skin. There is practically no more trouble in the dressing of the cord thus tied than if the cord were not there. The only thing I do is to pour alcohol over the site at the regular dressing of the baby. I have seen no trouble at all. Therefore, the advantage mentioned by Dr. Taussig in the economy of the dressing would not apply to the cases as I manage them.

DR. ASA B. DAVIS, New York: I have not practiced this method of suturing the umbilical stump. In our hospital service we ligate the cord about 1 inch from the abdominal wall. Dr. Taussig calls attention to the fact that infants do not gain until the umbilicus ceases to granulate and is well started towards healing. We can confirm this by many cases of minor degree, and also in a few exaggerated cases of the so-called "carneous stump," sometimes from one-half to three-quarters of an inch above the level of the abdominal wall. A tedious process of healing follows, aided by cutting away granulations with silver nitrate. During this time the infant is either at a standstill or retrograding. I believe that a very large percentage of digestive troubles, green stools, fever, and jaundice in infants during the first ten days is due to some grade of infection at the umbilicus. This method of treating the umbilicus may be valuable in the hands of trained surgeons in obstetric hospital service. Its general use, sometimes by unskilled and not surgically clean operators, must lead to many fatal results.

DR. F. J. TAUSSIG, St. Louis: I feel that the method is not one which will become popular. It must be limited largely to maternity institutions under the guidance of expert hands. In such institutions I believe it has considerable value as a time saving procedure, and in limiting those rare but serious epidemic infections that occasionally prevail in all maternities.

THE REPAIR OF CLEFT PALATE

A TECHNIC AND THE REASONS FOR IT *

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Cleft palate, a pure deformity, has no pathology. Its incidence and the part heredity plays in its production have long been studied by Mr. William F. Blades of the Eugenics Record Office, but no deductions can be drawn from the data as yet collected; so we must pass by this interesting phase of the condition, as well as its anatomic complex.

The description of a method for the repair of a cleft palate will be limited to the single sided complete cleft. This is the most common lesion. All technical details applied to it are also applicable to other varieties of the deformity without special indication.

The time at which to operate is of initial importance. I wait until the child has passed the first three or four months of life and has established a satisfactory state of health. I advocate and practice operating before the eruption of any teeth. The infant's mouth at this time is not a too septic place, and sepsis is the greatest obstacle with which we have to contend. This is, of course, long before the incidence of infection of the tonsils or of the pharyngeal adenoid tissue, and also long before the child learns to speak or to attempt any imitation of the voice sounds he hears. It results that we come to the beginning of the work when the child weighs about 15 pounds.

The first step is to narrow the cleft by elastic compression. Commonly the halves of the uvula may be seen to be close together or even touching, separating,

however, when the child opens the mouth, in front and at the back, to cry. The widest part of the cleft is at the front, and the intermaxillary bone projects well in advance of the maxilla on the opposite side of the cleft (Fig. 2). I deprecate measures which perforate the maxillae for the passage of wires to draw the bones together, chiefly because of the possible interference with budding teeth, and the danger of a sequent sepsis. It is possible to draw the bones materially together—so as to make the intermaxillary overlap the maxilla—by elastic band traction, pulling on hooks of the hook and eye variety, fastened in adhesive plaster which is stuck on the child's cheeks (Fig. 1). When the child is quiet, the elastic is steadily drawing the bones together, and its effect is much enhanced when the child laughs or cries. The anterior and middle parts of the cleft are definitely narrowed by this means, as can be seen in the improvement in the appearance of the nose, the flattened nostril and tense ala being deepened and relaxed. As soon as the ends of the broken alveolar arch overlap, the child is ready for the operation on the soft palate.

Fig. 1.—Detail of adhesive plaster and hook and elastic compression of the maxillae narrowing the cleft. Note that the inner end of the plaster is put on the cheek outside of the side of the nose and that the posterior end runs up as high as the top of the ear.

All operators today are practically using the Langenbeck or the Lane method of closing the soft palate. The former, recognizing that the cleft represents a failure of union, attempts to correct that fault by putting the parts in union with the least disturbance of tissues. The Lane method splits the velum between its pharyngeal and buccal sides, and turns flaps over from one side to the other. This necessarily jeopardizes the palatal muscles in the splitting, and results in extensive scarring in healing.

The Langenbeck method can be so done as to disturb the muscles individually not at all, though they are, as a group, moved toward the middle line. The statement that the Langenbeck method is inadequate in a wide cleft with a flat palatal arch does not apply to the velum; therefore the Langenbeck is the method I use.

Now, instead of paring the sides of the cleft to get raw surfaces for union, I split them from the attachment of the velum to the tips of the uvular halves. I now suture the posterior edges of the split uvular

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halves together, tying the knots in the pharynx (Fig. 2), and follow by uniting the anterior edges, tying the knots in the mouth (Fig. 3). By this plan I avoid

Fig. 2.—Schematic showing of the projection of the intermaxillary bone beyond the maxilla. The margins of the soft palate have been split along their contiguous edges. The posterior flaps are drawn together by sutures which are tied on their pharyngeal surface.

sacrificing any tissue, and if secondary or other sutures are needed, I have all of the original tissue up to the very end. Again, I get broader surfaces of contact for union, though this seems, in failing cases, to be a matter of doubtful value. Finally, I can plan the sutures so as to avoid strangulation of any part of the uvula; and this is a matter of importance, for a shrunken uvula materially limits the palate's usefulness in phonation and deglutition. The plan of splitting the uvula and velum I think originated with the late Hugh Alexander Ferguson of Chicago.

This double pharyngeal and buccal suture line is necessarily stopped at the edge of the hard palate; anterior to that point I use only a buccal suture, and I mattress it. By this means I turn down the edge of each side into the mouth, get broader surfaces of contact for union, and thicker tissue after healing where formerly it was too thin (Fig. 3). I do not attempt to come farther forward by this plan than half the length of the hard palate. This leaves me plenty of tissue in front for the blood supply. I make, on each side, lateral incisions, keeping them outside the posterior palatine foramina and carrying the posterior ends well back. This lets me lift up the whole of the soft palate and move it toward the middle, and to do the same with the mucoperiosteum of the posterior half of the hard palate (Fig. 3). Now around these two flaps, mobilized and approximated and sutured, I pass a piece of ordinary tape, saturated in Moorhof-Mosetig bone wax. This is caught by a stitch, at both the front and the back, on each side, and is so sutured that it acts as a relaxation suture; as it is somewhat

stiff, it is also a sort of splint, and immobilizes the soft tissues involved (Fig. 4). The part where my repaired palates begin to break down is at the junction of the hard and the soft palates. Here the strain seems to be greatest or the circulation poorest. In the bight of my tape the flaps cannot pull apart, the mattress sutures are not torn out, and union must occur. Finally, for purposes of cleanliness, I pack the lateral incisions with iodoform gauze.

The tape is left undisturbed for from ten or twelve to fourteen days; the gauze packings are changed daily until the incisions heal so much that they will not hold the gauze.

Union now gives us a palate with a somewhat shortened uvula, and this is usually destined to become still shorter as contraction of the scar tissue occurs. I have never seen a normally long velum after the operation, but I have seen them very nearly normally long, and with an active musculature, showing that I had not spoiled the nerve supply.

During this period the cheeks and the maxillae are held by the elastic traction, and I now repair the lip so that it shall remodel the alveolar processes and make an approximately normal alveolar arch. I shall not impose on any one the way in which I repair the lip. It is something in accordance with a method I once saw practiced by Charles H. Mayo. Each man must find out the way in which he can do this dainty bit of work best, and follow that way.

In the front of the mouth the mucosa is tightly applied to the bone, and the material for any sliding

Fig. 3.—The anterior flaps of the split soft palate and uvula have been sutured in the mouth. The mucoperiosteum of the posterior half of the hard palate has been mobilized by the lateral incision and by being separated from the bone, and the edges united by mattress sutures closing the cleft. The lateral incisions are stuffed with iodoform gauze.

plastic is lacking. Here is, however, a perfect place for a Lane flap, not made so big as to open and ruin tooth follicles, but broad enough to bridge the cleft

and long enough to close the whole length of the cleft left open. I take the flap from the wider side and pocket it under the mucosa of the narrower side. It is quite competent to do this to just behind the teeth and to leave no opening, a condition which is most

Fig. 4.—The waxed tape in position stitched where the ends meet, so as to maintain a proper tension, and caught by a stitch on each side, in front and at the back to keep it from rolling up into a string. The bone wax stiffens it and prevents its becoming saturated with saliva.

annoying, as it readily permits leakage of fluid into the nose (Figs. 5 and 6).

The suture material is of moment. In the uvula I use fine twenty day chromic catgut or horsehair or fine waxed black silk. The wax really is Moorhof-Mosetig bone wax, and the silk is boiled in it. Horsehair and silk have the disadvantage of usually having to be removed, though they may tear out of their light hold on the uvular mucosa. In the velum and in front of it I use black waxed silk or fine silkworm gut. This is for the sutures that are matted, and it is good policy to leave a long end to facilitate picking it up when the suture is removed. In the front part, for the tacking into its pocket of the Lane flap, the chromic catgut is enough.

I have used the body weight of 15 pounds as an index as to when the child is ready for the operation. Frequently these children are undernourished because they have difficulty in sucking a nipple on a breast or a bottle. So I have them all fed by a catheter in the nose. In a short time a child will learn to acquiesce in the method, and we can be sure that it really is getting a proper amount of food and without undue effort. After the operation, when the palate is freshly sutured, it is a definite advantage to eliminate the muscular act of swallowing and the consequent strain on the sutures in the soft palate. By this method it is quite possible to keep the child gaining in weight through the whole of the operative phase.

In operations on these children the anesthesia is ether, and the ether vapor is blown in through a soft rubber catheter which is fastened by a stitch in the nose, the stitch passing through the septum. The end of the catheter must reach only to the posterior nares. The child's head hangs half over the edge of the table, and is supported by a little shelf. I use a large complex gag, which holds the mouth open, holds the tongue forward, and pulls the corners of the mouth outward. Around the whole operative field I have black or dark blue cloths, sheets, towels, gowns, etc., to obviate the glare of the ordinary white environment. By this means the mouth is in the high light, rather than in the shadow.

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ABSTRACT OF DISCUSSION

DR. VILRAY P. BLAIR, St. Louis: The Brophy operation was used fifty years ago by an Australian. The Lane is but an enlargement of the Cawley flaps and the Davis could be called a Warren with equal justice. The relationship of various technical steps to each other and to the age of the patient are much more important than the choice of the technical steps themselves. Dr. Sherman has brought out a new and useful technical step. In almost every step of his work and mine we differ radically and I would not have the idea that one technic was any better than the other. As to the matter of age, I am firmly entrenched with those who believe the earlier an operation is done the better. The best time for the closure of the lip is the first twenty-four hours, on account of the feeling of the parents; the second reason for early operation is the ease with which the bones are molded into place; and, thirdly, at this age shock is not a consideration. As to the soft palate, I use the straight

Fig. 5.—The little Lane flap partly turned up, the pocket on the opposite side made ready, and the suture to draw the flap into the pocket placed. The elastic traction and the repaired lip have remodeled the alveolar arch into a normal shape.

Langenbeck operation. If one will wait until the child is 14 months old one can close the whole palate with ease in two operations. There is just enough tissue at birth to close the

palate. After a year we have 39 mm. to close 38 mm. and a space. We must accommodate the methods to the age in this work. In all of these cases there is a considerable spreading of the nostril which will necessitate an operation on the floor of the nose to round it up as on the other side, but where the

Fig. 6.—The flap drawn into place and held.

cleft remains wide open for a long time, for perfect closure of the lip there must be an operation to restore the nostril. The Brophy operation is usually not practical after three months. Some cases may be closed by elastic traction of a rubber band. There is no end of tricks that one must resort to in this work.

DR. TRUMAN W. BROPHY, Chicago: There are fifteen different congenital defects of the palate, treatment of which requires methods of procedure sometimes slightly and sometimes radically different from all the others. The premaxillary bones are sometimes absent. In that case the fissure is almost invariably in the central line and the nasal bones are deficient.

Having operated on about 4,000 patients with cleft palate, I am convinced that when the alveolar processes are not cleft the operation should be deferred until the patient is between 12 and 14 months old; and that when the alveolar processes are cleft, as well as the whole hard palate, the patient should be operated on in early infancy, before the fifth month.

In complete cleft palate what is accomplished by first closing the lip? The greater deformity is concealed but the cleft is not closed as it should be. By drawing the lip together the anterior part of the hard palate is approximated, but not the enormous breadth of the tuberosities of the jaw. Had the bones been approximated in infancy, the patient would have a normal arch, but this is abnormal. The bones should be put together and fixed so they will unite. To do this the intervening soft parts and compact bone should be removed, the cancellated bone exposed so it will meet cancellated bone and thus be approximated and held quiet until the bones firmly unite. That is the essential thing to do. If there is any better method to pursue than the one I have devised, then let it be made known. A complete cleft palate is not unlike a fracture of bone, separated sutures, or an ununited

fracture. I have never done a Langenbeck operation and I never will, for the reason that the Langenbeck operation calls for lateral incisions in the soft parts.

DR. WALTER B. SWIFT, Boston: I want to emphasize one point omitted in cleft palate treatment. It is the after-treatment. The majority of these patients have some speech disorder which persists long after the operation. The chief object of that operation should be the perfection of speech. In the Massachusetts General Hospital we have, in our speech clinic, evolved a system for the perfection of speech in these cases. Several now possess perfect speech.

DR. HARRY M. SHERMAN, San Francisco: It is a question as to whether the lip should be operated on early or late.

When you put in a needle, little or big, and touch the tooth germ you have penetrated the capsule, and by moving the needle around to find a way between the teeth you inevitably make a relatively big hole. I shall never attain the skill which will enable me to pass between these closely packed-in tooth follicles and pull a wire through without wounding and infecting the follicles.

As regards the tensor palati muscles, I make the incision outside the hamular process and so do not cut them off. I move all of the tissue implicated inwards, and that must stretch the nerves which supply the muscles but may not tear them off, because two or three years later in life I have seen these palates move. Dr. Charles H. Mayo used to put a piece of gauze round the mucoperiosteal flaps as a drain. I use tape instead of gauze, and wax it so that it cannot soak up saliva and perpetuate septic infection in the mouth, and then adjust it to be a relaxation suture. That is my innovation.

Of course training these children to speak is a very important matter. It is especially important in those families in which bad English and bad enunciation are the habit. In families in which good English and good enunciation are the habit, children will speak very well without much special instruction, though they will speak better if they have it.

PREMATURE DETACHMENT OF PLACENTA, WITH DELIVERY OF A LIVE BABY BY CESAREAN SECTION

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Mrs. S. G., aged 35, primipara, was in the ninth month of pregnancy. For the past thirty days there had been a small amount of albumin with no casts in the urine. The maximum blood pressure was 120. May 12, the patient was struck in the abdomen by the head of a 3-year-old child, who threw himself in her lap. This caused considerable pain at the time, but was soon forgotten by the patient. May 16, four days later, the patient walked seven blocks; when near her house she was taken with moderately severe pain in the lower abdomen and back, which was continuous, not intermittent. One hour later, fresh blood was discharged from the vagina, in small quantities but continuously. The patient thought that she lost about 4 ounces of blood during the first hour or two. At 3 p. m. (three hours after the pain had started), examination at the Chicago Lying-In Hospital showed: General condition of patient excellent; no signs of shock; pulse 94; color good; fundus one finger below ensiform; uterus tense with increased tenseness at intervals of about two to six minutes, accompanied by pain. Pain, however, was constant in lower abdomen and back. Fetal parts were difficult to outline on account of tenseness of uterus, but back seemed to be to the left, head movable, floating above inlet. Fetal heart tones were 140 to 148 left lower quadrant, regular, rhythmic, but somewhat variable during a minute's observation.

Rectal examination showed cervix not effaced, about 3 to 4 cm. long. The os hardly admitted one finger. During this examination about one-half ounce of very dark colored semifluid blood was expressed from the vagina. At 4 p. m.