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Corrective procedures in harelip nose deformities

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SUMMARY

The author describes his method of surgical corrections of the hare lip nose which is based on publications in the literature. In addition he has developed his own technique of modelling the nasal top through intracartilagenous incisions and a special technique of stair-step-rim-nasal incision in order to prevent a linear contraction of the enlarged nostril.

The malformations of the harelip deformity comprise the lip, the nose and occasionally the hard and soft palate.

The primary closure should be postponed until the child weighs approximately 5 kg, which means that it is in the average three to four months old. The closure of the lip and the reconstruction of the floor of the nose are carried out at the same time (Meisel, 1977). It is of utmost importance to unite the stumps of the orbicularis muscle as well as the skin. The different techniques of skin closure are well known.

We favour two muscle flaps for the creation of the nasal entrance, one flap consisting of cartilage and mucosa is turned from the septum horizontally, while a mucous membrane flap from the undersurface of the upper lip serves as nasal lining. It should be stressed however, that there should be no disrupture of the continuity of the base line of the septal cartilage nor a mutilation of the nasal spine. Injury of these two structures invariably will lead to growth retardation and to distoration of the mid face in later years.

Soft and hard palate are closed at the age of two.

Fortunately enough we can observe that the newer methods of primary closure have considerably helped to reduce the number of extensive secondary operations.

We warn against to extensive primary operations on the nasal spine, the

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septum and the tip of the nose in an attempt to achieve a more natural shape, since we have seen many cases in which such therapy caused considerable disaster.

We advocate therefore secondary revisions at the age of 15 to 16 years. In those cases the operation is divided into five parts:

1. Correction of the lip scar,
2. corrections of the columella and the nasal septum,
3. modelling of the nasal tip,
4. correction of the cartilagenous and bony nasal vault,
5. correction of the naso labial parts and bones of the face (Spira, 1970; Stellmach, 1973; Trauner (1962, 1957).

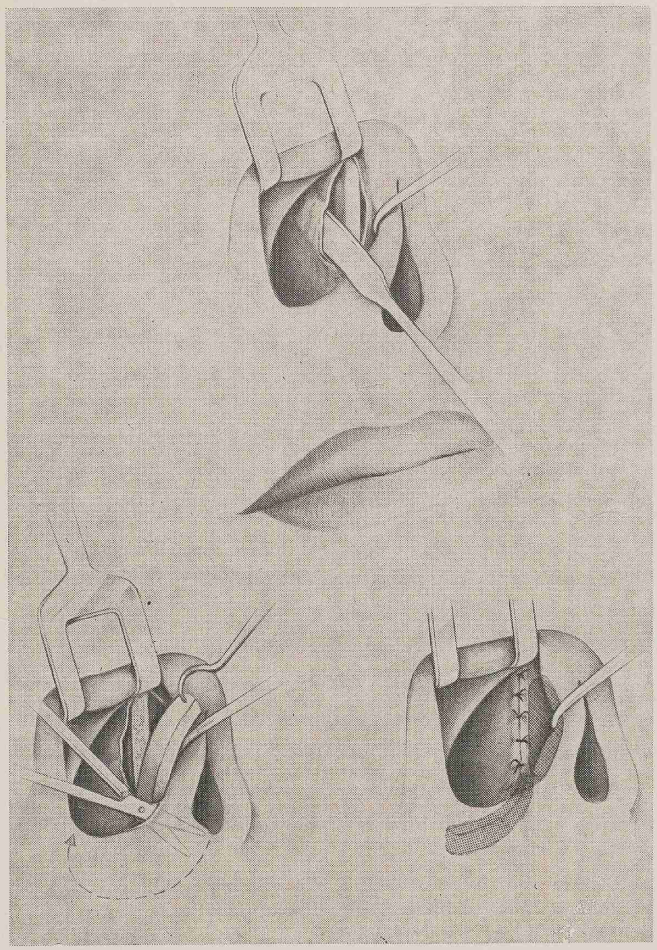


Figure 1.
Exposure of the caudal end of the septal cartilage. The base of the nostril is undermined and a strip of cartilage turned horizontally, a free cartilage graft fills the defect.

Since the length of the columella is affected by the shape and width of the upper lip it seems reasonable to start any secondary revision with the scar refinement.

The following points determine the steps in lip correction: appearance of the vermilion border, scarring of the mucous lining and oral nasal fistulae, status of the orbicularis oris muscle, appearance of the scar on the external surface of the upper lip.

We start the operation on the oral surface, excise any fistula, plug the tract with periosteum and close the oral side by flaps or direct suture. Larger defects of tissue on the nasal surface or endo-nasal structures can be abolished by a free composite graft (Meyer, 1964; Schmid, 1964; Walter). It is possible to lengthen either the columella or create a new nasal entrance using the scar on the upper lip as a flap. According to the center of rotation this flap contains the scar and fibrous tissue of the upper lip as well. Tailoring the distal end of this flap helps to smooth the incision lines (Denecke and Meyer, 1964; Millard, 1964; Neuner, 1973).

The so called Abbé-flap should only be considered in cases of extreme shortage of tissue (Walter; Meisel, 1977).

The next step in this procedure should be the correction of the nasal septum. From the hemitransfixion the caudal portion of the septum is exposed, the lowermost part is severed vertically but without transfixing this part completely. This enables us to turn such a cartilagenous flap horizontally, yet

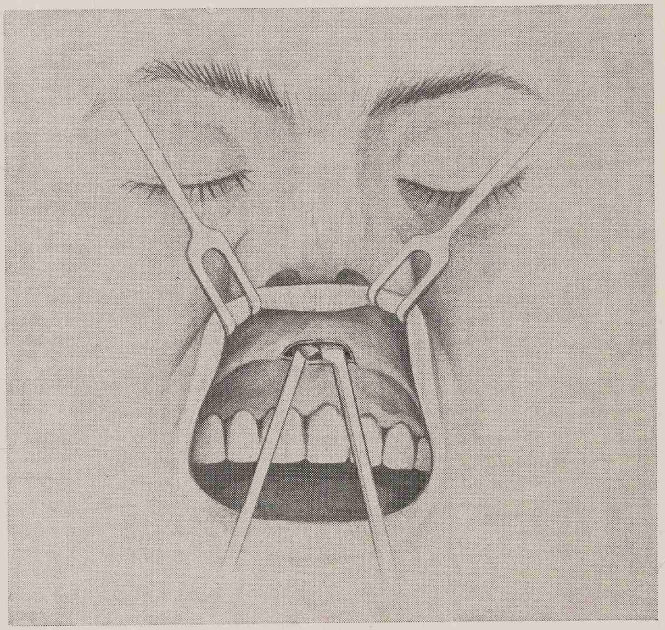


Figure 2.
Sublabial entrance for the implantation of cartilage into the columella.

keep it under tension, inserting it into a pocket under the nasal floor of the cleft side. This manoeuvre helps to raise the nasal floor and bring it to a more natural position. If we have an abundance of cartilage, it is not necessary to replace the cartilage in order to avoid a retraction of the columella. We must however replace any tissue shortage by cartilage or bone, taking it from the more posteriorly located parts of the septum or from the rib (Figure 1).
Before closing the suture-lines we fracture the nasal spine towards the mid-line. Additional cartilage to build up the columella can be inserted into the columella from a sublabial incision (Nishimura, 1978; Walter, 1977). This strut should be cut wider at its base (Figure 2).
The result of the correction of the nasal tip determines a great deal the future shape of the nose. For this reason we recommend the modelling of the nasal tip before modelling the cartilagenous and bony vault of the nose.
Different procedures have been advocated in the medical literature which are characterized by external incisions (Figure 3) and rotation of the entire malformed side (Gilles, 1932; Schjelderup, 1955; Young, 1949), Z-plasty in the nasal vestibulum of the cleft side (Trauner), V-Y-plasty after Potter or complete mobilisation of the tip cartilages with retrograd rotation (McIndoe, cit. by Walter) and lengthening of the columella in a cranial direction. We favour the following principle:

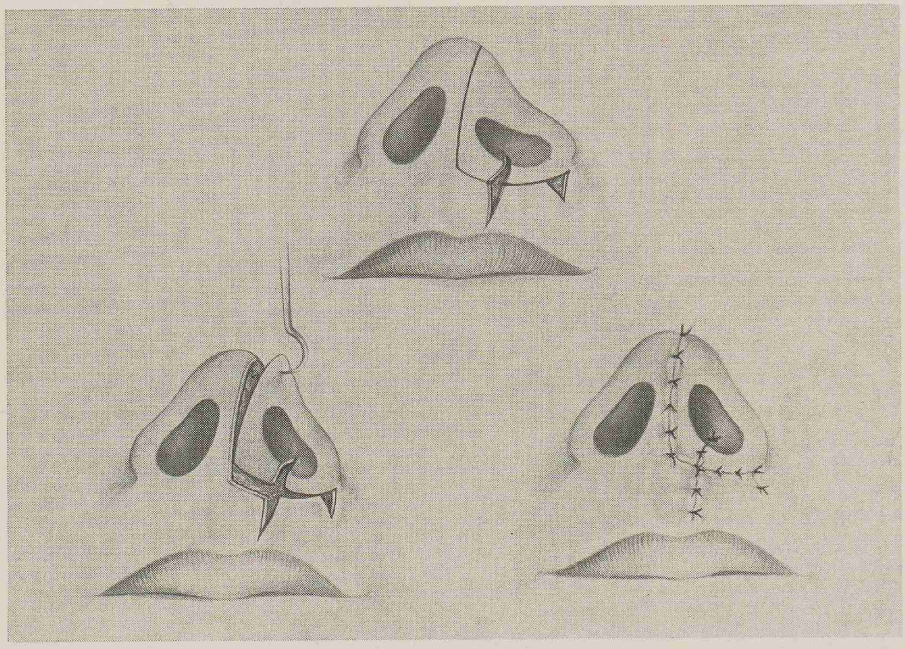


Figure 3. Totale rotation of malformed nostril and scar revision on the cleft side.

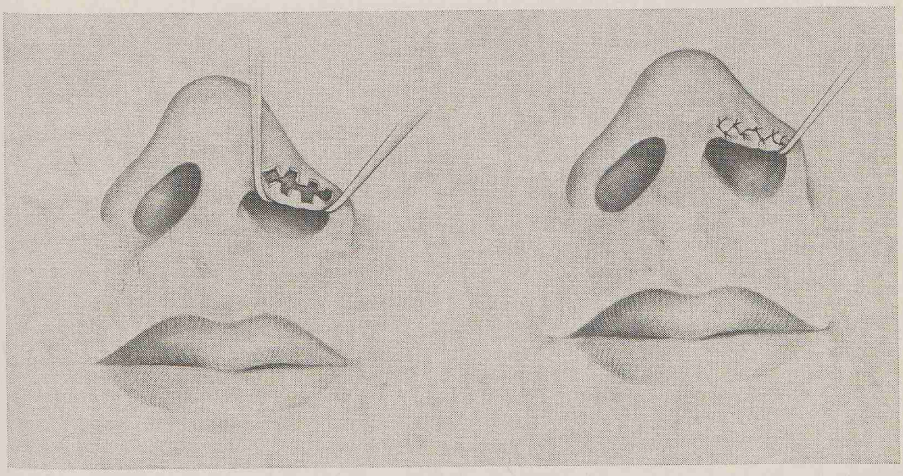


Figure 4. Correction of the nostril rim by stairstep skin excision.

A rim incision is done on the malformed nostril, which is supplemented by an intracartilagenous incision at the level of the non effected side. The bridge of cartilage and skin on the malformed side is removed near the ala rim and an additional stairstep-incision is made at its border. Corresponding to that the caudal end of the vestibular lining is incised in a similar way. Thus we achieve a zick-zack suture line which helps to prevent linear contractions on the newly formed nostril (Figure 4).

On the non effected lower lateral cartilage an incision (intracartilagenously) is placed at the level of the cranial border of the cleft side of the lower lateral cartilage. With this manoeuvre we equalize the size of the two lower lateral cartilages. The surgeon can diminish any bulbousness of the tip cartilages by a subcutaneous retrograde cartilage splitting incision in the dome. In order to elevate the nasal tip any further parts of previously removed tip cartilages are reinserted over the remaining lower laterals. In case of extreme scarring of the nasal tip we favour the total exposure of the tip cartilages, sever them in the dome according to the method of Goldman, shape the lateral parts according to the local situation and reinsert the excised cartilage for tip projection eith suture fixation to the mesial crura (Figure 5).

Too weak mesial crura can also be reinforced by a cartilagenous strut into the columella.

We do not favour the lengthening procedure for a too short columella as suggested by Millard and Cronin (cit. by Walter, 1977), since these methods do not supply the needed cartilagenous frame work. We tend more to the technique of severing the columella horizontally and close the resulting gap

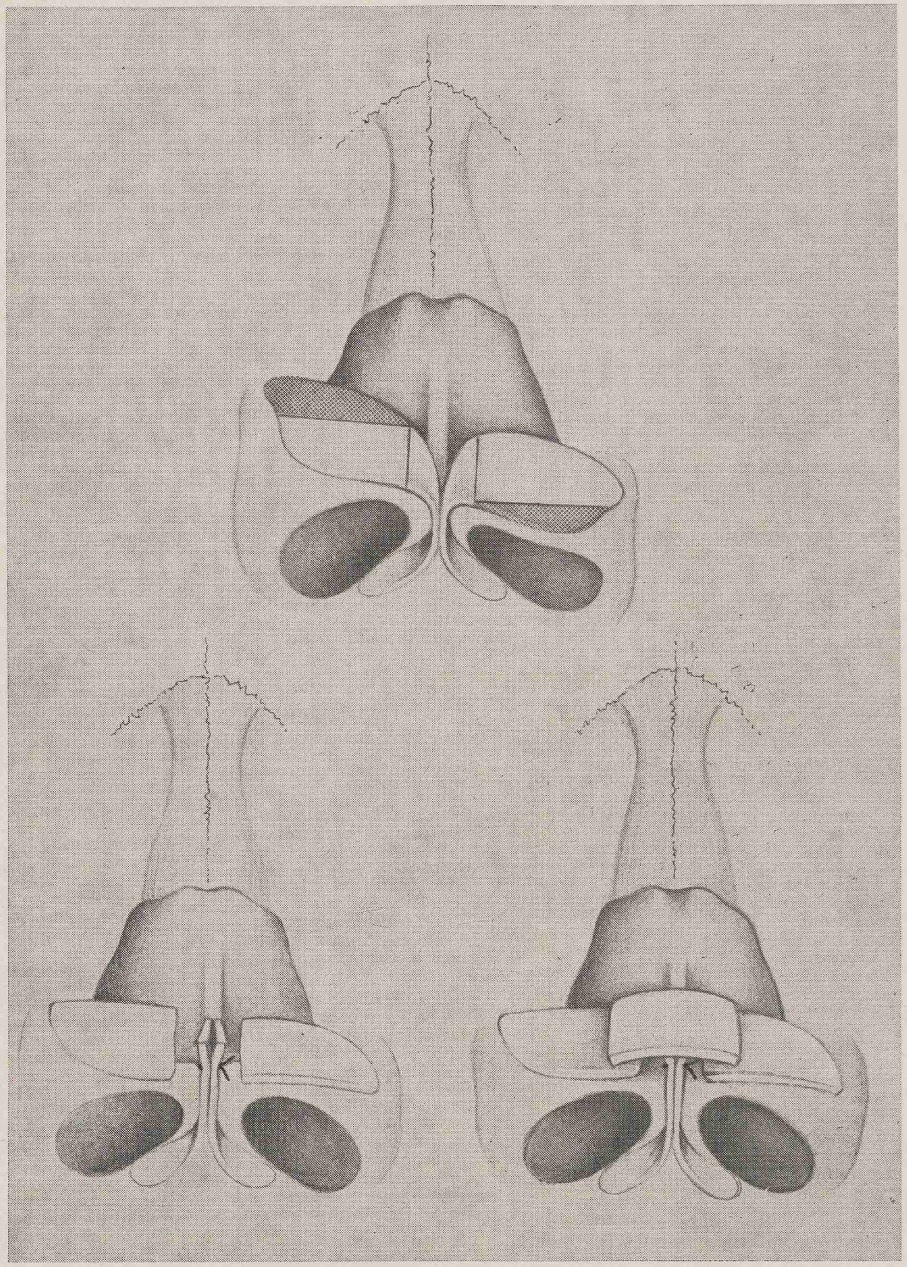


Figure 5. Correction of the nasal tip according to the described method.

with a free composite graft from the auricle supplemented with a piece of cartilage.

After modelling the nasal tip hump removal (if existing) is carried out, either by saw or chisel, followed by lateral and mesial osteotomies. For the latter we prefer chisels and osteotomies (Figures 6 and 7).

In order to perfectionate the result of any secondary harelip correction it often becomes necessary to carry out additional operations on the mandible to reduce a prognation or enlarge the maxilla in an atempt to overcome the retrognathy of this part of the human face. Transplantations of bone to provide stabilisation and wire fixation for the following weeks are mandatory. In this most difficult type of surgery the aim of our efforts should primarily be: nihil nocere!

ZUSAMMENFASSUNG

Die vorliegende Arbeit enthält eine Übersicht über das vom Autor bevorzugte Operationsverfahren bei der Sekundärkorrektur von Nasendeformitäten bei L.K.G.-Spalten. Die Nasenspitzenkorrektur erfolgt von intracartilaginären Incisionen, wobei die Modellierung des Nasenflügelrandes durch eine Treppenschnitt-Technik erfolgt, die eine lineare Narbenkontraktur am Nasenflügelrand verhindern soll.

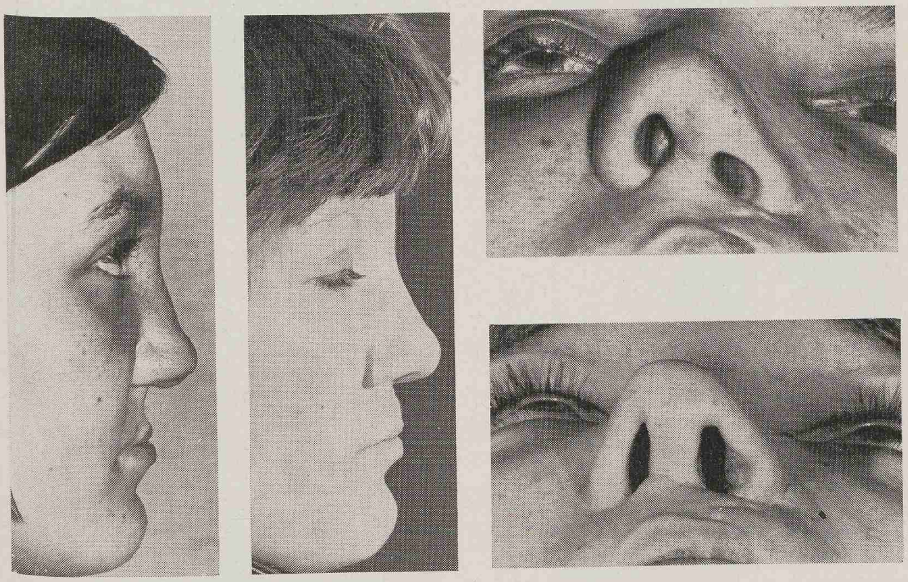
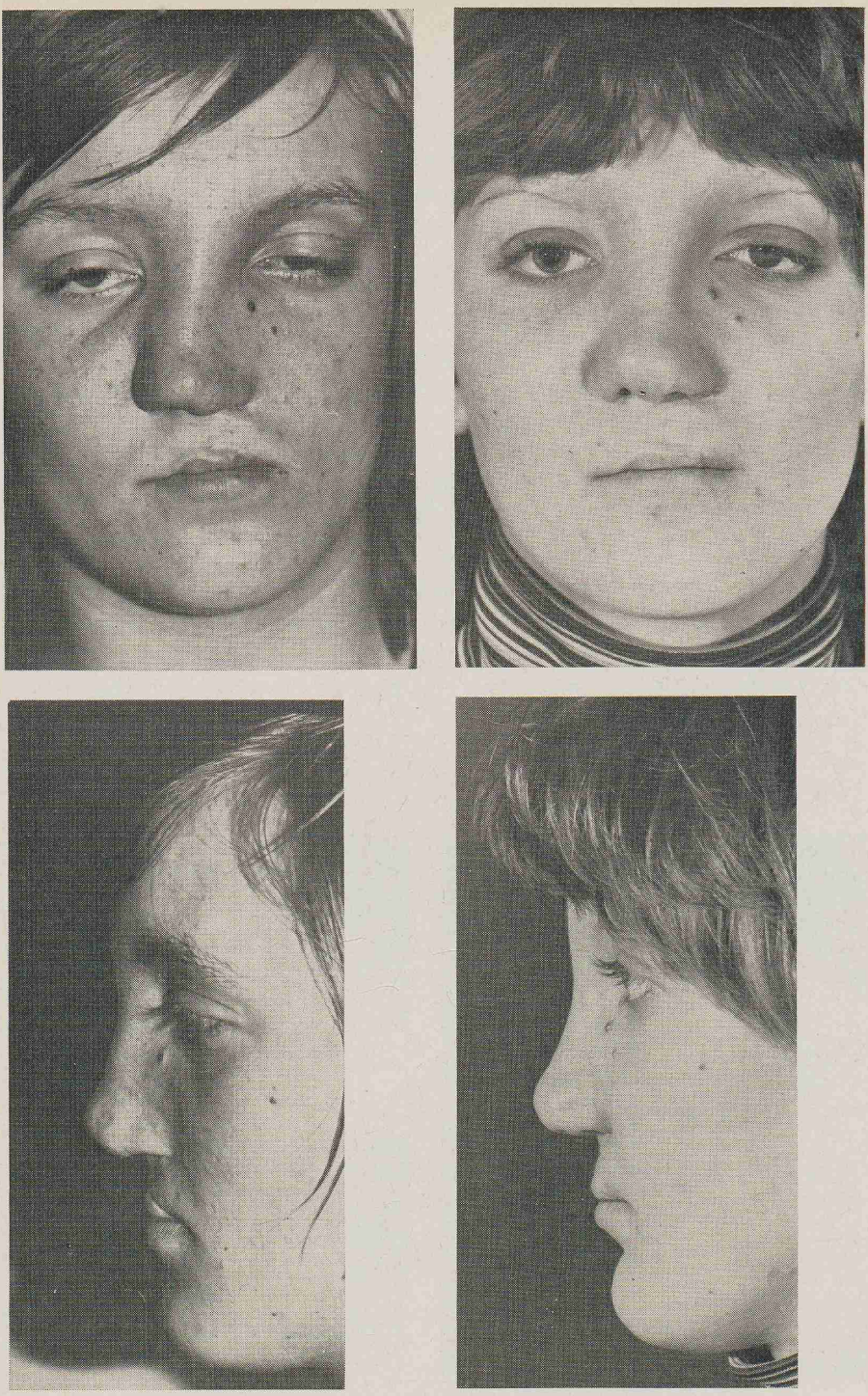


Figure 6. Prae- and postoperative appearance of a patient with a cleft lip deformity.



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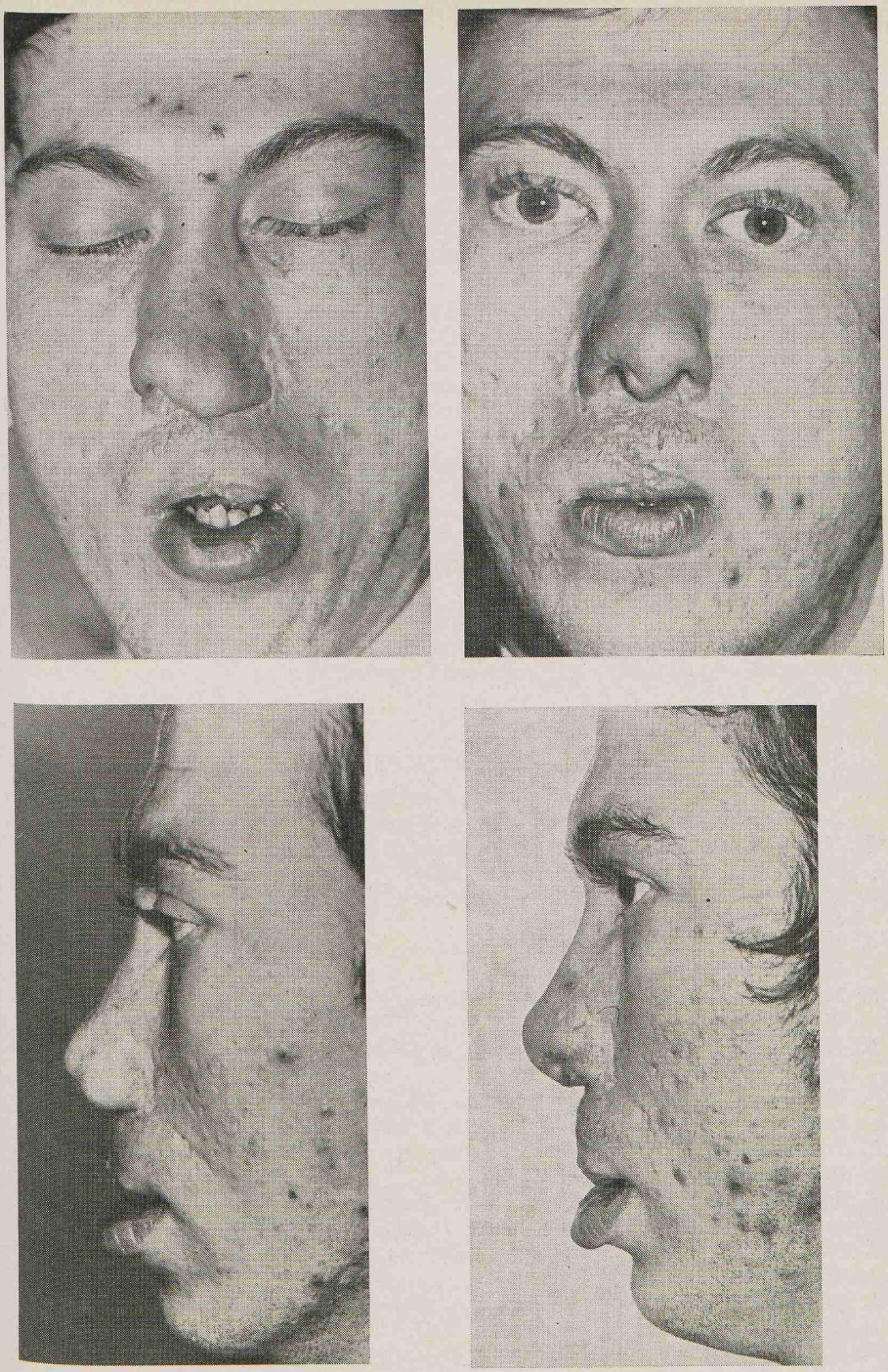
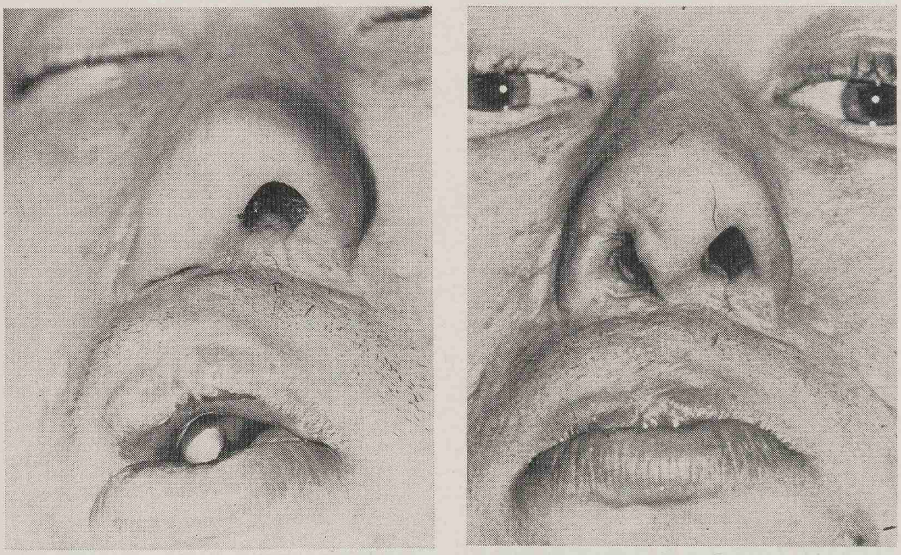


Figure 7. Prae- and postoperative appearance of a patient treated with composite graft insertion into the right nostril and nasal tip correction.



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REFERENCES

1. Denecke, J. J. and Meyer, R., 1964: Plastische Operationen an Kopf und Hals. Bd. I, Korrigierende und rekonstruktive Nasenplastik. Springer Berlin.
2. Gilles, H. and Kilner, T. P., 1932: Harelip: Operations from the correction of secondary deformities. Lancet 1932: II 1369.
3. Maisels, D. O., 1978: The alar base composite graft in cleft lip noses. Brit. J. Plast. Surg. 31: 220–221.
4. Meisel, H. H., 1977: Der heutige Stand der Gesichtsspaltchirurgie. Arch. Oto. – Rhino. Laryng. 216: 351–368.
5. Millard, D. R. Jr., 1964: Refinements in rotation – advancement cleft lip technique. Plast. Reconstr. Surg. 33: 26.
6. Neuner, O., 1973a: Corrective plastic surgery of the cleft nose. J. Max. – Fac. Surg. 1: 50–61a.
7. Nishimura, Y. and Ogino, Y., 1978: Autogenous septal cartilage graft in the correction of the cleft lip deformity. Brit. J. Plast. S. 31: 222-226.
8. Potter, J., 1955: Some nasal tip deformity due to alar cartilage abnormities. Plast. Reconstr. Surg. 15: 502.
9. Scheunemann, H. and Schulz, A., 1973: Indikation, Operationstechnik und Nachsorge bei der Abbé - Neuber - Plastik. Fortschr. Kiefer. u. Gesichtschir. 17: 233.
10. Schjelderup, H., 1955: Treatment of severe nasal deformity in secondary hare lips. Plast. Kongr. Stockholm, S. 113.
11. Schmid, E., 1964: Die Verwendung von composite grafts bei Gesichtsverbrennungen. Fortschr. Kiefer u. Gesichtschir., 9 67.
12. Schwenzer, M., 1973: Indikationen und Ausführung der Lippenersatzplastik nach Abbé. Chirurg. 44: 379.
13. Spira, M., Hardy, S. B. and. Gerow, F. J., 1970: Correction of nasal deformities accompanying unilateral cleft lip. Cleft Palate J. 7: 112–123.

14. Stellmach, R., 1973: Operative Korrektur und Nachbehandlung der spaltbedingten Schiefnase. Fortschr. Kiefer u. Gesichtschir. Bd. XVI–XVII. Hrsg. K. Schuchardt, G. Steinhardt, N. Schwenzer. Thieme Verlag Stuttg. 135–140.
15. Trauner R., 1962: Erreichung der Symmetrie von Nase und Lippe bei Lippen-Kiefer-Gaumenspalten. Dtsch. Zahn-Mund u. Kieferheilk. 37: 204.
16. Trauner, R. and Wirth, F., 1958: Zur Plastik am oberen Nasenloch. Ztschr. Laryng. Rhinol. 36: 609, 37: 655.
17. Trauner, R. and Wirth, F., 1957: Die Nasenkorrektur bei einseitigen Lippen-Kiefer-Gaumenspalten. Ztschr. Laryng. Rhinol. 36: 621.
18. Trauner, R. and Wirth, F., 1958: Die Nasenkorrekturen bei doppelseitigen Lippen-Kiefer-Gaumenspalten. Ztschr. Laryng. Rhinol. 37: 655.
19. Velasquez, J. M. and Ortiz-Monasterio, F., 1974: Primary simultaneous correction of the lip and nose in the unilateral cleft lip. Plast. Reconstr. Surg. 54: 558–563.
20. Walter, C.: Zur Korrektur der Spaltnase. Fortschr. Kiefer u. Gesichtschir. Bd. XXI: 254–258.
21. Walter, C., 1977: Aestetische Nasenchirurgie. Arch. Oto-Rhinol-Laryng. 216: 251–350.
22. Walter, C. and Meisel, H. H., 1976: Abbé-Plastik mit Nasenstegverlängerung. Actuelle Chirurgie 11: 93–98.
23. Young, F., 1949: The surgial repair of nasal deformities. Plast. Reconstr. Surg. 4: 59.

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