3.
# Rhinoplasty in Congenital Anomalies

CONGENITAL deformities of the nose represent the failure of embryogenesis to carry the nasal development to the end point. In these cases treatment necessitates diagnosis of the state of developmental progress. Only then can surgery be directed toward continuing what should have happened in the first place. Usually this involves moving displaced tissue into normal position and retaining it there. When the congenital deformity includes actual absence of elements, these missing parts must be replaced with as close to similar tissue in kind as possible.

AN UNUSUAL UNILATERAL NASAL DEFORMITY
This female child was born with a retracted left ala which was longer in circumference than the normal ala, causing lateral bulging. She had already had one surgical procedure. The de-

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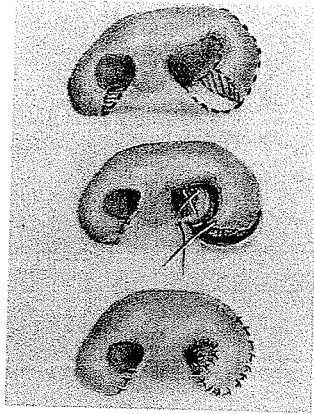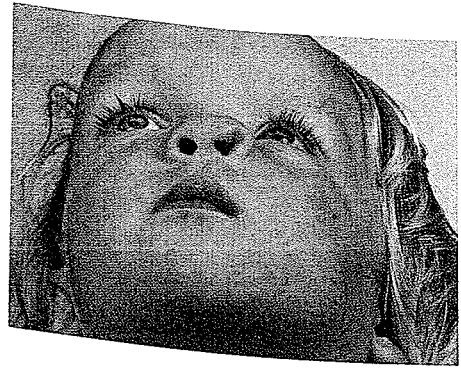
sign for correction involved a rotation incision of the alar base extending around into the alar crease. This allowed the alar base to come down and around. The distal portion of the ala was resected. Then a flap of the skin of the upper lip in the area designated to receive the alar base's new implantation was lifted and transposed into a lining releasing incision in the lateral vestibule of the ala. This not only made way for positioning the alar base but it also lengthened the lining.


Minor revisions seemed indicated but would serve better after growth. The patient, from another state, never returned.

NASAL DEFORMITY IN UNILATERAL CLEFT LIP

In 1949 plastic surgeon W. C. Huffman and otolaryngologist D. M. Lierle gave a detailed accurate description of the unilateral nasal deformity in cleft lip. They noted:

1. nasal tip deflection,
2. cleft alar cartilage dome retroplaced,
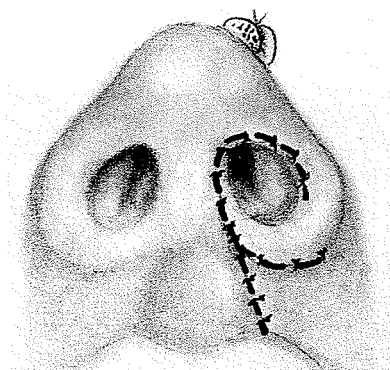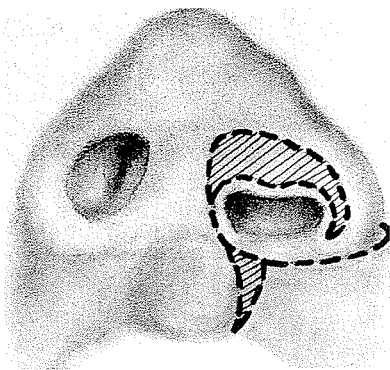3. obtuse angle between medial and lateral crus of alar cartilage,
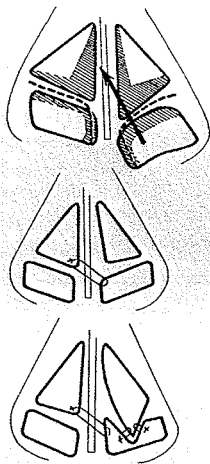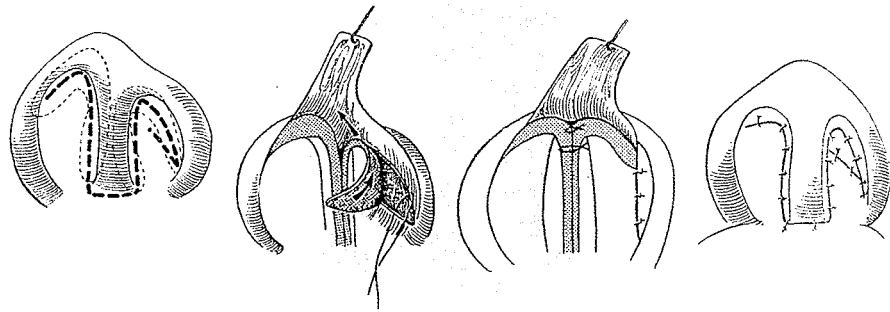
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4. inward buckling of ala,
5. absence of ala-facial groove with alar attachment to face at an obtuse angle,
6. real or apparent deficiency of bony development,
7. overly wide dorsal extremity of nares,
8. a naris circumference greater than that of its fellow,
9. more dorsal position of the entire naris,
10. shorter columella on cleft side,
11. medial alar crus inferiorly placed in the columella, and
12. columella slanted obliquely with the dorsal portion of the septum dislocated off the nasal spine and presenting in the normal nostril with the anterior septal tip leaning over the cleft.
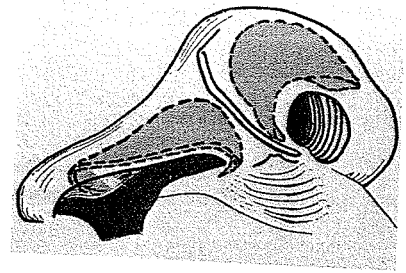
Berkely in 1959 added the bowstring contracture of interior of nostril extending from its apex along the upper border of the lower lateral cartilage to the margin of the pyriform sinus. I subsequently indicated that this web is involved with the distorted lateral tail of the dislocated alar cartilage. The total effect of these nasal distortions is exasperating asymmetry with the vertical axis of the normal nostril presenting an opposing contrast to the transverse axis of the cleft side nostril.

EVOLUTION OF THE CORRECTIVE SURGERY

In 1976 in Volume 1 of *Cleft Craft,* the evolution of the surgery of nasal correction in unilateral clefts was outlined in careful detail. Those methods that addressed the major nasal problems were directed toward moving displaced tissues into normal position. Harold Gillies' 1952 lift of the slumped alar cartilage, reduction of the normal alar cartilage, correction of the deflected septum, and medial advancement of the flared alar base gave improvement. In the severe slump he advocated an onlay cartilage graft. John Potter's 1954 Rethi exposure with medial advancement of the slumped alar cartilage of-

fered a variation in corrective design. John Reynolds with Charles Horton in 1965 designed a simple alar cartilage lift that was practical and probably better than preceding procedures. In 1972 Igor Kozin added onlay grafting of cartilage to the depressed bony base of the ala. In 1982 David Dibbel modified the nostril rotation with external incisions and excisions described earlier by Blair, Sheehan, Young and Joseph. Dibbel's procedure kept the scars within the margin of the nostril and, although not a perfect solution to the problem, became popular. He bolstered his approach with his Bowie knife shaped cartilage strut to force the nasal tip up. The extent to which any of these methods achieved placing displaced tissue into normal position and retained them there determined the merit of the method. None corrected all deformities.

The nasal deformity in unilateral clefts presents a different problem with multiple facets, the most exasperating of which is its overall asymmetry. In the adult the deformity is "set in its ways" and probably has suffered unsuccessful attempts at surgical correction which add scars to the deformity. Over the years I have found certain procedures that offer consistent, specific benefits.

Septal Correction

After the age of 16, correction of the deviated septum, as described in Corrective Rhinoplasty, is indicated. A submucous resection of the obstructing septal cartilage is carried out along with freeing the deviated septal base from its dislocated portions along the vomer and the scoring of the remaining septal cartilage on its concave side to allow it to curl into a

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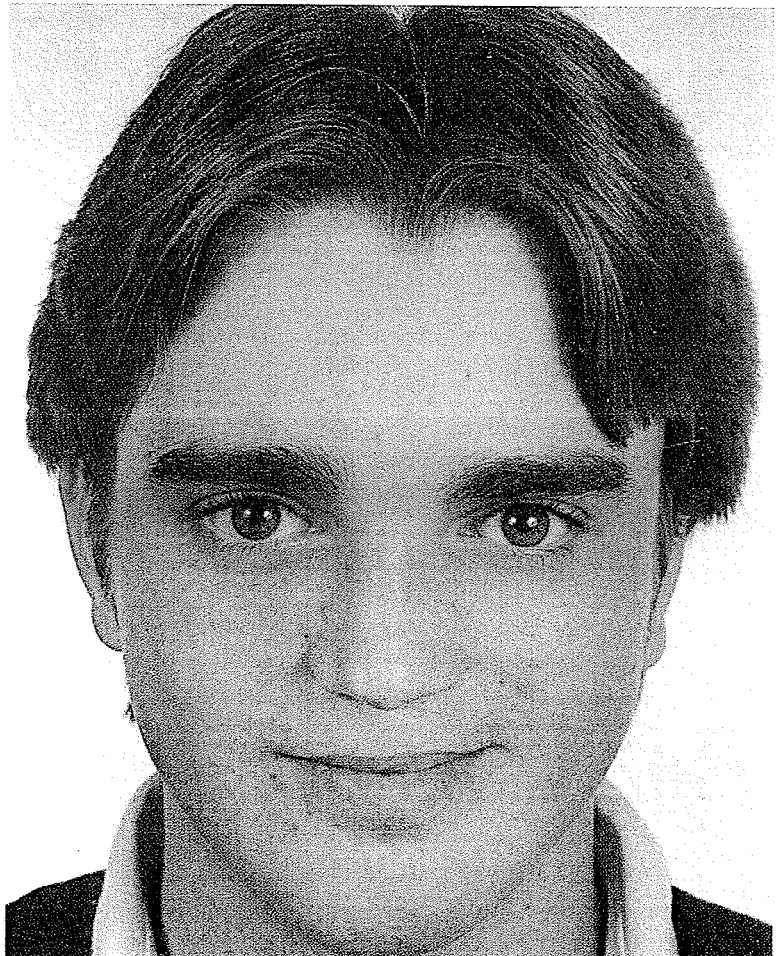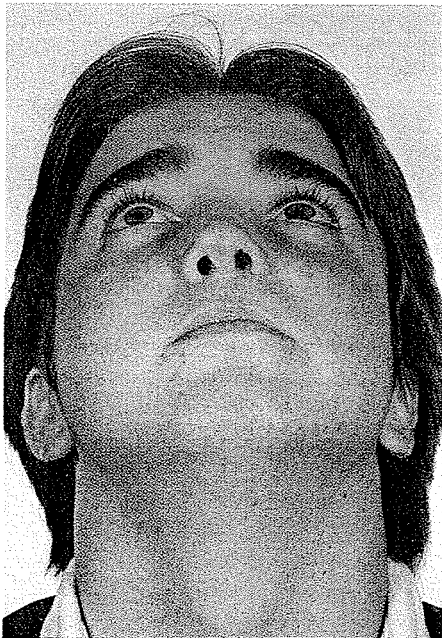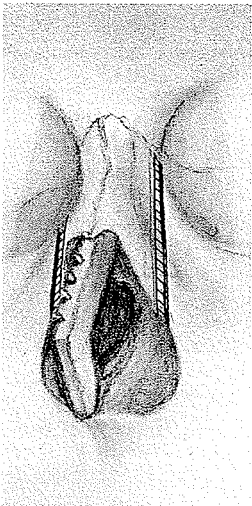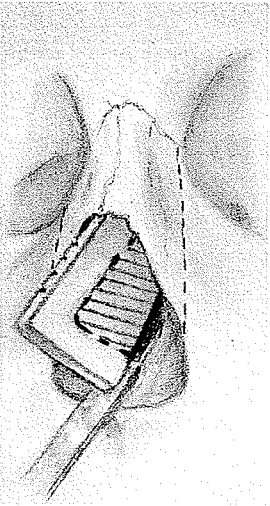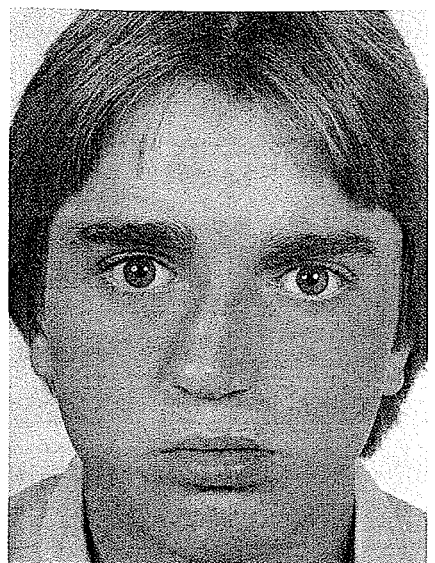
straighter position. A suture at the base of the columella on the side away from the curve of the septum will help to stabilize its correction. A 3–0 chromic catgut suture goes through the columella side of the membranous septum near the nasal spine, crosses to pick up the freed and scored septum at its inferior anterior border and then passes through the septal mucosa. Tying this stitch closes the membranous septal incision but pulls the freed septum into straight position and fixes it there. In this representative case the lip had been corrected with rotation advancement and the nasal alar cartilage rearranged in the tip. The deviated septum is seen at age 12 and 16. Correction of the septum with resection, freeing and scoring was accompanied by bilateral osteotomies and in-fracture.

This 15-year-old female patient had had a rotation-advancement lip closure. She had the typical nasal deformity of a unilateral cleft, including the deviated septum. The lip was re-rotated and the corrective rhinoplasty included alar cartilage lift, anterior septal cartilage shortening, submucous septal resection with scoring and bilateral osteotomies with in-fracture.



OBLIQUE CARTILAGE STRUT

In 1964 I described an adjunct which has been and still is of value in certain cases. The rectangular shaped cartilage removed during the submucous septal resection is shaped into one or more straight struts. If necessary the septal cartilage is freed at the nasal spine and scored to straighten the septum.
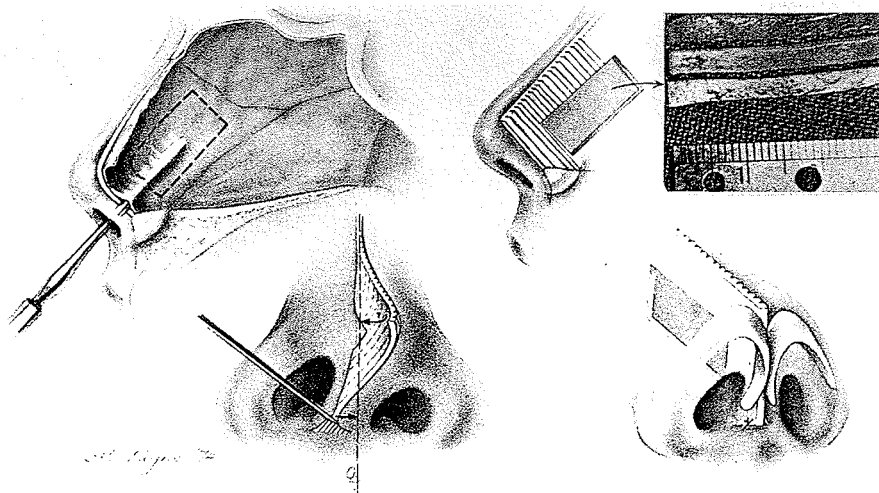
Through a stab incision at the base of the columella a pocket was tunneled under the anterior skin of the columella up to the tip and then directed in a slant obliquely across the nasal tip on the depressed side. A cartilage strut is threaded into this tunnel all the way across the tip to bolster the slumped side. This adjunct was used when the alar cartilage lift involved the less effective freeing only of the skin and fixation with temporary external sutures to elevate the cartilage.
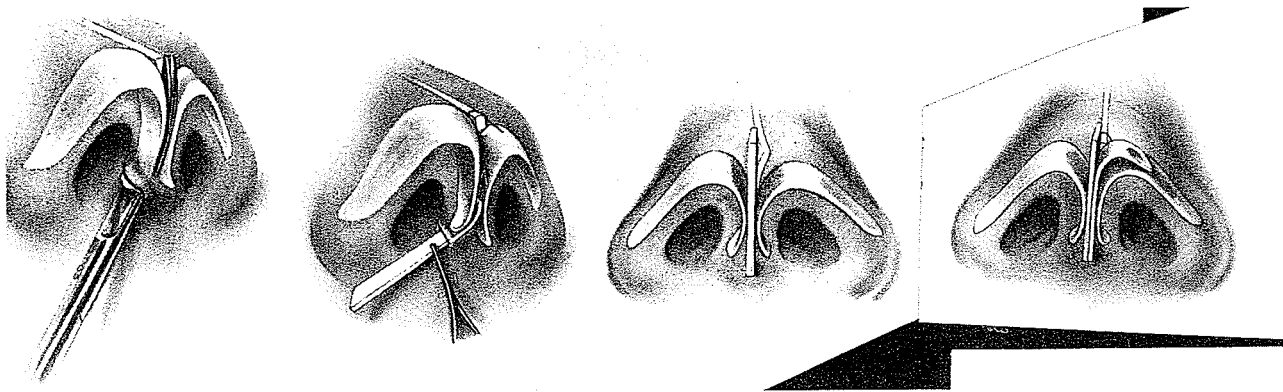
Here is an example in a 20-year-old female college student with secondary deformities of a unilateral cleft lip and nose. A midline shield-shaped Abbe flap created a philtrum. A partial lift of the slumped alar cartilage still attached to the mucosal lining was bolstered by a unilateral oblique septal cartilage strut up the columella and over and under the slumped nasal tip which symmetrized the deformity.
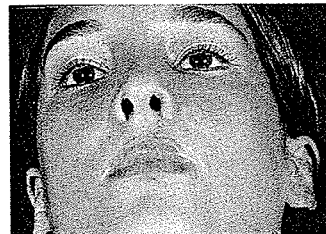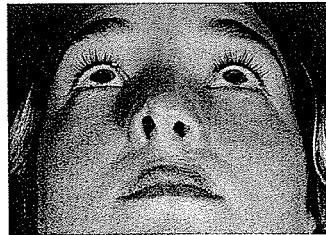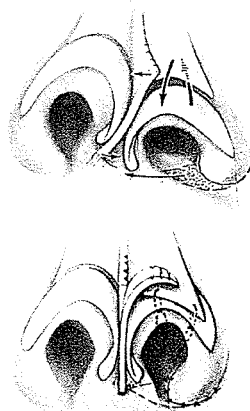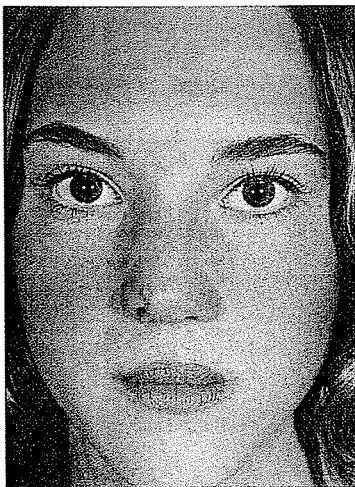
In this even more belligerant deformity the asymmetry and depression were corrected by reducing the normal alar cartilage, splitting the slumped alar cartilage, and overlapping the two parts and fixing them with sutures. Then a strong 3 cm septal cartilage strut was inserted up the columella and directed obliquely over to the slumped side to improve the projection. The flaring ala was advanced medially and the septum scored and freed from the nasal spine for straightening.
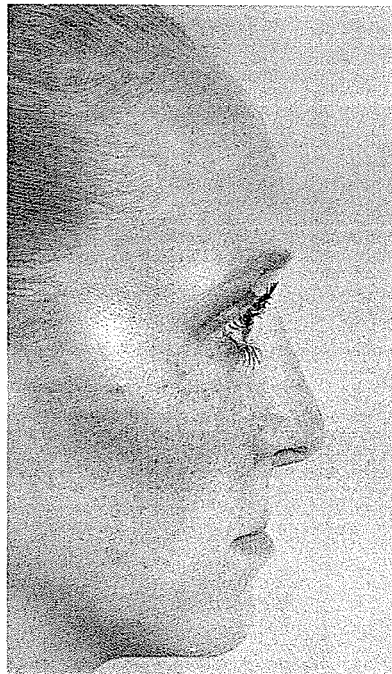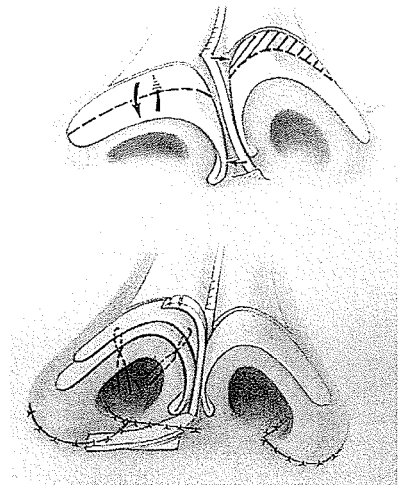
ALAR CINCH
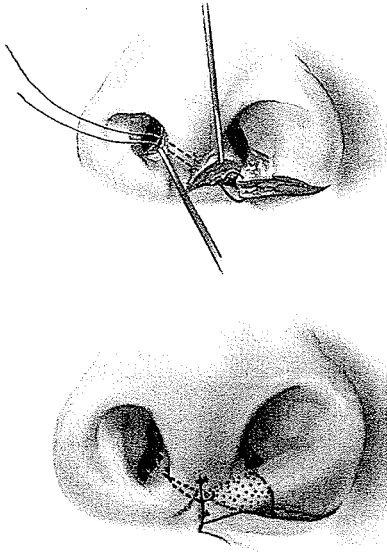
This procedure was described in 1976. The flaring ala is circumscribed by an incision incorporating the nostril sill. A tether of the alar base is developed in one of two ways. The usual method involves denuding the excess nostril sill and using this strong dermal attachment to be threaded through to the anterior base of the freed septum and fixed with a Prolene suture. This standard cinch will be demonstrated many times throughout this book. A variation of this principle can be useful in certain circumstances. When the nostril sill is absent and the alar base is thick, then a subcutaneous flap of tissue can be dissected out of the alar base, the defect closed with a suture and this flap used to cinch the ala (long arrow). This action not only corrected the alar flare but served to enforce maintenance of the septal straightening and also thinned the alar base.

Here is an early example of the subcutaneous tether in the alar cinch in a secondary unilateral cleft which required a midline lip-switch flap to create a dimpled philtrum and a cupid's bow. Other revisions, including a septal cartilage strut up the columella to the tip and alar cartilage lift, are diagrammed.
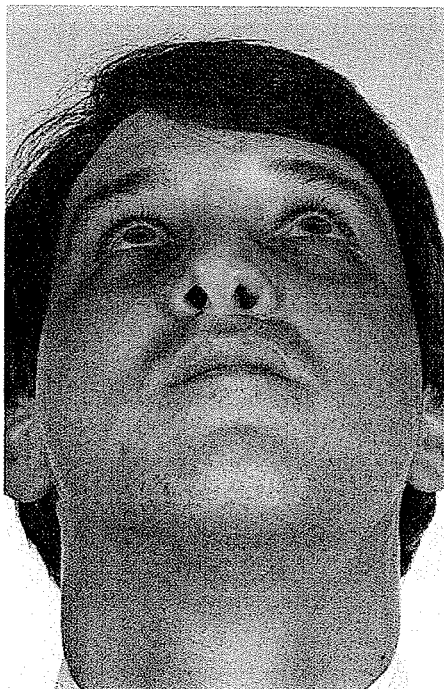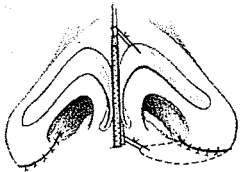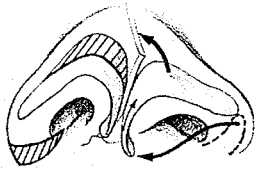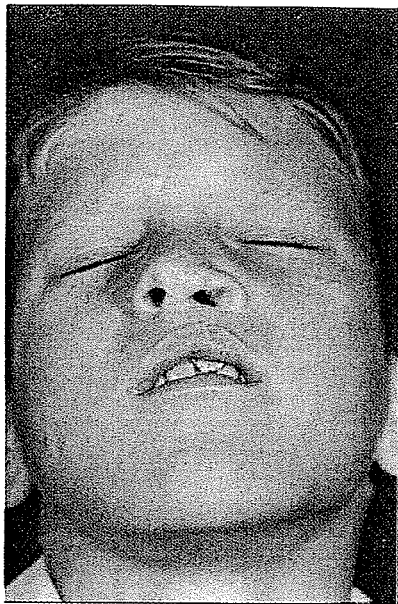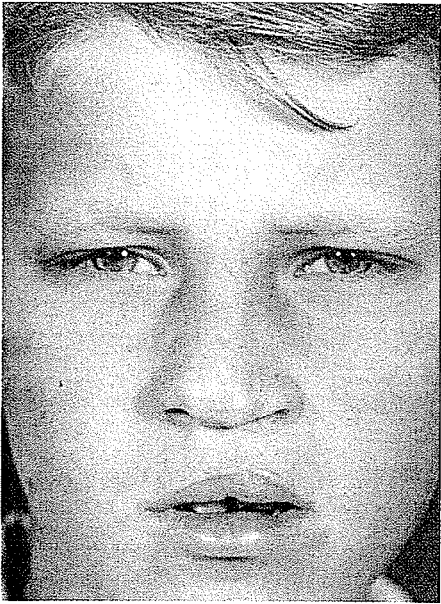
ALAR SCULPTURING

There are occasional incidents when even after all corrective procedures have been used the alar arches still do not match. Occasionally alar margin sculpturing of the overhanging edge can bring near symmetry. This was advocated first in 1964.

This unilateral cleft received the nasal improvement following a rotation-advancement lip correction. An alar cartilage lift operation improved the nasal tip but the drooping overhang of the ala on the cleft side was benefitted by alar margin sculpturing as seen at age 12.
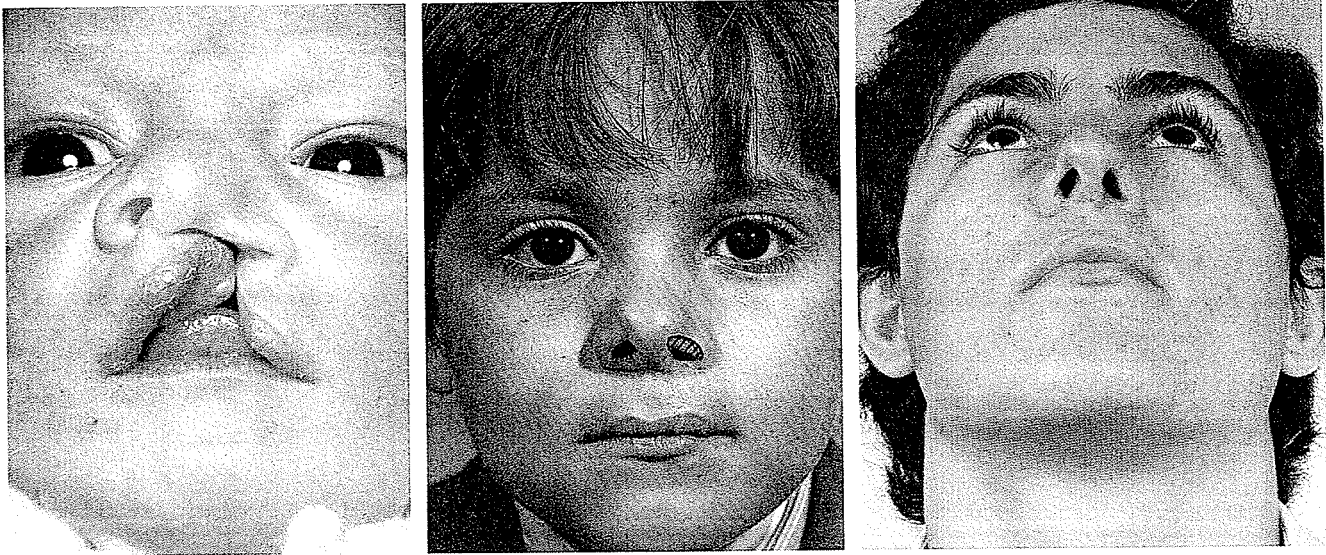
His nose healed well as seen at age 17.
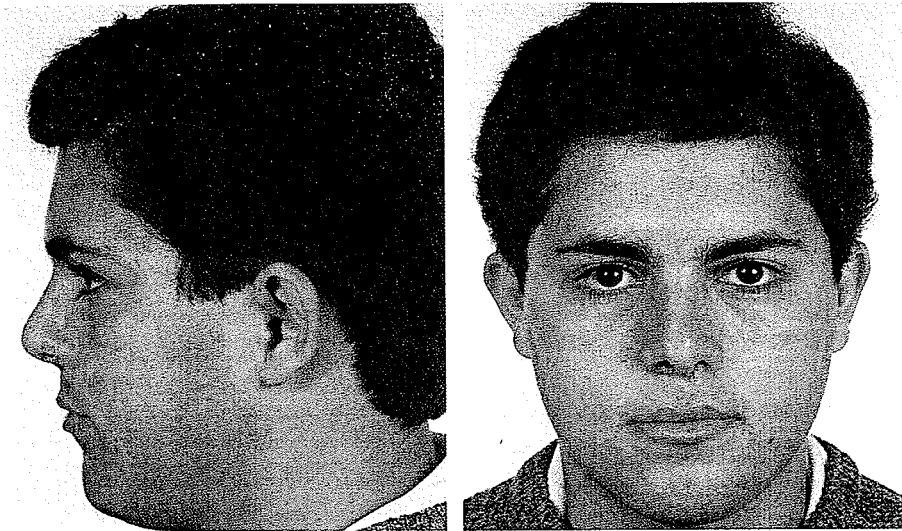
ALAR FLAP

There are various ways that the excess alar web on the cleft side can be used as a flap. It is usually based on the potential upper columella and can be folded in to give the effect of unilateral columella lengthening. This was first described in 1986 but has been rediscovered by H. G. Thompson and later by Burget and Menich. Here is an example.
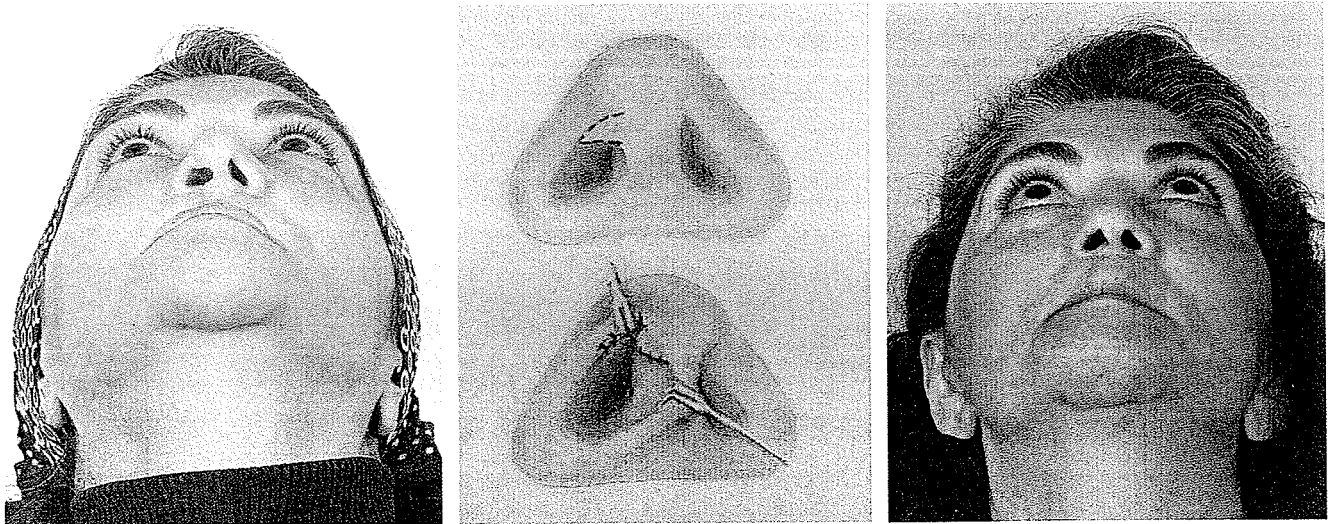
Another use for this flap is in the case where the ala meets the columella too acutely giving a sharp angle to the upper nostril. By releasing the sidewall from its constrictive attach-

ment to the anterior septum a space is created inside the vestibule. The alar flap can be wedged as a spreader along this gap to soften the ala-columella angle.
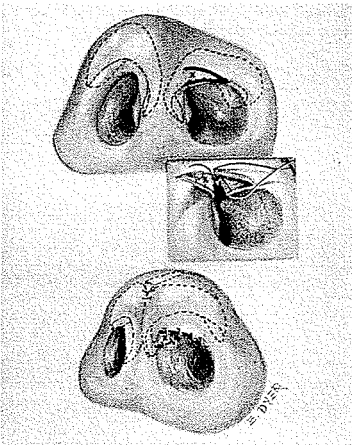
The alar web can be taken as a flap, which opens exposure for slumped alar cartilage dissection and positioning and then interdigitated into the vestibule to release the short lining in the upper columella.
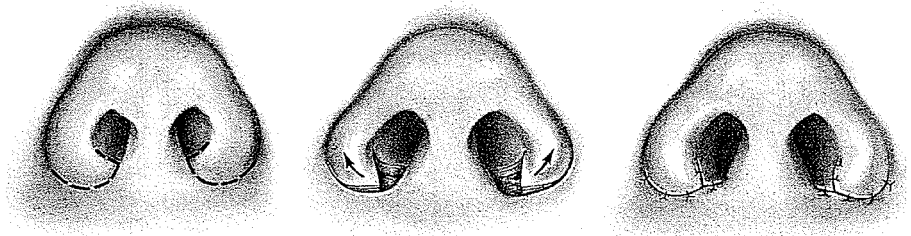
CONSTRICTED NOSTRIL

Occasionally in unilateral clefts the cleft side nostril ends up constricted to an abnormal dimension. This can happen in incomplete clefts when closure of the lip cleft inadvertently reduces a nostril size that is already near normal size before surgery. In rotation-advancement of the lip in incomplete clefts when the nostril size is nearly equal it is important *not to interrupt or excise* any portion of the nostril sill. The advancement of the lateral lip into the rotation incision will reduce the cleft side nostril width and thus the sill should be kept intact to splint the base of the nostril floor and prevent unnatural and asymmetric constriction on the cleft side.

In complete unilateral clefts of course the nasal floor is open and the alae is stretched and the alar base is flared and everted. In radical irrational attempts to correct this defor-

mity the inexperienced surgeon resects too great a portion of the alar base so that the final result presents a constricted nostril compounded by a shortened ala. Mild degree of nostril constriction can be aided by an outward V-Y of the alar base, unilateral or bilateral as the need may be.

COMPOSITE AURICULAR GRAFTS

In more severe contractions, particularly when the actual alar base has been resected, it is necessary to replace the missing tissue with similar tissue in kind. Release of the constriction opens a defect at the alar base which can be filled with a composite auricular graft. Here are two examples of this secondary correction. It should be noted that both of these unilateral clefts have had midline shield-shaped lower lip-switch flaps. These flaps have relaxed the tightened upper lip while reducing the protuberant lower lip and at the same time constructing a philtrum with its suggestion of a dimple, columns and a cupid's bow. The auricular composite grafts were taken from the appropriate area of the helix and concha to simulate the missing ala and its base. It can be 1.5 cm wide as it will be receiving blood supply into both sides of the graft. Once it has become vascularized it can be tailored to symmetry.

In one case there was generalized asymmetry of the skeletal structures, yet corrective rhinoplasty, relief of the constricted nostril with an auricular composite graft, and release of the upper lip with a lower lip-switch flap improved the overall effect.
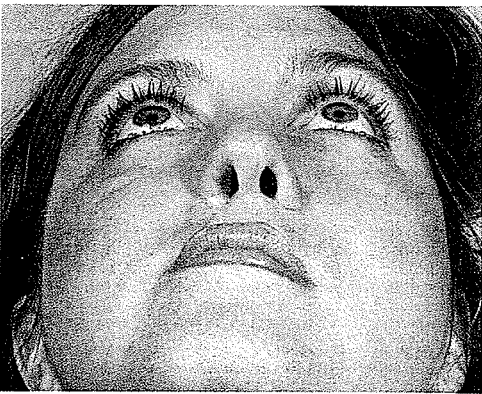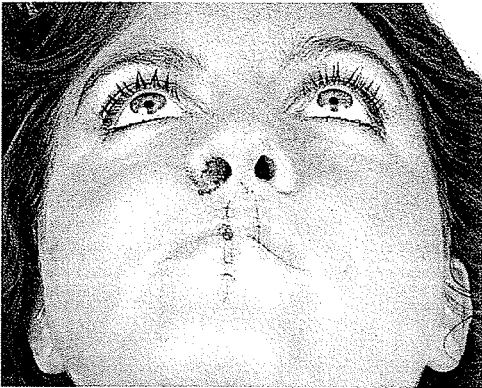
In the second case the severe nostril constriction was corrected by a radical release at the junction of the ala to the lip and cheek and filling this defect with a large composite auricular graft. Once there was alar symmetry the slumped alar cartilage was lifted and bolstered by the opposite alar cartilage onlay. Then the tight upper lip was released by a midline upper lip-switch flap.
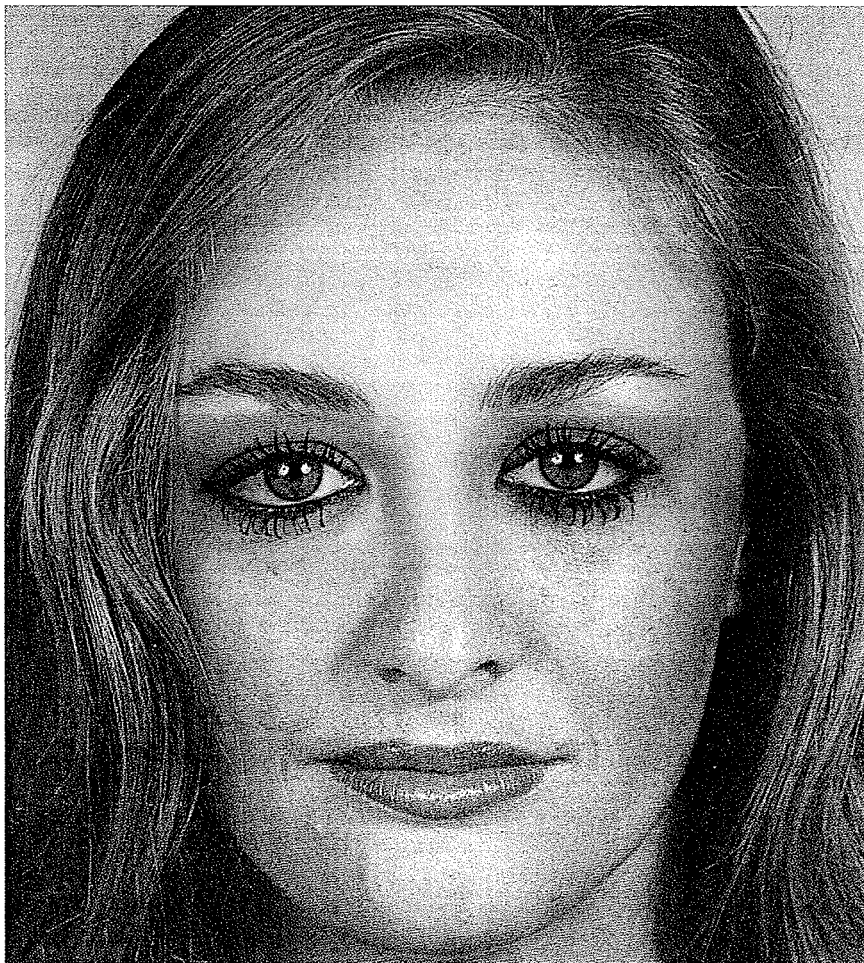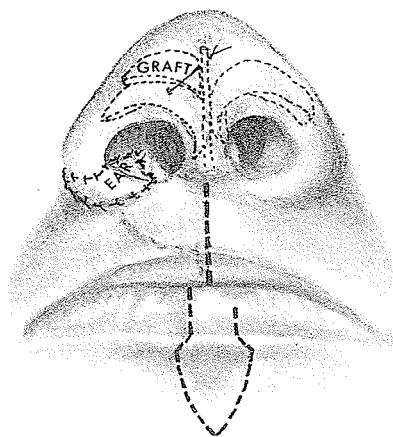
Here is a severely deformed unilateral cleft lip nose which after the usual corrective procedures ended up with the cleft side ala retracted. In this specific case an alar crease incision released the ala and the defect was filled with a chondrocutaneous auricular graft. It was later blended to its new site by minor surgical revisions. I do not advocate this approach except in rare incidences.
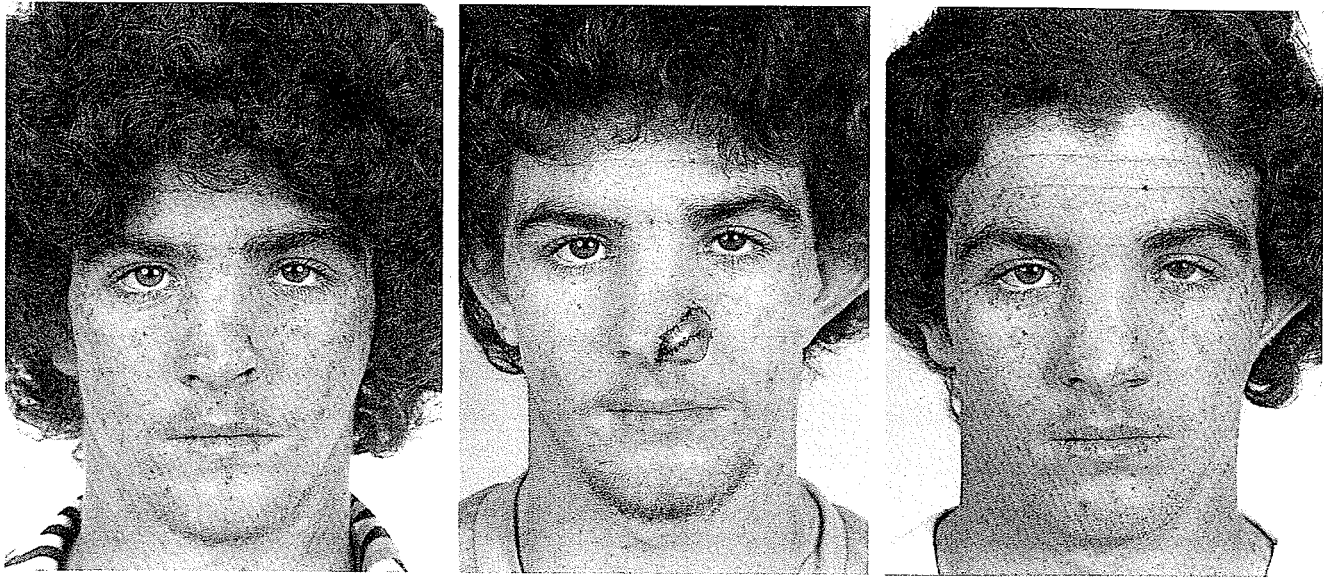
POT-POURRI

From 1960 to 1970 correction of the unilateral cleft nasal deformity utilized every trick in the proverbial book. If the rotation-advancement method had been used on the lip, the nasal deformity was less difficult and in a rare case the unilateral columella lengthening and alar cinch improved the nose.

During this period there was utilization of partial alar cartilage lift, onlay of alar or auricular cartilage in the tip, septal correction, oblique or straight septal struts in the columella, alar cinch and any or all corrective rhinoplasty procedures. The results were eventually reasonable but it took too long. These patients were *well into their teens* before they had shed the cleft nasal deformity. Here is a cardinal example.

This wide cleft had first a lip adhesion and then an effective rotation-advancement lip correction. As a teenager her nose

enlarged, requiring reduction as well as symmetrizing. The alar cartilages were reduced and positioned and tip definition improved with a tip cartilage graft.
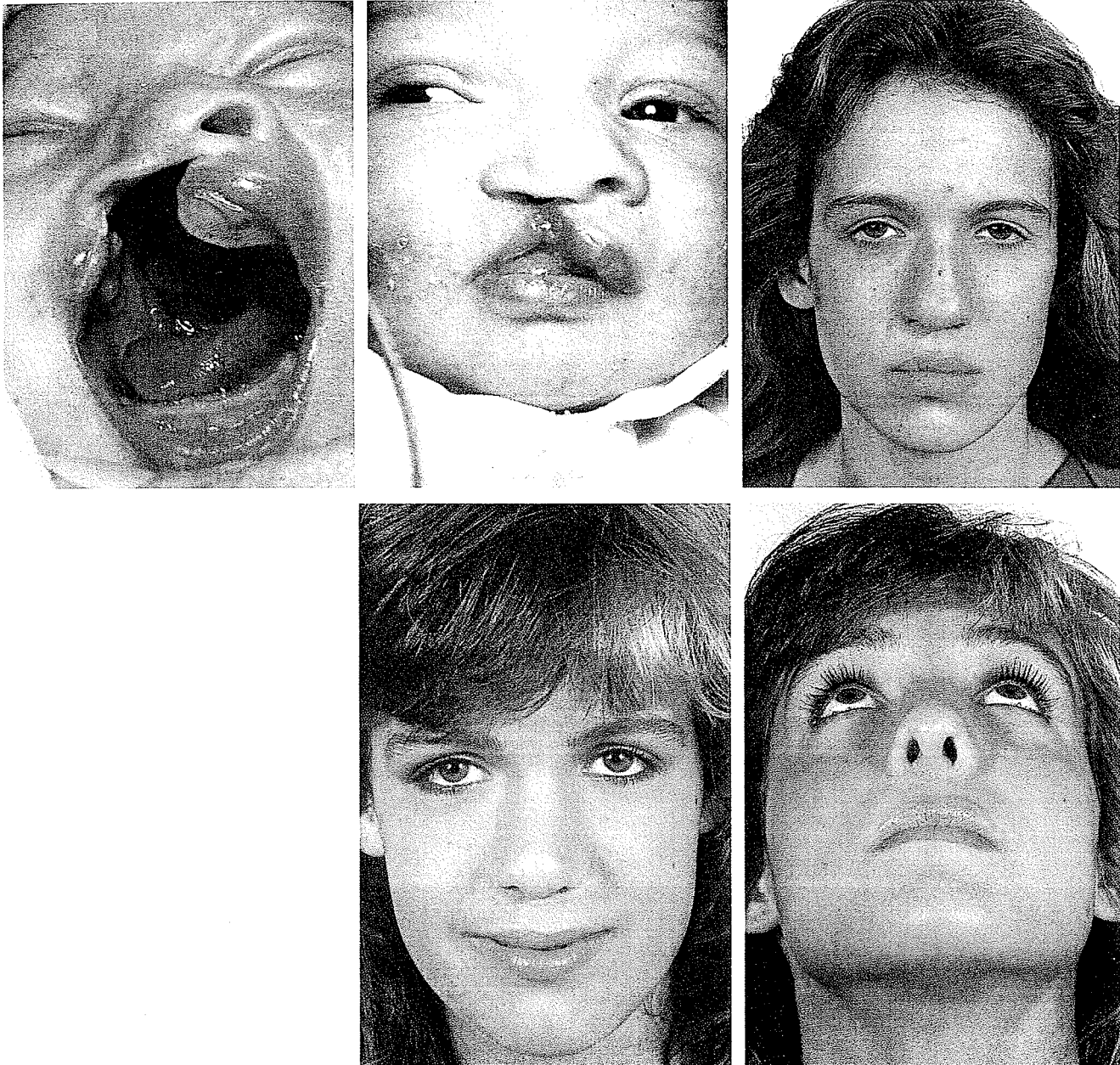
FULL EXPOSURE

It is interesting that A. Rethi's 1929 open exposure for nasal correction in clefts, which subsequently was used by Potter to position the alar cartilages under direct vision, has not only become popular but touted as original. The Erich Figi flying bird incision was also used to uncover the deformity but the

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exposure is not as complete or the scar as well hidden. In cases of severe deformity in which the simple placement of the dislocated alar cartilage into normal position would not suffice, exposure through the Rethi incision simplifies the problem. I do not use this approach routinely, but in this Jamaican case in 1986 where further columella lengthening was desired I turned to a modified Rethi incision to extend the tip of the columella into the lip as a V-Y. This not only provided exposure but after placement of the other parts into normal position offered extra columella in the closure. As the lip had had a rotation-advancement closure well executed by S. Williams only the nose required radical surgery. Under direct vision the normal alar cartilage was reduced, the slumped alar cartilage was lifted and fixed. Then a strut of septal cartilage was used for tip definition. This is the precursor to the modern routine cartilage strut used in all open rhinoplasties (C. Johnson).



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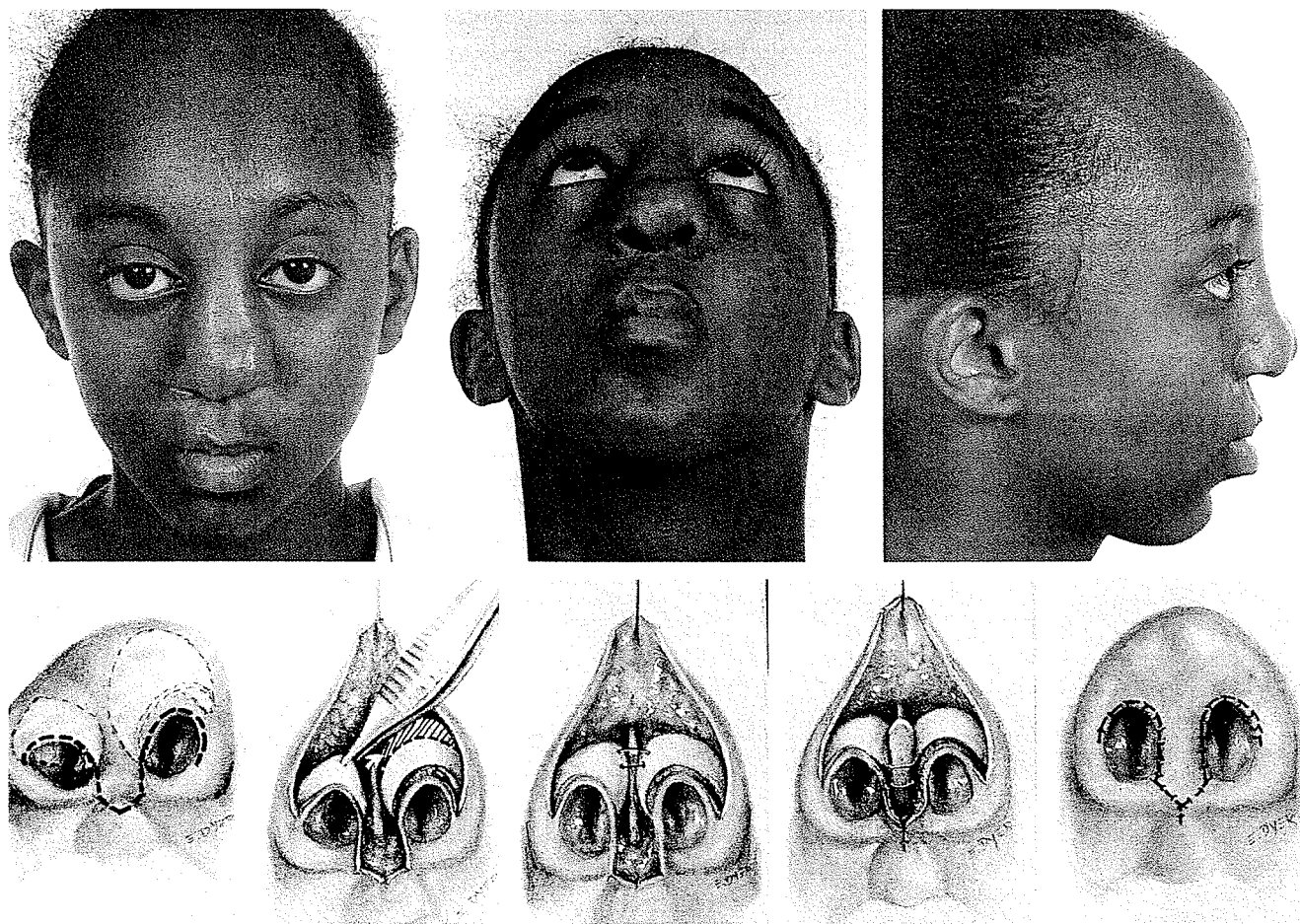
SECONDARY CORRECTION
OF MAXILLARY PLATFORM

The maxillary platform should be first priority. This unilateral cleft lip and palate treated in Colombia, S. A. with a straight line lip closure and a pharyngeal flap evidently revealed lack of maxillary growth. At age 11 years she underwent a Le Fort I osteotomy with bone grafts but when seen at age 13 years revealed severe class III occlusion with profound maxillary hypoplasia. It was difficult to determine whether this occlusal relationship represented regression of the advanced maxilla or simply lack of growth of the maxilla in the presence of continuing growth of the mandible.
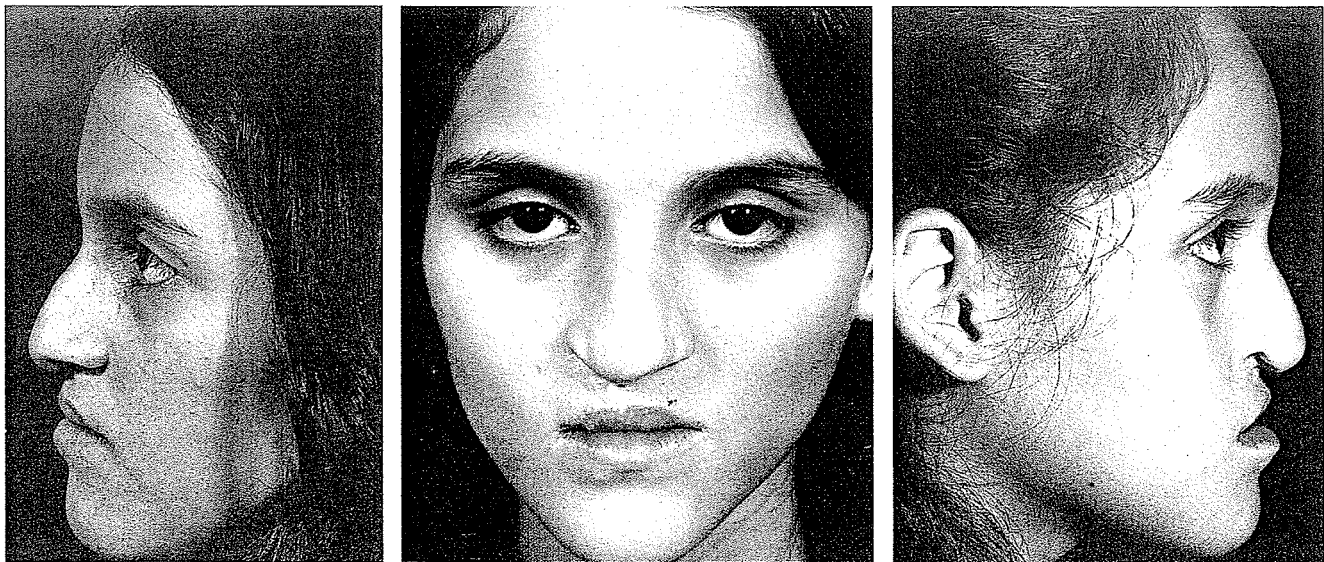
When she was 15 years old, S. A. Wolfe carried out a Le Fort I maxillary osteotomy fixed with bone grafts and S. Berkowitz assisted with traction in the right segment. This provided a satisfactory bony platform and occlusion in preparation for corrective surgery of the lip and nose.
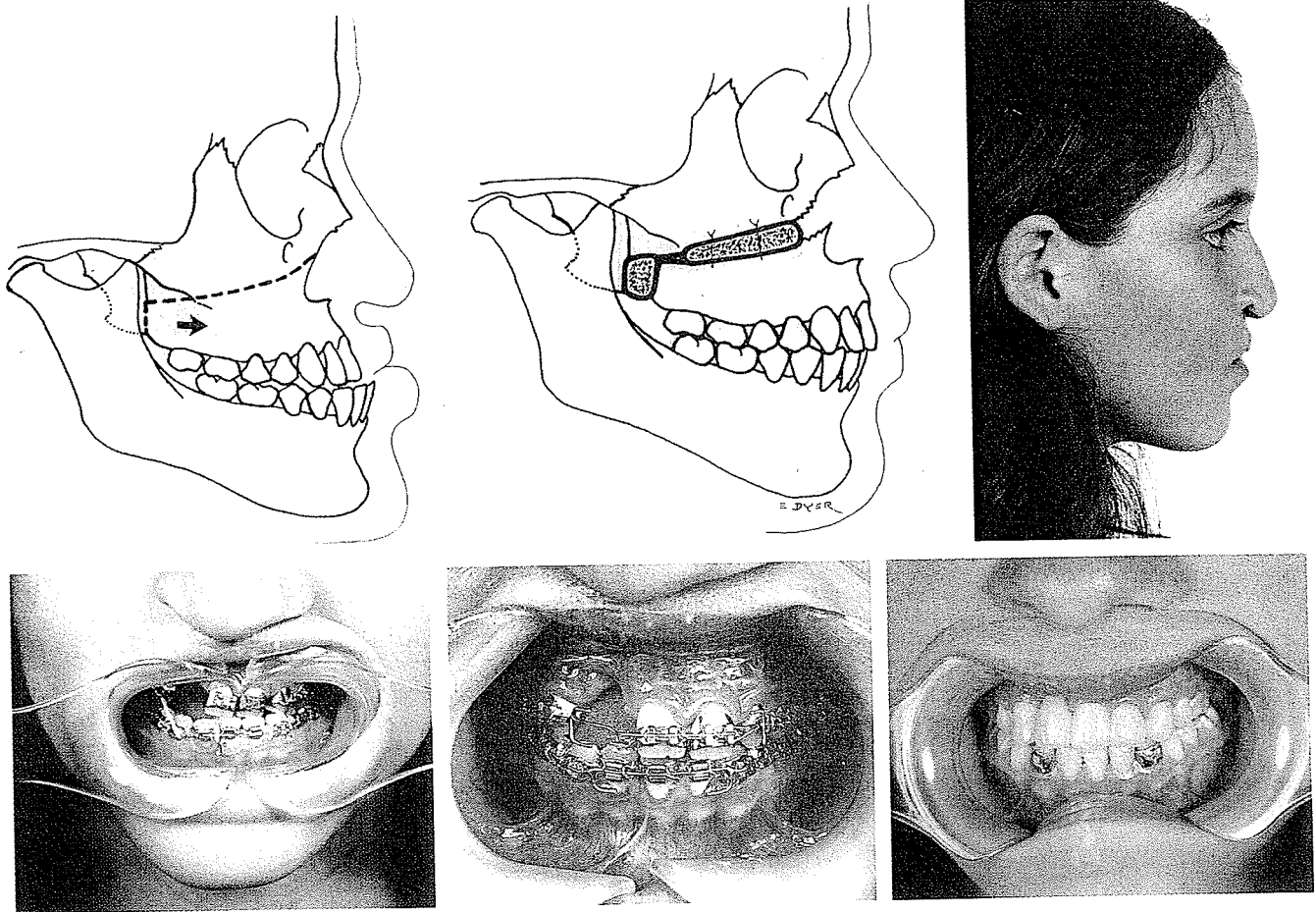
At age 16 years a cleft lip rhinoplasty was carried out which included hump reduction, anterior septal resection, bilateral osteotomies with in-fractures, reduction of the left alar cartilage and advancement of the right alar base with a cinch. The slumped right alar cartilage was dissected free medially, bolstered by an onlay from the left alar cartilage and sutured in a lift to the septum. A submucous resection of septal cartilage was used for a columella strut to support the nasal tip. A midline shield-shaped lower lip-switch flap was transposed into the direct center of the upper lip, ignoring the old scar present, and created a dimpled philtrum and cupid's bow.

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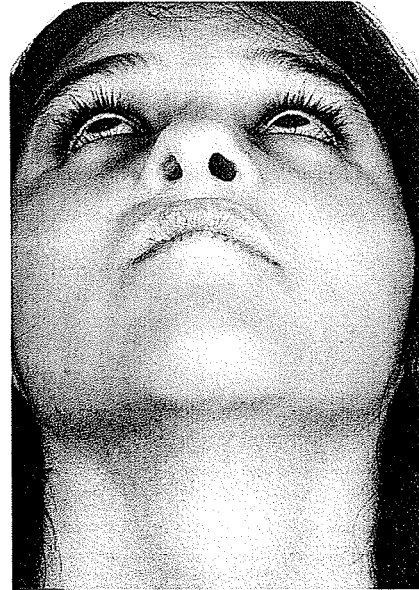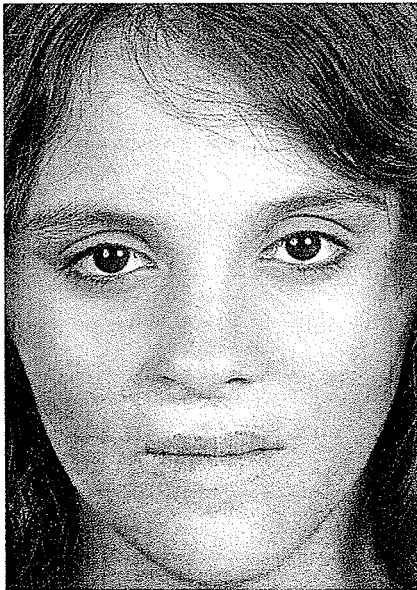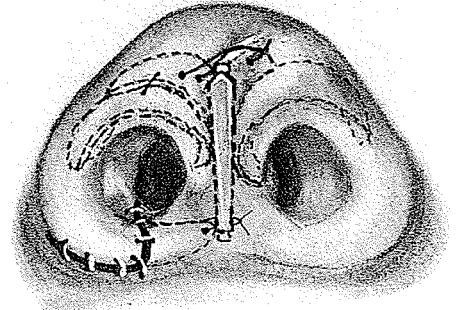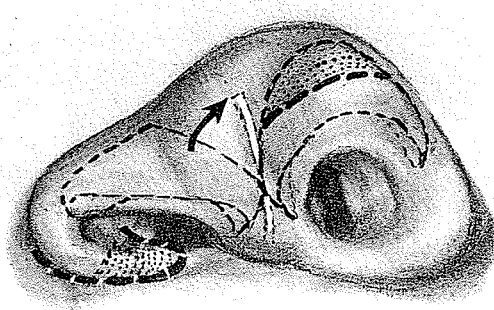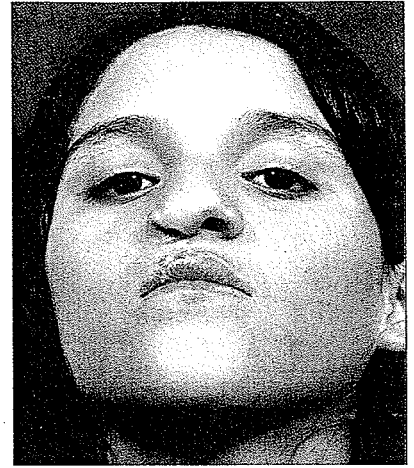
The problem of the dislocated alar cartilage had continued to pose a problem. Freeing it from the skin attachments and lifting it with sutures, did not correct the deformity. Finally in 1982 in *Plastic and Reconstructive Surgery* I described a method of freeing the medial two-thirds of the alar cartilage through a corrective alar margin incision. The appeal of this approach was that it enabled positioning the most displaced portion of the alar cartilage into normal position and fixing it with permanent sutures.
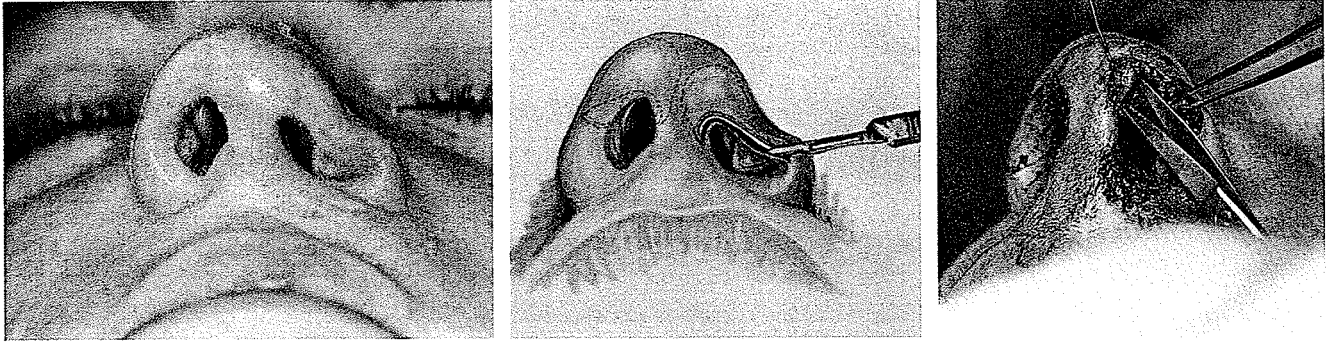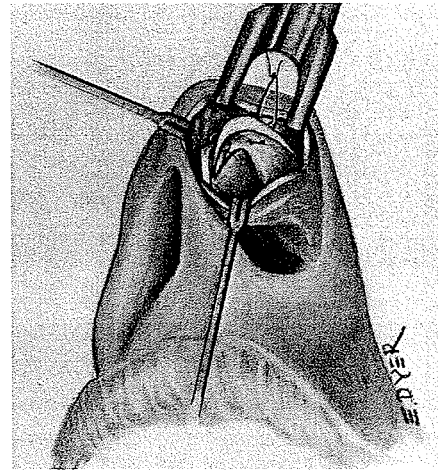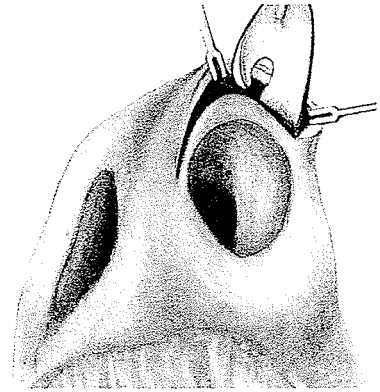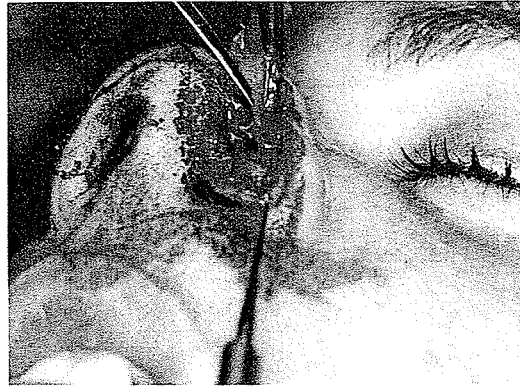
John Reynolds, who had previously described an alar cartilage lift procedure, wrote to me expressing his approval of this modification. This approach was used in adults but also at age four and a half to five years to prepare the child for school.


The freeing of the slumped cartilage on the cleft side through an alar margin incision was difficult before the age of

four years. Not only is the cartilage friable but it is severely adherent to the nasal lining which is extremely thin. Once dissected out of its abnormal position in the columella and along the alar margin for two-thirds of its length the cartilage can be lifted and fixed to the opposite alar cartilage at the crus, as well as to the septum with Prolene sutures to symmetrize the alar arches. This left the lateral vestibular web obstructing the nasal airway requiring direct excision. When the slumped alar cartilage was too attenuated to demand a respectful arch to match the normal side, half of the normal alar cartilage was taken and used as a sutured onlay to bolster the weak side. I began to use this lift of the alar cartilage at four years of age with some success. To wait to correct the nose until the patient is an adult or teenager offers only the advantage of more mature tissue for easier dissection. The correction of the lip early without associated nasal correction leaves an ugly nasal deformity, which is traumatic through the teen years, often taking a painful toll psychologically. This provided stimulus and pressure on surgeons to try again for early primary nasal correction.

PRIMARY NASAL CORRECTION

W. T. Berkley in 1959 presented a primary correction of the unilateral cleft lip nose using the Joseph external incision rotating the displaced nasal component up into near normal position. He used a Z-plasty to correct the lateral vestibular web. The nose was improved but the external scar, although unnoticeable in some cases, was less than ideal.
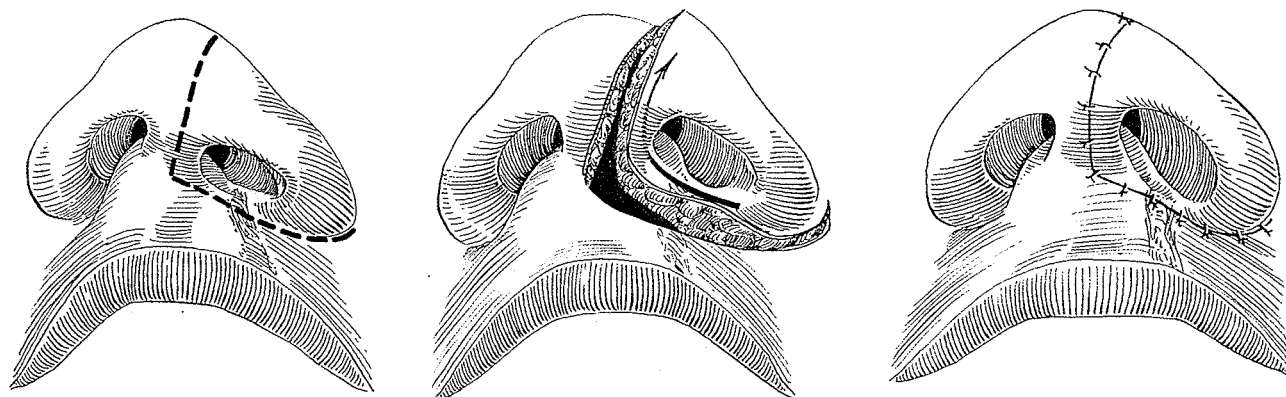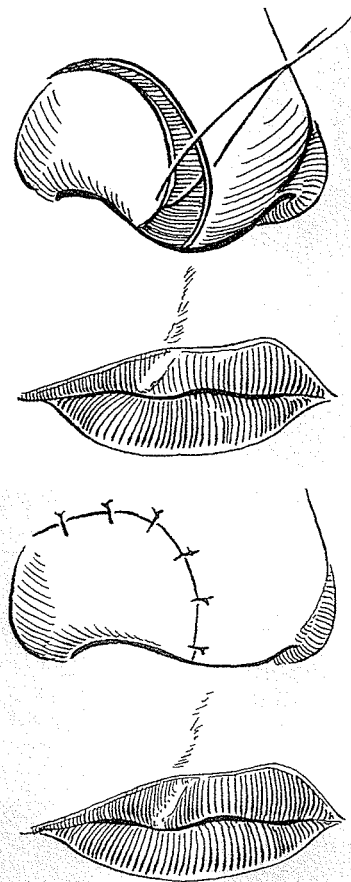
In the mid-60s stimulated by Berkley, I went underground during the primary lip closure and, through an intercartilaginous incision, freed up the displaced alar cartilages, lifted and sutured it to the septum. This was described in *Cleft Craft 1*


and the method gave early improvement but required more secondary work later, so eventually this primary nasal procedure was discontinued temporarily. Others continued to propose primary nasal correction. In 1985, R. Pigott, who had been a Fellow with me in 1967 while I was using the primary nasal correction, described the "leapfrog" positioning of the alar cartilage during the primary lip surgery. In 1986 E. Salyer also proposed alar cartilage positioning much the same as we all had described.

For years it was thought and taught that the severity of the nasal deformity was in direct proportion to the severity of the lip cleft. In 1948 at Professor T. P. Kilner's cleft palate clinic at Lord Mayor Treloar Hospital, Alton, England, I observed a microform cleft of the lip with merely a congenital ridge associated with a typical severe nasal deformity. I realized then that the severity of the lip cleft had nothing to do with the severity of the nasal deformity even though the severity of one is often accompanied by the severity of the other. Since then I have observed many cases of microform lip cleft with more severe nasal deformity.

In a Hunterian Lecture entitled *"Embryonic Rationale for the Primary Correction of Classical Congenital Clefts of the Lip and Palate"* presented in 1993 in Oxford, England I outlined a treatment design to complete the specific cleft failures in the normal embryogenesis. At 7 weeks' gestation maxillary prom-

inences increase and migrate medially. Finally the cleft is overbridged by mesenchyme and fuse. The floor of the nasal cavity is completed by a pair of shelf-like palatine processes extending medially from the maxillary processes. In the classic cleft the nasolateral process unites with the maxillary process which joins the alar base to the lateral lip. The failure of mesenchyme migration anterior to the shelf-like palatine processes accounts for the cleft in the nasal floor and the resultant flaring of the nasal ala. Had the mesenchyme migration proceeded normally across the nasal floor, pushing the medial crus of the lower lateral alar cartilages upward into normal position in the nasal tip, the columella would have been stretched to accommodate this action and the septum would have projected straight forward. Failure of this mesenchyme action leaves the lower lateral cartilage in the slumped marginal position in the alar rim dislocated from its mate in the nasal tip. The septum, unopposed from the cleft side, is pushed from the normal side until it deviates into a slant over the cleft with its base dislocated out of the vomerian groove. The nasal vestibular web is but a slack in one direction and tenting in another in the chondromucosal lining, due to the failure of this entire component to be pushed up and rotated into balance with the normal side.

Correction of this embryonic failure is consistent with, but an extension of, the basic principle of moving tissue into normal position and retaining it there. Creating a symmetrical, sound platform for the nose was the first step in bringing tissue into normal position. Pre-surgical orthodontics, as started by C. K. McNeil in 1950, improved by Burston, Hagerty, Manchester, Hotz, Gnoinsky, Georgiade and Latham, was finally perfected by R. A. Latham in 1980. To lock the alveolar segments into their new, more normal position and close the anterior cleft, a periosteoplasty was designed first by T. Skoog in 1965 and later improved by R. A. Latham. This approach was presented by D. R. Millard and R. A. Latham in 1990.

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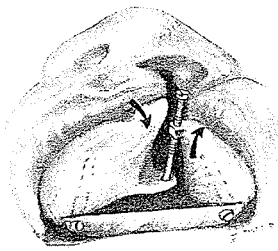
The Latham co-axial orthopedic appliance with its transverse bar and screw is fitted into the cleft and pinned. Each turn of the screw pulls the rotated maxilla in and pushes the retracted lateral maxilla out until alignment and approximation of segments to within 2 to 4 mm is accomplished. This creates a symmetrical platform. As soon as this is accomplished the cleft of the alveolus and anterior hard palate are closed with a periosteoplasty, which fixes the segments into normal position.
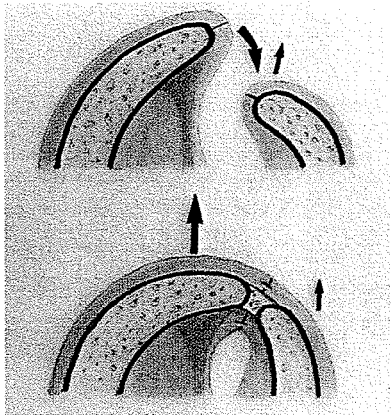
A SEPTAL CORRECTION DIVIDEND

In the unilateral cleft during the corrective rotation of the two maxillary segments with the minimal aid of an intact outer nasal arch the cant of the septum is corrected as it pivots in the vomerian groove and gradually assumes a vertical (upright) stance. This of course does not happen in all cases but in most cases the correction is remarkable. At this point both the nose and lip can be constructed. At age six months the lip is rotated and advanced, and during this process flap c is cut off from the lip and through a unilateral membranous septal incision is advanced in a one-side forked flap lengthening of the columella. Through this exposure and through alar margin and intercartilaginous incisions the displaced medial two-thirds of the alar cartilage is freed carefully from the vestibular lining with scalpel and scissor dissection and from the skin covering with right-angled scissors. It is freed out of its depressed position in the columella and tip, lifted and sutured with a 4–0 Prolene (Ethicon) to create a symmetrical medial crus in the nasal tip and maintained with sutures from the freed cartilage's upper edge to the septum and to underlap the upper lateral cartilage. With a cut-back in the lateral extension of the intercartilaginous incision across the vestibular web, the chondromucosal lining is shifted upward closing the back-cut as a V-Y and flattening the web to improve the airway. The ala base is cinched to complete the nasal correction. The lip is then rotated and advanced as both the lip and nose have enjoyed their definitive correction at age six to eight months.
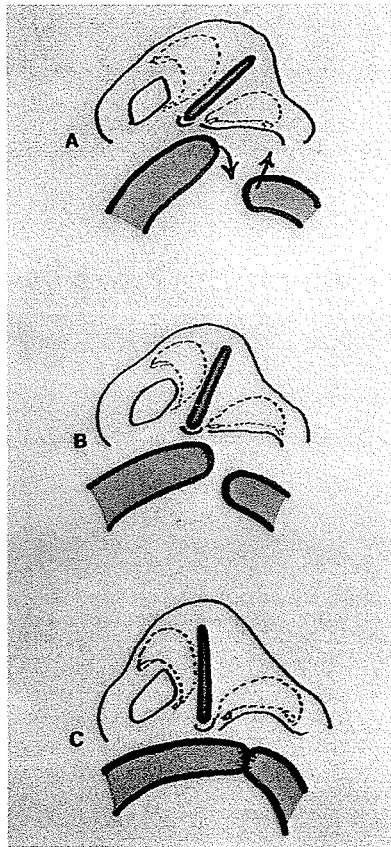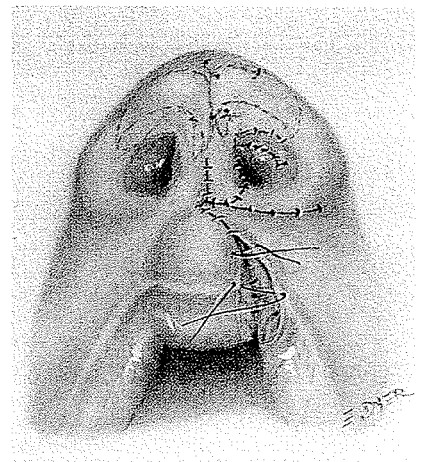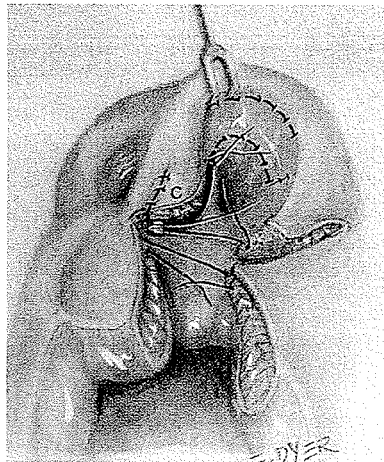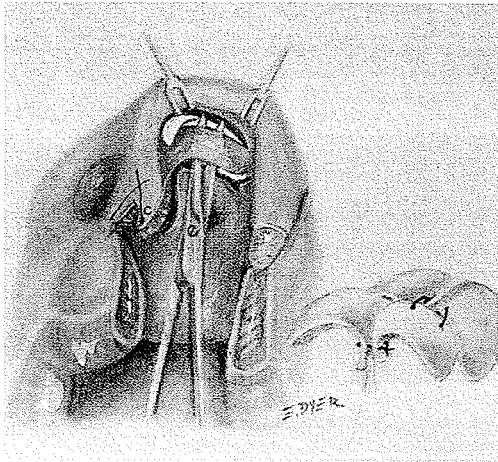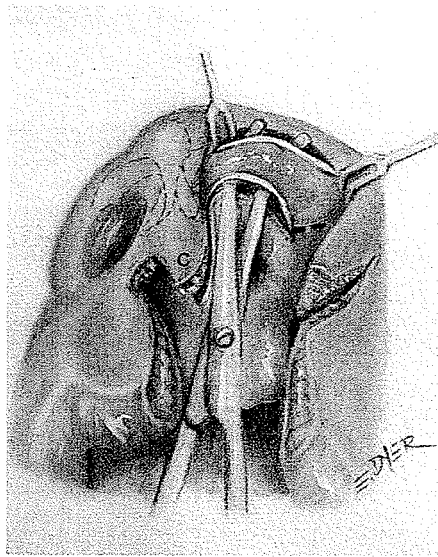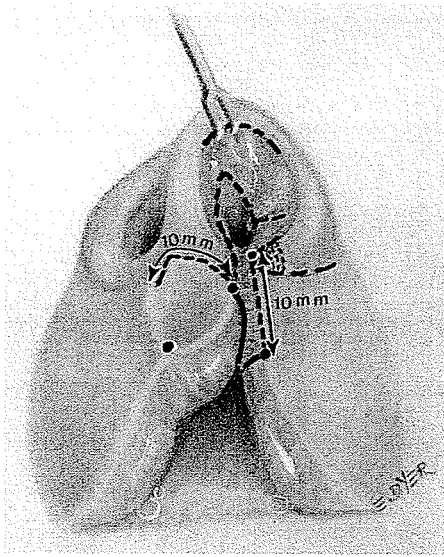
Here are three examples of pre-surgical orthodontics, peri-osteoplasty and lip adhesion followed at six to eight months with rotation-advancement of the lip and primary correction of the nose with alar cartilage freeing and lifting, columella
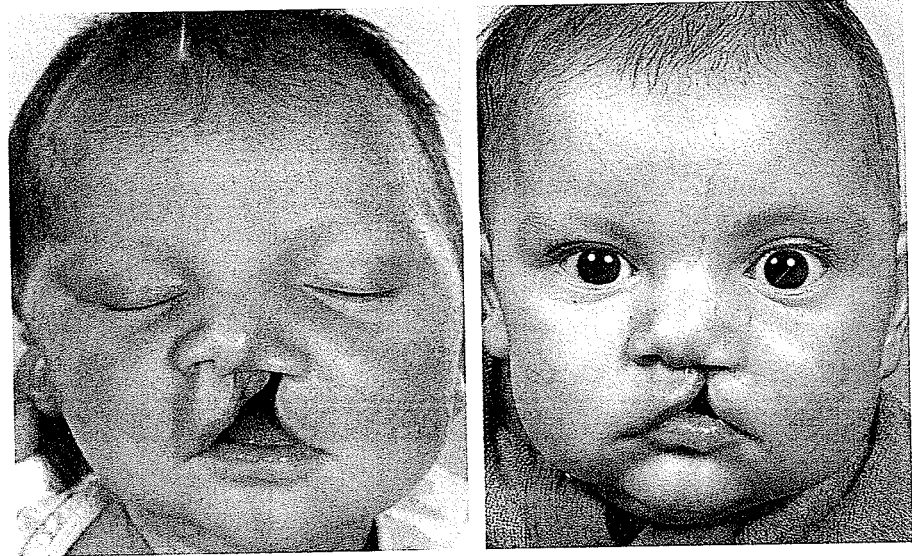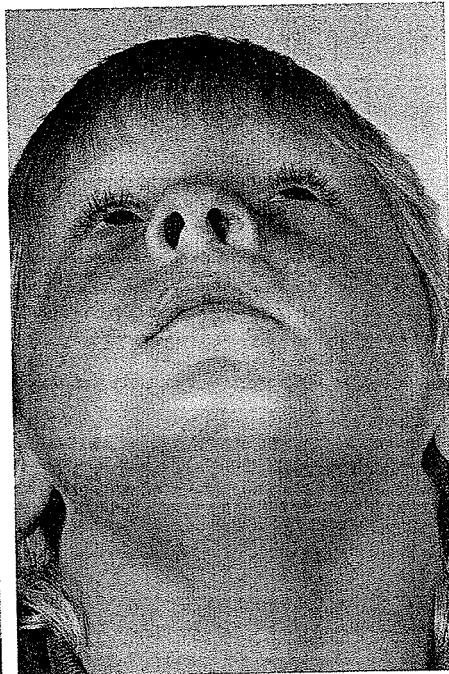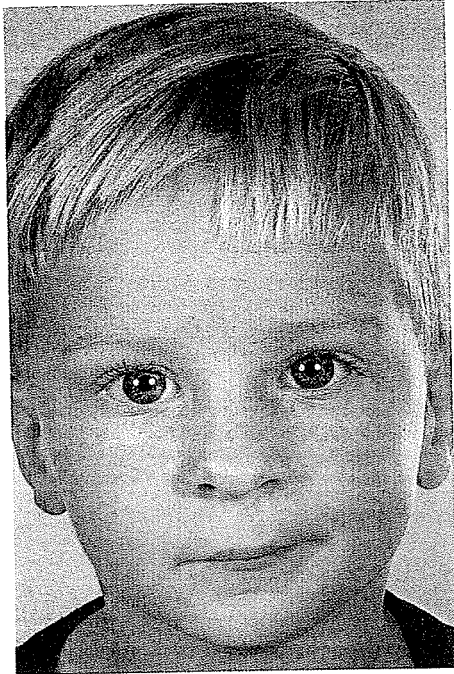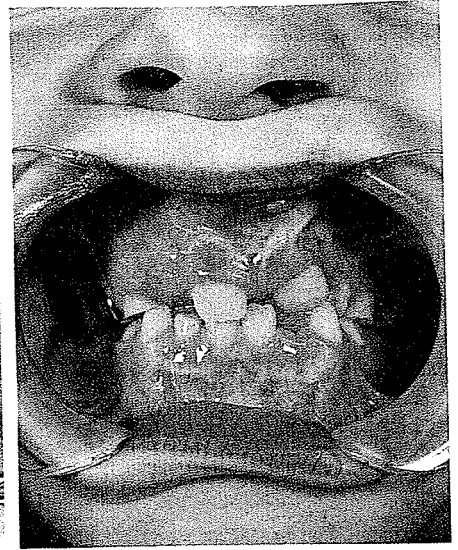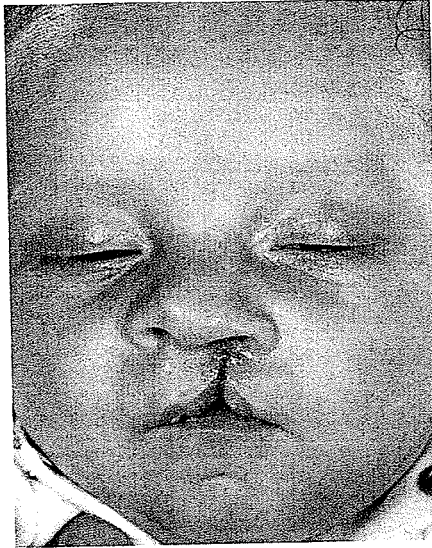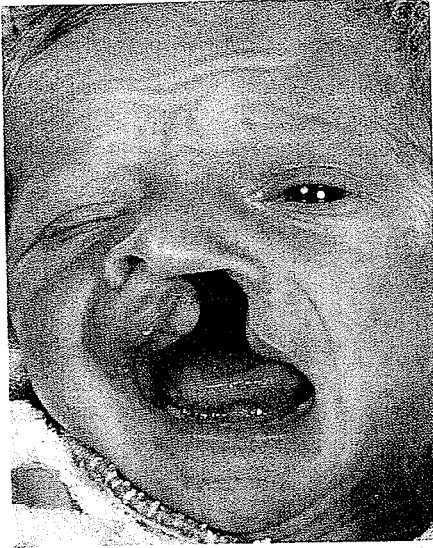
lengthening and alar base cinching. Finished at two years and seen again at three years.

For those concerned about normal growth following early surgery, let me cite this fact. From the 1930s through the 1950s Blair, Brown, Byers and McDowell freed the alar cartilage from the dorsal nasal skin radically and then tried to lift the cartilage into a better position with through-and-through sutures exiting the dorsal nasal skin and tied over a bolster. I observed these cases in early 1950 and noted that when the external suture was removed there was some loss of correction immediately and more over time. Of greater importance, I noted in the later postoperative results that there was never

any evidence of lack of nasal growth because of this early surgery.

The only remaining snag lies in the surgeon himself. If he believes in the principle of moving tissue into normal position and retaining it there and understands the technique required to accomplish this, then it comes down to his dexterity, patience, and persistence. There is also desire but as John Ruskin, the famous nineteenth-century English author and critic wrote, "Love of our work ensures honesty of our best endeavor." There is no way each case can be corrected 100% but the closer the better!

NASAL DEFORMITY IN BILATERAL LIP CLEFT

The nasal deformity in bilateral clefts is more than double that in unilateral clefts.

Projecting Premaxilla

Failure of mesenchyme migration from both maxillary processes into the nasomedial processes causes the maxillae not to form bony union with the premaxilla. At the time of birth this lack of union has allowed the premaxilla, at the head of the septovomerian growth spurt, to project ahead of the lagging lateral maxillae which exaggerates the deformity and disrupts the entire nasolabial platform.

Nasal Deformity

The maxillary mesenchyme not migrating across the nasal floor fails to push the lower lateral alar cartilages up into the nasal tip and give a compensating stretch to the columella. Rather, without maxillary mesenchyme penetration from each side, the muscleless prolabium sits forlornly on the end of a very short columella attached to a flat nasal tip with the alar cartilages dislocated from the tip, positioned along the alar margins and stretched over the cleft as flaring alae. Due to the inherent shortness of the entire fronto-nasal component from nasal tip, columella and vertical length of prolabium, the nasal septum has been restrained from normal anterior

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projection and no septal cartilage has been allowed to project normally into the nasal tip.

Symmetry

Complete bilateral clefts with all their faults do have one asset: symmetry. The asymmetric bilateral cleft cannot boast this advantage and necessitates its surgical correction be involved also with symmetrizing the defect.

Flaring Alae

A procedure designed for correction of the flaring ala is the alar cinch which offers a double value in the bilateral cleft. There are three variations of this procedure. The standard design de-epithelializes the skin of the medial portion of the nostril sill flap which is based on the alar base. The alar bases are freed and the de-epithelialized flaps are joined to each other under the base of the columella near the nasal spine.
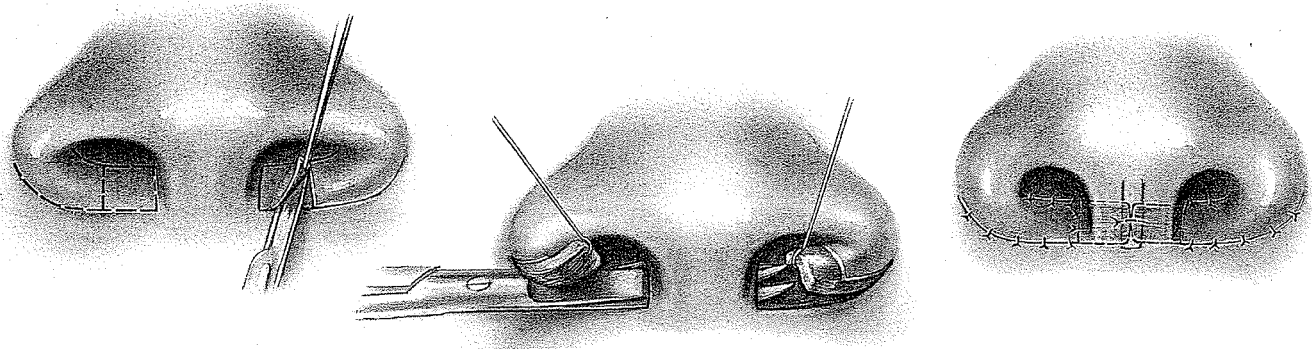
A second variation of this procedure is used in thick alar bases without much nostril sill. A flap is dissected out of the alar base and the defect closed to thin the alar base. The subcutaneous tether is sutured to the opposite tether behind the base of the columella as in the standard approach.
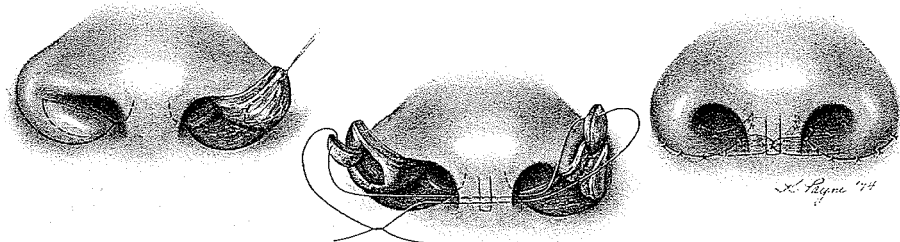
The third variation splits the nostril sill flap into a superficial skin flap and a deep subcutaneous flap. The deep flap is cinched in the usual fashion but the skin flaps are advanced into the skin defect between the columella and the septum.
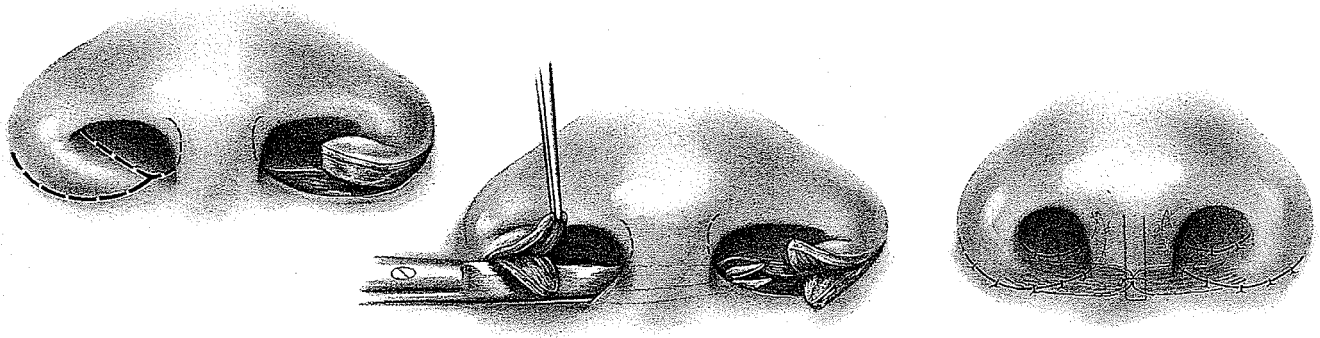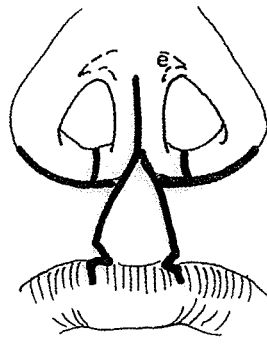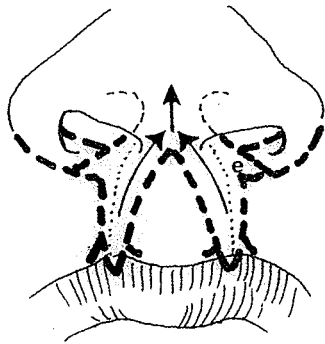

SECONDARY COLUMELLA LENGTHENING

The most glaring deformity in bilateral clefts is the depressed nasal tip snubbed by the short bridle of little to no columella. Over 160 years ago in 1833 J. Gensoul directed his attention to this aspect of the deformity when he described a midline V-Y advancement flap from the upper lip to lengthen the columella. This achieved some lengthening but added a third scar to the bilateral scars already present in the lip. It was the abhorrence of adding to the gridiron of vertical scars of the lip that stimulated the conception of the forked flap for columella lengthening.

As in the 30-day embryo the future prolabium and columella sit side by side, it seems not unjustified to take from the prolabium to help the columella. This plan enabled simultaneous revision of bilateral lip scars to lengthen the columella while reducing an abnormally wide prolabium to normal philtrum dimensions. The forked flap was designed originally as a secondary procedure. It was first used at St. Joseph Hospital in Asheville, N. C. in 1956 and published in 1958.


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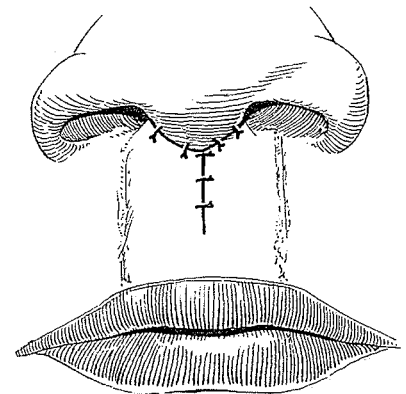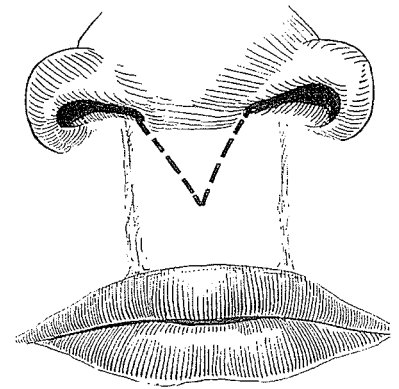
The forked flap is still used in this capacity in those cases where the prolabium is wide and can spare the fork.

Standard Forks

Here is the use of a standard forked flap for secondary columella lengthening. The upper lip was ample enough to benefit by the sacrifice, and the closure of the lip following the forked flap enabled lateral advancement of mucocutaneous flaps to construct a cupid's bow and midline tubercle. Most forked flap advancements are accompanied simultaneously by whatever other necessary corrective rhinoplastic procedures, such as cartilage reduction, septal shortening and correction, bridge lowering and osteotomies. The forked flap of course provides open rhinoplasty.
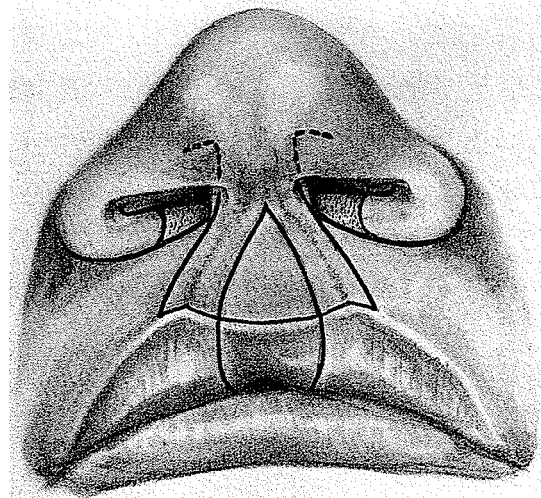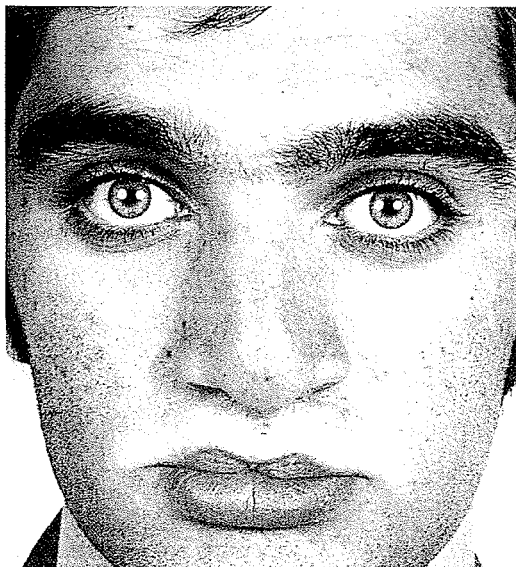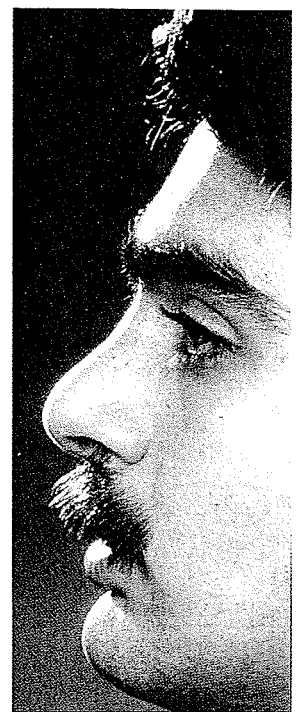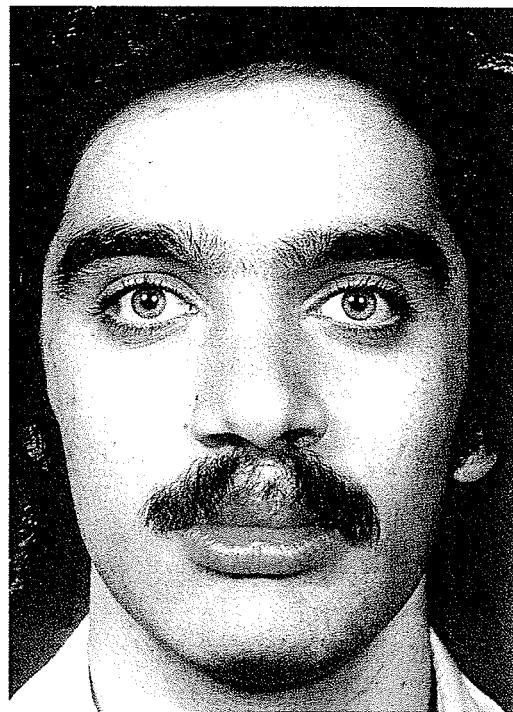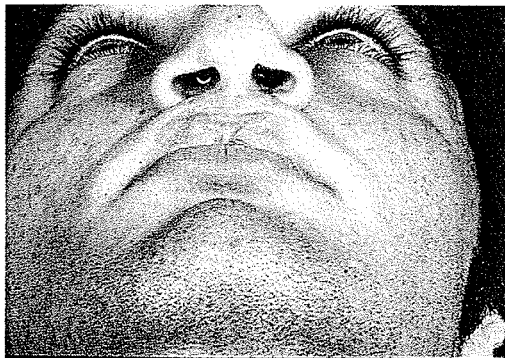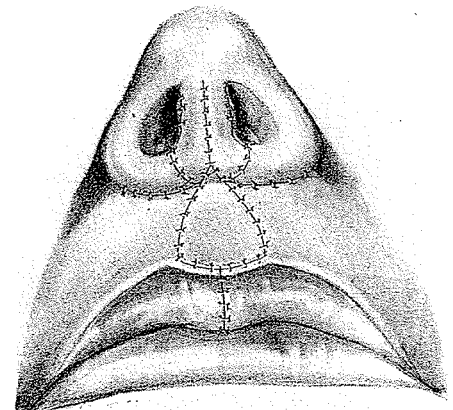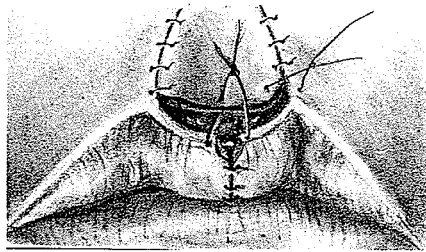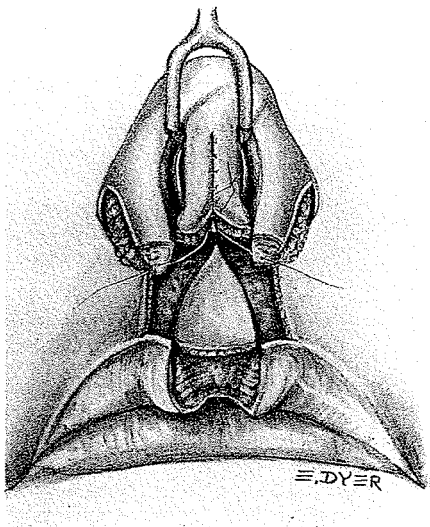
In those cases where a primary bilateral cleft lip closure, such as described by Manchester and others, was accomplished early with no concern for the nose, the lip often is acceptable. Unfortunately, the lip eventually has to give up skin to release the depressed nasal tip. A forked flap was used in this young female to shape the wide inartistic prolabium and lengthen the non-existent columella to allow release of the flat nasal tip. Bilateral alar cinch corrected the alar flare.

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Short Fork

Variation in the plan of the forked flap depends on the specific case. In this 20-year-old male the lower border of the upper lip was relatively tight but the upper portion could spare a fork. Certainly the short columella and the grossly depressed nasal tip needed skin. A short fork was acceptable to the lip and improved the columella. From this natural open rhinoplasty the tip was reduced and the bridge and septum corrected.

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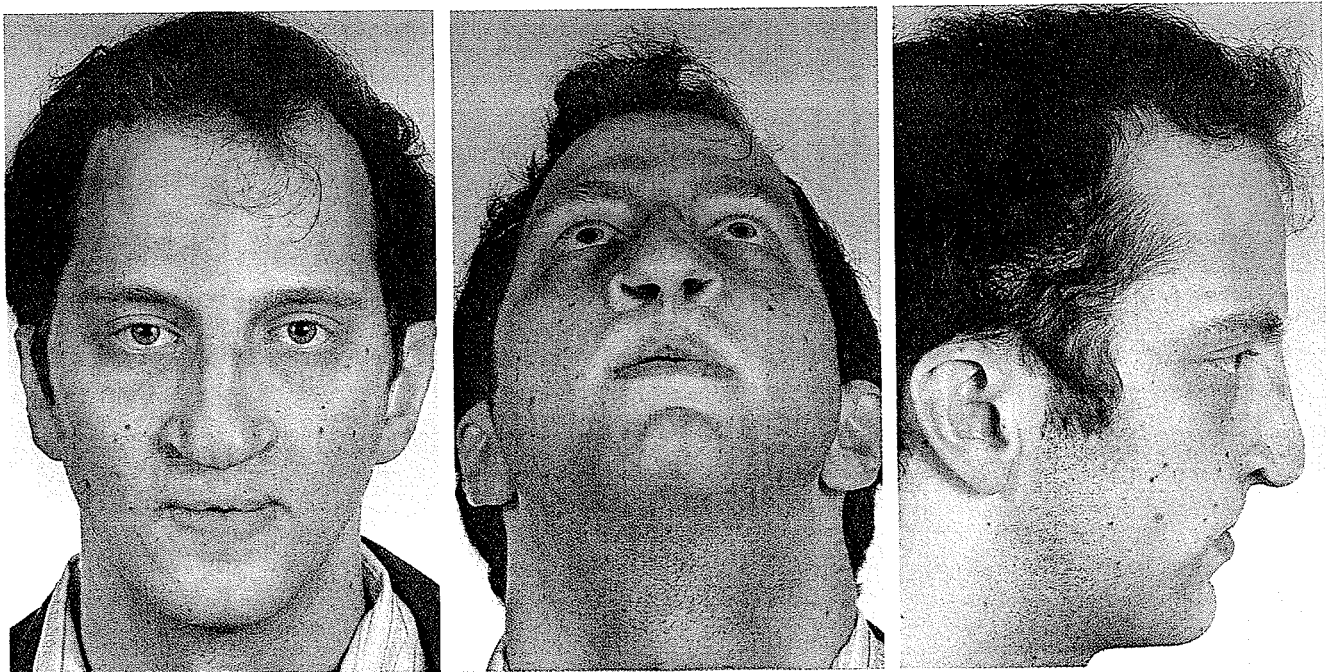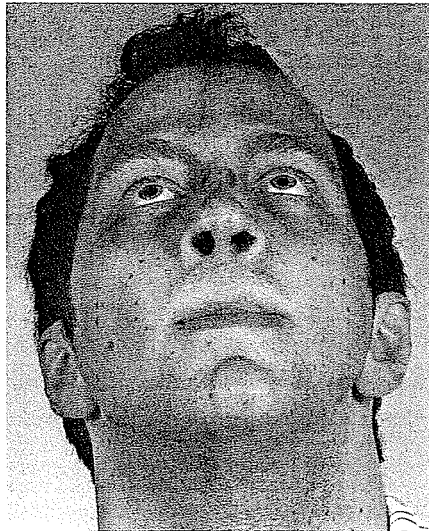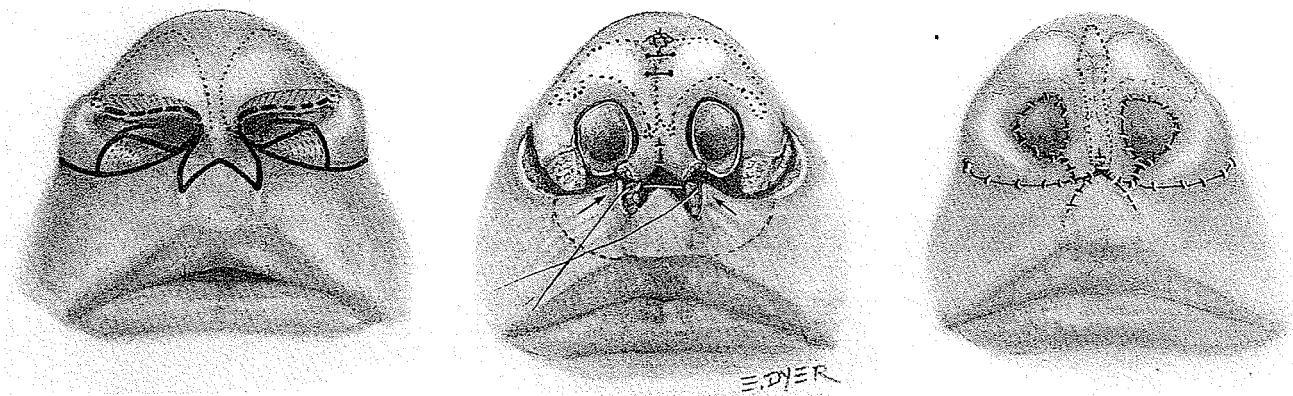
Odd Forks

Again the case dictated the configuration of the forks. The diminutive short prolabium and the relatively long lateral lip elements called for a design that obtained skin for the columella and at the same time symmetrized the lip elements so that a philtrum and the lateral lip segments could be joined. The bilateral trilobed fork was gathered, trimmed, sutured together and banked in whisker position.

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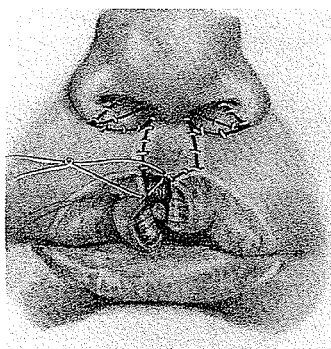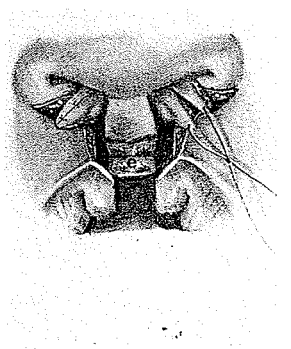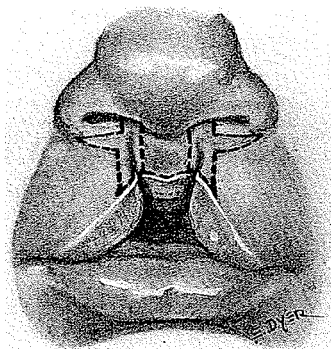
Three months later the banked forks were re-elevated and advanced to create a columella while releasing the depressed nasal tip. At the time of forked flap advancement and in natural open rhinoplasty the alar cartilages were freed, lifted and sutured to each other in the tip. The patient is seen after a 10-year period.

Forked Flap in Primary Closure

In 1960 the forked flap was designed as a delayed procedure in the primary bilateral lip correction. In 1966 it was tried as a primary procedure at the time of lip closure but the precarious prolabium blood supply coming from the premaxilla did not warrant the gain of this action. In 1975 H. McComb lengthened the short columella primarily with the forked flap at age 6 weeks. At three months, through an upper buccal sulcus incision, t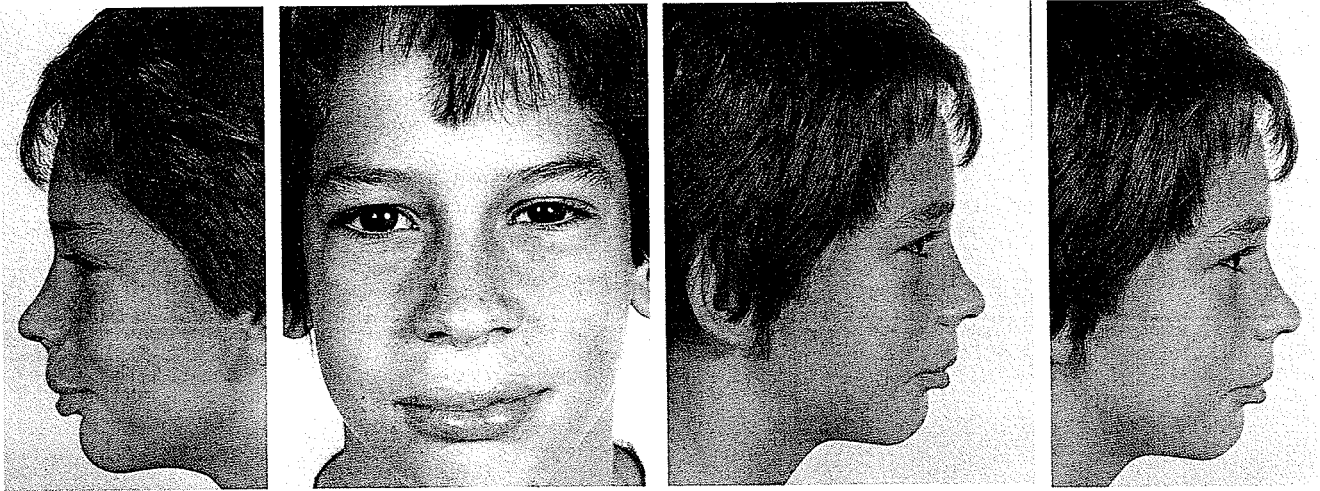he skin of the nose was freed from the under structures particularly the alar cartilages. Silk sutures through the intercrural angles of the alar cartilages were brought out through the skin at the nasion and tied to lift the cartilage into better position. This certainly was a step in the right direction but as in most "tie-over" corrections when the suture is removed some of the lifting gain is lost, particularly when the displaced alar cartilages are not freed from their abnormal attachments to the lining. Long-term follow-up by McComb revealed less than ideal results, causing him to give up the use of the primary forked flap. I have always felt McComb was

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over-lengthening his columella and that this would be better corrected by reducing the amount of the forks shoved into the columella.

It is true that after the forked flap has been advanced into the columella the depressed nasal tip has been lifted dramatically, causing the nose to appear too snubbed and short. This stimulated M. T. Edgerton and J. L. Marsh in 1978 to advocate the use of an external V-Y downward advancement of the dorsal nasal skin to correct this illusional problem. Growth with development of the nasal bridge, as seen in the young cleft patient from 9 to 15 to 17 years, will correct the relations without the need of adding skin scars. As the bridge rises the nasal tip turns down. If you look for it you will see it in other cases in this book. For this reason I vehemently opposed this
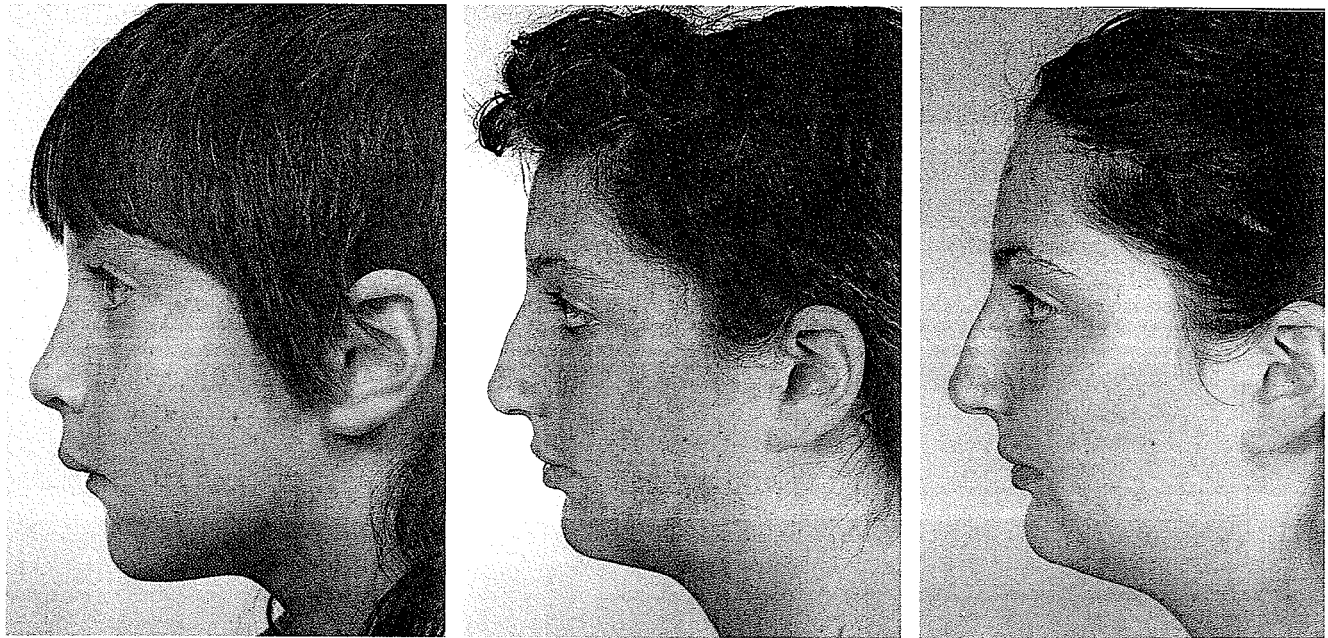
V-Y operation with its unacceptable dorsal skin scars.

In 1971 M. Duffy described banking the fork as a staged procedure. Subsequently I tried all variations of uses and stages of the forked flap which were described in *Cleft Craft 11*. Banking the forked flap has become a standard stage in columella lengthening. It avoids the five-point scar at the base of the columella and lets the lip construction be completed in the banking stage.

There are those who claim without actual justification that there is no true shortness of skin in the columella. The supposition is advanced that positioning the alar cartilages would correct the discrepancy like magic. Several surgeons such as R. Broadbent opposed the forked flap. Evidently these surgeons were not able to execute the forked flap to their satisfaction, but they never offered a better solution. When the primary surgeon devotes his entire surgery to lip construction, without anticipating the nasal needs, he may produce an accepted lip. Yet there are few predicaments more infuriating than to be faced with a respectable lip and its fine scars of infancy cowering under a flat nose without a columella. This condition is seen in most designs for bilateral cleft lip and certainly in the once popular Manchester approach. These methods require either acceptance of a snubbed nose or re-entrance into the lip years later to release the columella, but in the process may produce scars that do not compare favorably with the early ones. Of course there is always the composite auricular patch graft to lengthen the columella.

J. B. Mulliken tried to accomplish the same goal of lengthening the columella but without using the forked flap for extra skin. He freed the slumped alar cartilages through bilateral alar and a midline tip-columella incisions. The freed cartilages were sutured together in the midline in a more normal position. This entire maneuver was motivated to gain columella skin length without actually adding skin. The procedure improved alar cartilage position and might have given the slightest suggestion of increased columella length. It did not lengthen appreciatively a truly short columella and unfortunately most bilateral clefts suffer from very short columellas. His 1995 fine work suffers the same problem.

The same is true of the one-stage open tip rhinoplasty described by J. A. Trott and N. Mohan in 1993. By lifting the skin of the prolabium in conjunction with alar margin inci-

sions, an open exposure to the alar cartilages is achieved. Then the cartilages are sutured in corrected position and the prolabium replaced. The advantage achieved is in tip cartilage position with only slight relative nasal tip-columella improvement. There has been no true increase in skin in the area of columella shortness. In the Malaysian cases shown, where a flat nose and a relatively short columella may be better tolerated, those with some columella already present ended up short but almost acceptable, whereas those with no columella and lack of prolabial tissue resulted, as would be expected, in both inadequate columella and philtrum.

Mulliken, Trott and Mohan and others, by correcting alar cartilage position (which incidentally is necessary in almost all bilateral clefts), claim to lengthen the columella by squeezing the nasal tip skin into the upper columella. Coming from the opposite direction, in 1993 C. Cutting and B. Grayson proposed a thoughtful modification, which rolls superior prolabium skin up into the lower columella and lines it posteriorly with superiorly based flaps of lateral prolabium mucosa. This method unfortunately takes skin from the upper prolabium which is limited in most bilateral clefts. There seems to be a resultant asymmetry of the columella-lip junction in a relatively high percentage of their eight cases. This secondary deformity calls for a Z-plasty, H. S. Deneke and R. Meyer, the scars of which, of course, partially cancel any gains. As noted honestly by Cutting, "Patients with a small prolabium are not candidates for this procedure . . . while the lip segment seems to stretch as usual, the columella does not. In such patients, we prefer the two-stage method described by Millard."

For 20 years, from the mid-1960s to the mid-1980s, my standard two or three stage approach depended on the size of the prolabium. When the prolabium was large it could spare a forked flap primarily pared off its sides. These flaps were banked in the first stage and later advanced into the columella at a second stage. Yet to have a large prolabium in Miami has been rare.
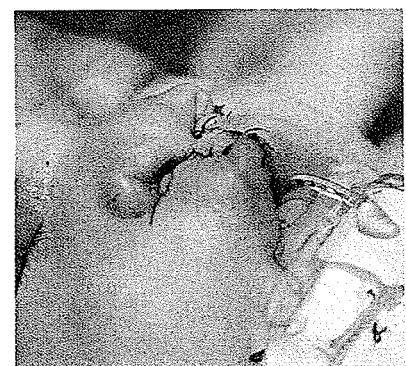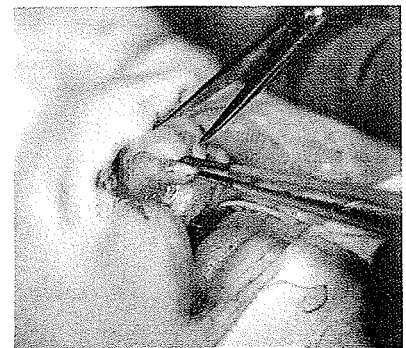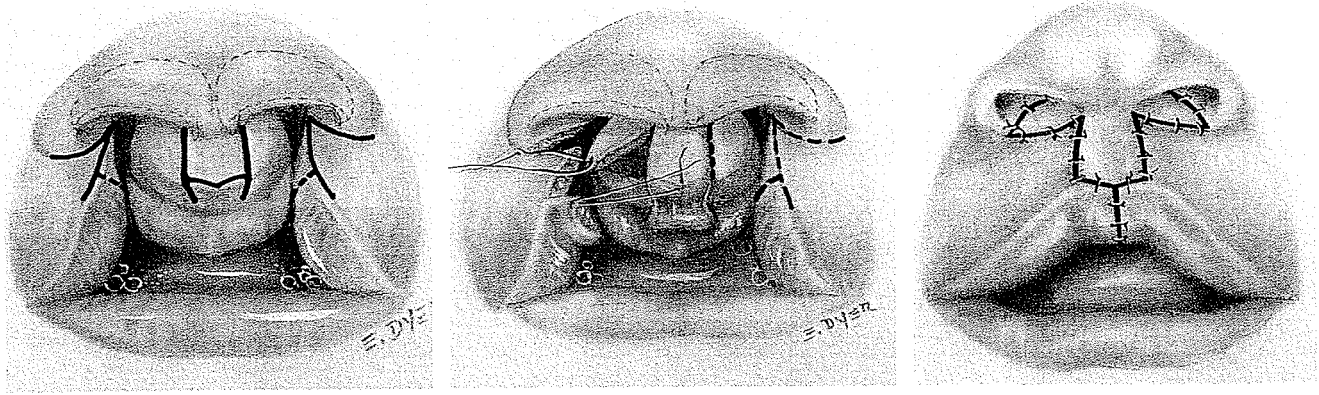
When the prolabium is small, which is the usual state, then the edges of the lateral lip elements are attached to the freshened sides of the prolabium. In time the lateral muscular elements will stretch the prolabium to double its size providing plenty of tissue for a forked flap. The flap is first banked in whisker position and then is advanced into the columella with release of the depressed nasal tip. Here are three bilateral clefts treated in this manner of prolabium stretch, then forked flap banking, and finally advancement into the columella with alar cartilage correction. These patients were in their early teens before the nose became acceptable. Note also that the snubbed nose in the child after forked flap advancement settled into normal position gradually with age and nasal
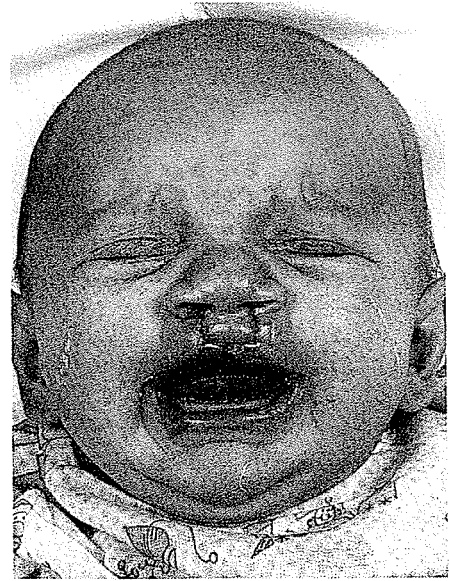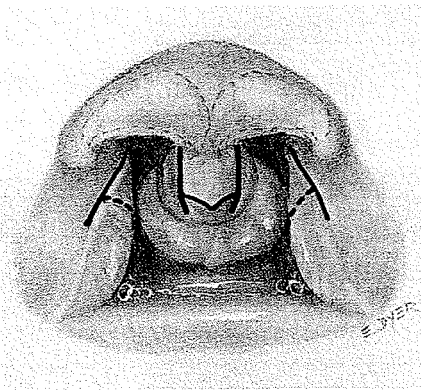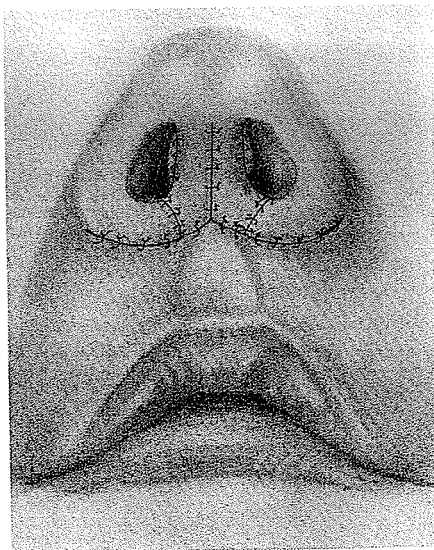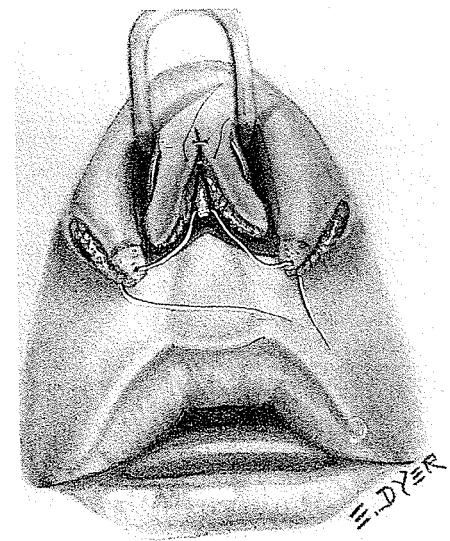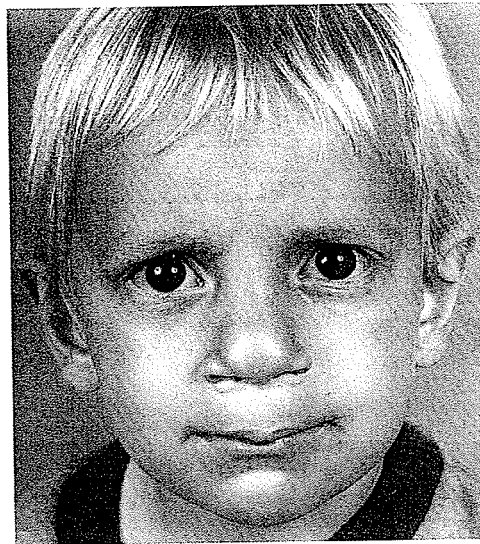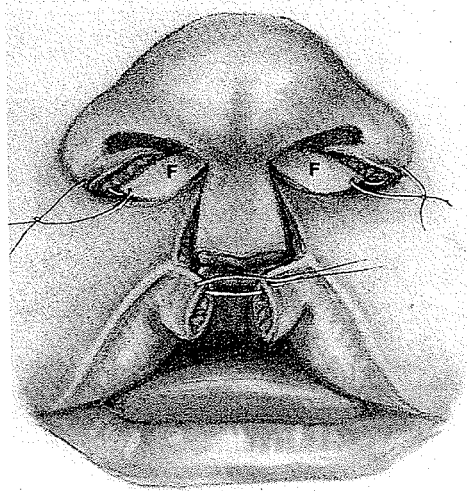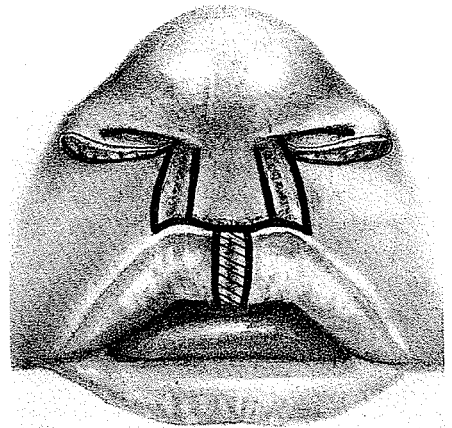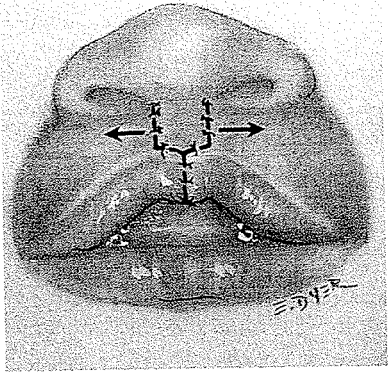
bridge development. Here he is at the age of 12 years.
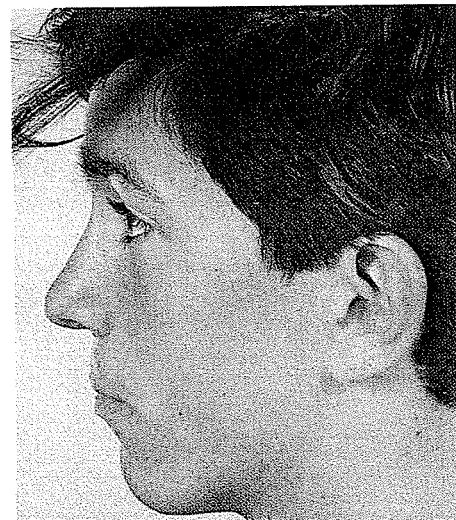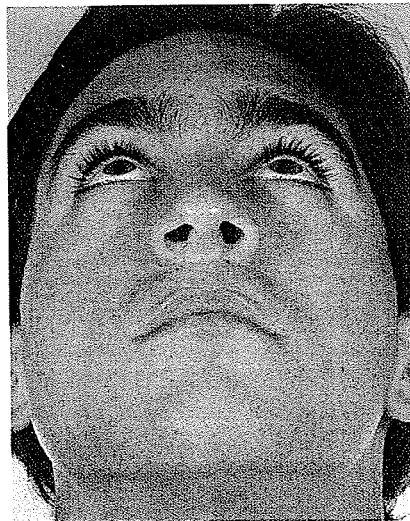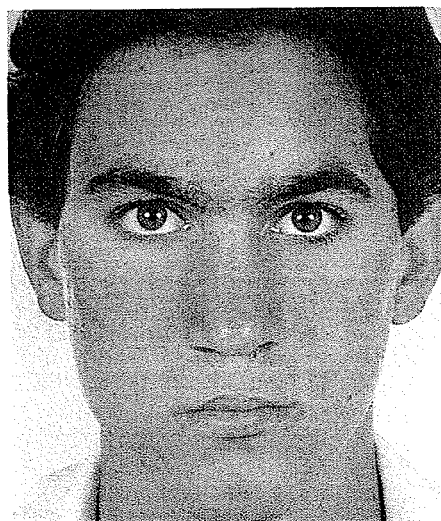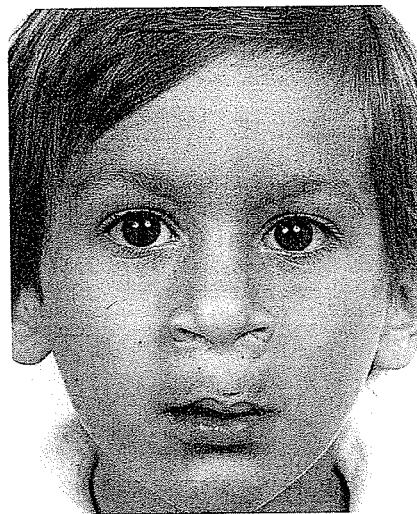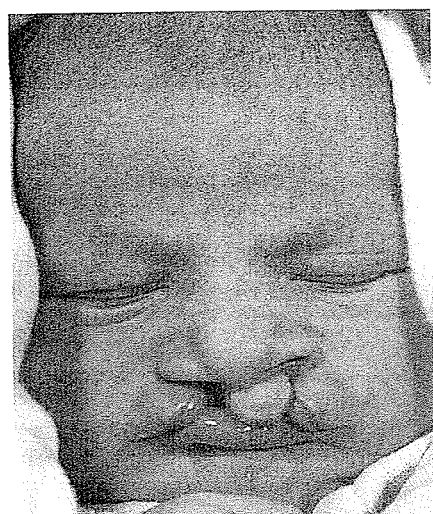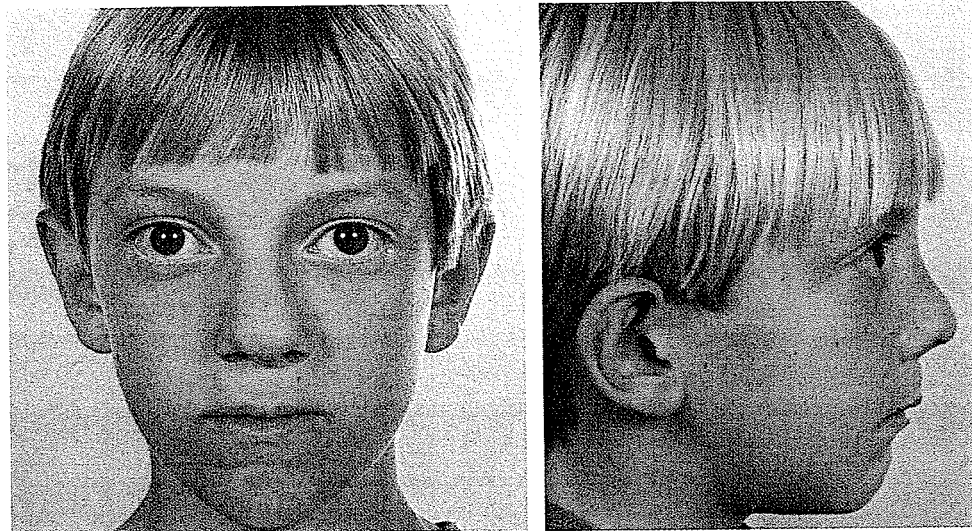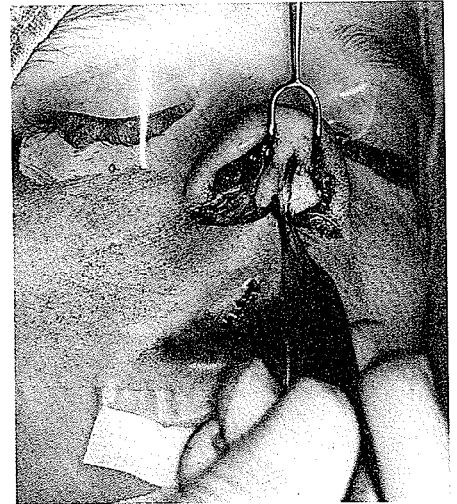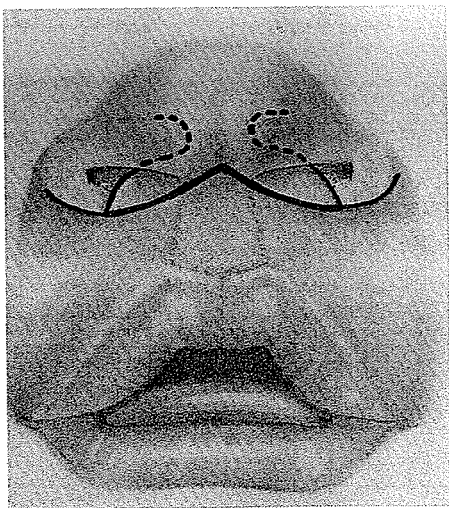
Here he is at the age of six and at the age of fifteen.
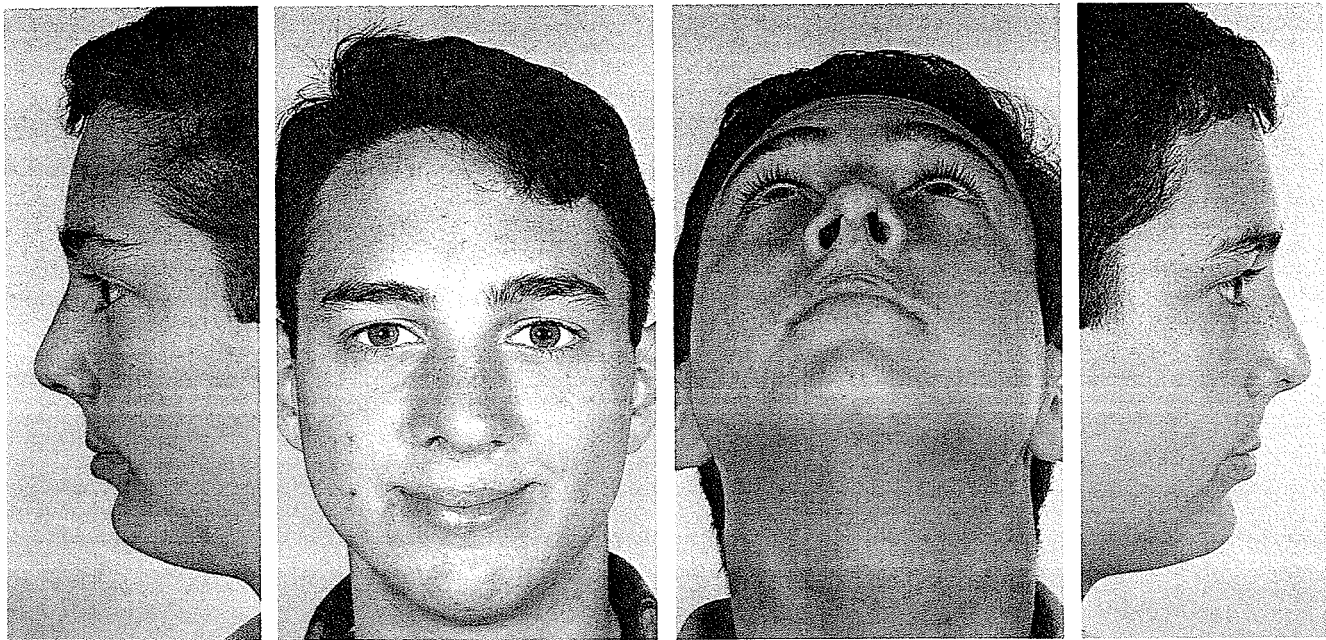
CORRECTION BASED ON BIOLOGIC DESIGN

Before correction by completion of the forked process in bilateral clefts is possible, alignment of facial parts is a first priority. Presurgical orthodontics as pioneered by McNeil and Burston, Georgiade and Latham and developed by Latham is the initial corrective step. The premaxilla and maxillae are aligned by the use of an elastic chain, two vomer pins and an expander appliance. By direct and gradual force the maxillae are spread and advanced as the premaxilla is restrained and set back without buckling the septum. It is pressured back like

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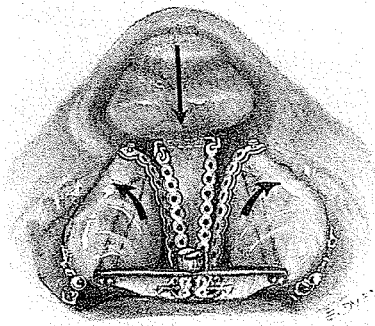
closing a drawer and is not bent by flexion. There may be re-
action to the compression by temporary swelling of the sep-
tum but this soon subsides. Once in alignment and 2–4 mm
apart on each side it is possible to turn mucoperiosteum out
of the alveolar clefts and construct a periosteal tunnel across
the bony gaps as diagrammed in 1990. Correction of the mes-
enchyme migration failures in the nasal area, after stabilizing
a symmetric platform and constructing the nasal floors, in-
volves lengthening the columella and freeing and positioning
the alar cartilages and cinching the flaring alar bases.

Eighteen years ago Ralph Latham first teamed with me on
several cases and over the past 12 years all complete clefts
have had the Latham presurgical orthodontics followed by bi-
lateral periosteoplasties, which stabilized a symmetrical plat-
form and constructed the nasal floors. This has set the stage
for earlier correction of the nose.

At the time of periosteoplasty, the type of primary lip clo-
sure depends on the size of the prolabium. If the prolabium
is small, an adhesion is achieved and stretching of the pro-
labium over a year or two will provide adequate tissue for a
forked flap, leaving enough tissue to form a normal philtrum.
If the prolabium is large, the forked flap can be spared from
its sides and banked in whisker position at the time of pri-
mary closure of the alveolar defects and the lip.

Banking Stage of Forked Flap Preferred
Whether the forked flap is banked primarily or as a secondary
procedure during palate closure after the prolabium has
stretched, the banking procedure offers assets. It avoids the
five-point scar at the base of the columella and it allows com-
pletion of lip construction during the stage of banking. Then,
too, advancement of the forked flap from banked position is
easier because the lip does not have to be re-entered. The gen-
eral action of advancing the banked fork is similar to the
Carter-Cronin procedure except for one cardinal point. By
banking the fork in whisker position under the alar base there
is actual new tissue provided for columella lengthening.

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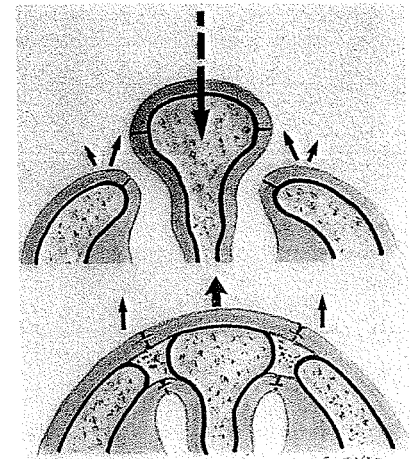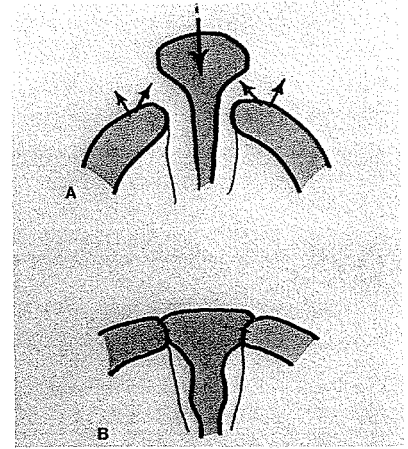
Advancing the fork from the banked position or from the lip into the columella is similar in technique. The fork is tubed with skin sutures in front and then the forks are curled into a column with 5–0 catgut sutures in the subcutaneous tissues posteriorly. This extended column is advanced along the membranous septum as columella and the tips of the fork are trimmed and splayed to help in construction of the nostril sill. One of the advantages of the forked flap has always been the improved advancement of the slumped medial crura of the lower lateral alar cartilage as the tip of the nose was released during columella lengthening.
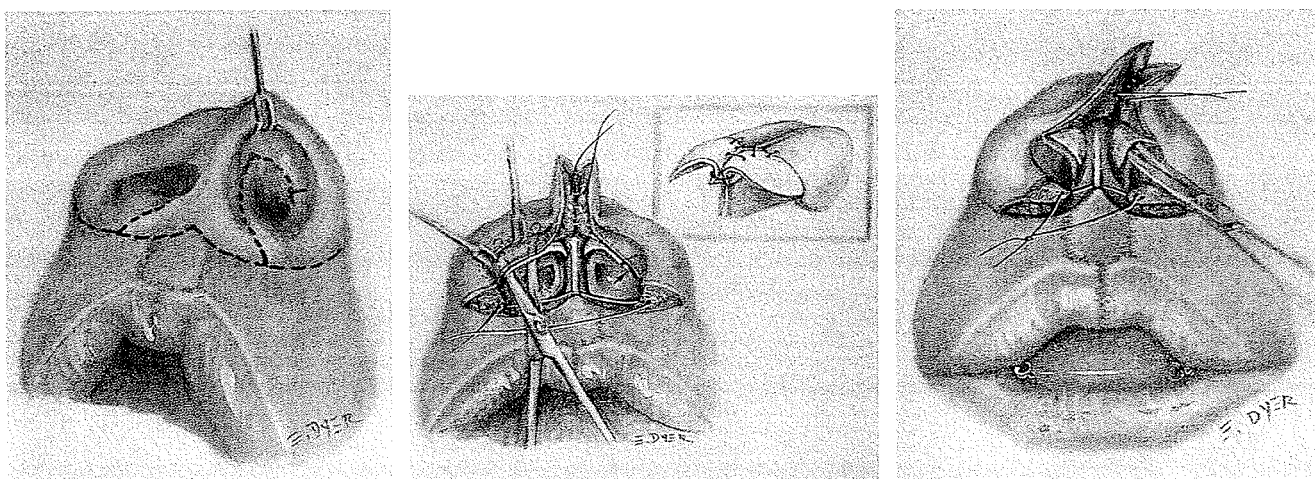
Over the last 8–10 years, the advance of the forked flap into columella and open rhinoplasty has led to extension of the membranous septal incisions as intercartilaginous incisions with lateral back-cuts across the vestibular mucosa at the webs. This allows freeing of the medial two-thirds of both alar cartilages from the overlying skin and the inferiorly lying mucosa. This dissection is facilitated by alar margin incisions to give even better direct view of the cartilage adherence to the nasal lining. The freed ends of the alar cartilages are sutured to each other with mattress sutures of 4–0 Prolene to create a matching pair of medial crura in the nasal tip. The upper edge of each freed alar cartilage is sutured under direct vision to the septum and to underlap the upper lateral cartilages. The vestibular lining is closed carefully with catgut su-

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tures, letting the lateral back-cut close in a V-Y to eradicate the vestibular web and open the airway. This approach is similar in broad principle with a method described by R. Pigott in 1988 but different in technical detail. Finally the alar bases are cinched to complete the nasal corrections.

These intraoperative views may clarify the dissection and suturing of the alar cartilages during the advancement of the forked flaps.
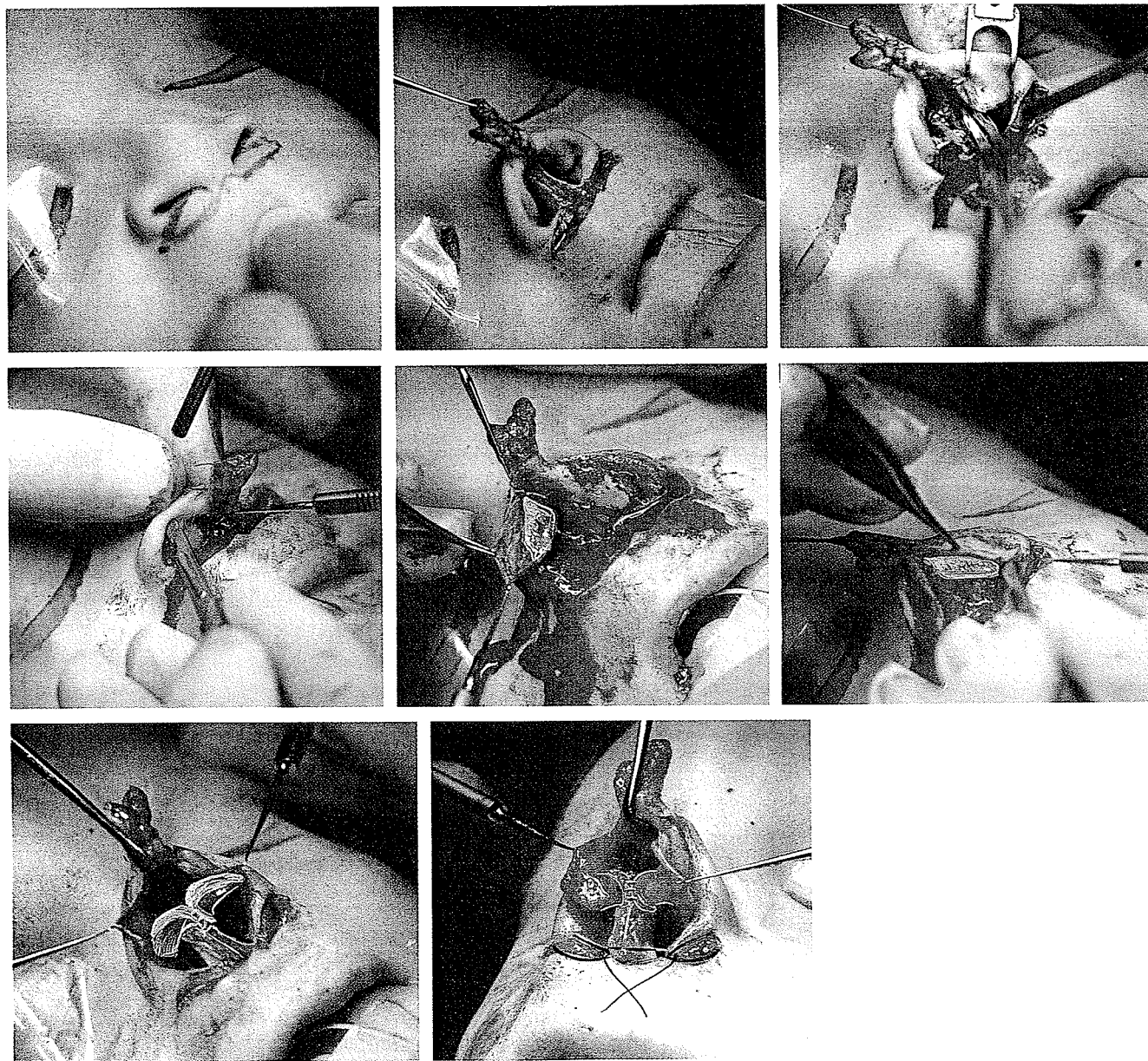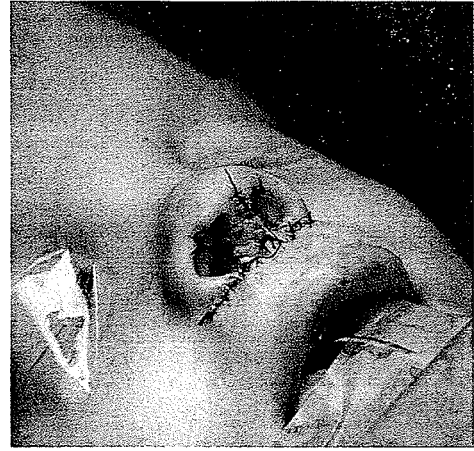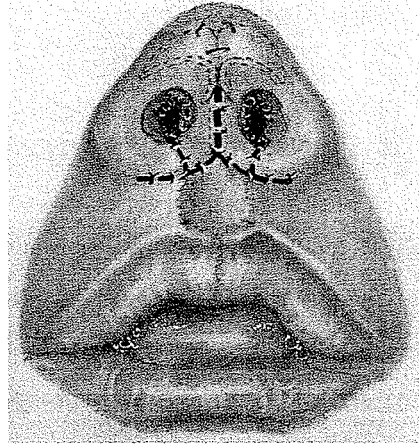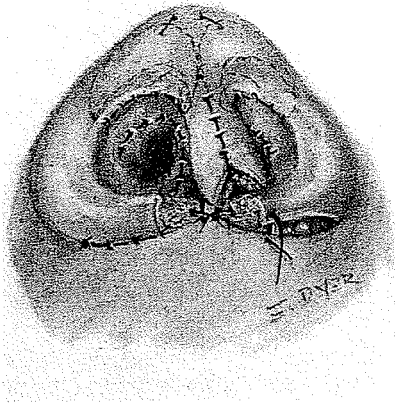
The principle of fashioning the treatment of clefts toward the completion of the arrested embryogenesis was presented in a Hunterian lecture and published in the *Annals of the Royal College of Surgeons,* 1994.

Here are two examples of this approach in bilateral clefts with small prolabiums who had presurgical orthodontia, periosteoplasty and a lip adhesion followed by banking of forked flaps. Then at the age of about four years the forked flaps were advanced from the banked whisker position into the columella. During this open rhinoplasty stage, the alar cartilages were freed, lifted and sutured together into normal position. The alar bases were narrowed by an alar cinch.

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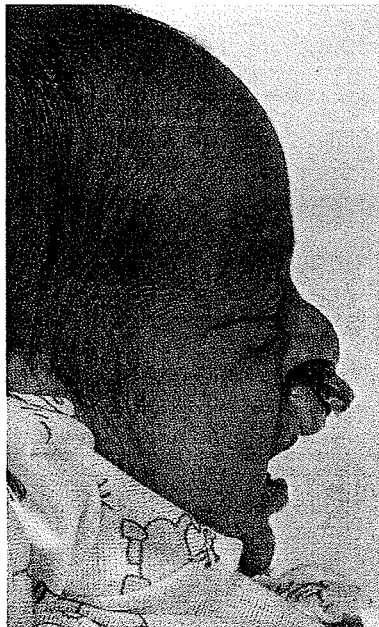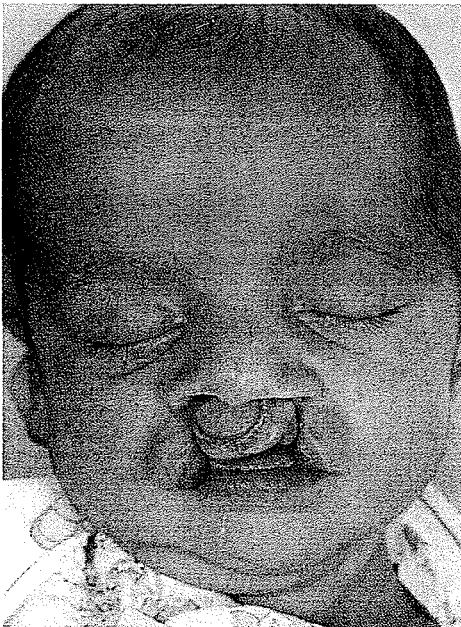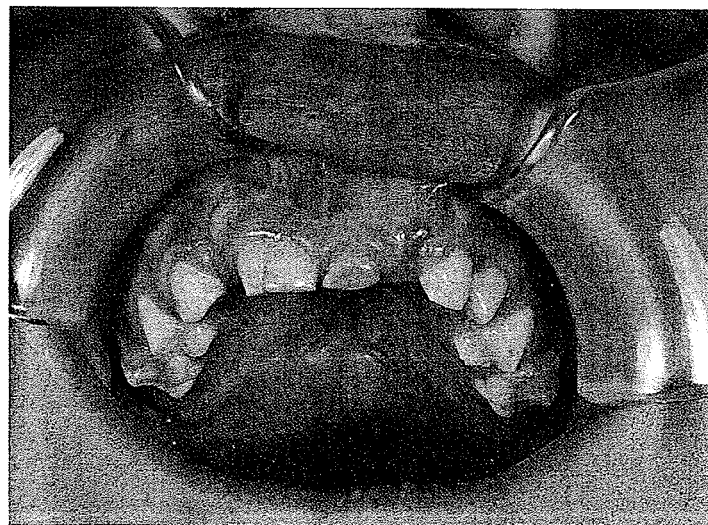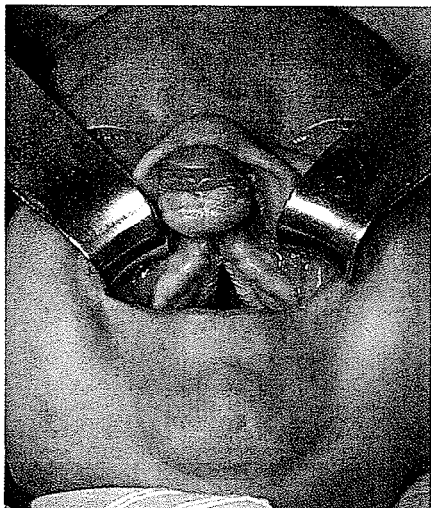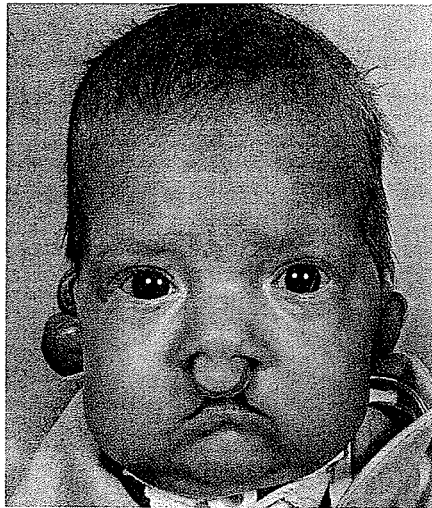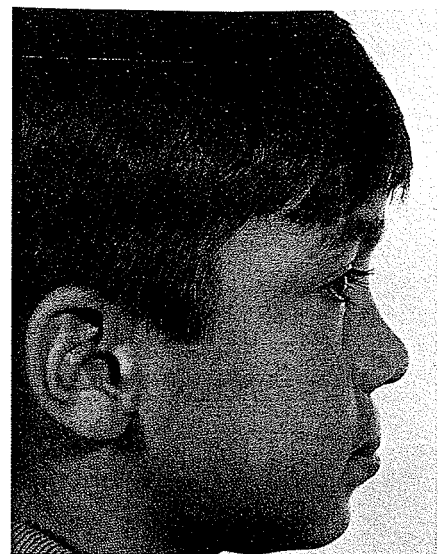
Forked Flap Not Always Necessary

There are circumstances in certain bilateral clefts where the forked flap may not be necessary. If the nasal tip is not extremely depressed and the columella has moderate length but the nostril sills are long and the nasal floors wide, a type of nostril sill advancement into the columella may suffice. This is more likely to be effective in incomplete and some asymmetric bilateral clefts.
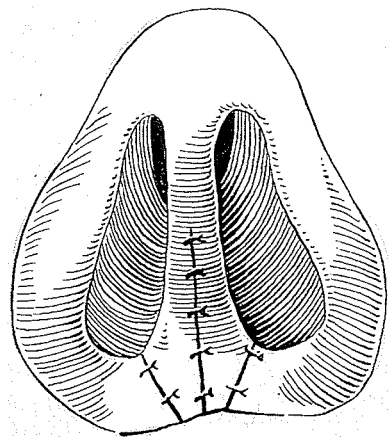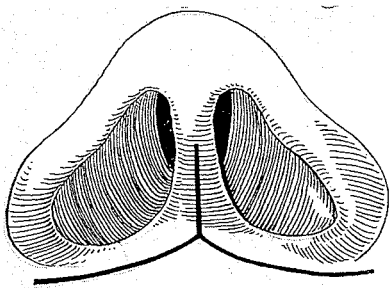
As early as 1914 W. Carter described a columella lengthening procedure that advanced the nasal floors and alar bases with an inverted Y shaped incision. The alar bases were freed and advanced medially with some benefit to the short columella. In 1956 D. Cardosa and in 1957 J. Converse each described V-Y advancements from the nostril floors into the columella. Then in 1958 T. Cronin described an improved rendition of this same principle of advancing the nostril sills with the columella.
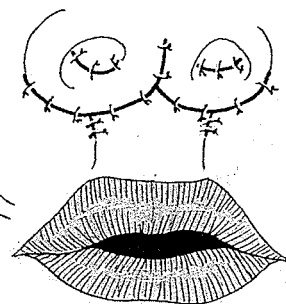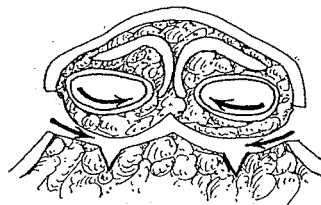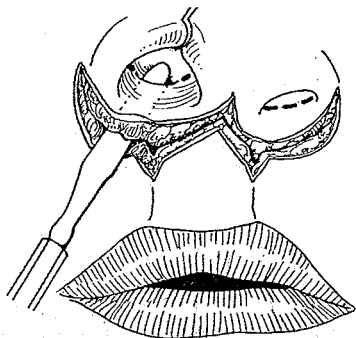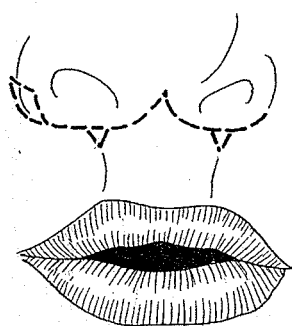
In my view of this technique in *Cleft Craft,* Volume II, I noted that in all of Cronin's published cases, in my opinion, the columella seemed to be just a little short of ideal and the nasal tip never quite up enough. There was one case in which Cronin had carried out the procedure twice so that the columella and tip, although slightly snubbed, was within acceptable proportions.

When there is some columella present in the original deformity or in a good percentage of incomplete and even asymmetric incomplete bilateral cleft, then the V-Y advancement of the nostril sills into the columella length, if maintained by developing bilateral tethering strips to be cinched at the nasal spine, has a chance. This tethering action not only reinforces the columella lengthening but controls and fixes the medial advancement of the alar bases essential in the overall positioning of the involved parts.

Here are two examples of this general approach which I seldom use. In one the original cleft was incomplete with some columella present. Advancement of the alar bases in a V-Y externally aided by a bilateral cinching gave modest columella improvement.
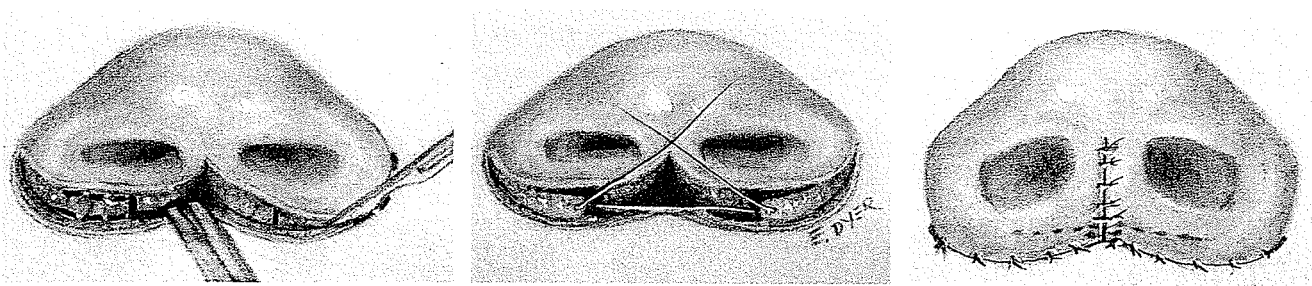
In the other short columella the nostril sills were cut as strap flaps attached to the alar bases and extended into the short columella by a membranous septal incision. This allowed greater advancement of the nostril sills into the columella with medial advancement of the alar bases. This maneuver was enhanced and stabilized by a bilateral alar cinch which lengthened the columella modestly and reduced the flare satisfactorily.

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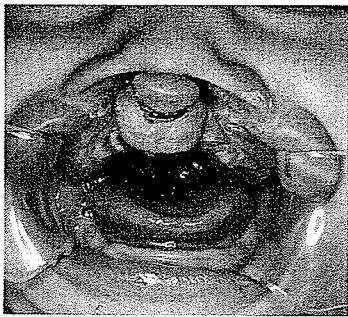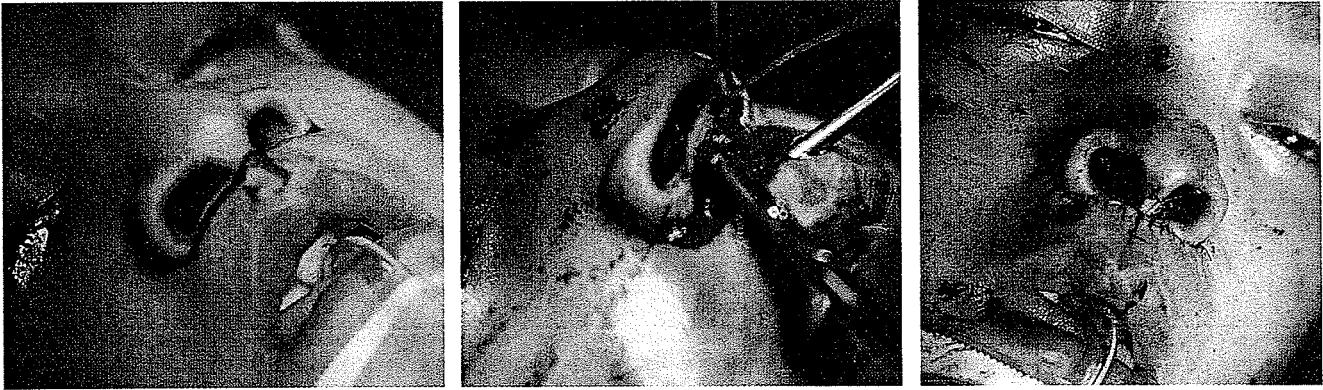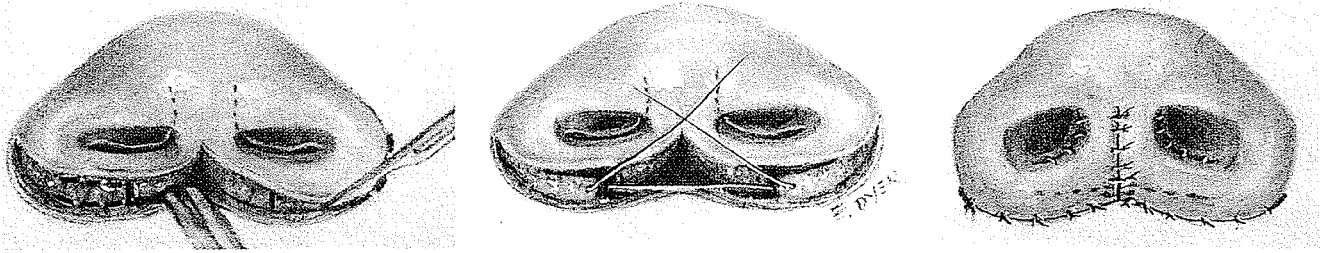
When selecting the most appropriate procedure for the specific case there is one factor in the equation that must not be overlooked: the ultimate goal of each patient. Those races such as the Oriental and the Black, where a certain amount of nasal flatness and broadness is normal, there is no need for the long columella necessary in the Caucasian. Here the bilateral alar advancement may suffice. Yet do not get caught in the rut of routine here either and do not rule out forked

flaps on all Black or Orientals. In many bilateral clefts the
columella is so non-existent that substantial new skin must
be brought in to give a normal result. Here the forked flap is
first choice.

It is difficult for me to evaluate fairly the practical value of
all the excellent Japanese work being reported on bilateral
clefts because their normal goals are often quite different
from those of the Caucasian.

A Contraindication for Forked Flap

There are certain secondary cases in which the forked flap can-
not be used to advantage. The Robin Hood principle must be
monitored carefully to make certain the donor area is not
harmed by too much sacrifice. When the nasal tip is de-
pressed and the columella is short but the upper lip is enough
tighter than the lower lip that a severe discrepancy is visible,
especially in profile, the upper lip then obviously cannot af-
ford a forked flap. Do not get caught in routine and force a
fork when the costs are extravagant. In these patients the
shifting of the entire prolabium, whatever its shape, into
the columella releases the tug-of-war between the lip and
the nose. The freed prolabium can be trimmed, thinned,
tailored and rolled into a column to imitate an excellent
columella and then shifted along the membranous septum
releasing the depressed nasal tip. The flaring alar bases can be
cinched. The lateral lip elements can and should be advanced
medially to create a midline philtrum-sized defect. This fol-
lows the principle of never cutting a flap to fill a defect but
rather maneuver the defect into an aesthetic unit and then cut
the flap to fit that asesthetic unit. The protuberant or rela-
tively protuberant lower lip will benefit by sparing a midline
shield-shaped lip-switch flap to reconstruct the philtrum of
the upper lip. It is important that the lower lip flap be fash-
ioned of adequate length to reach the split columella base and
dovetail into it not only for camouflage but also for aesthetics.
The coronary vessel pedicle is left seven to eight days and
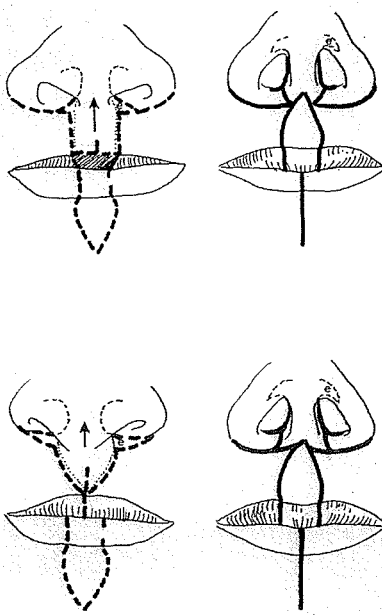
when divided this area of the upper and lower lip are revised carefully.

EXAMPLES OF ADVANCEMENT OF PROLABIUM INTO COLUMELLA

In complete bilateral clefts the failure of mesenchyma migration to bolster the central frontonasal component ends up with severe deficiency in tissues along this line. The distance from the tip of the nose to the inferior edge of the prolabium is short and the area of greatest deficiency is in columella length. When the lateral lip elements are simply attached to the sides of the prolabium, preserving the prolabium vermilion, not only are the needs of the nose ignored but the lip has been ineffectively constructed.

At age 16 this patient's face was a conflict of scars, deficiencies and tensions that in themselves were not drastically severe but when observed together made her face look as if it *hurt!* The key to this confusion of tension lay in the fair redis-

tribution of tissues. The prolabium was advanced into the columella to release the depressed nasal tip. Then by advancing the upper lip elements through release and rotation around the alar bases a natural shape and size philtrum defect was prepared. This was filled with a shield-shaped midline lower lip-switch flap which reduced the protuberant lower lip.

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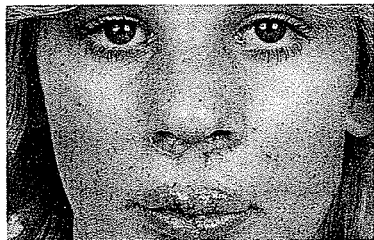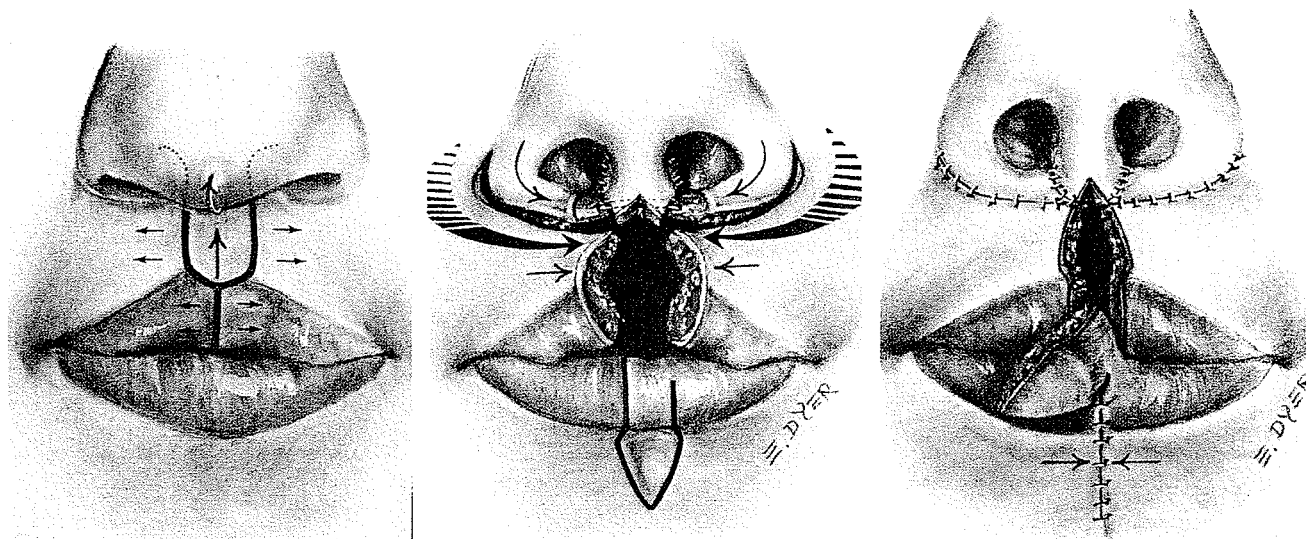
After one year the tissues were content in their rearrangement. A corrective rhinoplasty reduced the alar cartilages, rasped the bridge, narrowed the nasal bones by osteotomy with in-fracture and improved the columella contour and tip definition by insertion of septal cartilage grafts.
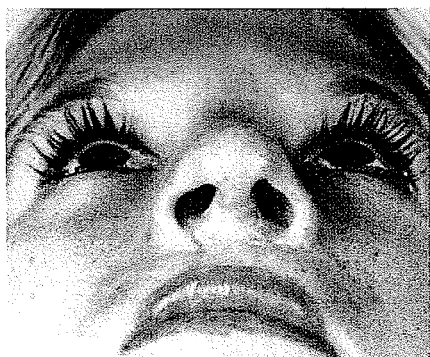
This Hispanic male had been treated primarily in Cuba. Subsequently he underwent a Le Fort I osteotomy by S. A. Wolfe with spread of the maxilla to enable the fitting of a prosthesis and improvement of the nasal platform. This set
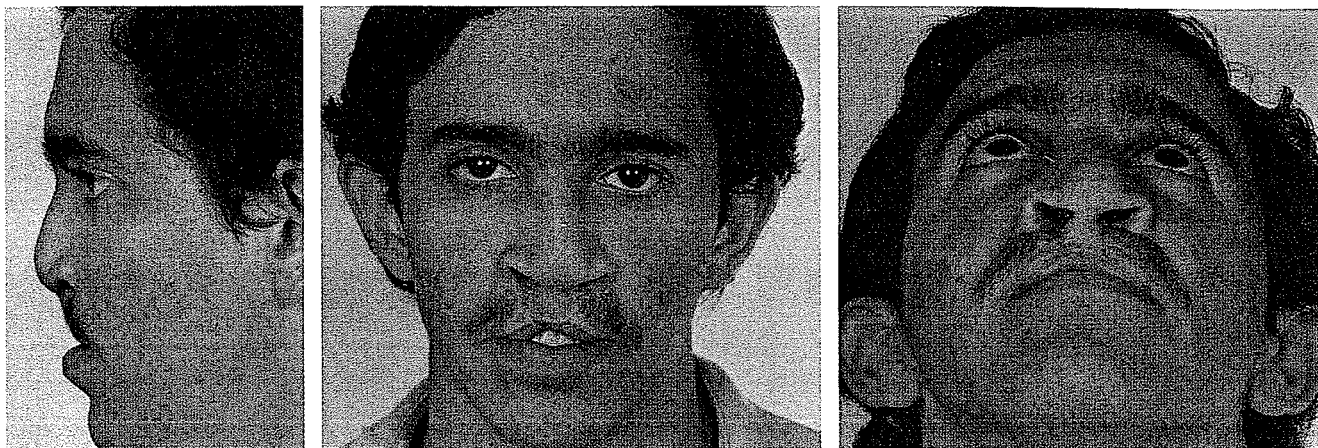
the stage for midline shifting of tissues to relieve the shortness in the frontonasal line. The prolabium was cut out of the lip and lifted so that extension of the membranous septal incision could be carried bilaterally in the intercartilaginous line. This enables exposure, dissection, advancement and midline suturing of the alar cartilages in the nasal tip. The prolabium was thinned, rolled into a column, and advanced along the septum to lengthen the columella. The alar bases were cinched, and the lateral lip elements were advanced to create a philtrum shaped central defect. A shield-shaped lower lip flap was transposed into the upper lip defect. In seven days the pedicle was divided. In a second stage and as a final adjunct, the septal deviation was corrected and the septal cartilage obtained was inserted up the columella into the tip.
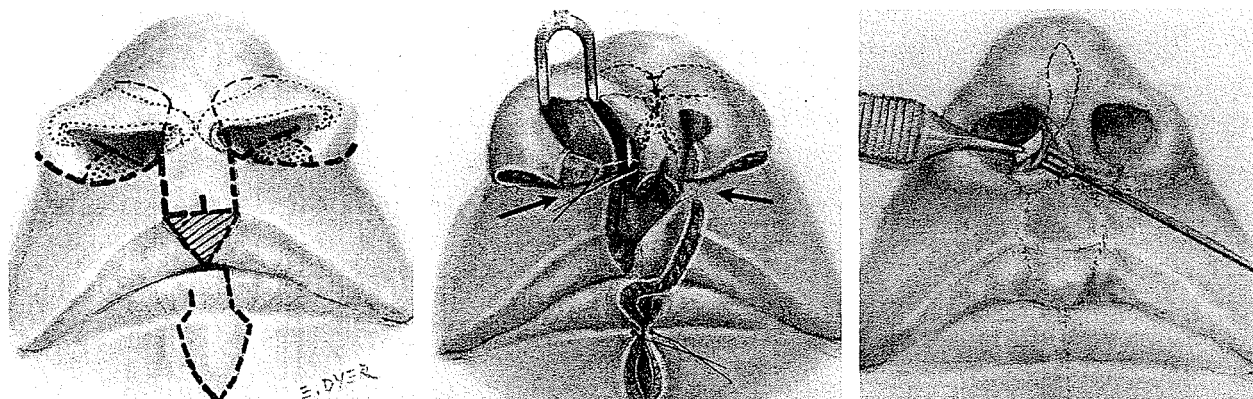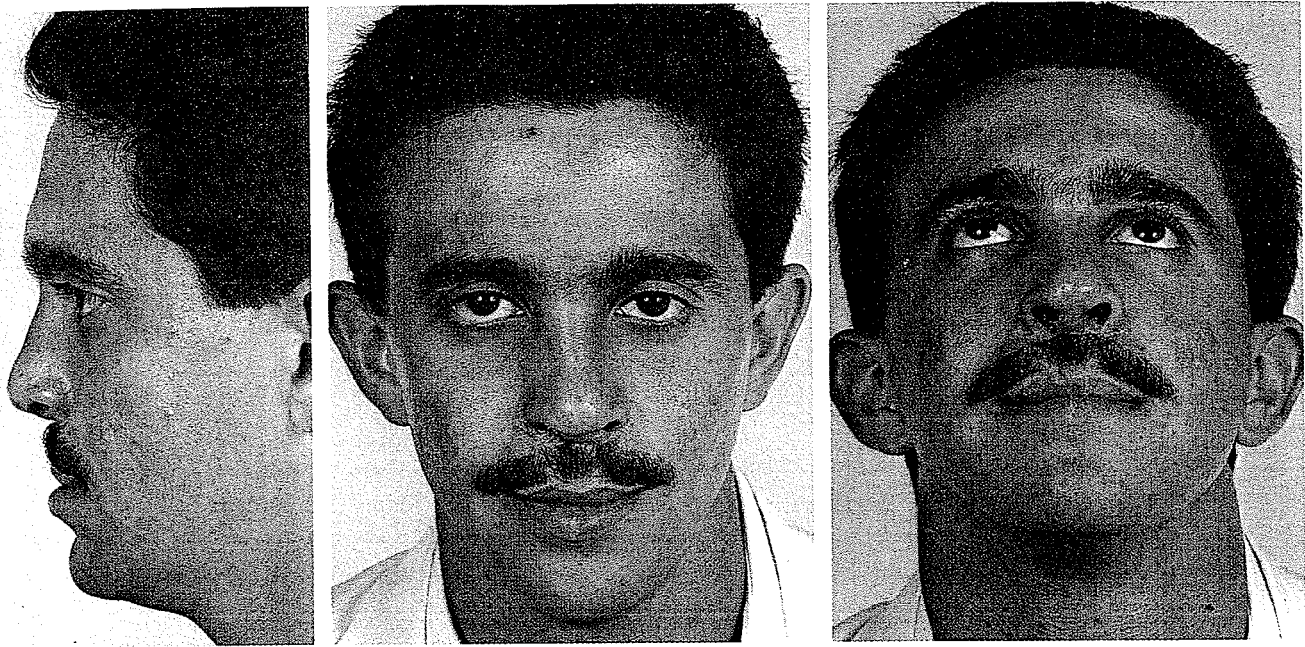
This 17-year-old female was born with a bilateral cleft, which after multiple procedures presented a hooked nose with a broad tip, flaring alae and short columella, a patch of prolabium surrounded by scars, no Cupid's bow, protuberant lower lip, fair occlusion and good speech.

Our approach involved advancing the prolabium out of the lip, thinning it and curling it into a column to allow columella lengthening as it was advanced along the membranous septum. From this open position the anterior septum was resected, alar cartilages reduced, bridge straightened, and bones narrowed with osteotomies and in-fractures. An alar cinch procedure narrowed the flaring alae and reconstructed the nostril sills. The lateral lip elements of the upper lip were advanced to create a philtrum size and shaped defect. A shield-shaped lip-switch flap from the protuberant lower lip was transposed into the upper lip defect and the pedicle divided in seven days. Minor revisions completed the reconstruction.

Eleven years later I received a letter from this patient. I will quote parts of her note:

"In this cruel world we live in, I was often teased while growing up. The scars to the heart, unfortunately, have taken a long time to heal. I recently went through some old pictures

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of myself and came across my high school senior picture. This was six months before you did your first surgery. About one month ago, I had professional pictures taken of myself. I couldn't believe the difference. It was then that I realized that the ugly duckling had been transformed into the beautiful swan."
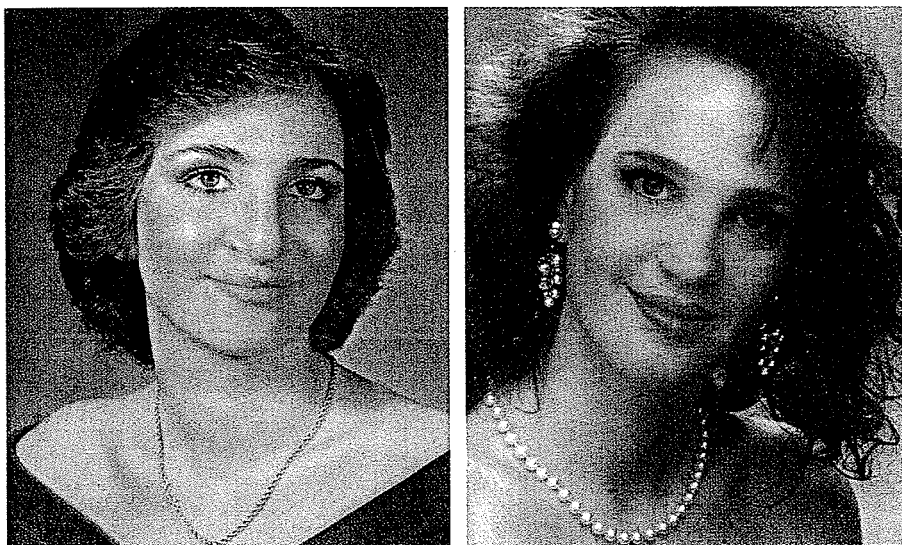
Success of plastic surgery is suggested when the surgeon and other spectators are pleased with the result. The ultimate success, however, is reserved for the time when the patient, as the beholder, realizes there is indeed beauty to behold.

ODD PROBLEMS

Due to the complex nature of this bilateral cleft anomaly, the various surgeons who undertook the surgical correction of these deformities and the fact that many of them had no idea about the principles that should govern their surgical actions, some strange problems do appear. Except to be guided by principle in diagnosis, planning and execution, there is no easy formula. A few unusual cases which do not fit in any special section will be presented just to show how each was handled at the time.

A GROSS TIP

As a result of numerous operations this gross result in a bilateral cleft presented a thick, broad tip. Through open rhino-

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plasty the skin was elevated and the bulk of cartilage and scar was resected as designed, sutured, and the skin trapdoor replaced. In this case at this time that was what was done, but
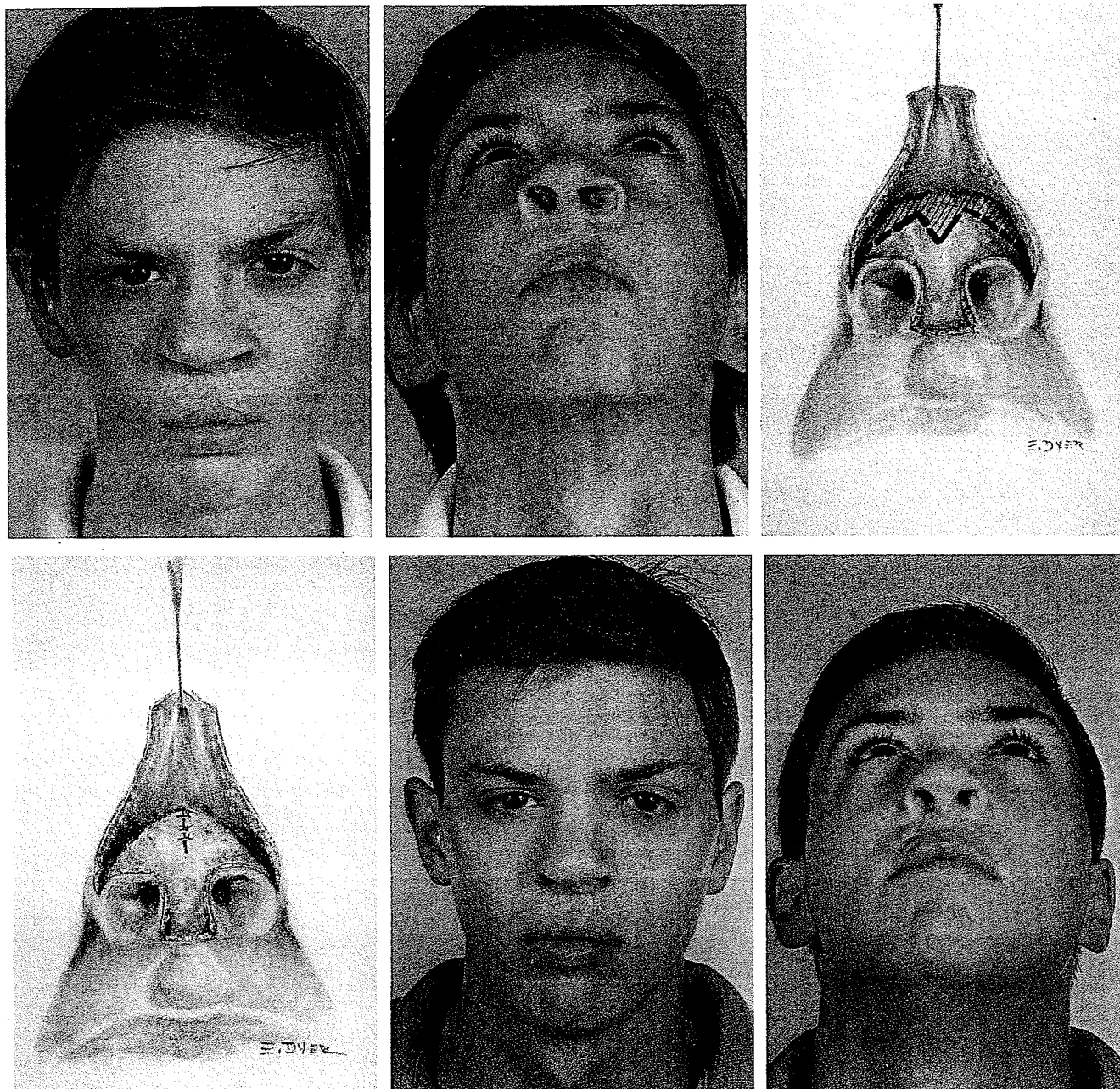
such an approach for me is very rare and usually not indicated.

This 33-year-old female with a bilateral cleft after multiple surgical procedures, presented a flat, wide nasal bridge with a depressed nasal tip and horizontal nostrils. One of the most exasperating aspects was the rigid, downslanted nasal bridge, the result of a long bone graft. Her prolabium was unnaturally wide and there was severe retroposition of her maxilla. Maxillary osteotomy with forward advancement fixed with bone grafts by G. Lovaas was followed by the fitting of an upper prosthesis.
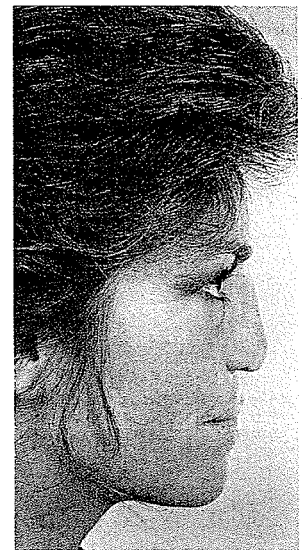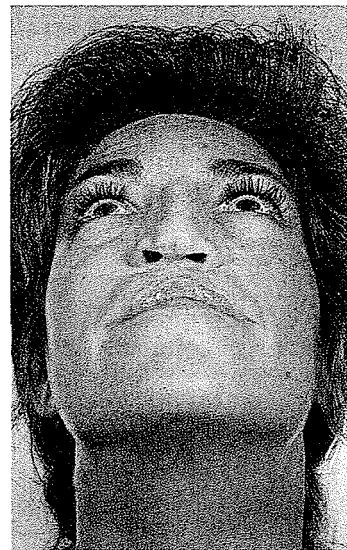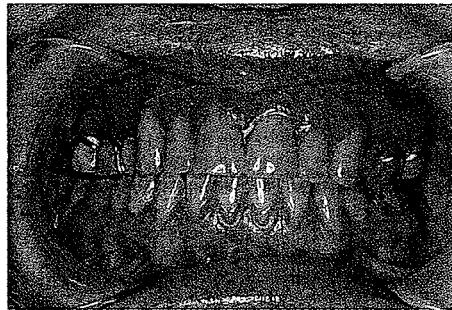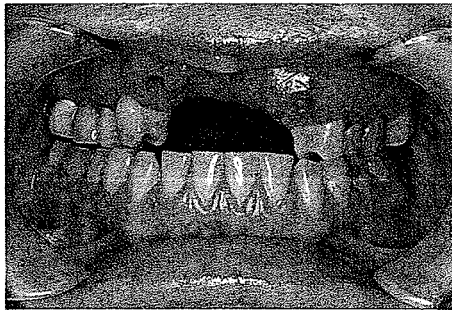
The wide, scarred prolabium was reduced by creating forked flaps which were advanced into the columella. A costal cartilage strut in the columella supported the nasal tip after a greenstick fracture of the bridge bone graft allowed the tip to rise. Bilateral osteotomies through the upper buccal sulcus gave the exposure needed for Lovaas to move the nasal bones in and fix them with his L-shaped microplate screwed to the maxillary bases. An alar cinch narrowed the flare and placed the nose in better harmony.

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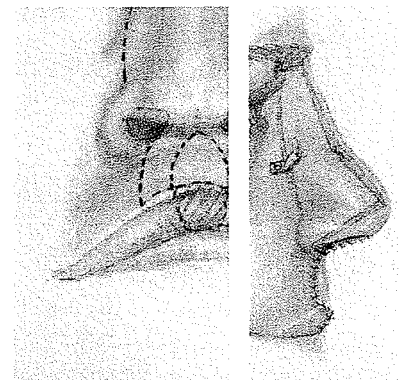
A COMPLEX DEFORMITY

This 22-year-old female with a bilateral cleft suffered multiple surgical procedures which had been disastrous to both the lip and the nose as presented in 1979. The lip was short, tight, retracted and scarred. The nose was thick, wide and flat with scarred notching of the tip, overhanging alar rims, flaring alae and a short, scarred, retracted columella.
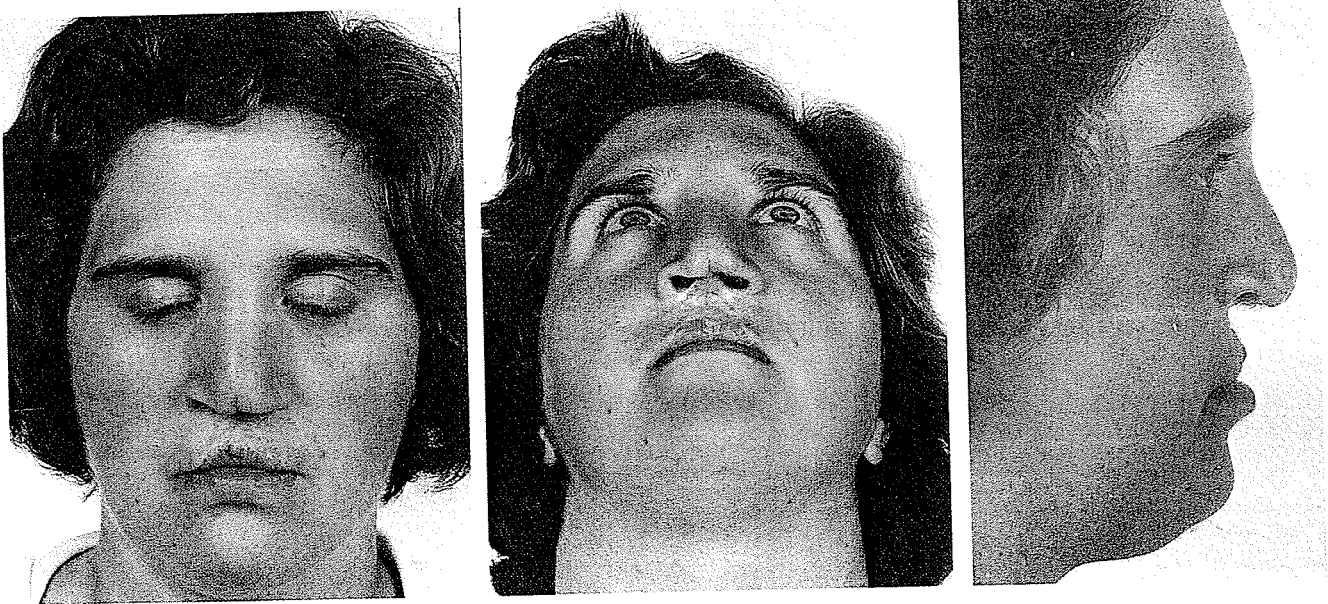
Correction of this complex problem required multiple applications of the Robin Hood principle of tissue apportionment: taking from the rich or excess for the poor or deficient. The excess alar rims were marked as flaps based on the tip on each side of the midline scar to be transposed together onto

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the columella. The nostril sill extensions of the alar bases were de-epithelialized for an alar cinch procedure. The scarred skin of the center of the lip was excised and a superiorly based vertical flap of remaining subcutaneous tissue was cut out of the middle of the lip, tucked under the columella base and inserted up into the membranous septum to fill out the retracted columella. The lateral lip elements were advanced to present a natural philtrum defect. A midline shield-shaped lower lip-switch flap was transposed into the upper lip. The pedicle was divided on the eighth postoperative day and the upper and lower lip revised at the pedicle sites.
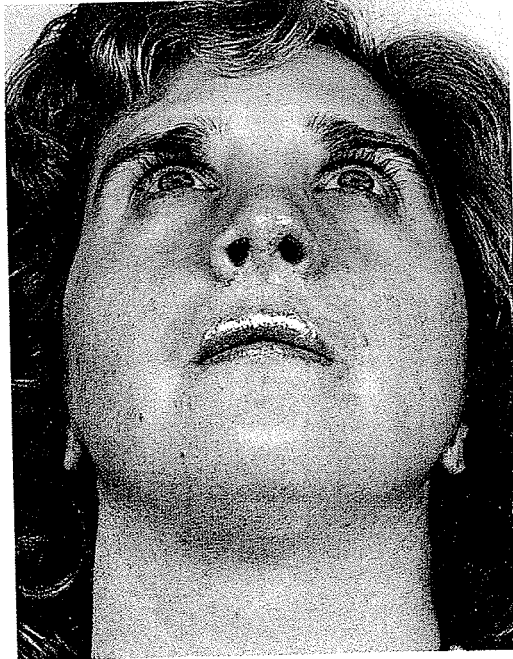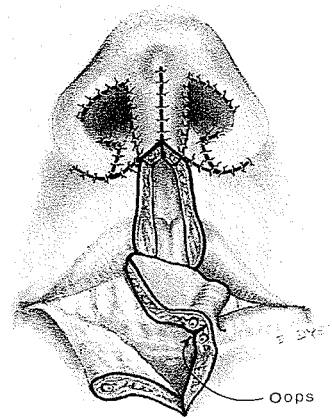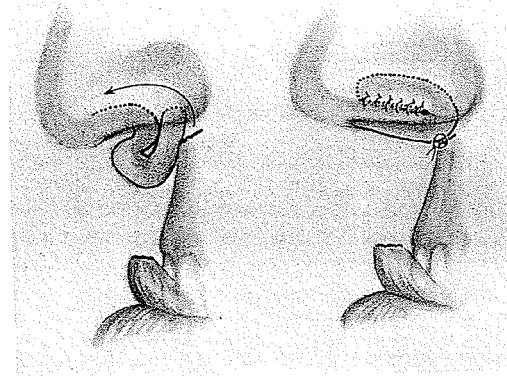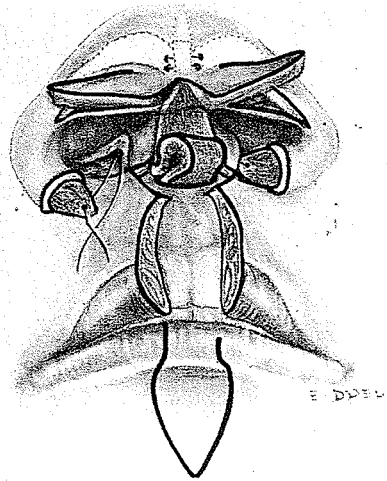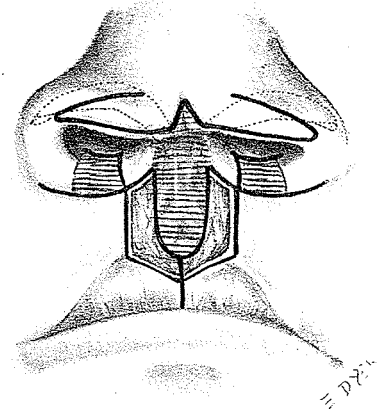
This bilateral cleft was treated first in India. In 1948 while I was a student with Gillies, the patient came to England and had a Gillies-Fry operation which lengthened the palate but created an anterior fistula. This was closed with an obturator resulting in good speech.

The patient found his way to Miami 20 years later, revealing a tight upper lip, protuberant lower lip and a short, retracted columella with a severely depressed nasal tip.

The first operation included hump reduction, septal short-
ening, bilateral osteotomy with in-fractures, submucous septal
resection with cartilage graft to tip and bilateral chondromu-
cosal flaps transposed to each other in the releasing membra-
nous septal incision which brought the columella out into
profile view and reduced the alar cartilages in the tip. A mid-
line lip-switch flap was transposed from lower to upper lip and
the pedicle divided in ten days.
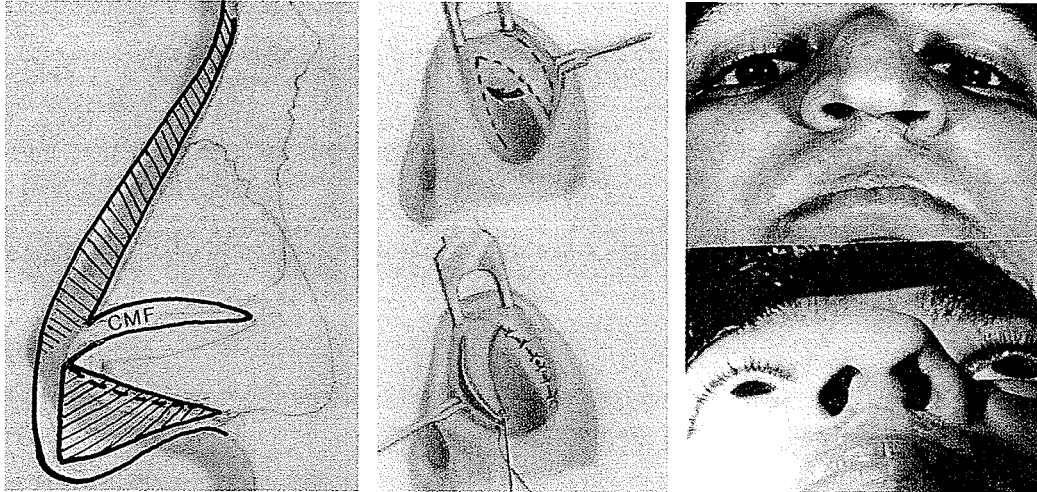
NOSE IN ATYPICAL CLEFTS

There are various atypical congenital nasal defects which require specific solutions. This requires a little imagination guided by principles. Here is a patient born with a partial facial paralysis with sympathetic hemiatrophy, asymmetry of the maxilla, atypical cleft of the lip, wide cleft of the palate, lack of half a nose and absent right eye. She also had transposition of the great vessels with a ventricular septal defect and a life expectancy of 18 months. A lip adhesion was performed to aid feeding and later a prosthesis was fitted to help speech but no further surgery was contemplated.

By the age of nine years the patient had convinced her mother that life was not worth living if she could not have a more normal nose. The situation was presented to anesthetist, S. McMahon, who, noting her great pulmonary hypertension, took precaution to prevent hypotension during surgery to avoid cessation of pulmonary vessel blood flow and certain death.
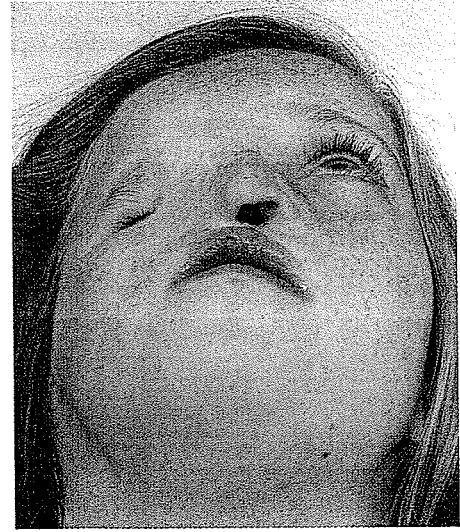
This would be a difficult problem under normal circumstances, but in this patient's case the surgery had to be in one stage and still achieve at least symmetrical alae and a columella in as simple a procedure as possible. The right side of the nasal arch was cut free and transposed laterally into the cheek, and a flap was transposed medially in a "Z" to make room for positioning the right ala. The left vestibular web,

typical of clefts, was taken with its distorted alar cartilage as a flap based on the nasal tip and set high in the center of the upper lip to form the front of the columella. Then the excess cheek skin to the right of the nasal bridge was taken as an island on a peninsula flap based on an inferior subcutaneous pedicle, as described by J. Barron. This was threaded under the upper nasolabial skin and brought out in the nasal cavity to line the raw areas of the right ala, the adjoining lip and the back side of the new columella.
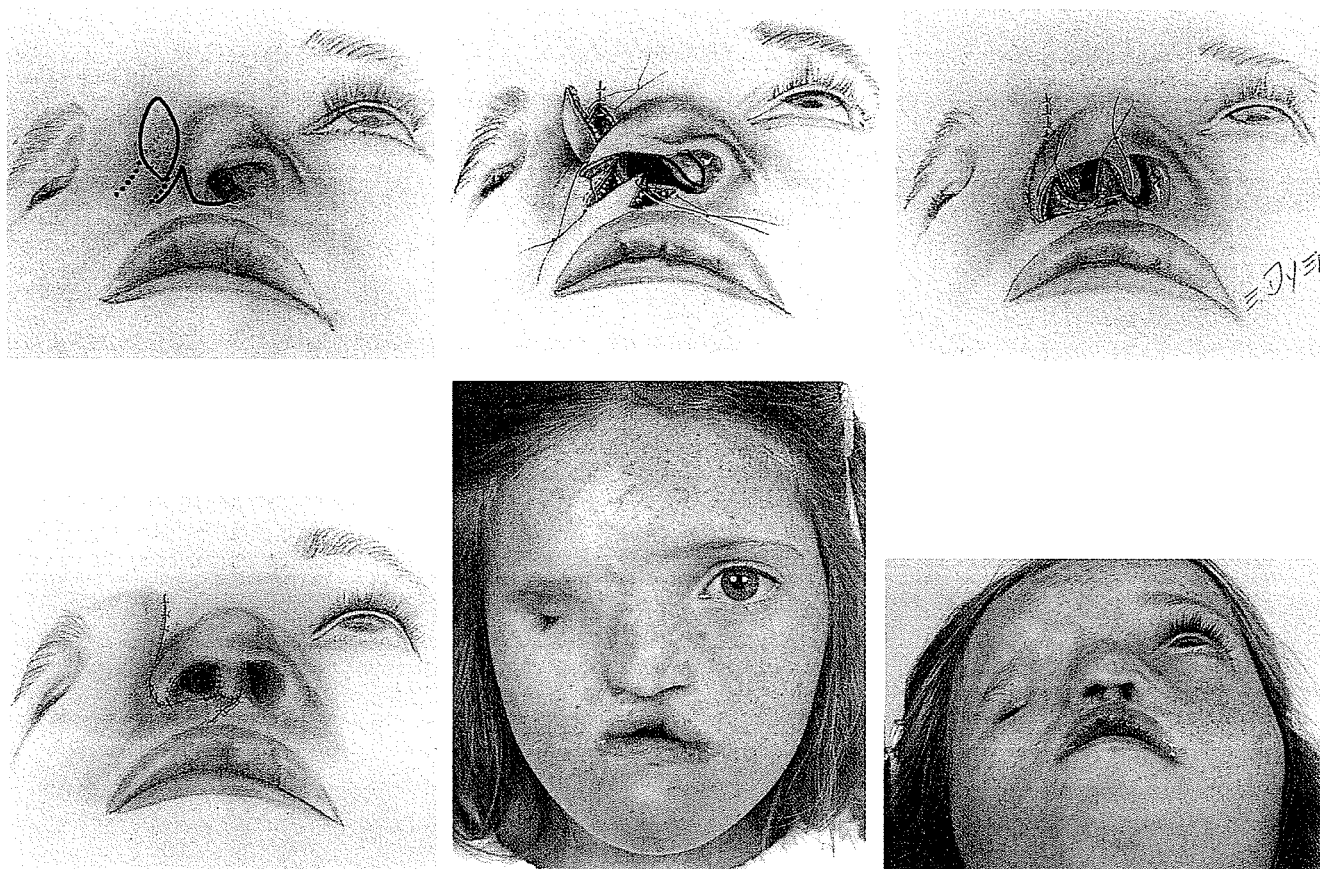
The nasal reconstruction healed with minimal contracture so the patient and the team were remobilized for a midline shield-shaped lip-switch flap from the lower to the upper lip.

At the age of 11 years the patient came in for a visit. She had had her hair styled and was dressed in pink stockings, her favorite blue dress and a gold chain. She had been unwilling to wear a Hathaway black eye patch but had been delighted with the fancy and colorful patch made especially for her by
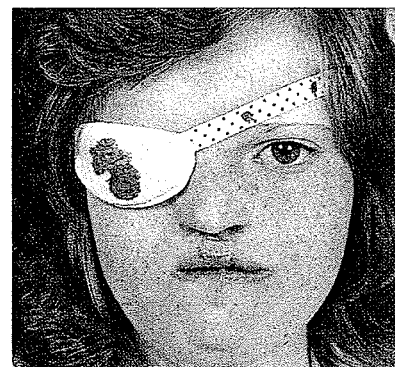
our nurses. She showed pride in herself but also increased cyanosis. One year later at the age of 12 she passed away in her sleep.

CONGENITAL BILATERAL CLEFT NOSE

Although the nose is considered by some an unpaired midline structure of the face, it is most definitely composed of paired components that must be carefully balanced during any surgical procedure.

Embryology

This abnormality, cleft nose or doggenase (dog nose), is a rare congenital deformity that may be hereditary, but most often it presents as an isolated event. The major components of the nose are formed from the substance of the frontonasal process that migrates dorsocentrally over the forehead region of the embryo. These components are formed by a thickening of each element of the epithelium at the ventrolateral margins of the frontal prominence. These nasal placodes further demarcate into medial and lateral processes, which form the alae, tubercle, and columella. It has been speculated that the alae mesodermal migration lags in development behind the central nasal area, and interruption during this process may result in clefting or notching of the alar rim. Other structures formed by the frontonasal process are the forehead, glabella, interorbital region, and prolabium. Beneath these soft tissue structures, the prechordal mesenchyme produces the median skeletal structures of the central face: the crista galli, the ethmoid nasal bone, the vomer, the nasal septum, the premaxillary bone with its four incisive teeth, and the anterior palatine triangle. Irregularities (frontal nasal dysplasia) resulting in changes in any of these structures demand investigation of the others to rule out associated abnormalities, such as cranium bifidum of the forehead, irregular hairline, encephaloceles, other clefts, epidermoid inclusion cysts, hypertelorism, duplicate nasal septum, accessory air sinuses, widening of the
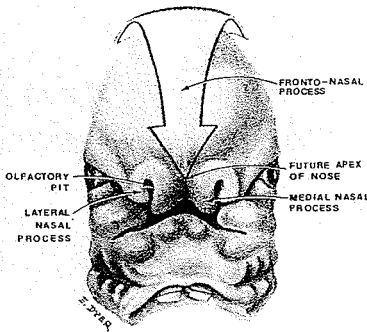
lesser wing of the sphenoid, choanal atresia, nasal dermoids, and gliomata.

Tessier developed a useful numbering system to standardize the understanding of specific cleft locations.

This rare case of congenital bilateral cleft nose demonstrated Tessier 1 and 2 clefts of the distal nose. In the infant there was frontal bossing and interorbital fullness (pseudotelecanthus). The improvement through growth to the age of four years is quite remarkable.

The surgical correction was carried out by W. R. Mullin and D. R. Millard. The primary surgery was designed as a V-Y flap of excess dorsal skin with a split forking at the V flap to produce bilateral transposition flaps destined to fill the gaps developed after downward rotation at both alae into normal position. The advancement humping of the base of the V, created the nasal tip fullness. That lateral transposition of the forks created contour to simulate intact normal lower lateral cartilages. The V-Y flap taken from the tissue in the intercanthal nasal bridge area not only served to reduce this excess but also provided exposure for surgical access to the excessive subcutaneous tissue beneath. After removal of this tissue, simple closure of the dorsal defect presented an ideal midline scar. After thinning the excess of the large V flap it was split into two flaps destined to fill the bilateral defects left behind as the alae were rotated down into normal position. Reduction

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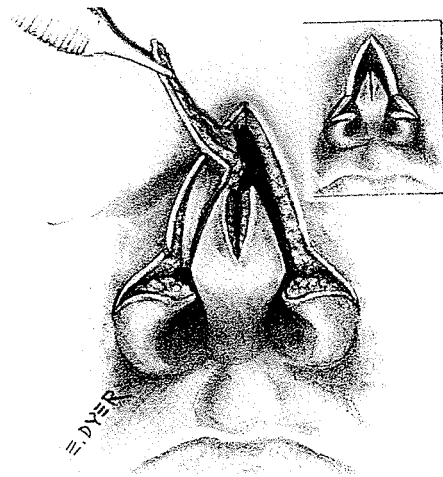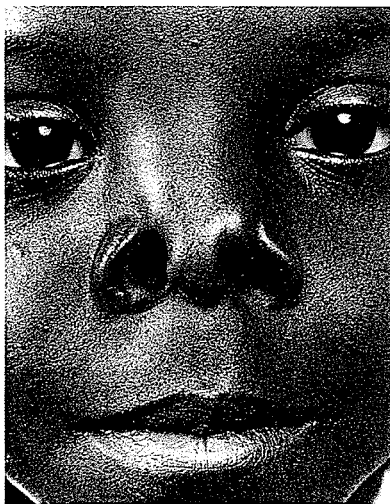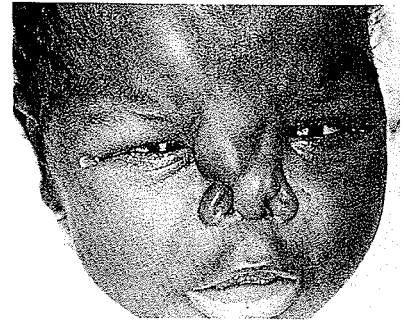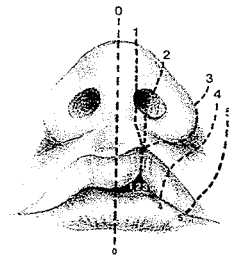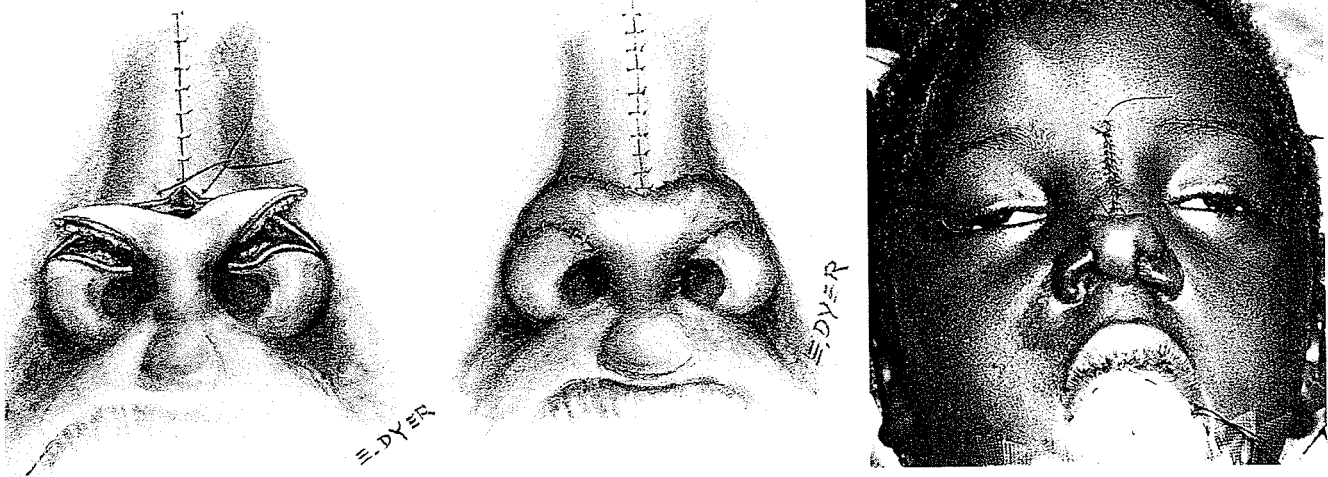
of the tip bulk was carried out after a few months. At age
seven years alar margins revisions blended the reconstruction.
She is seen at the age of 9 having adjusted well in school and
in life.

MEDIAN CLEFTS OF THE LIP

In this median cleft deformity the columella was present but
wide and the median incomplete cleft of the lip was also
wide. Correction of this deformity was achieved by a vertical
wedge of columella and upper lip which if angled correctly
can produce a narrow columella and a lip with a cupid's bow.

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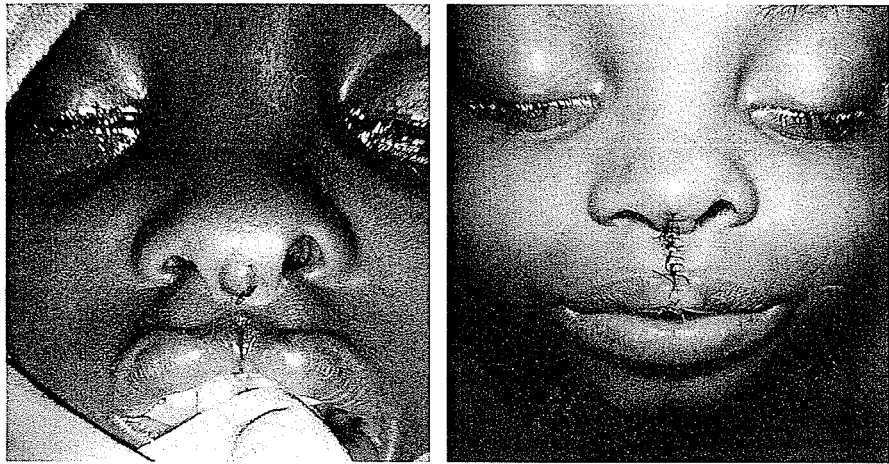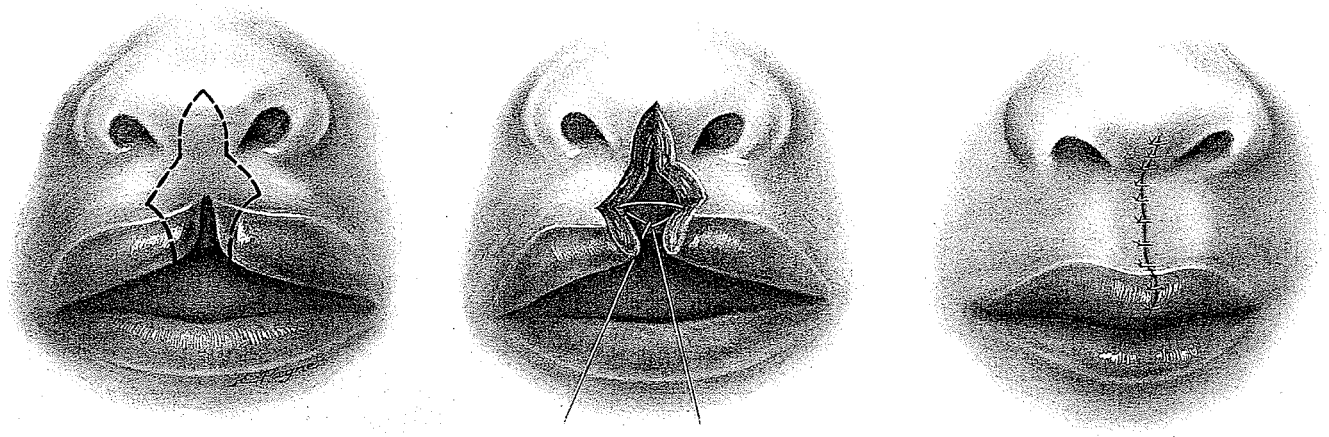
In those median clefts which have a short or absent columella, forked flaps can be taken from the sides of the median lip cleft and advanced to create a columella. The pared edges of the lip can be approximated to create a natural lip with a semblance of a cupid's bow.

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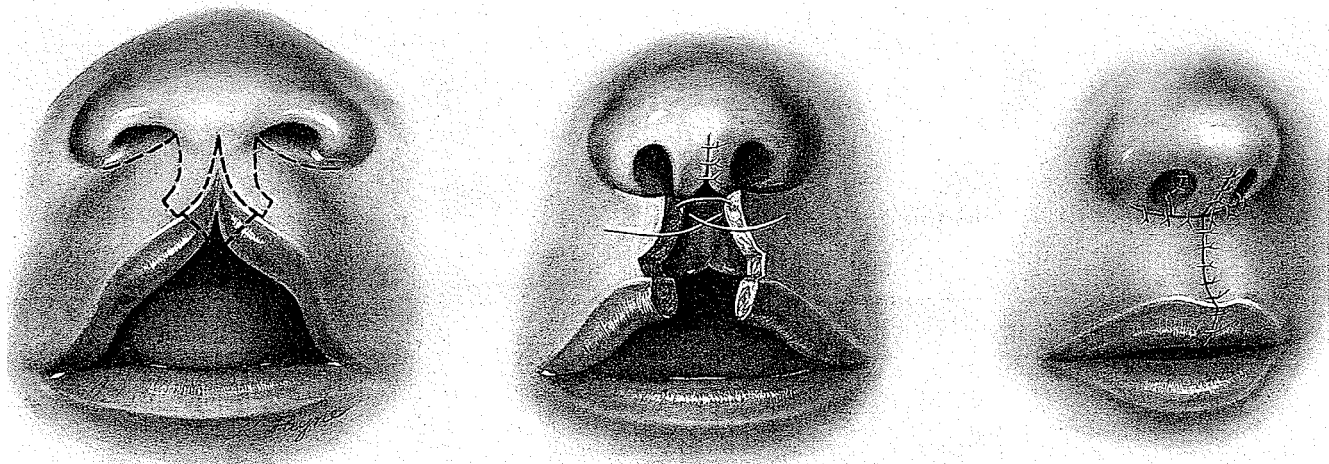
Here is a median cleft of the lip with no columella but a midvertical ridge in the nasal tip. In this case the forked flaps were taken from the sides of the lip cleft. This not only allowed construction of a columella but it pared the edges of the lip cleft so that approximation created a natural looking lip.
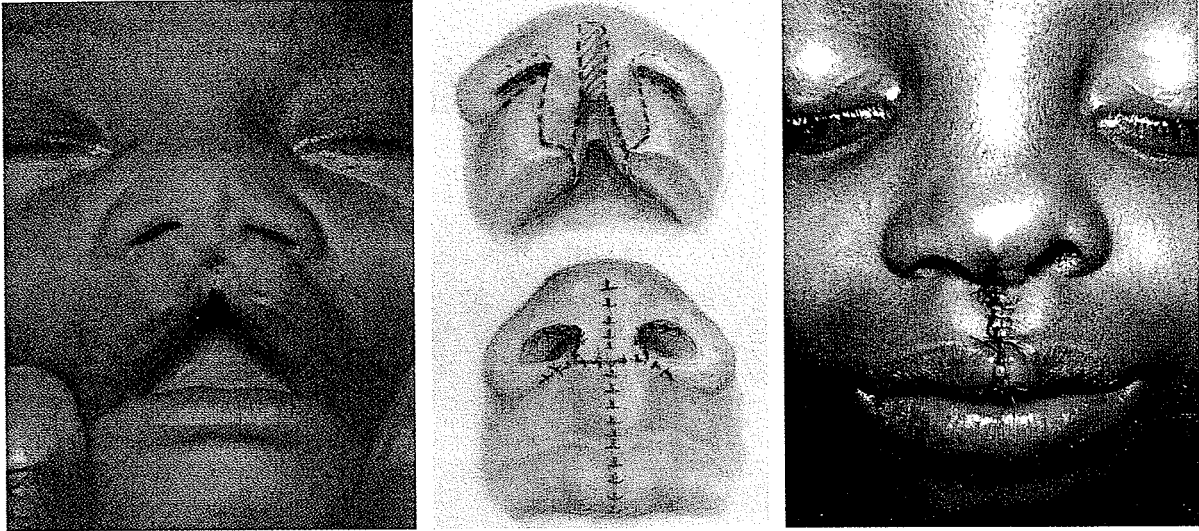
This design of a forked flap in a median cleft lip was used in one of the Caribbean Islands. The vertical ridge of the nasal tip and wide, short columella was excised. The lateral edges of the median cleft of the lip were marked to produce a forked flap, and the angle of the cut at the bottom of each fork was placed so that when the lip was brought together in the midline there would be extra length of skin at the center of the lip to create a cupid's bow. The forked flap was trimmed, sutured to each other and advanced into the nose to create a columella. The nurses in attendance were instructed in suture removal on the fourth postoperative day.
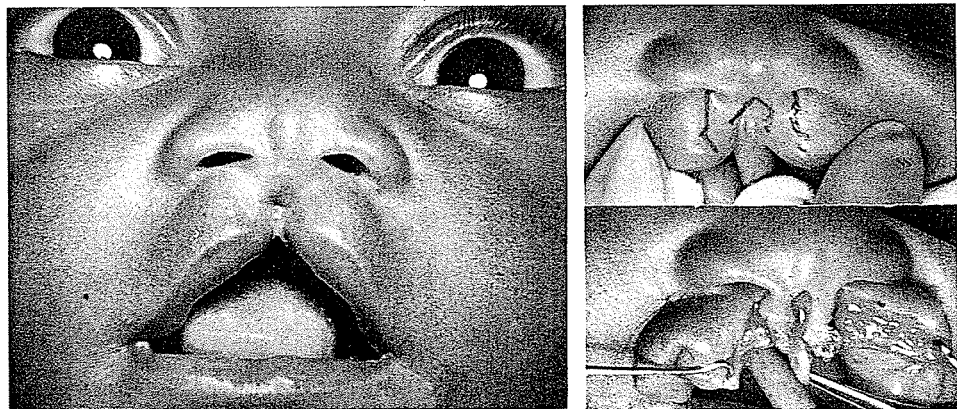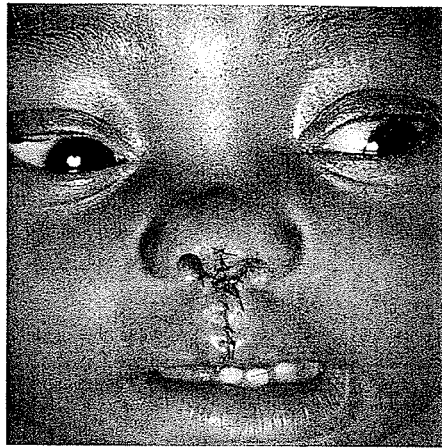
A Median Cleft with a Nasal Excess

This three-week-old female was born with an asymmetric median cleft of the lip without cleft of the alveolus or palate. There was a partial cleft of the right ala with retraction and a tubed protrusion of skin and subcutaneous tissue extending from the ala notch.
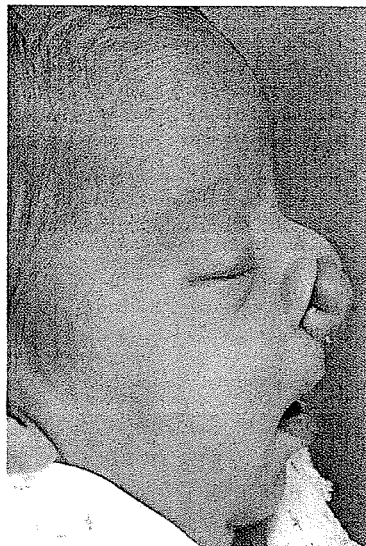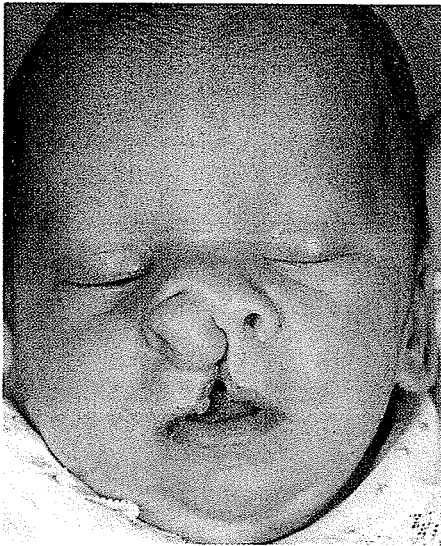
At one year the lip was closed by the method already described in this section for median clefts. The retracted and notched right ala was released by a through-and-through rotation incision along its crease, which allowed the ala to come down into normal position as it was sutured to the side of the upper columella. The excess blob of tissue was left attached at the right side of the nasal tip but thinned and trimmed to fit the defect above the ala rotation both as cover and as lining. The alar base was advanced for symmetry.

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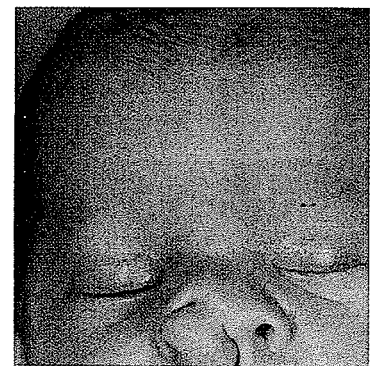
Five years later minor revisions sculptured the ala and revised the scars.

The patient will receive final work in her early teens.

MIDLINE SYNDROMES

A Midline Syndrome

This 10-day-old male infant revealed a strange, rare midline deformity. There was a moderate hypertelorism with rudimentary nasal bones widely separated and of low height. The septum was also lacking in projection. There was a redundancy of skin pinched into a longitudinal furrowed fold extending from the nasal tip along the nasal axis into excess

.S ___
.N__

skin gathered in the intercanthal area and the glabella and lower midline forehead region. The nasal tip and columella seemed within normal limits except they were quite thick and lacking in definition.

At 6 months a longitudinal ellipse of skin, one and one-half inches wide at its center point and extending from the midline of the lower forehead and glabella area down the nasal bridge to the tip was excised. The excision included a cyst and some subcutaneous tissue. The closure advanced the lateral subcutaneous tissue to create the semblance of a nasal bridge which was covered with skin by advancement.
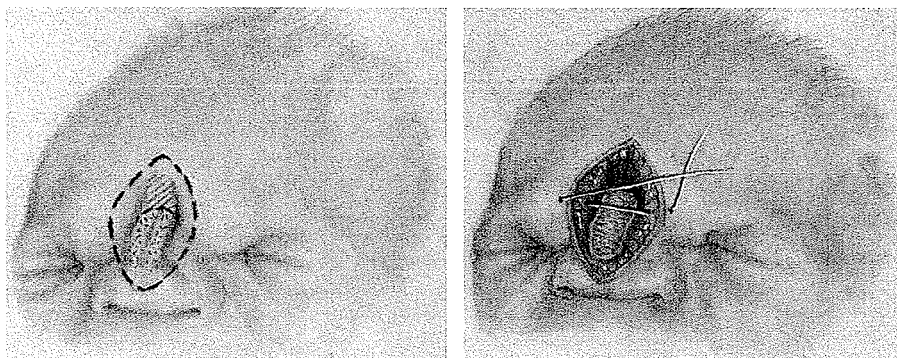
C. Straith was in observation during this case as he had been requested to report back to the hierarchy of the American Society of Plastic and Reconstructive Surgery, who were trying to decide for the third time if I was worthy of membership.

At 7 years a silastic block was inserted in the bridge area to stretch the skin during the growing years and give the semblance of a bridge line.

Seven Years   Fifteen years
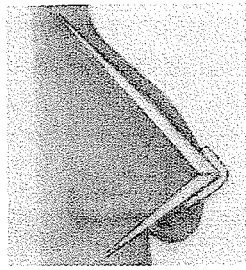
At age 16 years the silastic implant was removed, the nasal bones received osteotomies and in-fractures and a costal cartilage hinge graft was inserted through a columella splitting incision to create a bridge, lift the nasal tip and support the columella. Here he is at the age of 23 hoping to join the Air Force.
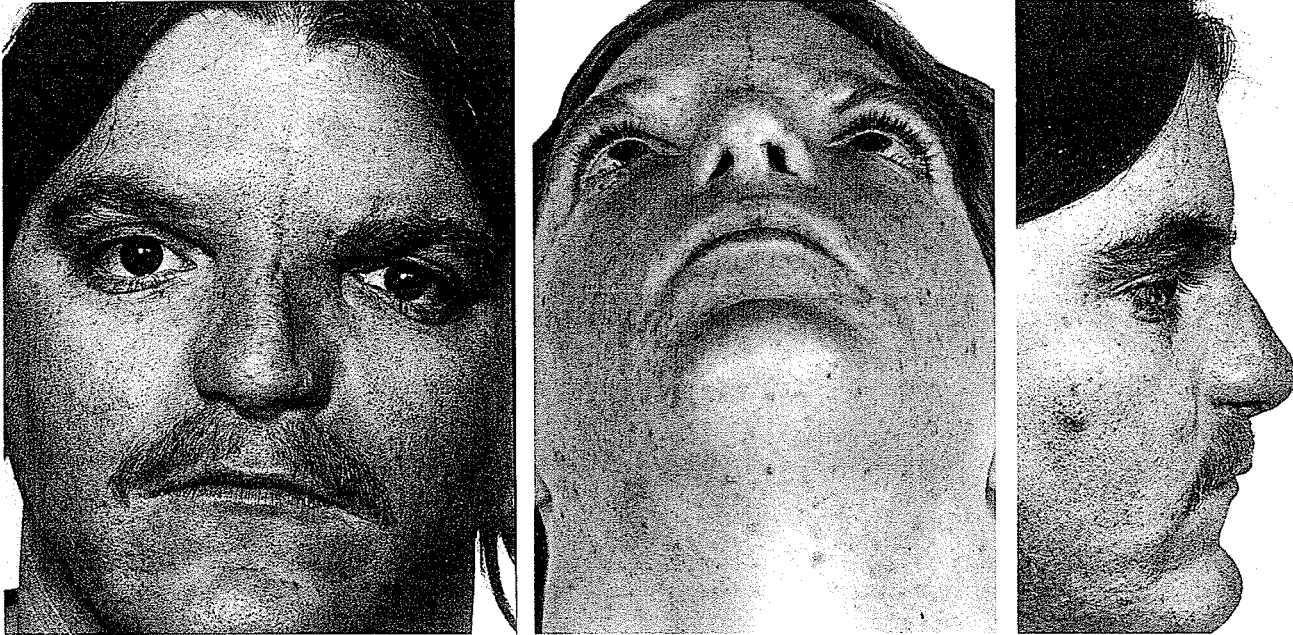
THE BIFID NOSE

This deformity varies greatly in depth of the clefting, extent of the spread and amount of asymmetrical distortion. Surgical correction includes bisection with removal of the excess midportion of the skin, subcutaneous tissue and bone combined with the shifting of the distorted elements into balance. Closure should bring alar cartilages side to side. Alar notches can be corrected by local rotations.

This was the approach on this ten-year-old boy from Antigua who also had an atypical median cleft of the lip. A forked flap of the diverging philtrum columns was used to construct the columella and revise the lip. An L-shaped silastic was used to support the bridge and tip and the alar bases were rotated to correct the notching. The patient's return to Antigua postponed surgical refinement.

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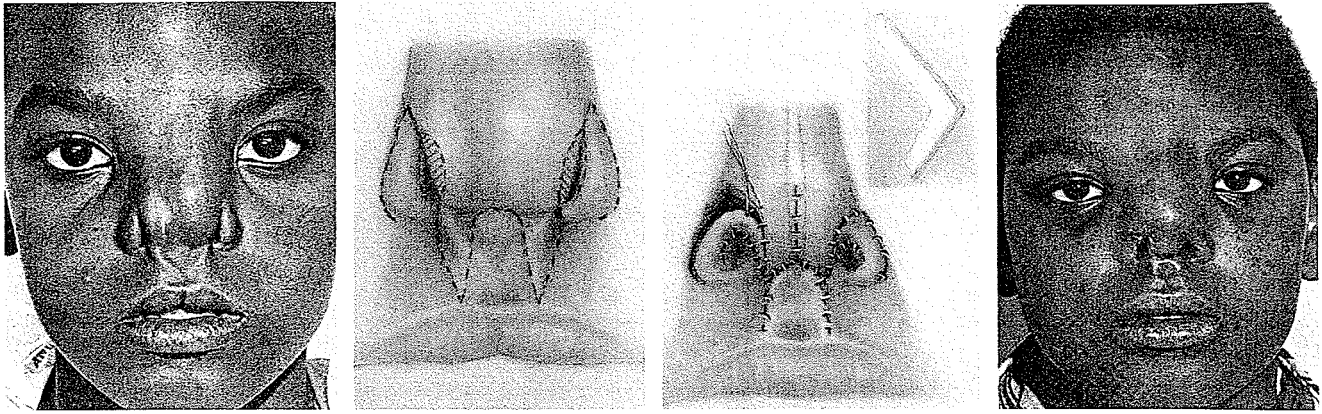
In 1950 J. P. Webster and E. G. Deming pointed out that hypertelorism was associated with bifid nose in only four of the ten cases but the illusion was present in eight of the ten. They accounted for this illusion being due to wide spacing of component parts of the face adjacent to the eyes, such as increased intercanthal distance, flatness of a broad nasal bridge, presence of epicanthal folds and widely spaced eyebrows. Webster focused his attention on soft tissue and nasal bone reduction and shifting to reduce the illusion. This was accomplished by excision of a wide vertical ellipse of forehead, glabella, nasal bridge and tip skin from hairline to columella. He in-fractured the nasal bones and wired them together. If the nasal tip was flattened and the nose shortened he used a midline V-Y advancement of dorsal skin to reposition the parts.

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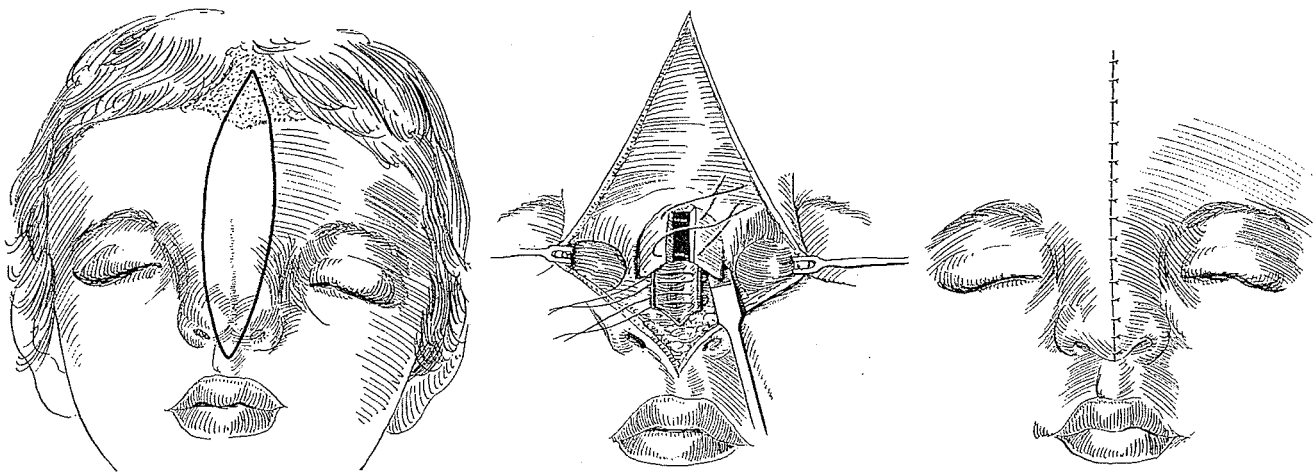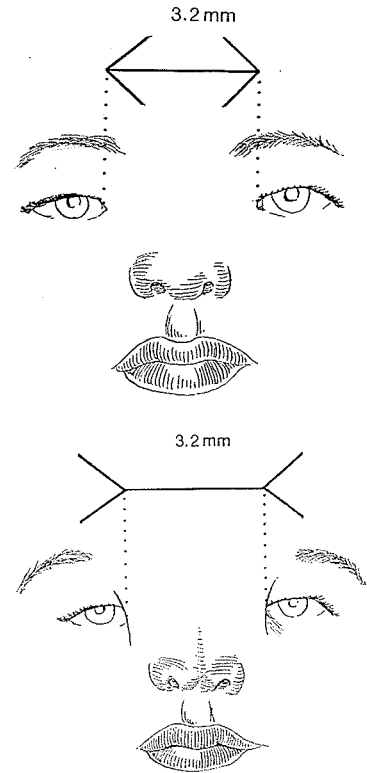
A bifid nose associated with a true wide hypertelorism can only be corrected if the underlying bony structures are placed into normal position. This is a complicated procedure that should be carried out only by an expert craniofacial surgeon. Here is a rare cardinal example of an 0–14 cleft of the Tessier classification which is actually a craniofacial dysrhaphia presenting a frontonasomaxillary cleft with considerable hypertelorism and preoperative xray film revealing duplication of the crista galli.

The case was treated by Paul Tessier himself with transcranial surgery. Subperiosteal dissection of the upper facial skeleton and orbital cavities through a coronal incision enabled "square-like" osteotomies to mobilize the orbits. The excess bone between the orbital cavities, mostly ethmoid and duplication of the crista galli, was removed. This necessitated a complete submucous resection and a nasal bone graft for nasal support. The orbital cavities were brought together into a normal relationship with a normal interorbital distance and the voids in the bone from the displacement of the orbital cavities were filled with bone grafts. Medial canthopexies and

b   *f*   *h*   *i*

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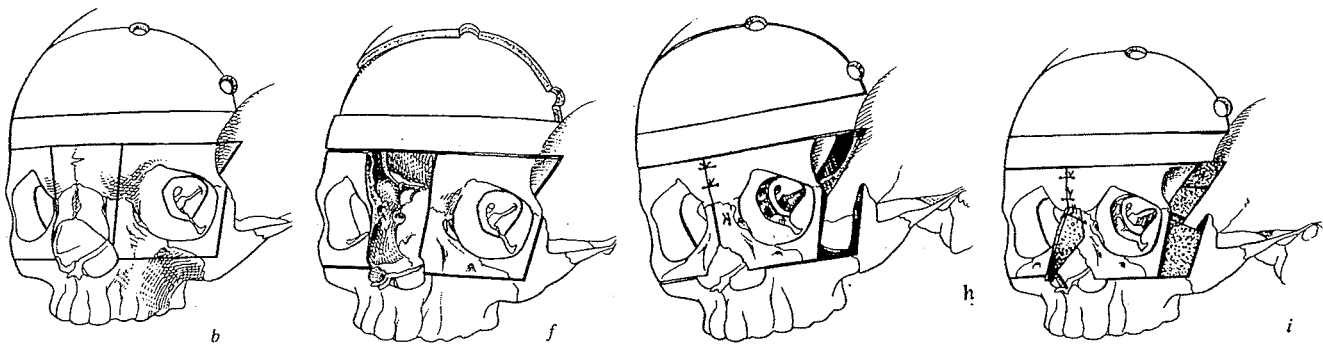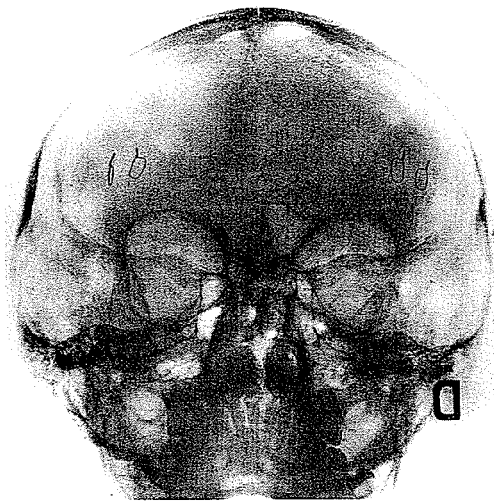
the iliac bone graft to the nose were effective but the nasal skin scars, lack of bridge and tip subcutaneous substance and inadequate columella eventually forced the use of a paramedian forehead flap.
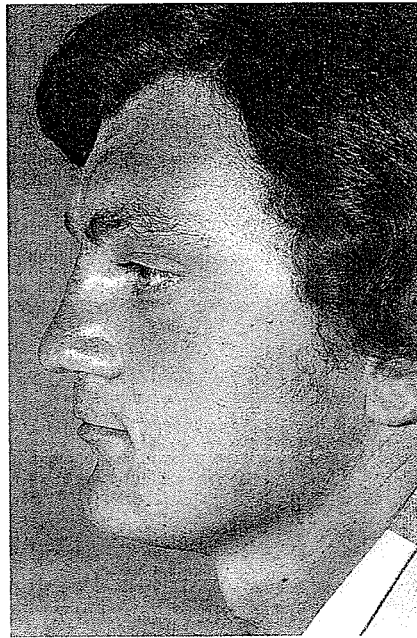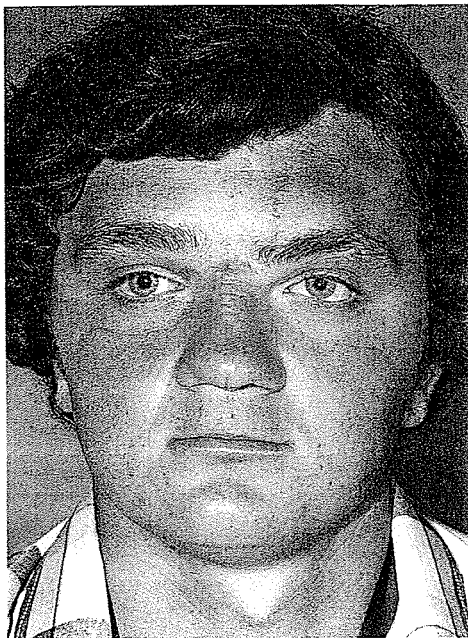
INTEROPHTHALMIC DYSPLASIA

This patient was born with a unilateral cleft lip but also with a rare nasal deformity. S. M. Lazarus corrected her lip with an excellent rotation-advancement and closed her palate resulting in good speech. Her general appearance reminded one of the spectrum of holoprosencephally, certainly a form of arhinencephally, and even a touch of Binder's. Her ventricles were normal as was her life expectancy. She could be labeled of the
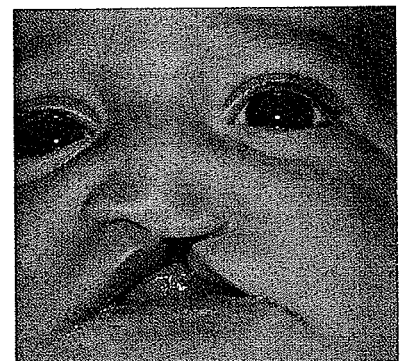
DeMyer Sequence—an interophthalmic dysplasia as described by Spolyer, Eldis, and Benjamins.

The lack of maxilla and the failure of its growth stimulated S. A. Wolfe to do an onlay bone graft to her maxilla at age 7 with improvement in the platform.

This child developed well in spite of her nasal deformity, which prompted her parents to request early nasal surgery.

The distal half of her nose was an attenuated funnel with no septum and virtually no columella. The left ala had the usual characteristics of a unilateral cleft. Due to lack of distal nasal support and the absence of a skin envelope in which to introduce support, I kept putting off surgery. Frankly, I did
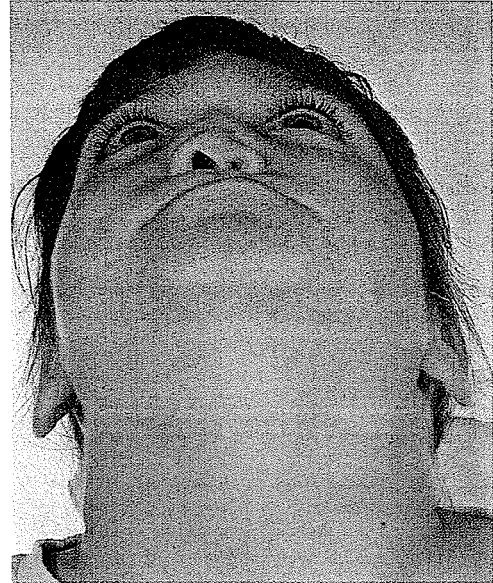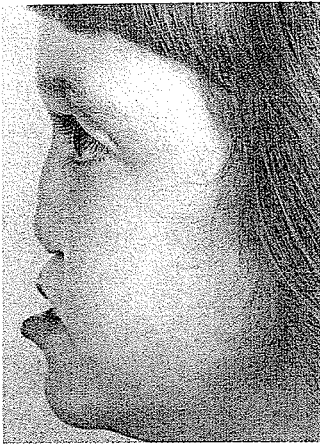
not see how to help her, short of reconstruction with a forehead flap and costal cartilage. The family kept asking me to do something . . .

Reconstructing nasal support ideally requires a propped cantilever, the proverbial L. This cantilever must rest on a fulcrum proximally and be propped distally. In most cases this is not an impossible task and with various maneuvers already described can be accomplished. When there is no columella or the columella is a skin shell with no substance in which to house the prop, then the cantilever will tend to droop and the tip fall. Bone graft cantilevers screwed to fixed bone above are inefficient at the distal end of the long axis of the cantilever

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even in resisting just gravity. When there is also the downward pull of skin and lining shortness and the contracture of scar the odds are even greater against proud tip support.

Transverse Arch Support

Faced with the dilemma of insufficient distal structures to accept columella struts, an alternate architectural arch support was conceived. Instead of the standard longitudinal, vertical L support, a *transverse* arch from ala base to alar base was designed to span across the front of the nose to lift the tip.

I first used this transverse arch principle in 1993 in a 71-year-old patient in which cancer of the septum had been treated with so much radiation that support to the distal nose had been destroyed. The flat shell of the nasal tip and alae without sufficient columella was benefitted by a transverse arch of costal cartilage threaded through a subcutaneous tunnel from ala through the tip to the other ala.

Application of this transverse support approach to this congenital deformity was achieved by freeing the ala bases from their cheek-lip attachments, enabling a subcutaneous tunnel to be dissected across the distal nose from alar base through the nasal tip and out the opposite alar base. A 1.4-cm × 6.5-cm costal perichondrial cartilage strut was carved and threaded through the tunnel. The protruding ends of the cartilage arch, one centimeter on each side, were introduced into stab wounds extending down to the maxilla. The alar bases were sutured back into place to cover the cartilage arch. This indeed gave the distal nose a supportive lift. The attenuated stub of columella was freed from the lip and bolstered by a chondromucosal flap from the left vestibular web.
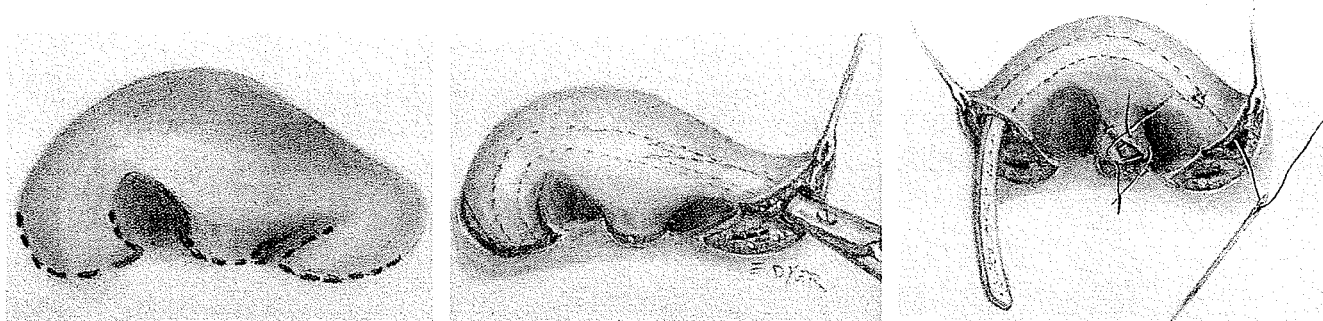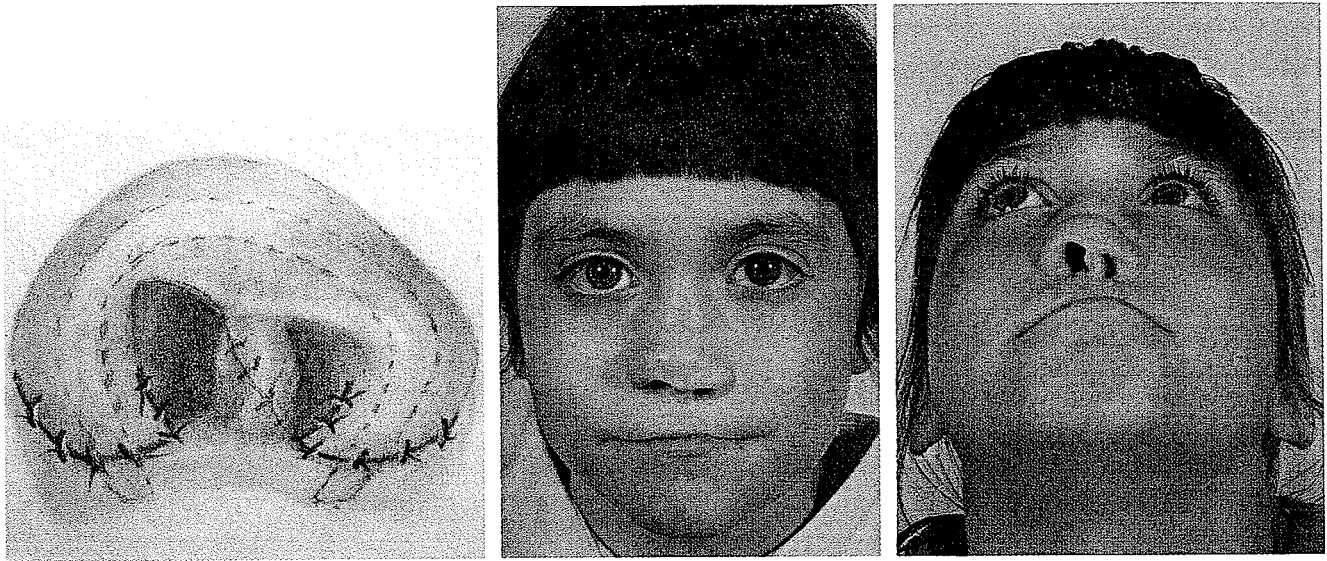
One and a half years later the left alar slump was transposed to the columella and a second rib graft added just posterior to the first graft for support continuity. Cartilage grafts were placed in the tip for better contour.
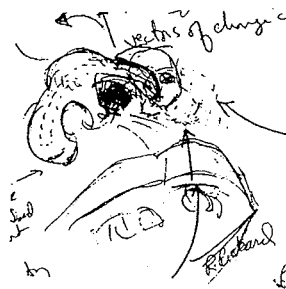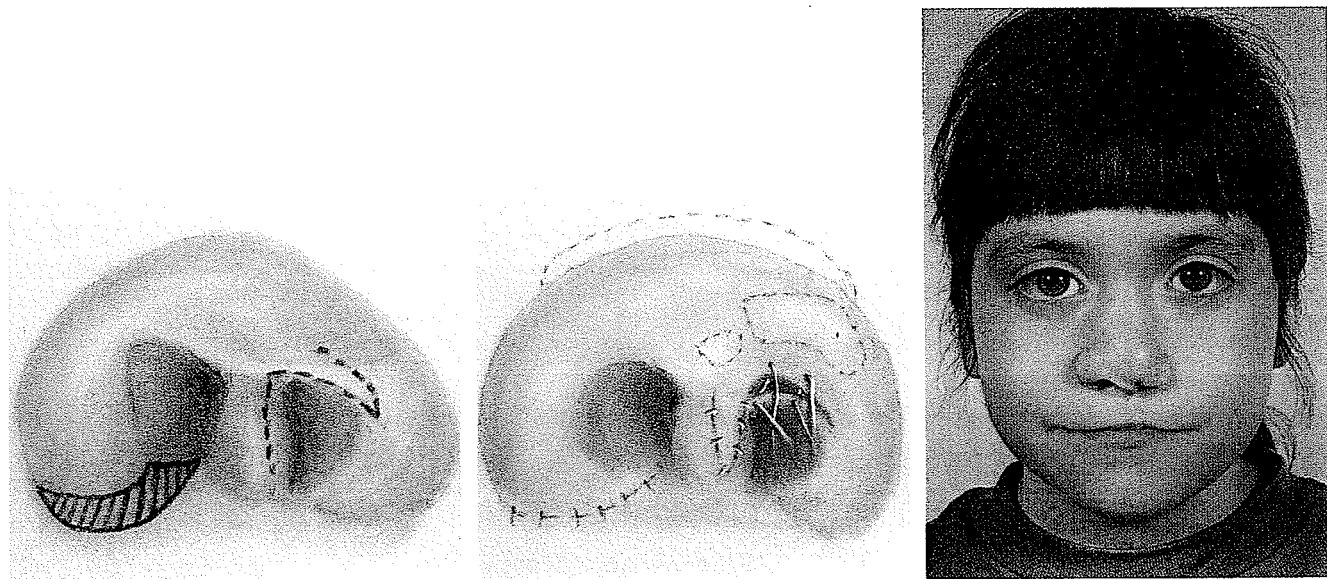
Nine months later, through an upper buccal incision, the deficient maxilla was dissected free of periosteum and costal bone was inserted as an onlay graft to improve maxillary contour. It was also wedged under the left extremity of the cartilage arch to lift the depressed left alar base. A costal cartilage strut was inserted on her nasal bridge.

A Temporary Silastic Arch

In April 1995 I had the opportunity to treat a similar problem. A female patient was first seen at the age of four years. She revealed a nasal deformity that indicated the midline structure of the septum was absent as there was no bridge, no tip support and no forward growth of the nose. The skin and alar cartilages were collapsed and foreshortened with only half a columella. There was not enough lining and cover to house the usual L support. The lip was well formed with a natural philtrum dimple.
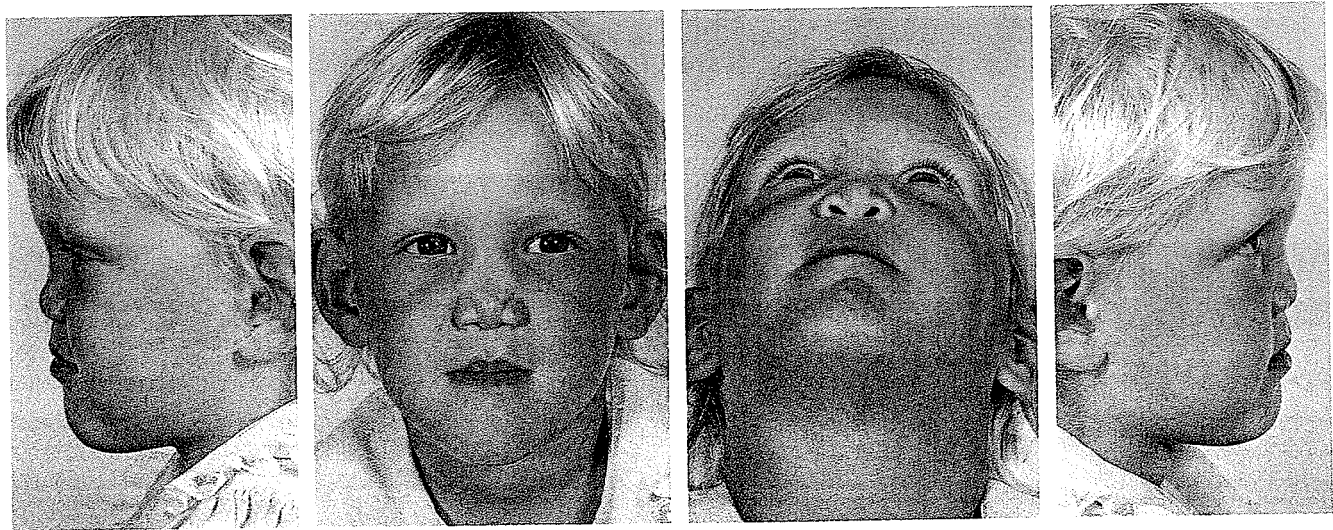
Again the use of a transverse architectural support, that had served in two previous cases, was contemplated. Yet the young age of the patient stimulated me to start early but

avoid costal cartilage, which would be difficult to exchange. I decided on silastic which could be used as an internal expander to be replaced every five years, if necessary, for internal stretching until time for the final costal cartilage arch.

A columella lengthening procedure I had used in 1963 in a luetic case offered the best method of lengthening the columella without scarring or deforming the lip. A composite ear graft would not have served in continuity with the transverse arch support procedure. Thus a skin incision around the base of the short columella enabled dissection of a subcutaneous-muscle flap out of the thickness of the middle of the upper lip. It was slanted obliquely down and back to obtain 1.5 cm of extension without affecting the lip and its philtrum. This extension was further released with a moderate
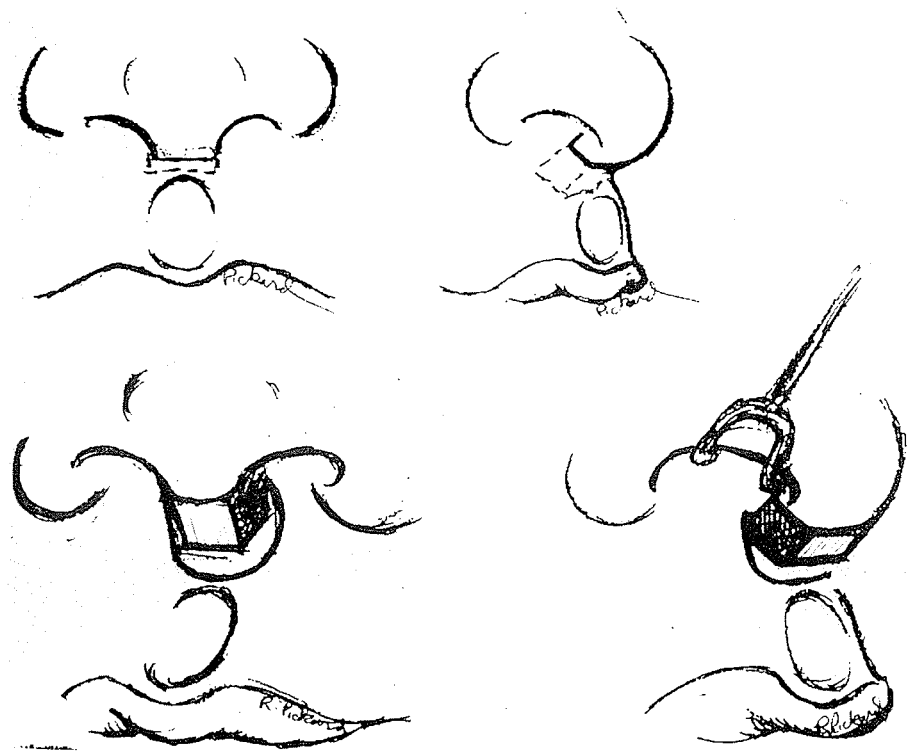
membranous septal incision. Incidentally, through this membranous septal exposure a pocket was easily dissected back over the flat bridge and a silastic strut was inserted for improved contour and bridge skin stretching.

Both alae were divided at their bases from the lip-cheek attachments which enabled the anterior nasal arch to flatten to

near a straight line which facilitated the dissection of a subcutaneous tunnel from ala to ala just above the mucosal lining but under the alar cartilage and dorsal skin of the tip and alae. A probe was passed through the tunnel carrying a suture attached to a specially shaped 6½-cm solid silastic strut. This allowed easy tugging of the silastic through the tunnel so that the ends extended well beyond each alae. A stab was made in the raw area at the previous base of each ala and extended down to maxilla. The silastic ends were cut to fit into the stab wounds with enough thrust off the maxilla to give a transverse arch lift to the front of the nose.
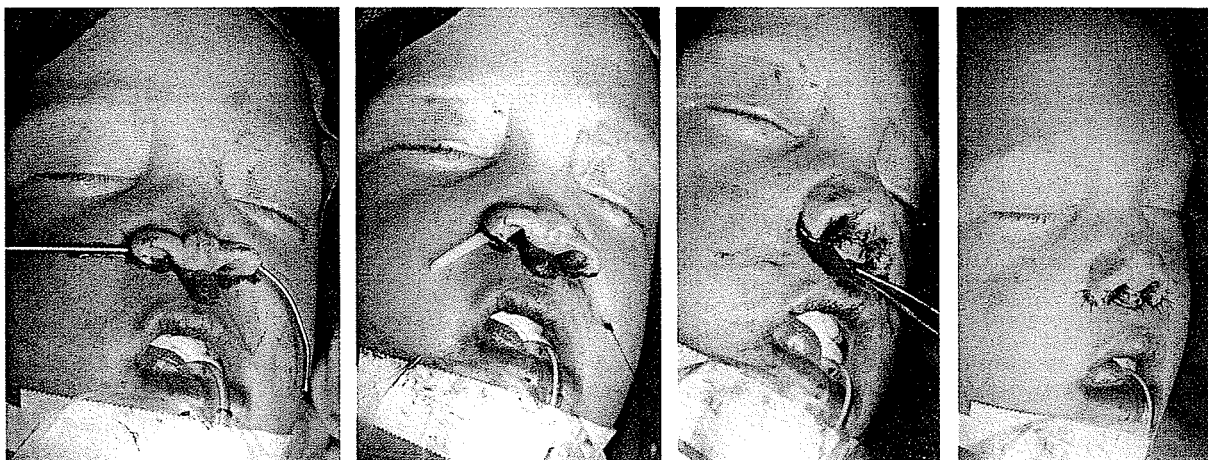
The raw extension of the columella was wrapped in a thinned postauricular skin graft fixed with sutures. The extended columella was fixed in the upper center of the upper lip and the alar bases were sutured with care to enclose the silastic arch support.

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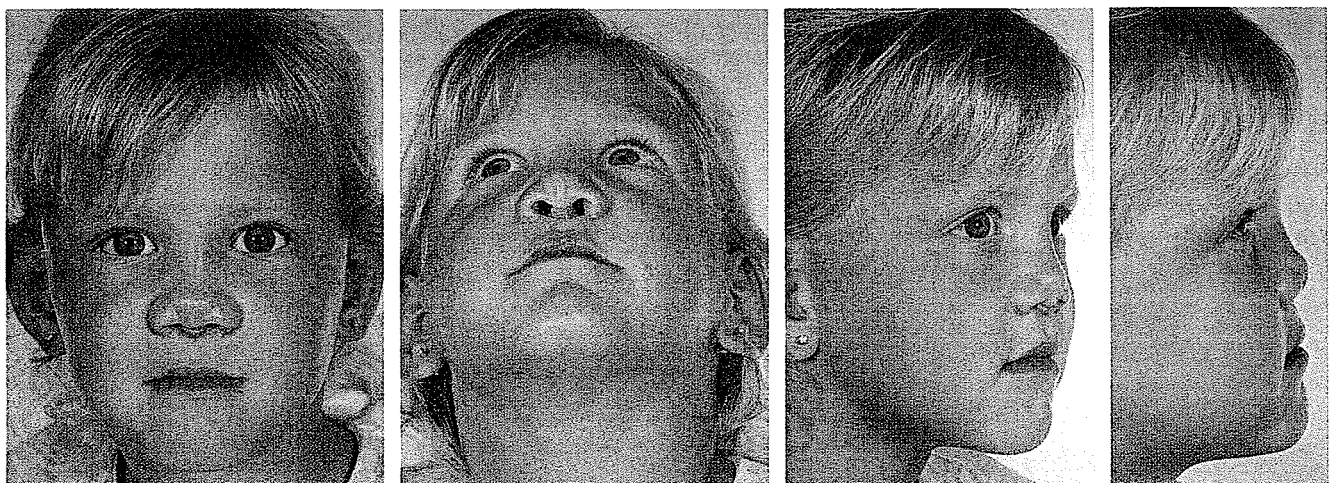
The early result was promising. Time will tell. It is my plan to replace this silastic strut with a longer strut every five or so years to stretch the nose. Eventually the silastic will be replaced with cartilage.

BINDER'S SYNDROME

Maxillary dysplasia, or Binder's Syndrome, is a congenital malformation with an extremely flat and retruded nose, often combined with maxillary retrusion and Class III maloclusion.

In 1969 I treated a mild case of Binder's Syndrome which revealed a failure in normal development of the vertical height of the nasal tripod, more marked in the tip than in the bridge. This discrepancy in nasal growth was also associated with some lack of maxillary development. The patient considered herself ugly.

The Defect

The vertical length of the columella and both sidewalls, when measured from the height of the alar arch to the join with the lip, was little more than half that of normal. Although the amount of deformity in itself did not appear staggering, there was a subtle, inherent shortness of all tissues. Its correction was complicated by the three-fold requirement for lining, support and cover in the columella and in each ala.

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Possible Solutions

The most tempting approach, but least likely to succeed, was the forcing of an "L" shaped bone or cartilage implant into this inadequate nasal jacket. V-Y flaps out of the lip continuity for lengthening of the columella and both alae were possible but promised too much scarring. Distal flaps were considered too complicated.

Three Composite Auricular Grafts

The columella and each alar base were divided at their join with the lip and the release was carried deep enough so that the entire arch of the nasal tripod could be lifted into normal position. The columella release required a membranous septal incision to allow the columella to advance upward. Forward pull by a two-pronged hook on the tip opened three yawning gaps, into which were fitted a triplet of composite auricular wedges taken from the junction of the helix and the lobule of each ear; the block for the columella was taken from the postauricular area, all without great loss to the ears. Each composite graft was cut in a specific shape, but with skin extensions to be used to curl as a sill into the nasal floor. The only cause for anxiety was whether all three grafts would take equally well.
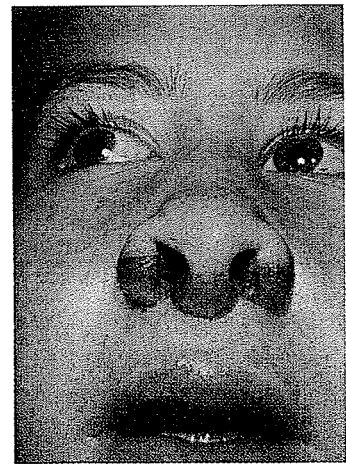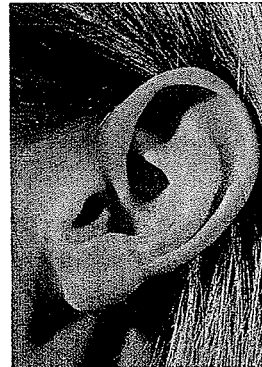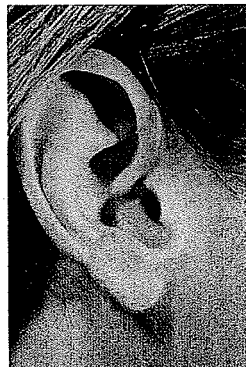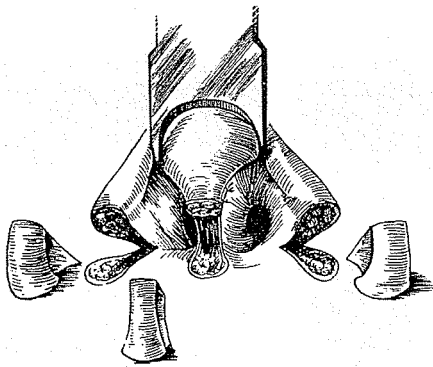
Perfect Take

The grafts went through the usual color changes that Konig observed first, Brown and Cannon and Dupertius demon-

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strated, and McLaughlin described but we all suffer through—white, blue black, purple, and pink.

Revisions

Five months later a septal cartilage strut in the columella gave better support to the nasal tip. Alar margin sculpturing camouflaged the blending of the grafts with the columella and alae. A silastic implant under the alar bases on the maxilla improved the platform. In fact, the patient expressed the feeling that she was no longer ugly. The case was published in 1971 in *Plastic and Reconstructive Surgery.*

MORE TYPICAL BINDER'S

This is a more severe and typical Binder's Syndrome.
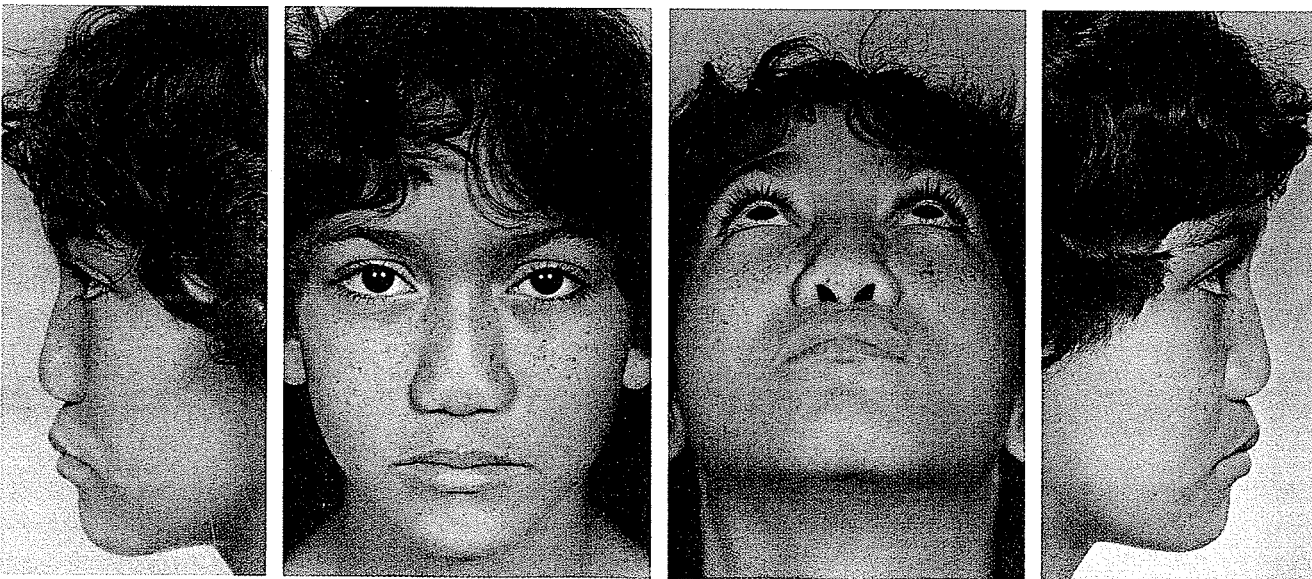
Three composite ear grafts had been inserted by plastic surgical resident R. T. W. Yuan as previously described but without great improvement. It occurred to me that the septal composite L-shaped advancement flap would be very effective in this type of nose, and it was. In the design of the L-shaped septal chondromucosal flap the dotted lines indicate the area of subperiosteal sectioning of the cartilage to facilitate the L-flap advancement by rotation to elevate the bridge and tip.
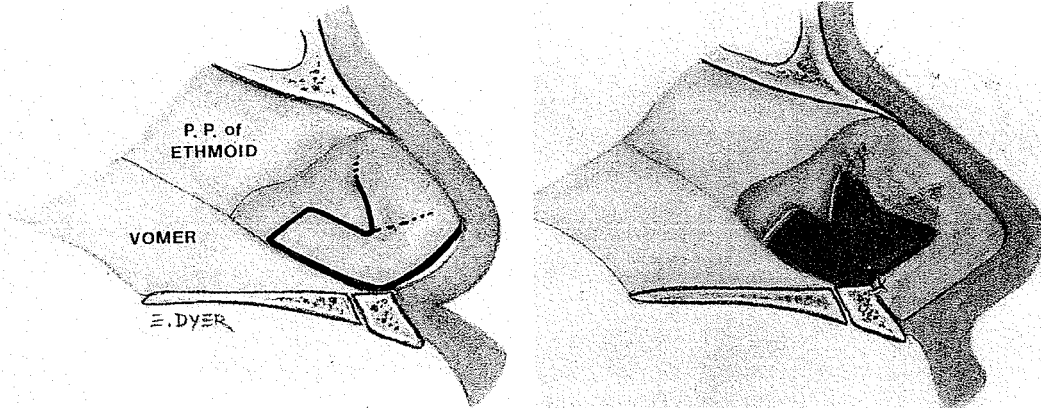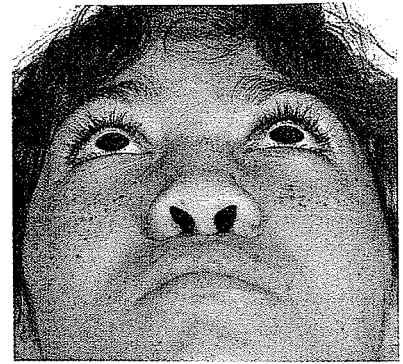
In 1986 Holmstrand advocated correction of the retruded nasal base with subperiosteal onlay bone grafts, and this was carried out in our case with cranial bone. An onlay strut of cranial bone was applied to the nasal bridge, the alar base grafts were excised, and the columella graft revised. This case was published in 1988 in *Plastic and Reconstructive Surgery.*

A SHORT NOSE

This 29-year-old female suffered with maxillary hyperplasia and mandibular retrognathia. She had Le Fort I maxillary os-

teotomies and osteotomies with direct bone plate/screw fixation of the maxilla and a segmental mandibular osteotomy (sliding genioplasty) with bone screw fixation by S. H. Holms. The surgery did improve the maxillary mandibular contour and occlused alignment but resulted in a nose that was relatively short for her facial skeleton. She was referred for nasal lengthening. There was no history of septal surgery.
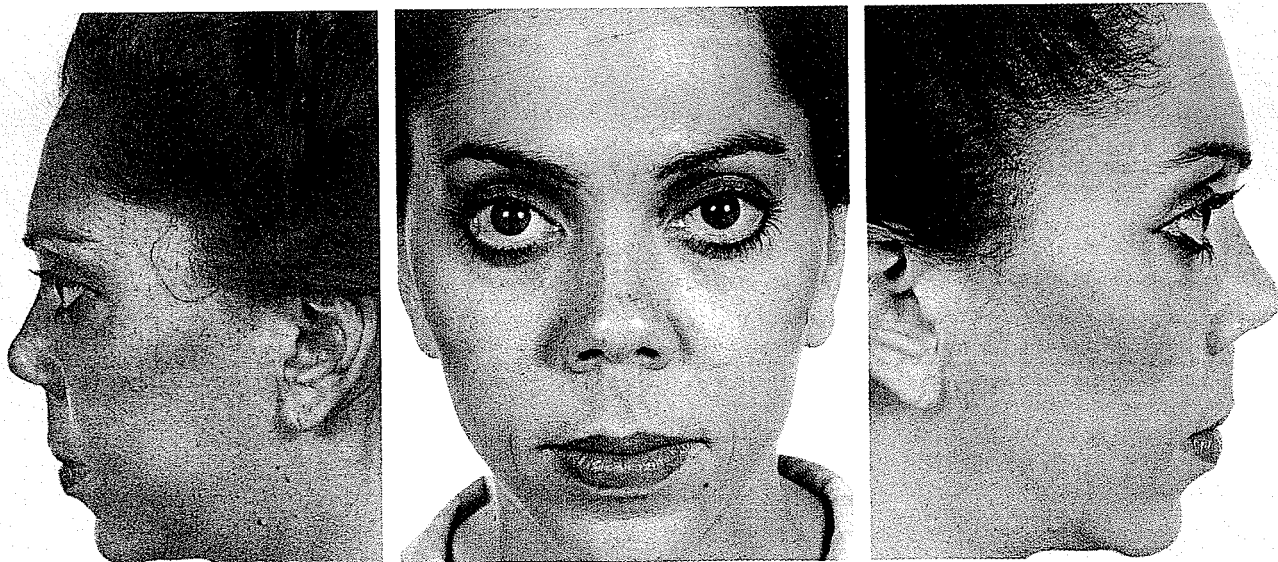
A subnasal advancement of the L-shaped septal chondro-
mucosal flap was designed. A membranous septal incision
hugging the distal septal cartilage was carried from the nasal
spine up toward the tip extending bilaterally along the in-
tercartilaginous line. Through the lateral vestibular inter-
cartilaginous incisions the skin of the dorsum was freed to
improve the potential for longitudinal nasal lengthening. In the
design for lengthening the framework of the nose, the mem-
branous septal incision exposed the anterior edge of the sep-
tum which was destined to rotate outward and become the
extended nasal bridge and tip. The additional nasal length,
being estimated at about 1.8 cm, was marked on the inferior
septum just above the nasal spine. At this point the full
thickness horizontal cut of the L was advanced posteriorly in
the septum parallel, but just above the septal join in the
vomerial groove. The length of this full-thickness incision
was another 1.8 cm, the estimated length of required col-
umella support from nasal tip down in front of the nasal
spine. The rest of the septal L was incised, keeping a wide
enough flap of over 1.25 cm to maintain vascularity. This ac-
tion was achieved without visual difficulty in spite of the in-
tact nose. Careful subperichondrial dissection enabled release
of the cartilage at the proximal kink to ease deliverance of the
septal flap out through one nostril. This improved access for
trimming excess cartilage along the undersurface and back
side of the L flap so that mucosa could be sutured to mucosa
without tension with 5–0 catgut to achieve a closed chondro-
mucosal unit. The L flap advanced up and out to form the
lengthened tip, and the distal leg was sutured with 4–0
Prolene in front of the residual nasal spine. This forced main-
tenance of the nasal lengthening and correction of the col-
umella retraction through the advanced propped cantilever
behind the tip and columella. The flap was sutured to the
membranous septum and the lateral lining incisions were also
gently sutured. Bilateral alar wedge resections narrowed the
flaring nostrils.
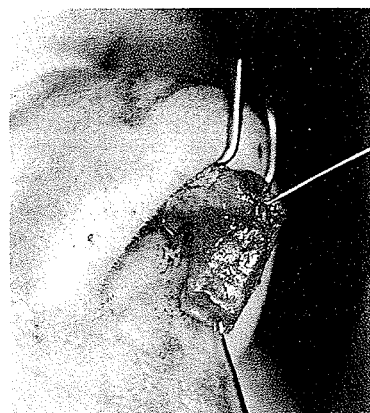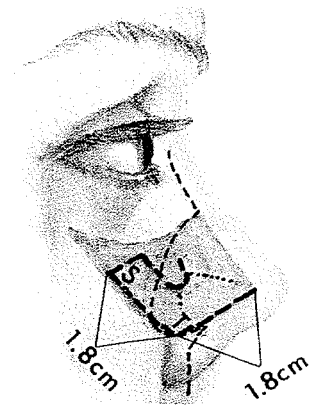
HEMANGIOMA OF THE NOSE

Hemangioma of the nose may be capillary, cavernous, or a combination of both. In the early phase there is often rapid proliferation, but by 6 months involution usually is in progress. Most observers estimate that more than 50% of general hemangiomas will show regression by the time the patient is 5 years old and 70% by 7 years with continued improvement up to 10 to 12 years. Unfortunately nasal hemangiomas have a history of slow regression, as noted by J. B. Mulliken in 1988 and I. T. Jackson in 1993. J. C. Vander Muelen, et al. in 1994 advocated early excision of nasal hemangiomas using the L incision. The results shown were good and the scars in unit lines.

Rarely will hemangiomas progress into rapid ulceration and hemorrhaging. If they do, immediate early excision and coverage with grafts and flaps may be necessary.

My usual approach to nasal hemangiomas has been observation up to five years of age supplemented with Prednisone under the supervision of the pediatrician. Once the spontaneous regression has reached its optimum, then surgical excision and reconstruction is indicated.

During the dissection and resection great care is taken not to injure the dermis or the alar cartilages but to take all tumor from between the two.

Embolization and ligation of predominant vascular supply are techniques occasionally used. A running mattress suture through skin and subcutaneous tissues encircling the lesion just outside its borders can be used to constrict and thus reduce hemorrhage during surgery. This has not been necessary in any of the nasal hemangiomas I have treated.

This patient was born with a nonraised capillary hemangioma which in the following three months revealed marked progression of the cavernous component with severe orbital, nasal and oral distortion. Radiation was deferred because of lack of acute symptoms or further progression. When the baby was first seen at seven months the face was severely involved.

The primary treatment was carried out by pediatric surgeon Mark Rowe. At interrupted periods the patient received oral Prednisone (20–40 mg). Ligation of predominant vascular supply was deferred to avoid enhancement of collateralization. Gradual spontaneous regression with blanching and shrinkage was seen over the next three years.

Angiogram revealed hemangioma of the left face filled primarily by maxillary artery division of the left external carotid.

Serial excision was chosen as the method of treatment and possibly could have been facilitated by the use of expanders. The serial excision principle of surface tissue stretcher was first used by H. Morestin and later popularized by F. Smith. Excision in stages enabled removal of large scars, pigmented nevi, hemangiomas, neurofibromas, and other benign lesions not removable in one stage. By serial excision the tension is fractionated into safer portions. It is important that the excisions be carried out along natural lines like the nasolabial crease to hide the scar. Amounts to be excised should be calibrated so that the tension of closure produces the desired balance.

My first operation on a patient four years of age was an excision of diseased tissue along the side of the nose and nasolabial line (crosshatching), removing deep hemangioma tissue (strippling) from the nose, cheek and lip followed by closure with moderate tension.
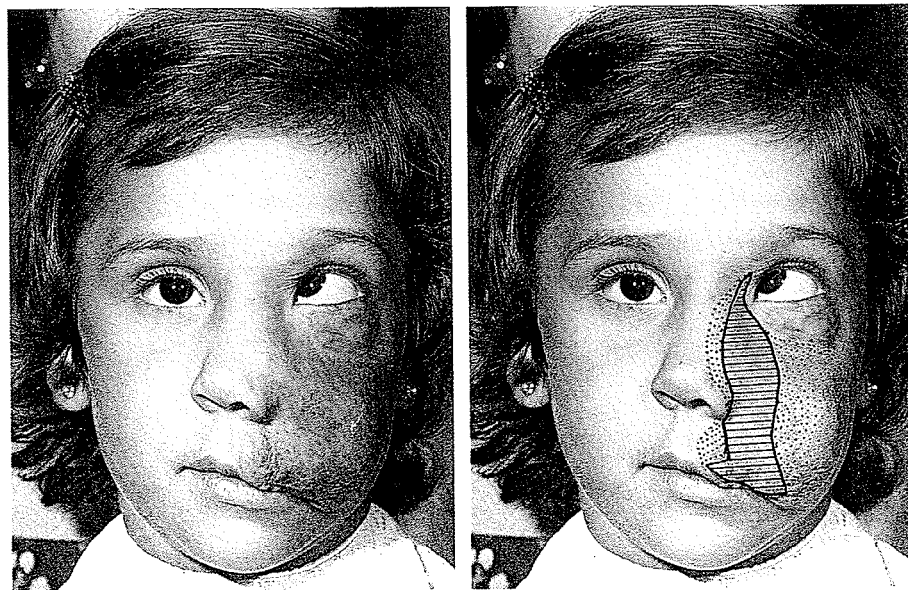
Ten months later a wide strip of scar, skin and hemangiomatous tissue was removed (crosshatching) from the nose join to the cheek and the nasolabial line including redundant tissue (strippling) below the commissure. Lipectomy of the

left lower lid and scar abrasions were accomplished and the strabismus was improved.

One year later, skin, scar and tumor tissues were excised (crosshatching and strippling) in the left medial canthal area along the palpebral fold. Six months later, wrinkled and deeply pigmented skin was tightened with a phenol peel. The patient is seen at age 13 years with well healed scars along natural lines.
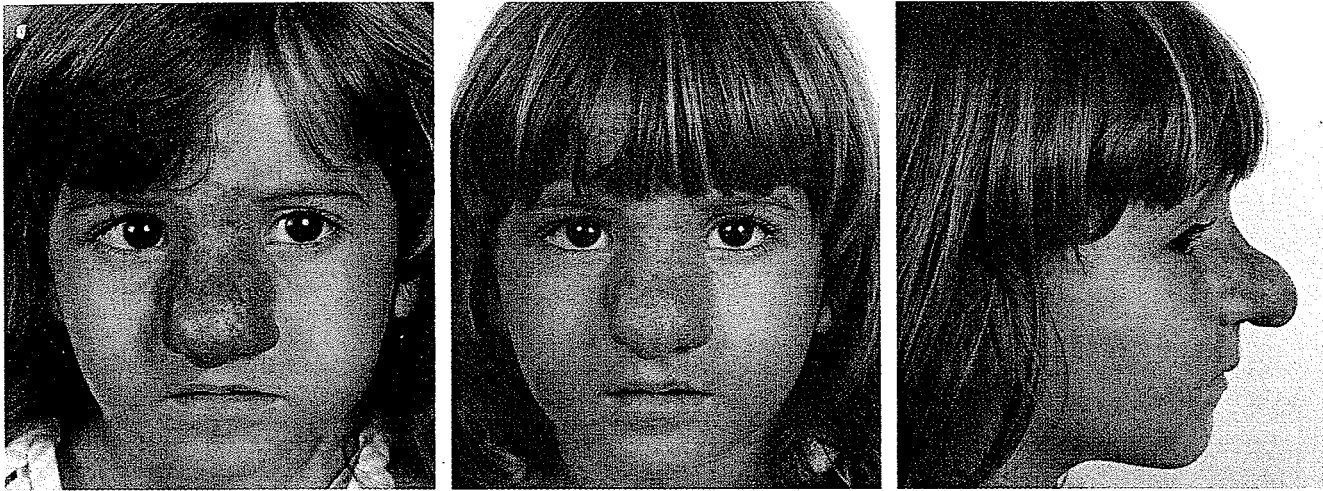

ANOTHER SERIAL EXCISION

This patient was born with a normal appearing nose that developed a hemangioma early and progressed rapidly. She is seen at the age of six months. No treatment was advised. Ob-

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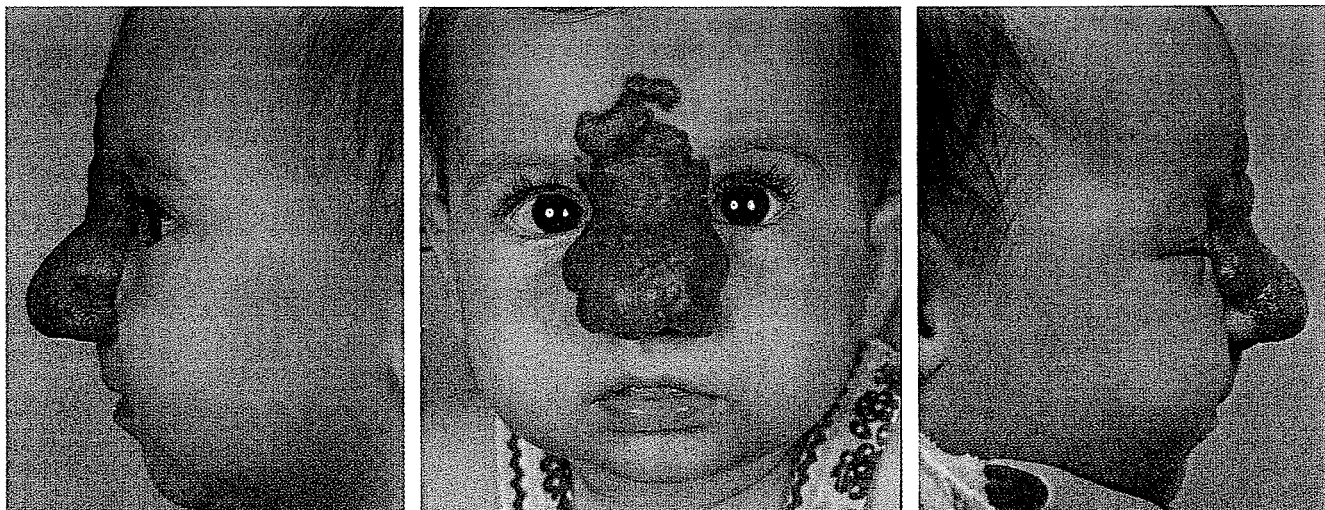
servation at ages two and three years revealed gradual reces-
sion.

First surgery at age three years involved distal incisions
along the alar rims and down around the columella similar to
an open rhinoplasty. This allowed elevation of the skin and
excision of hemangioma from dermis to alar cartilages. Free-
ing the skin produced distal excess which could be excised
and sutured. The improvement is seen two years later.

A year later a vertical excision of skin of the nasal dorsum
allowed lateral undermining and excision of more heman-
gioma on either side. Bilateral osteotomies with infracture
narrowed the nasal base and a vertical diamond excision of the
columella reduced its width. Wound was closed carefully
down the midline of the bridge.

Patient returned at age 14 years with a hump.

As the patient was mature for her years a corrective rhino-plasty with hump removal, septal tip resection, columella tip graft and other minor revisions improved her result.
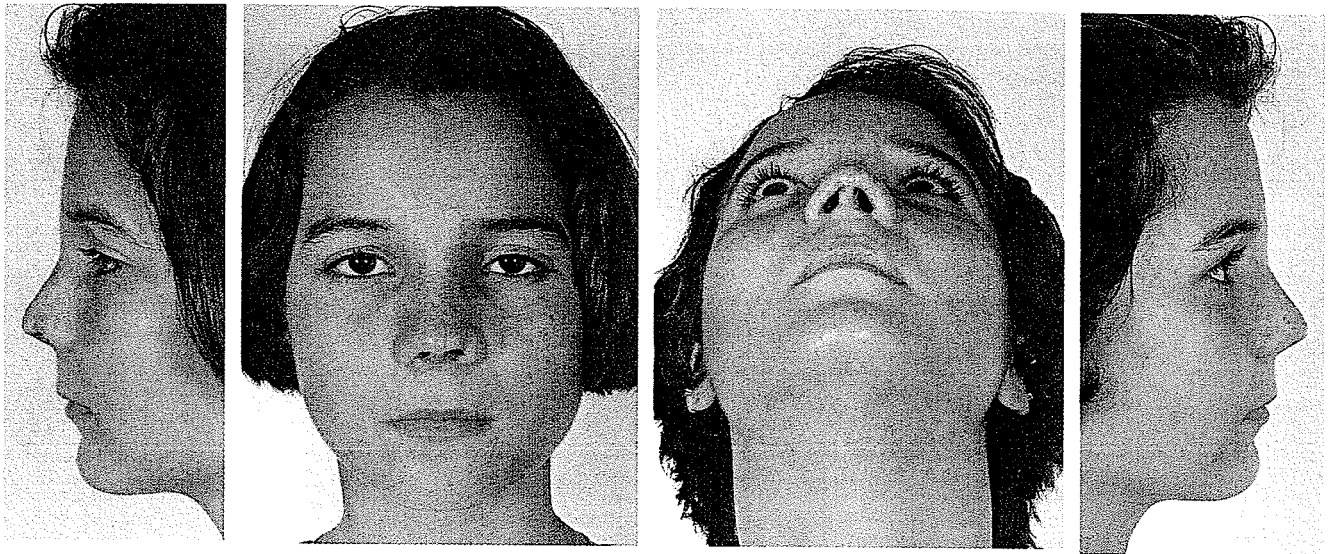

This patient was born with a red spot on the tip of her nose. At two years the capillary component had subsided spontaneously but the cavernous portion has progressed to a bulbous blue swelling.

Since observation is a wise adjunct in treatment of heman-giomas, the patient was requested to return in three years at the age of five. The nasal tip swelling was relatively less but no more improvement was expected.
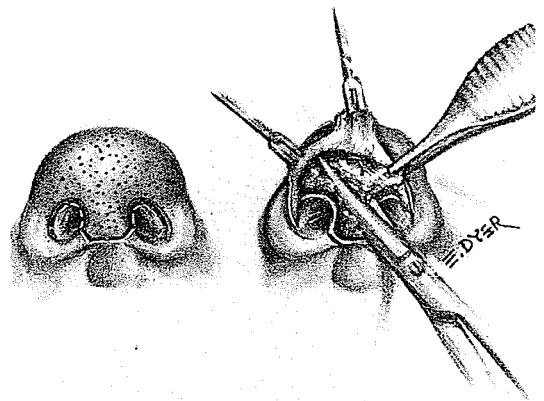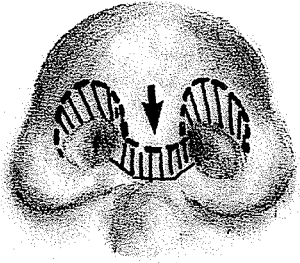
An open rhinoplasty approach through a modified flying bird designed at the inferior periphery of the lesions involved incisions along the alar margins running down the sides of the columella and across its base. This allowed elevation of the thinned skin of the columella and tip. The diagnosis of hamartoma was made, and the excess angiolipomatous tissue was excised from the columella, alar cartilages and distal bridge. Then the alar cartilages were sutured together and the excess skin draped, trimmed and sutured along the alar margins, down the sides and across the base of the columella in hidden positions. The patient is seen at age 5 and 19 years of age.
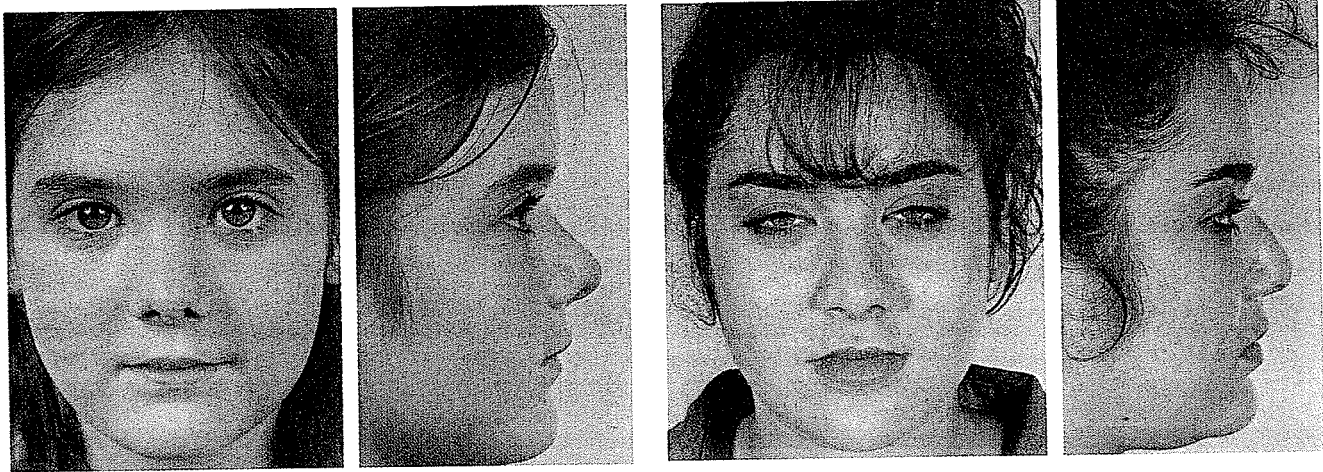
This ten-month-old baby girl was born with capillary and cavernous hemangioma of the nasal tip. Surgery was postponed with the hope that the usual spontaneous regression would occur. A course of Cortisone was without noticeable effect.
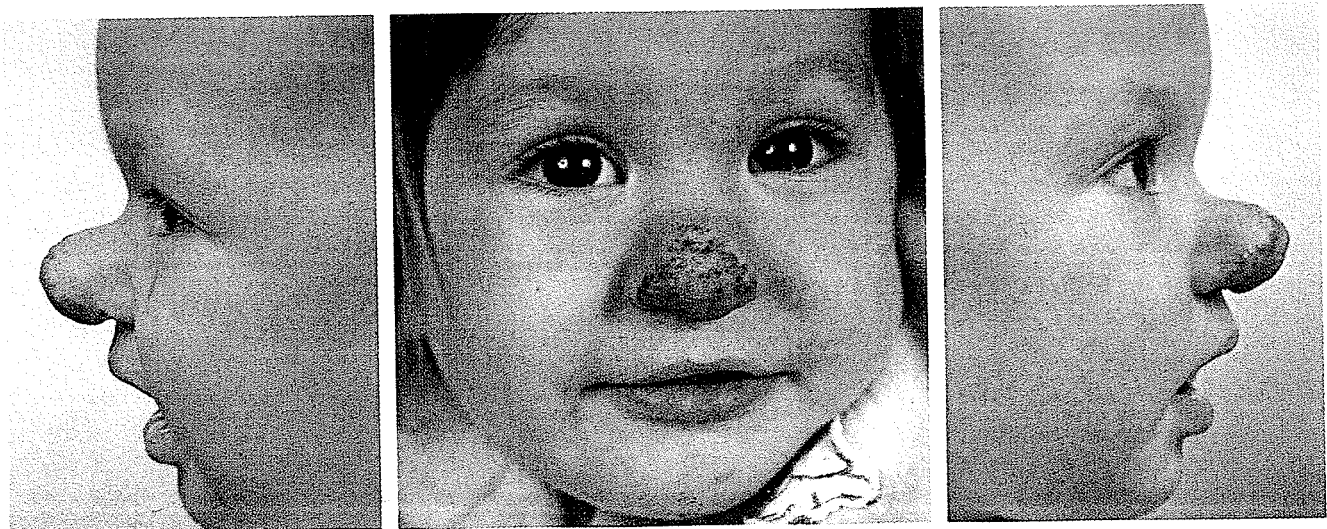
At the age of three years an open rhinoplasty across the base of the columella and along the alar rims allowed the skin of the nasal tip to be elevated with good exposure for excision of hemangioma from off the alar cartilages out to the dermis. The excess skin was trimmed and sutured back into position with good improvement. Two years later minor revision of the alar rims was carried out. The patient was then lost to follow-up.
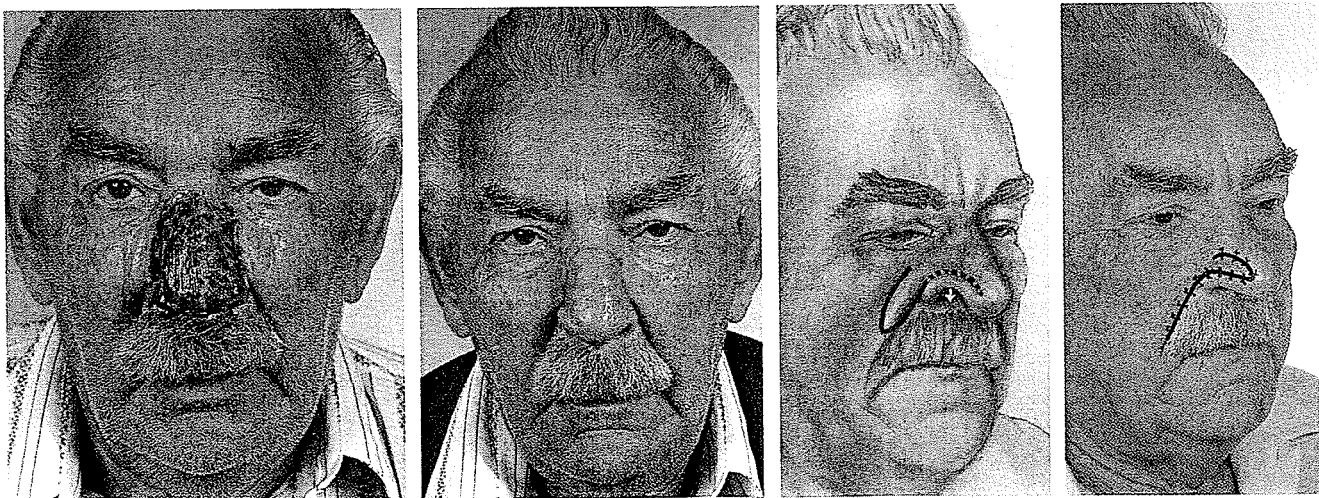

RHINOPHYMA

A rhinophyma represents excess sebaceous adenomatous hypertrophy in the skin of the nose. This lobulated pile-up can grow to enormous proportions but its correction is relatively simple. With a gloved finger in the nostril to gauge the remaining thickness of the rhinophyma, a no. 10 Personna Plus scalpel blade is used to pare the excess tissue. The final refined shaving is carried out with a sandpaper abrader which is also used to feather the peripheral edges. Every effort must be made to avoid exposing bare alar cartilage in the tip and to maintain an equal thickness over all shaved areas. The remaining sebaceous glands are notorious for re-epithialized the nose. Yet, as this presents a large granulating surface, there will be varying degrees of contracture during the healing. Usually the shaved nose will heal spontaneously and in

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time will become a reasonable color. Here are three examples of the treatment of this deformity.

A 67-year-old male developed an impressibly large, lobulated rhinophyma. He let it grow without concern until his wife died. Then he was forced to make new friends and this stimulated his quest for nasal correction. The excess tissue was
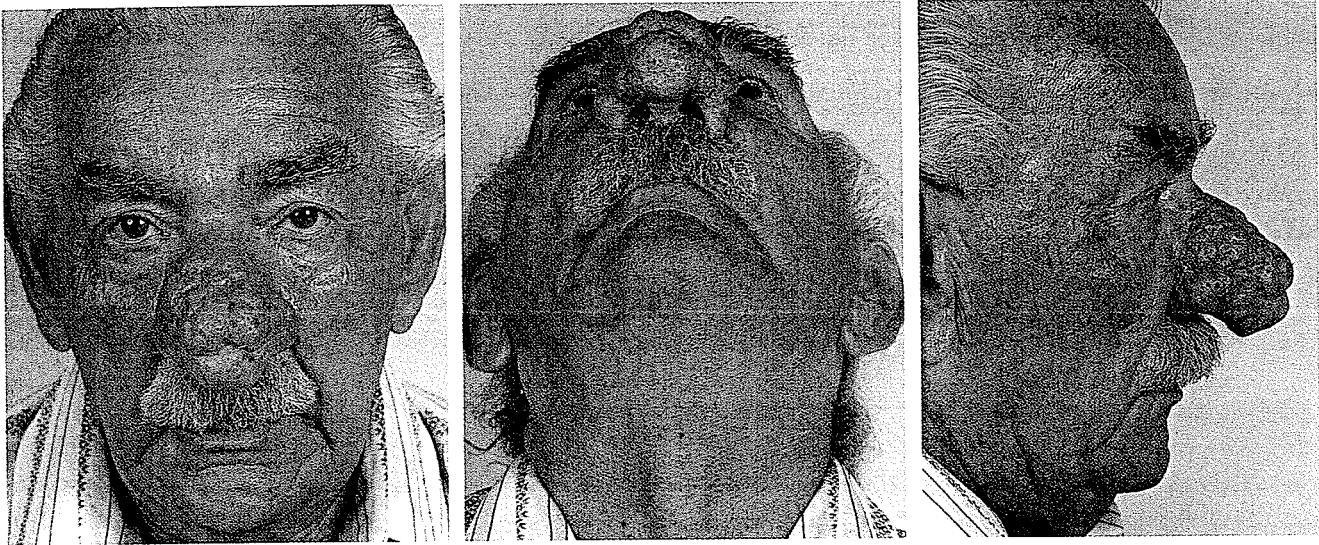
shaved off with a scalpel to a reasonable reshaping of his nose. The alar cartilages were not exposed and the granulating area gradually healed with re-epithelialization. It is difficult to gauge exactly the depth of shaving or the extent of surface contracture during healing. In this case the right ala, evidently pared slightly deeper than the left, healed with more retraction. This was symmetrized by release of the right ala retraction and covered with a nasolabial flap from the excess facial fold.
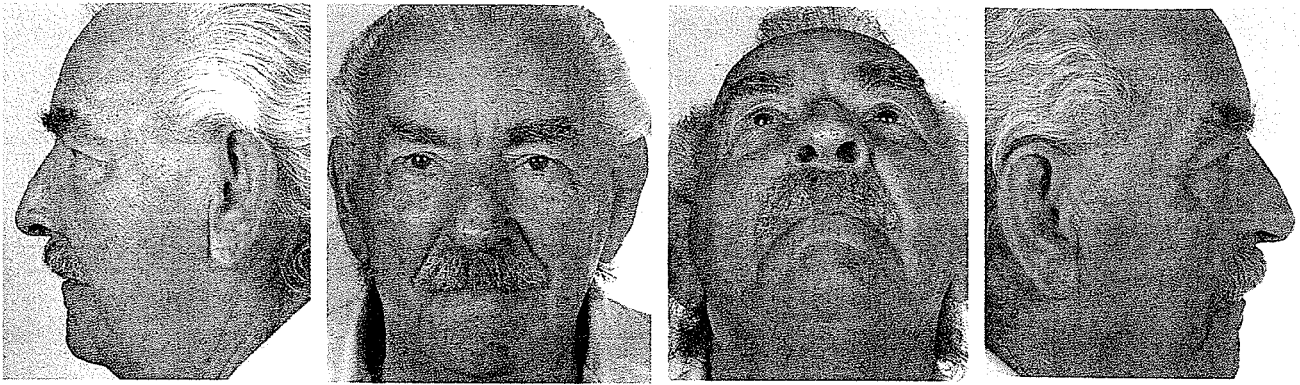
The second example was a 68-year-old male also with lobular rhinophyma that also was pared with a scalpel and the edges smoothed with a sandpaper abrader. In this case the


granulating area healed rapidly with more contracture than epithelialization so that there was severe retraction of the tip and alae. In my experience this is unusual. At three months the contracting scar was excised and the alae released. The raw area was covered with a postauricular skin graft which healed without incident. His general health prevented him


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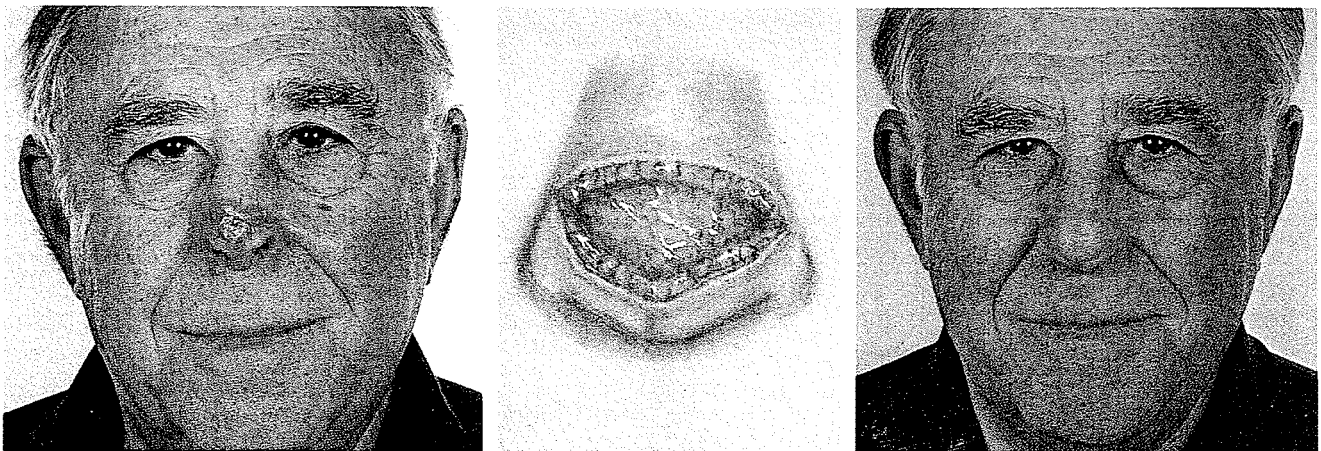
from returning for late final photographs but he reported satisfaction with his reduced and grafted nose.

Here is a case of first degree rhinophyma which also had basal cell carcinoma. Paring the rhinophyma with frozen section study of the shavings determined the extent of the paring. He healed satisfactorily.
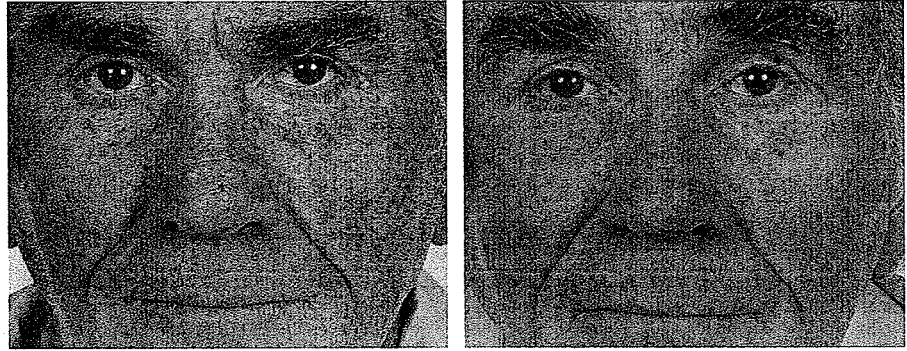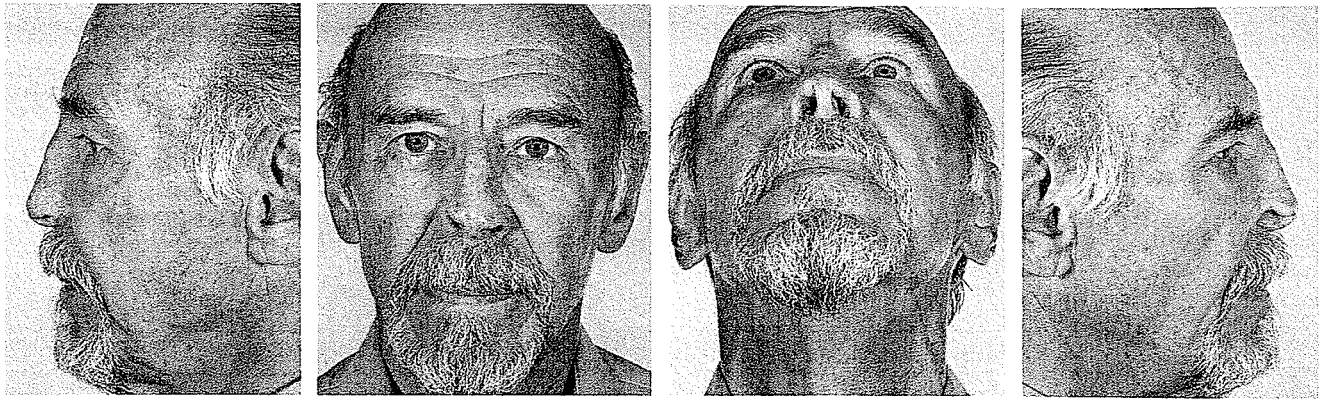

Secondary Correction of Rhinophyma

This 66-year-old male developed a rhinophyma that evidently was treated by excessive shaving. The healed result revealed
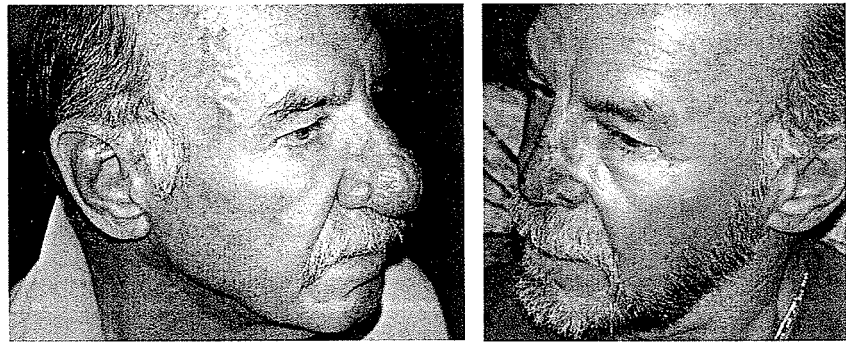
scarred skin of the nasal bridge and retraction of both alae more marked on the right. His nose was so constricted that his breathing was impaired.

The excess of the patient's nasolabial folds stimulated their use in repair. The retracted alae were incised to delay turn-down flaps of alar lining. Bilateral superiorly based nasolabial flaps were delayed by incisions. Three weeks later submucous septal resection aided the airway. The alar flaps were turned down for lining and covered with bilateral nasolabial flaps. Closure of the nasolabial donor areas provided a modest face lift.

The residual scarring on the dorsal bridge was replaced by the rotation of a bishop's mitre flap from the glabella area, based on the right supratrochlear vessels and taking the cor-rugator frown with it. Other minor revisions and flap thin-ning completed the reconstruction. This replacement of scar with three-flap cover needs time for flap edema to subside.