

HARELIP AND CLEFT PALATE

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IN THE human mouth at the entrance are two fleshy folds, the lips, covered externally by the skin and internally by the mucous membrane.

In the middle part of the outer surface of the upper lip is a vertical depression, groove-like in appearance, called the philtrum. The inside of the upper and lower lips in the middle line joins the gum tissue of the corresponding jaw by a fold of mucous membrane called the frenum. The covering of the margin of the lips is mucous membrane, which is thicker and drier than that of the oral cavity called the vermilion border which is well defined.

In the middle line of the border of the upper lip and at the lower end of the philtrum is a slight elevation, the labial tubercle. On each side of the labial tubercle the vermilion line points upward, and then gently curves downward to the angle of the mouth. In the lower lip the vermilion border is greater in the middle line from which it curves gently upward to the angle of the mouth.

In a healthy person the vermilion border of the lips are of a bright red color and slightly wrinkled. The thickness varies in individuals. This is also true of the amount of redness exposed.

The formation of the upper lip is brought about by the union of the maxillary globular and fronto-nasal processes in embryo. Should these processes fail to unite the result is a defect called harelip. The nomenclature used in the description of this deformity does not resemble the cleft of the hare's lip, which is located in the medium line bifurcating to each nostril (Fig. 1) but may af-

fect any part of the lip. The cleft in the lip of the human being may exist as a mere notch in the vermilion border (Fig. 2), or it may continue into the floor of the nose (Fig. 3).

Harelip may be divided into (a) single or unilateral harelip (complete or incomplete); (b) double or bilateral harelip (complete, Fig. 3, or incomplete). This classification applies to the usual cases that come to the oral surgeon for correction.

Frequently one finds cases of incomplete harelip where the tissue above the fissure are not of normal thickness. The covering is nothing more than the skin. It is smooth, does not contain hair follicles, nor sweat glands. The color is more red and appears to be somewhat like mucous membrane. It may appear like an old scar (Fig. 5).

In some cases the streak of abnormal skin extends to the floor of the nose, and the nostril is usually wider than the opposite one. These patients when operated on should have all of this abnormal thin covering removed, and cared for like a complete harelip in order to obtain a good result.

The shape of the nose in complete harelip is very characteristic. The nostril is broad and flattened out. The cleft of the lip is more common on the left side than on the right. Rose reports that Muller found 142 left-sided against 62 right-sided clefts. Mason, out of 65 cases, found 54 to be unilateral, and of these 35 left-sided to 19 on the right. Kolliker mentions that 165 unilateral clefts, 113 were on the left side, and 62 on the right. In my own observation of

80 cases I find that 70 per cent had a cleft on the left side.

Double harelip is a condition where the fissure may be complete or incom-

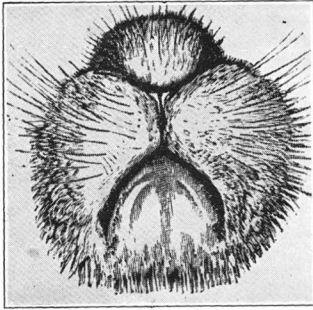


Fig. 1.—A hare's lip. The cleft of the upper lip is in the median line, bifurcating to each nostril.

plete on both sides, or it may be complete on one side and incomplete on the other. When the fissure is complete on each side the nostrils are flattened outward. The vermilion border on each side of the fissure extends into the nostril. The central part of the lip frequently extends forward on account of

cleft which unites at about the position of the anterior palatine canal, and then may extend backward as a single cleft of the hard and soft palate (see Fig. 6).

In a large number of cases where there is a single harelip and a single cleft of the alveolar process the premaxillary bone is turned outward and protrudes, causing the nose to be shifted to one side. In such cases the vomer is usually deflected (Fig. 7).

WHEN TO OPERATE

As a general rule the repair of a harelip should be done just as soon after birth as possible. I usually operate on these cases three to four weeks after birth. While the earlier operation is considered imperative, the surgeon must take into consideration the degree of the deformity, and the amount of vitality of the patient. Frequently patients possess a low vitality due to inherited weakness, or to inability to receive nourishment properly owing to the cleft of the lip and palate. I do not believe that a set of rules can be laid down as to when to operate, as the surgeon must carefully weigh and consider the pa-



Figs. 2, 3, 4.—Fig. 2, a cleft of the upper lip which is usually described as a notch thru the vermilion border; Fig. 3, a complete harelip extending into the floor of the nose; Fig. 4, a bilateral harelip and alveolar cleft.

the protrusion of the os incisivum which it covers (see Fig. 4). When this occurs the alveolar process has a double

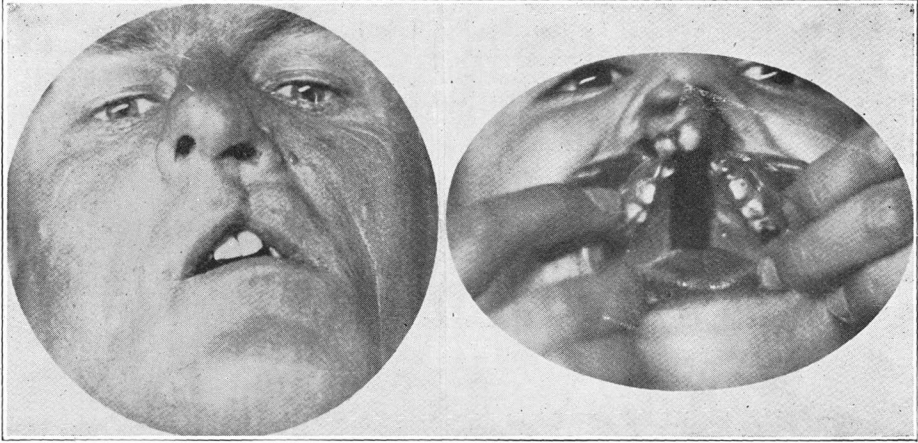
tient's vitality and resistance to withstand the shock of the operation, or any complication that may arise.

TREATMENT: PREOPERATIVE CARE

When a child is born with a harelip the mother should not be allowed to see the infant until the borders of the lip are brought together as close as is pos-

sible of the lip and alveolar process to be considerable narrower.

When a child with a harelip cries or laughs the sphincter-like action of the orbicularis oris muscle cannot function-



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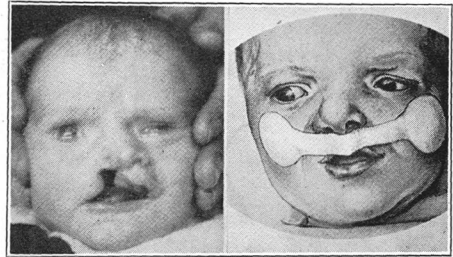
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Figs. 5 and 6.—Fig. 5 shows a fissure of the upper lip; the covering is nothing more than skin; Fig. 6 is a double alveolar cleft extending backward as a single cleft of the hard and soft palate.

sible, and held so by a strip of adhesive tape (Fig. 8). It is well to inform the parents that the deformity can be corrected by an operation, and that results are usually very good. It is of great importance that practitioners who are present at the birth of a child with a harelip should see to it that the holding of the borders of the cleft are held together, or nearly so, with adhesive tape.

The chief reason for this preoperative care is that the pressure brought about by the adhesive tape will greatly assist in molding the lip so that the fissure becomes more narrow. In patients who have a cleft of the lip and alveolar process such treatment often aids in reducing not only the width of the lip cleft, but also narrows the cleft of the alveolar process. I have seen a number of cases where such preoperative care within three weeks caused a wide extensive

ate normally, so that when contraction occurs each half of the lip pulls away from the center, and therefore exaggerates the deformity. If, however, the



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Figs. 7 and 8.—Fig. 7 is a single cleft of the lip and alveolar process showing the pre-maxillary bone turned outward and protruding. Fig. 8 shows adhesive tape strapped across the upper lip to hold the borders of the cleft together. This will greatly assist in molding the lip so that the fissure becomes more narrow.

borders of the lip are held together with adhesive tape the edges of the cleft will not be widened nor everted by the child in the act of crying or laughing. The tendency then will, by muscular pull, cause the cleft of the lip and alveolar process to become more narrow during the growth of the child. The narrowing of a cleft during the preoperative care is of great importance to the surgeon in obtaining a better and more cosmetic result.

In cases that have a complete cleft of the lip and alveolar process, and palate, some surgeons recommend the closing of the alveolar cleft first and then at a later time the cleft of the lip, especially so if the Brophy operation is to be performed, as the surgeon has better access to the palate. However, I have abandoned, in most cases, this method for the reason that after the cleft of the lip is closed the sphincter-like action of the orbicularis muscle will usually mold the alveolar cleft so that its borders approximate, and in some cases closure takes place.

In such cases after the cleft of the lip and alveolar process are united I close the palatal cleft several months later. At no time have I found any difficulty in closing the hard and soft palate to arise from a previous operation on the lip.

ANESTHESIA

In my experience I find that ether is the choice anesthesia for operations on harelip and cleft palate. The Sorenson Ether vapor and Asperating apparatus we find suitable for this purpose. It permits free access to the operating field without interfering with operations of the anesthetists. The ether vapor is pumped into the mouth thru a tube. The nostrils are gently packed with gauze to prevent the blood from running thru the nostril into the pharynx and larynx.

With regard to the position of the

patient I prefer the recumbent posture on a table. The anesthetist should stand at the head of the table, the assistant and operator on each side. After the parts to be operated on and the surrounding area have been thoroly cleansed, then bathed with 60 per cent alcohol, the patient is ready for operation.

OPERATION FOR SINGLE HARELIP

This operation for convenience of description may be divided into four stages: (1) freeing of the lip from its attachment to the maxilla; (2) cutting of the borders of the cleft to obtain symmetry of the nostrils, an invisible scar of the lip, and well-contoured vermilion border; (3) insertion of sutures in the skin and mucous membrane; (4) prevention of lateral tension.

FREEING OF THE LIP FROM ITS ATTACHMENT TO THE MAXILLA

In order to obtain a well-formed lip it is of great importance to thoroly free the lip from its attachment to the maxilla, especially should the ala nasi be dissected freely from its bony attachment so that the flattened and distorted nostril may be made to correspond in shape to that on the opposite side.

After making an incision down to the bone the soft tissue can be stripped from this bony attachment with a blunt dissector; this method will minimize bleeding. If, however, hemorrhage is severe, hot sponge pressure will readily control the flow of blood.

The extent to which the lip should be detached from the bone depends upon the width of the cleft; unless this is done to the extent that the parts to be united can be approximated in their new position without tension, one cannot hope for an artistic mouth.

Harelips which have been operated upon without a free undercutting will usually show a flattened nostril and a triangular scar extending downward from it.

CUTTING OF THE BORDERS OF THE
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CONTOURED VERMILION
BORDER

This stage of the operation must be done with great care in order to obtain symmetry of the nostril, to avoid a scar and to obtain a continuous and well-



Fig. 9.—Nelaton operation.

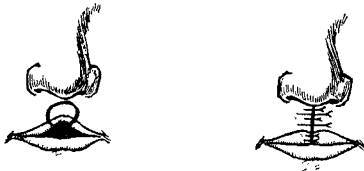


Fig. 10.—Grafe operation.



Fig. 11.—Konig operation.

formed muco-cutaneous line or red margin. The cutting away the borders of the lip to obtain union of the two segments of the divided lip is not sufficient. While such procedure will close the cleft it will not avoid the formation of a V-shaped notch at the vermilion border, by subsequent cicatrization.

Quite a number of surgeons endeavor to utilize all of the tissue bounding the cleft of lip. This method is suitable when the cleft is not extensive and the margins are quite parallel. The preparation of the borders of the lip de-

pends largely on the degree of the deformity. No one method can be universally followed. The surgeon should rely on his own judgment and plan the incisions that are indicated for each case in order to obtain the best result.

From my own experience I am satisfied that a free removal of tissue on each side of the cleft is not justified; neither do I advocate the other extreme, to utilize all of the tissue bounding the cleft of the lip.

The following methods give some idea of the various forms of operation:

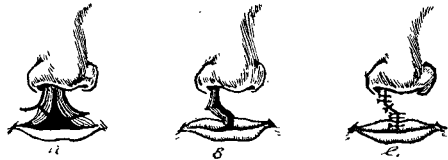


Fig. 12.—Haagedorn operation.

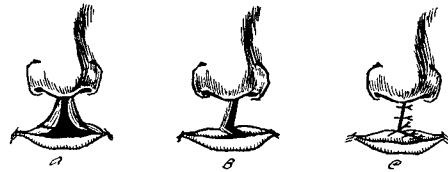


Fig. 13 shows the incisions the author prefers in repairing a single cleft.

When a cleft of the lip is of moderate extent and does not involve all of the lip extending into the nostril, the Nelaton method may be followed. In this operation an incision is made thru the lip above the angle parallel with the defect. The vermilion border then drops downward (see Fig. 9). The lower border of the wound is drawn downward and the sides of the wound sutured. This causes the vermilion border to protrude downward. It is claimed that during healing the shrinkage is sufficient to form a normal-shaped lip. In my experience I find that this does not always happen, so that I have abandoned this method.

The Grafe method gives the lip a

better shape. This operation is performed by making a semicircular incision above the defect (Fig. 10). The first suture is placed at the margin of the vermillion border and the skin, so that the sides approximate normally. This method is quite satisfactory in cases where the notch in the lip is not extensive. If carefully done one can obtain a splendid contour of the vermillion border.

When the cleft in the lip is more extensive, many surgeons follow the Konig

somewhat downward. Figure 12-B shows the wound as it should be, and Figure 12-C the wound sutured. This operation will give a good-appearing lip;

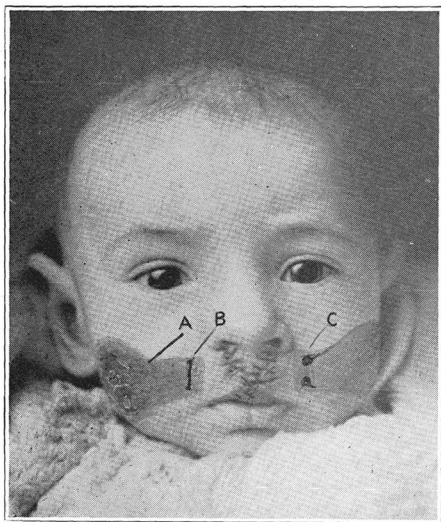


Fig. 14.—Author's method of reinforcing the center sutures: A, adhesive tape, B, silver wire, C, perforated shot.

method. This operation is done by making two vertical incisions in order to cut away the borders of the cleft. Then a slanting incision is made on each side (Fig. 11). By drawing the wound together (Fig. 11-B), and by holding the vermillion borders together and downward and then suturing, a very nice prolabium can be obtained (Fig. 11).

The Haagedorn method is somewhat similar to the Konig method. The vertical incisions are semicircular (Fig. 12-A), and the later incision slanting



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Figs. 15 and 16.—Congenital cleft of the lip, alveolar process, and soft palate.

however, in some cases, especially in those cases that have scar tissue following infection, a V-shaped notch will be formed in the vermillion border.

While there are so many methods advocated for the repair of a harelip, I find that no one rule can be followed. In the majority of cases I find the following method giving the best results: This operation is done by making a slight curved incision downward from the nostril, separating the vermillion border

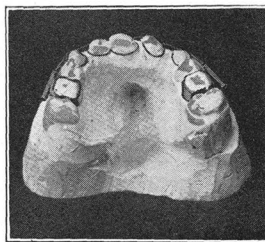


Fig. 17 shows method of immobilizing the fractured bone with an alignment wire to which the anterior teeth were ligated.

from the skin; then making a downward slanting incision on one side toward the cleft, and on the other side a downward slanting incision away from the cleft (Fig. 13-A). Figure 13-B shows the

cut surface, Figure 13-C, the wound sutured. The planning of these incisions so as to provide a fullness of the vermilion border depends on the thickness of the lip, and the size of the cleft. The sutures are inserted in the skin and mucous membrane after the wound is prepared so that the borders will approximate to give the lip the proper form and contour. It is important that the suture be so placed that the raw surfaces will be in contact without any curling or buckling of the edges, neither should there be any bleeding of the raw surfaces. In our experience we find that fine paraffin silk is the ideal suture material. It does not absorb moisture, and is friendly to the tissue.

After the suturing, the lateral tension must be overcome. This is important. Unless the wound is put at rest, one cannot hope for a good result. One should not rely on the skin and mucous membrane sutures to hold the raw surfaces together. Various methods may be used to reinforce these sutures. In our experience we have adopted the following methods:

Adhesive tape is glued to the cheek on each side (Fig. 14). The edges near the lip are turned inward. A strong paraffin silk ligature is then passed thru the tape into the lip midway between the skin and mucous membrane, in the form of a mattress suture; then by tying the loose ends sufficient tension can be brought to bear so that the approximating sutures will not tear out from the sphincter-like action of the orbicularis muscle. This simple method puts the lip at rest. The lip is again washed with 60 per cent alcohol made dry and liquid paraffin sprayed on the lips, so that the sutures are covered with a thin layer of paraffin.

After the lip is closed the sphincter-like action of the orbicularis muscle will continue to mold the alveolar cleft so that its borders approximate and in some cases closure takes place. If, however, the borders fail to unite, I usually

cauterize the borders in order to obtain a complete organization of the approximating borders to obtain union. If the patient is at an age when the stripping of the adhesive tape will not cause a narrowing of the alveolar cleft, I close the cleft by producing a green-stick fracture of the alveolar process, thereby preserving the shape of the dental arch. This is best illustrated in the following case:

Patient, female, nine years old; excellent health; had congenital cleft of the lip, alveolar process and soft palate (see Figs. 15 and 16). Notice that the alveolar process is divided between the left central and the rudimentary left

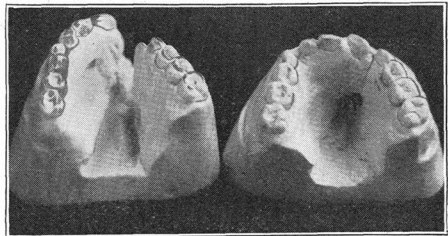


Fig. 18 shows result of the operation before and after treatment.

lateral. The alveolar process on the right side was turned outward and protruded to such an extent that it caused a distortion in that region. It was necessary to reconstruct the shape of the dental arch before doing anything further. The patient was anesthetized under ether, and incision was made between the right deciduous cuspid and right permanent later. The muco-periosteal flaps were raised and retracted, the exposed bone was cut one-half its thickness by a narrow long fissure bur; then by forcible pressure the protruding alveolar process containing the lateral and two centrals was brought in contact with the alveolar process on the opposite side, thus producing a green-stick fracture. The borders of the cleft were freshened and held together with an orthodontic appliance (Fig. 17). The

patient's mouth was kept as clean as possible and four weeks later, after union



Fig. 19 shows result after operation.

had taken place, the appliance was removed. This operation restored to a fair degree the shape of the dental arch, (Fig. 18), and as a result the cleft of the lip became narrower. When I operated upon the patient the second time for the correction of the lip, I obtained

better results than if I had attempted closing the lip before the shape of the dental arch had been restored (Fig. 19).

After the correction of the alveolar cleft and the cleft of the lip, the patient is usually discharged for about six months, at which time the cleft of the palate is closed.

Should there be a double alveolar cleft where the central portion of the os incisivum is displaced forward and attached to the tip of the nose, I usually cut the vomer to allow the septum to overlap when the protruding os incisivum is forced backward. Then by passing wire suture thru the vomer and freshening the approximating surfaces of the borders of the alveolar cleft, good results are obtained (Fig. 20.) The lip then is closed several weeks later.

In cases where the patient is older and the teeth are erupting, I find that cutting of the vomer is not sufficient to force the protruding os incisivum in its new position. In these cases I resort to orthodontic care. Bands with buccal tubing are fitted and cemented to the molar teeth, and alignment wire fitted to the arch to rest on the incisors and passing thru the buccal tubing. To the alignment wire is soldered hooks; rubber bands are then stretched from the

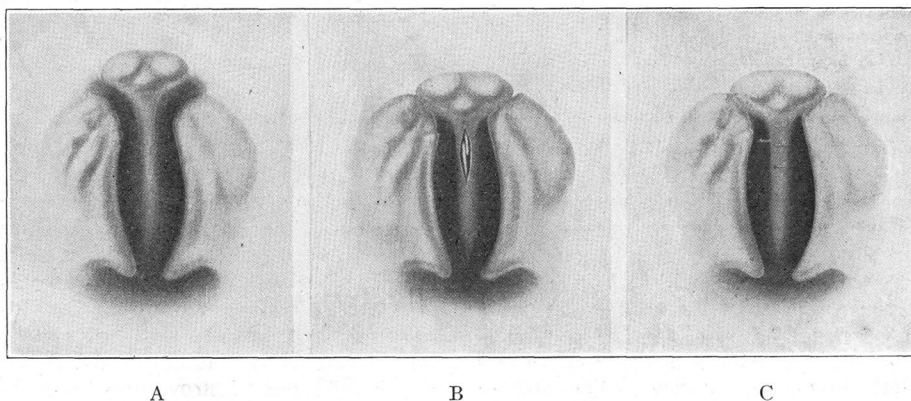


Fig. 20.—A, drawing of the palatal view to show the double cleft and protruding pre-maxillary; B, the vomer cut so that the pre-maxillary bone could be forced into its normal position; C, the pre-maxillary bone wired in its new position.

buccal tubing to the hooks. These rubber bands are to be replaced daily. After the patient is accustomed to the orthodontia appliance, I operate on the vomer by doing a submucous resection. The orthodontic treatment gradually shifts the protruding mass in its position. The borders are cauterized to promote fusing of the tissue. The lip is then operated on.

If, however, the os incisivum is undeveloped, the teeth decayed, pulp diseased, and there is a chronic inflammatory process going on, I find it advisable to remove the protruding mass. This is done by stripping loose the soft tissue and suturing it across the gap to act as a good stump for restoration with artificial teeth.

In my experience in the repair of alveolar clefts, I find that after having followed the Brophy method closely in operating on these defects I would frequently destroy some of the tooth buds. I have also observed that the end results of this technic by excellent cleft palate operation were similar to my results. The loss of several teeth prevents the normal development of the upper jaw. It has a tendency to start a so-called progressive malocclusion, the upper jaw remaining stunted, leaving the patient after the passing of years with an infantile jaw, called *micrognathia*.

The lower jaw appears to protrude and the upper jaw is undeveloped. While it is true that many of these cases can be benefited by orthodontic care, orthodontists agree that to accomplish this there must be a sufficient number of teeth to stimulate growth of the jaw for normal development.

By observing Figure 21 it will be noticed that a number of teeth are missing. It is a cast of the upper jaw of a young lad who was operated on for cleft palate in infancy. The parents informed me that the patient was two months of age when the operation was performed, that wire was passed thru

the jaw and then thru lead plates on each side of the arch, that these wires were twisted until the front of the cleft was closed, and that since the operation nothing was done to close the remaining part of the palatal cleft.

The upper arch appeared undeveloped and the lower jaw protruded. This inharmonious relation of the arches gave the boy a rather unpleasant appearance. The bicuspid, left

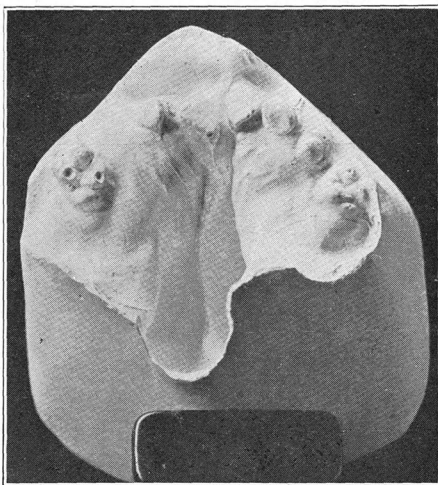


Fig. 21 shows loss of teeth caused by passing silver wire thru the jaw for the closing of a cleft of the alveolar process. The jaw is undeveloped and a number of permanent teeth are lost.

lateral and the right cuspid were missing. The other teeth were deciduous. The cause for the missing teeth, no doubt, was due to the operation in the attempt to close the cleft. While this may not happen by operators who claim that the passing of wire thru the jaw to repair a cleft does not destroy the tooth buds, I am of the opinion that this method of operating for the repair of the cleft will destroy tooth buds in the majority of operations that are done in this way. The loss of a number of permanent teeth in a contracted and

undeveloped upper arch is difficult to correct by orthodontic care.

Such cases have been treated by us for a number of years. While the improvement was remarkable, we can never hope for results as beautiful and effective as when the teeth are not missing. Let us compare this care with that of Figure 22. This shows the result which can be achieved in developing the upper jaw, restoring the forces of mastication, improving the facial lines, and enlarging the nasal channels. In this case there were sufficient number of teeth to fit the proper appliance to obtain the right results. The object of comparing these two cases is to impress

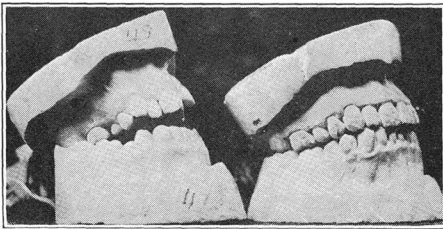


Fig. 22 shows a contracted upper arch with the teeth in malocclusion, and the result after orthodontic treatment.

upon operators the importance of preserving the deciduous and permanent teeth when operating upon cleft palate cases in order to permit further care, if necessary thru orthodontic means.

After the alveolar cleft and harelip is repaired, the next step is the closing of the palatal cleft. Before attempting to repair a cleft of the hard and soft palate, the operator should be well informed on the advantage and disadvantage of surgical care or the substituting of an obturator for the restoration of function.

I have observed in my experience a large number of cases where surgery was resorted to for the correction of a cleft palate, with the end result anything but satisfactory. While the opening was closed, the soft palate was short

and immovable from the large amount of scar tissue so that function was impossible. In other cases I have observed patients wearing an artificial palate and velum which did little or no good to improve function.

I do not consider that a set of unalterable regulations can be established as to whether a mechanical substitute or surgical correction is best suited for the patient, but I do know that unless one has had a training in correcting a

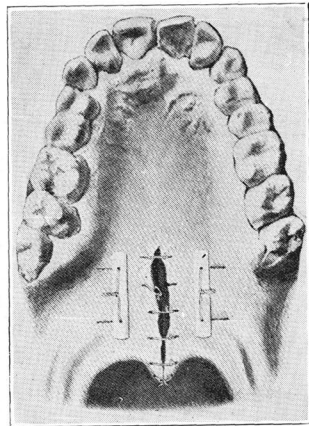


Fig. 23 shows the ligatures cutting into the soft tissues. This form of reinforcing the center sutures is not practical.

cleft palate by mechanical restoration and surgical repair he cannot be in a position to judge what is best fitted for the patient's welfare.

The oral surgeon who manifests a desire to give his patient that which is best, cannot ignore the value of an artificial palate. In cases where surgical correction has its limitations, the crude methods that have been employed by a large number of surgeons to close a cleft palate by making long lateral incisions, or the reflected flap method, may and frequently do close the cleft. The result as far as function goes must be considered a failure. Unless one is satisfied that there is a sufficient amount

of tissue to bridge over the gap and the soft palate can be lengthened to establish a functioning velum, then it is far better to advise the patient to wear an artificial palate.

For a number of years I followed the methods of the world's best oral surgeons for the surgical repair of a cleft of the hard and soft palate. In some the results were excellent, in some, a partial failure, and in a large number, a complete failure. While I could usually approximate the borders of the cleft after freeing of the mucoperiosteal flaps, without making lateral incisions, I found it a difficult task to overcome lateral tension. If I made lateral incisions, scar tissue would fill in the lateral wounds and the result would be a short and stiff drum-like palate. While the cleft was usually closed I felt that my results and the cases operated on by others were not as they should be.

Ten years ago I adopted a new method for the relief of lateral tension which would overcome the necessity of making lateral incisions. In 1916 I reported my results before the Kansas City Dental Society. Since that time I have applied this method in every case for the repair of a cleft of the hard and soft palate with results far better than any method I had followed heretofore.

In order to fully appreciate my method in the relief of lateral tension in cleft palate operations, I will describe the technic of combined uranoplasty and staphylorrhaphy. The method universally employed is Langenbeck's, which consists of the following steps: (1) freeing of mucoperiosteal flaps; (2) freshening the edges of the cleft; (3) placing and tying of sutures; (4) relief of lateral tension.

Freeing of the mucoperiosteal flaps.—This procedure is accomplished by cutting the mucous membrane along the entire borders of the cleft and separating the soft tissue by periosteal elevators and cutting the tissue loose from the

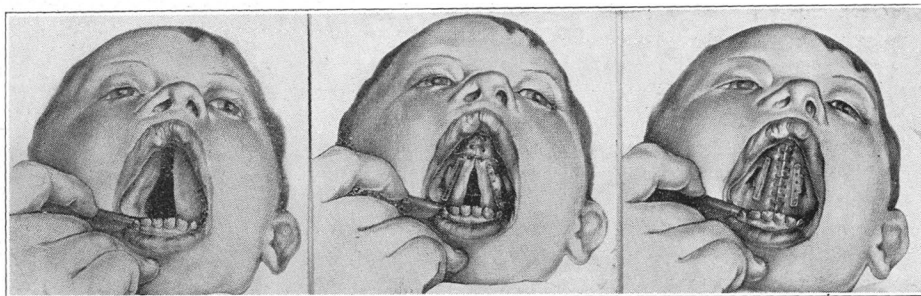
distal surface of the horizontal plates of the palate bone. This should be done with great care in order to prevent tearing or lacerating, which may seriously impair nutrition. Naturally this brings on considerable hemorrhage, which can be stopped by firmly pressing a gauze sponge against the bleeding surface. It is not always possible to avoid wounding the anterior palatine and especially the posterior palatine artery. Should one of the vessels be nicked it will cause severe and prolonged hemorrhage. It is therefore better to completely divide the vessel so that it will contract as it ends, thereby overcoming protracted bleeding.

Freshening the edges of the cleft.—This can best be accomplished by grasping the uvula on one side with a catch forcep and putting tension on the soft tissues, then with a very sharp thin-bladed knife cut a thin marginal strip along the entire flap from the uvula to the apex of the cleft. This same procedure is to be carried out on the opposite side. The freshened surface should be cut square with the flap tissue. A beveled surface is conducive to failure. If the raw surfaces are cut square, it is an easy matter to bring them together in close apposition, which will enable rapid union during the healing period. In cases where there seems to be a shortage of tissue in the soft palate I prefer to split the border of the velum about one-eighth of an inch and then unite the raw surfaces.

Placing and tying of sutures.—Various kinds of suture material have been adopted for holding the pared edges together, such as silk, horsehair, linen, catgut, wire, etc. Personally I do not believe that the difference in value of the above-named suture materials is of any great consequence, providing the operator does not depend upon the same to overcome lateral tension. Sir William Ferguson, in 1844, recognized that the tension on the ligatures frequently invited failure, either thru their cutting out or by shutting off the circulation,

thereby bringing on starvation necrosis and infection. To overcome this tension Ferguson divided the levator palati, the palatoglossi, and the palatopharyngeal muscles. In 1860 Dr. Agnew believed that the tensor palati muscles were responsible by pulling the newly approximated surfaces on the soft palate apart, thus causing the sutures to pull out. Therefore he advocated making an incision close to the hamular process of the sphenoid bone, and in this way overcoming tension. For a long time these methods were extensively adopted by operators in this and foreign countries.

entirely upon the sufficient freeing of the flaps. In my experiences I have never found that the plates cause sloughing, but that they did not prevent the suture from cutting (see Fig. 23). They are, however, of a distinct advantage in rendering the palate inflexible. In order to prevent the cutting of the suture thru the soft tissue I have devised a new tension plate which will prevent the suture material from cutting out and at the same time relieve the tension as well as render the palatal tissues inflexible. These plates are made from



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Figs 24, 25, 26.—Fig. 24 shows a cleft of the hard and soft palate; Fig. 25 shows the author's plates in position before wires are tightened; Fig. 26 shows the author's plates in position and the cleft closed.

The end results were not satisfactory. This was pointed out in a paper by T. W. Brophy in 1901 in which he says: "The formation of cicatrices following incision renders the soft palate thick and unyielding, so that its function is performed imperfectly." Dr. Brophy finds it unnecessary to cut the muscles on either side; it was he who introduced the application of lead plates. The advantages claimed for these plates are to render the palate inflexible and the prevention of the cutting out of the sutures. Dr. Blair reports that he has discontinued the use of lead plates as a retention device because they occasionally caused sloughing, in spite of every care; he depends

non-corrosive metal B. I. B. American gauge No. 22, in various sizes.

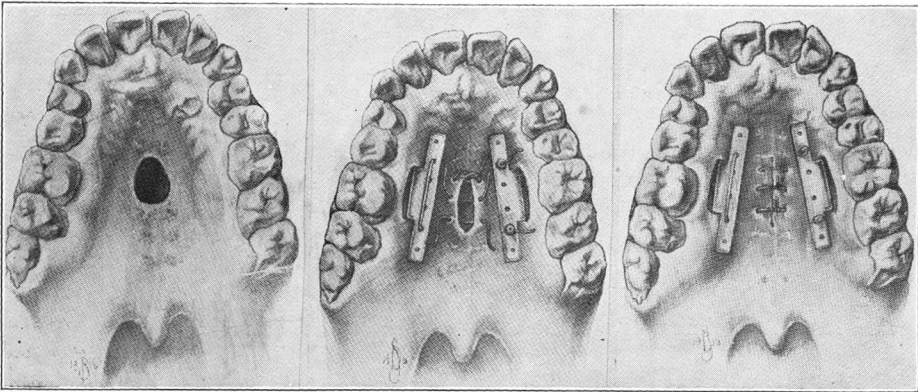
The object of these plates is to prevent the cutting out of the wire ligature which frequently happens with the Brophy plates. In order to fit these plates it is necessary to make a small incision near the gingival border of the last molar; care must be exercised not to cut the palatine artery. (The operator must take into consideration the degree of the cleft, the position of the blood vessels and the size of plate that best suits his purpose). The incision should be of sufficient length to permit the flange of the plate to enter and lie between the palatal bone and soft tissue. Previous to fitting these plates it is

necessary to pass silver wire (American gauge No. 24) thru the mucoperiosteal flaps and then thru the holes in the plates. The ends of the wire are then passed thru perforated lead shot and made tense by pulling the wire and crushing the shot after the borders of the flaps can be approximated without tension. After this is done I denude the border of the cleft and then place and tie the coaptating sutures after the McCurdy method.

While to the beginner it is rather a

Figure 27 illustrates the so called "button-hole" opening in the center of the palate. This form of opening usually is the end result of an attempt to close the hard and soft palate. Figures 28 and 29 show the advantage of using the author's tension plates for closing the opening.

A progressive scientific man must first of all be one hundred per cent honest and must present his ideas in their true genuine light. One should



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Figs. 27, 28, 29.—Fig. 27, button hole opening; Figs. 28 and 29, advantages of using author's tension plates for closing the opening.

difficult procedure to properly fit these plates he can, with a little patience, soon master the technic of this simple procedure as an aid in obtaining uniform anatomical, as well as physiological results.

Figure 24 illustrates the cleft of the hard and soft palate; Figure 25 shows the same case with the plates in position; Figure 26 shows the same case and the operation completed. These plates are now relieving the center ligatures so that healing can take place without tension.

be progressive, but one must also be revolutionary. When it comes to applying anything new to patients, intelligent conservatism is indispensable, the old methods must be discarded only when experimental investigation and clinical experience, presented by men who are qualified to discriminate, have shown the superiority of the new over the old. A new revolutionary medical invention should be accepted with a most painstaking, careful and exhaustive control, which obviously requires long time and the co-operation of many workers.