair. Those patients who had a nasal correction at the time of lip repair, below 12 years and syndromic were excluded from the study.

In this series we included only those patients who underwent an Erich open rhinoplasty with Dibbell and Tajima techniques. A total of 21 patients were included in the study according to the selection criteria. Among them 6 patients were females and 15 were males. Four patients were excluded from the study because they had a history of primary nasal correction at the time of lip surgery.

We performed Erich open rhinoplasty technique combined with Dibbell and Tajima techniques. An inverted U shaped incision over the columella was used. A Tajima inverted U shaped incision was made on the cleft side over the dorsum of the nostril and inside the ala and the inverted U incision was designed similar to the nostril shape on the non-cleft side. The nose was opened after subcutaneous undermining between skin and cartilage. Once the domes were fully exposed, the Dibbell incision was made across the nasal floor. The medial crus of the lower lateral cartilage was cut at the lower end and the lower lateral cartilage was fully mobilized on the cleft side. The domes were approximated by putting interdomal sutures.

The medial crura of both the lower lateral cartilage were stitched together with 5/0 polypropylene suture. The alar base was then dissected from the underlying bone and the alar base was placed into normal position by putting a stitch in the periosteum of the anterior nasal spine. After tip correction the rhinoplasty incision was closed. The inferior skin flap of the Tajima incision was then marked, trimmed and closed. This created the soft triangle. All the patients had pre-operative and post-operative photographs (Frontal and worms eye view) taken. The post-operative results were classified into three groups as good, average and poor as described in table I.

#### **Results:**

The total numbers of patients included in the study were 21 and among them 15 were males and 6 were female. In male we achieved good results in 60% of patients and in female we achieved good results in 66% patients. Poor results observed in 13% male patients only.

**TABLE I: POST-OPERATIVE RESULTS ASSESSEMENT CLASSIFICATION**

S/N	Category	Interpretation
1	Good	Both the patients and the surgeon are satisfied with the surgical outcome.
2	Average	Patient is happy with results but surgeon is not satisfied with the aesthetic outcome and vice versa.
3	Poor	Both the patient and surgeon are not satisfied with the results.

**TABLE II: POST-OPERATIVE RESULTS IN THE PATIENTS UNDERGOING COMBINED ERICH OPEN RHINOPLASTY WITH THE DIBBELL AND TAJIMA TECHNIQUES**

Category	Number of patients	Percentage
Good	14	66.66%
Average	05	23.80%
Poor	02	9.52%
Total	21	100%

**TABLE II: POST-OPERATIVE RESULTS IN THE MALE PATIENTS UNDERGOING COMBINED ERICH OPEN RHINOPLASTY WITH THE DIBBELL AND TAJIMA TECHNIQUES**

Category	Number of patients	Percentage
Good	10	60%
Average	03	20%
Poor	02	13%
Total	15	100%

**TABLE II: POST-OPERATIVE RESULTS IN THE FEMALE PATIENTS UNDERGOING COMBINED ERICH OPEN RHINOPLASTY WITH THE DIBBELL AND TAJIMA TECHNIQUES**

Category	Number of patients	Percentage
Good	04	66%
Average	02	33%
Poor	00	00%
Total	06	100%

**Discussion:**

Secondary nasal deformity associated with cleft lip is a difficult surgical task. Since time immemorial numerous surgical methods have been created to address the structural changes that occur over time following primary surgery. Because the presenting patients with cleft lip nasal deformity are young, the surgical plan must account for patient growth and surgical scarring<sup>9</sup>. The challenges posed by secondary unilateral cleft lip nasal defects have spurred the recent advent of various surgical techniques and the use of autogenous and alloplastic material to correct the structural and supportive deficiencies<sup>6</sup>. Although a wide variety of alloplastic materials have been used historically and they still have a place in nasal surgery the ideal implant has strict requirements concerning biocompatibility, plasticity, stability of form, resistance to infection and removability<sup>10</sup>. The most commonly used alloplastic materials used are silicone, expanded polytetrafluoroethylene (Gore-Tex) and porous high density polyethylene (Medpore) with intent to circumvent the short-comings of autogenous tissue materials. Silicone implants although relatively inert do not become integrated into recipient tissues making them prone to extrusion. There are frequent reports of rejection, infection and bone resorption<sup>6,11, 12, 13</sup>. Polyamide undergoes severe hydrolytic degradation of bulk and has been associated with severe inflammatory reaction. Limited use of Gore-Tex is attributed to its inability to maintain an exact shape or provide

support. Medpore may offer many advantages in terms of host tissue tolerance, easy manipulability and demonstration of host tissue ingrowth but still carry a removal rate of 3.1% as compared to silicone which has significantly higher of 6.5%. Proplast is often used in its place<sup>14</sup>. All these great variety of alloplastic materials are available but there high cost, poor tissue tolerance and infection limits there use. Moreover, many patients are not suitable for or do not agree to the use of alloplastic materials. The combination of Erich open rhinoplasty with Dibbell and Tajima techniques will correct most of the secondary cleft nasal deformities. Some of the plastic surgeons use autogenous cartilage grafts or alloplastic material in the form of columella struts or for tip augmentation<sup>15, 16</sup>. In our series the pre-operative and post-operative photographs were assessed which showed good aesthetic improvements in 60% of the male patients and 66% in the female patients. Poor results observed in 13% male patients only. We believe that the achievement of good aesthetic results in secondary cleft rhinoplasty depends upon a number of factors as below:

1. **Selection of the patients:** It is very important to perform the secondary cleft rhinoplasty when the nasal growth is complete at the age of 11-12 years in females and 13-14 years in male patients.
2. **Pre-operative assessment of deformity:** It is important to assess the external and internal nasal structures. Pre-operative assessment of any functional problem is also mandatory and will need correction at the time of secondary cleft rhinoplasty.

One of the cleft nasal deformities is the descent of the lower lateral cartilage on the cleft side. This deformity will lead to obliteration of the soft triangle and causing a nostril apex overhang. The inverted U Tajima incision will create a soft triangle so a combination of open rhinoplasty with the Tajima and Dibbell technique will address all the visible deformities

of the cleft nose.

With open rhinoplasty approach we have a good exposure of the domes. So accurate reconstruction and precise placement of sutures in the domes and correction of the nasal tip disparities in cleft nose is possible with the technique. Several authors reported the use of autogenous cartilage grafts.

In secondary cleft rhinoplasty, because the lower lateral cartilage in the cleft patients tends to be floppy, we did not use any cartilage grafts in our series. We observed that the lower lateral cartilage in our population are thick and needs only repositioning in the majority of cases so we prefer to use the suture technique which provides adequate support to maintain the cartilage in correct and desired anatomical position.

### Conclusion:

Cleft lip nasal deformity is a complex anomaly and its correction requires a considerable surgical experience. Thorough understanding of the magnitude of the deformity and various techniques of its repair allows a successful correction. The combination of open rhinoplasty with Tajima and Dibbell techniques is a safe and reliable method of correction of secondary cleft nasal deformities with low revision rates.

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