carcinoma and sarcoma of the maxilla has been much under-estimated. In the majority of them I found the external carotid obscured by overlapping enlarged glands. Preliminary ligature of the external carotid, therefore, gives the surgeon the opportunity of investigating the condition of, and, if necessary, of dissecting out and following up secondary disease in the glands of the neck—a procedure now generally adopted where feasible in malignant disease elsewhere. To ascertain the condition of the glands, and in view of the fact that the position of the bifurcation of the common carotid is often higher than usual, I have always made it a practice to thoroughly expose the bifurcation. The ligature is usually applied between the superior thyroid and lingual arteries.

Returning now to preliminary laryngotomy. This should be performed after the ligature of the external carotid, as in opening the air passage the hands must necessarily be soiled. Laryngotomy, in addition to greatly diminishing the chance of inhalation pneumonia, also diminishes shock. The anaesthetist's task is easier, and therefore likely to be more efficient. Cyanosis is entirely avoided, and with it the danger of overstraining of heart muscle from distension of the right side of the heart. I much prefer laryngotomy to tracheotomy; the former can be very rapidly performed, there is little haemorrhage, and little disturbance of soft parts. After the insertion of the tube the air passages are protected by a large marine sponge thrust into the pharynx. The disadvantages associated with Trendelenburg's or Hahn's tubes are thus avoided. The tube is taken out immediately after the operation, or the next morning.

During the last two years I have in five consecutive cases performed removal of the upper jaw with preliminary ligature of the external carotid and laryngotomy without a death. One patient died of gangrene of lung in whom the external carotid was tied *without laryngotomy*. Taking all my hospital cases during the last six years and adding my private cases, I have removed the maxilla twelve times with two deaths—a mortality of 16.6 per cent. None of my cases have had secondary haemorrhage either from the cavity in the mouth or the external carotid.

In the operation of excision of the upper jaw the median or Fergusson's incision is now invariably used; the horizontal incision across the facial aspect of the maxilla should be only just above the level of the lower edge of the malar bone, and should not extend further outwards than the spheno-maxillary fissure or the fibres of the facial nerve passing to the inferior half of the orbicularis oculi will be divided.

In severing the bones I have for some time used a Gigli's saw. It effects its purpose much more cleanly and quickly than an ordinary saw and bone forceps. After reflecting the cheek flap and raising the soft parts from the floor of the orbit, a strong silk thread is passed from above downwards through the spheno-maxillary fissure by means of a large narrow aneurysm needle. The Gigli's saw is drawn through the fissure by the silk, and the section then completed. The section of the hard palate is carried out in a similar manner by making a puncture in the middle line at the junction of the hard and soft palate. The aneurysm needle loaded with silk is passed through the nose and through the puncture into the mouth, where the silk is seized, and by it the saw is drawn through the nose into the mouth. The section of the hard palate is then completed. Although this method is not, I think commonly employed, I find that Schlatter has preceded me in publishing it.

When the position of the growth admits of the orbital floor being preserved I have found it inadvisable to completely sever the malar bone at the level of the spheno-maxillary fissure. A better plan is to chisel or saw through the lower two-thirds of the malar; and from this osseous incision I divide the anterior wall of the maxilla in a direction horizontally inwards parallel with the orbital margin until the cavity of the nose is reached. By this means not only is the floor of the orbit preserved, but also its bony margin. There is, therefore, less falling in of soft parts, and less tendency to tear the floor of the orbit away with the bone than when the incision is carried through the whole thickness of the malar bone and along the orbital plate just within the orbital margin, as is often recommended.

When an epitheliomatous growth has commenced in the alveolus or hard palate and does not appear to have extensively involved the antrum, only the lower half of the maxilla may require removal. But before this limited operation is performed an exploratory opening should be made into the antrum, in order to make sure of the extent of the disease. If the latter be found limited, the removal of the lower half of the bone is completed by sawing from the nasal cavity horizontally outwards; or a Gigli's saw may be passed through the pterygo-maxillary fissure into the nose (Schlatter).

When, in cases of disease of the maxilla requiring its removal, the muco-periosteum of the hard palate is not involved, I have with considerable advantage in two cases preserved it by carrying an incision along the inner surface of the teeth on the affected side and reflecting the muco-periosteum towards the middle line, as suggested by Watson Cheyne; the maxilla is then removed in the ordinary way, and the edge of the flap of muco-periosteum is stitched to the cut edge of the mucous membrane of the cheek. The roof of the mouth is thus restored.

I have to thank Messrs. Longman for their kind permission to use Fig. 2.

REFERENCES.

1 *Odontological Society's Transactions*, vol. xviii, New Series, p. 44. 2 BRITISH MEDICAL JOURNAL, vol. i, 1883, p. 3. 3 *Odontological Society's Transactions*, vol. xviii, New Series, p. 52.

A NEW METHOD OF DEALING WITH CLEFT PALATE.*

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THOSE of us who have had much experience with cases of cleft palate have all met with more or less disappointment in our results. It has more than likely happened in the practice of all who have undertaken these cases that certain ones, though they looked promising at the time of operation, have broken down at some point in the line of closure, if not throughout. This experience has been mine upon more than one occasion. In looking about for causes, the following points presented themselves: (1) Tension along the line of suture; (2) sucking of the stitches by the patient; (3) infection from the mouth.

When searching for some means to overcome these difficulties I read a paper by Charles H. Peck, of New York,[1] in which he made reference to a plan suggested by C. H. Mayo—namely, the introduction of a tape through the lateral incisions, completely surrounding the flaps, and thus preventing tension. I tried this at the first opportunity; but, though it took off the tension, I am satisfied that in the three cases upon which it was used the risk of infection was increased, for after forty-eight hours it became most offensive, and by the end of a week the patients almost hated themselves. It therefore became necessary to find something better, and, finally, as a substitute for the tape I chose aluminium, sufficiently beaten out to make it pliable. I have no doubt that silver would answer the purpose equally well, but it is more expensive.

My technique varies somewhat from the Langenbeck operation, and, I think, saves time, which is an important point. The child is placed upon a table with a sandbag under the shoulders to throw the head well back, while the surgeon stands to the left of the patient. Hewitt's gag is placed in position and the tongue drawn well forward by means of a silk suture. I make the first lateral incision well out to the alveolar margin of the hard palate, carrying it beyond the anterior extremity of the cleft, if the cleft does not extend through the alveolar margin. With the periosteal elevator the muco-periosteum is quickly denuded from this side, then with Lane's curved scissors the palate aponeurosis is snipped from the posterior margin of the hard palate, thus freeing the flap from its bony attachment. The flap should be freed anterior to the cleft. This incision may then be packed with a piece of sea sponge while one proceeds to the opposite side to deal with it in the same way. The first packing may now be removed, when one finds that all haemorrhage

* Read at a meeting of the Toronto Medical Society, May 2nd.

has ceased. The edges of the flap are then removed with a small tenotomy or cataract knife, making certain to cut as thin a slice as possible, at the same time taking the whole thickness of the flap margin. By the time denudation has been carried to the anterior angle on one side the sponge packing from the other may be removed, and denudation proceeded with on the other flap. While the raw edges are still oozing, and before there is time for mucus to glaze them over, I begin suturing, commencing at the anterior angle and proceeding backward. Horsehair is used, and each suture is passed about ⅛ in. from the margin and from ⅛ to ¼ in. apart. These are left long until all have been passed, when they may be quickly tied. Lane's needles and needle-holder are used, and greatly facilitate the work. I then take a piece of aluminium, gauge 36 in thickness (Fig. 1), bend it at an angle where I want it to fold over the outer side of the flap, and pass it through one lateral incision; then by passing a pair of forceps into the opposite lateral incision, I grasp the free end and pull it down into the mouth cavity again, carry it across to the point at which it entered, and there cut off any excess. With a heavy needle one may then easily penetrate the metal, at one or two points as required, and pass a horsehair suture through and tie it to prevent the free end scraping and irritating the tongue, or the free end may be turned up into the lateral incision again and pinched with a pair of forceps (Fig. 2). The operation takes from twenty-five to fifty minutes. The aluminium may be left in for eight or nine days, when it is removed by cutting it across close to the lateral incision, and the stitches are taken out. The lateral incisions then rapidly heal, and the patient may leave the hospital in from ten days to two weeks.

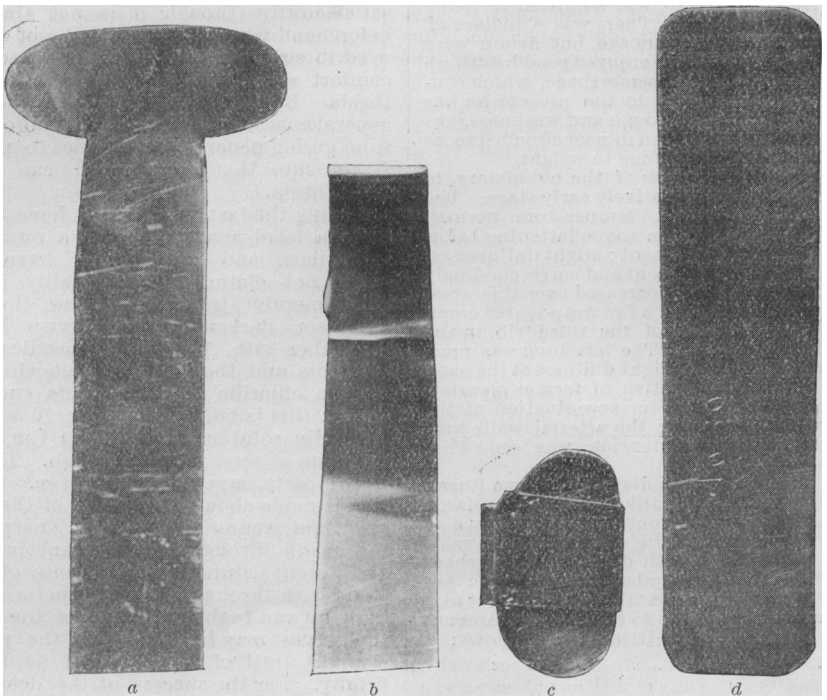

Fig 1.—*a*, Aluminium prepared with flange to cover line of suture. *b*, The same, bent at an angle, preparatory to passing the small end through the lateral incision. *c*, Appearance of splint when made secure. *d*, Piece of aluminium that may be used in small clefts.

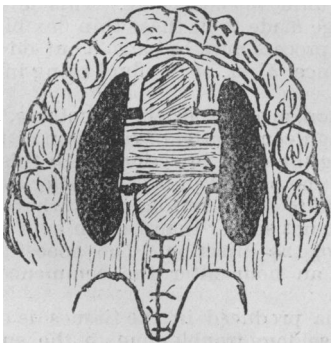

Fig. 2.

The case, aged 2 years and 4 months, that I show to-night was operated upon April 19th last. The cleft was of the soft palate and about one-third of the hard. The aluminium splint and the stitches were removed on the 28th; you therefore see the case thirteen days after operation, and may judge for yourselves as to the efficiency of the method. This is the third case upon which the aluminium splint has been employed. The first one was in a child, aged 14, that had a very wide cleft which had been pronounced incurable, and it was advised that she should wear an obturator. The cast of the mouth (Fig. 3) was sent me a few days ago by Dr. Bennett, a dentist of St. Thomas's. It will be observed that union has taken place, except at one pin-point spot at about the junction of the hard and soft palate. This, of course, can readily be repaired. The second case was a child of 2 years with a complete cleft, in which union occurred throughout.

The advantages of the aluminium splint that occur to me are these: That it prevents tension, and prevents—till union of the edges has occurred — adhesion taking place between the muco-periosteum and the bone of the hard palate. I am satisfied that some cases have gone bad because of this, in that while there may be no tension at the completion of operation, yet, when such union begins, tension upon the edges of the flap may be sufficient to separate them by tearing out the stitches. Then, too, it prevents the child sucking the stitches. To avoid infection, the mouth is sprayed with a solution of boric acid and 10 per cent. rectified spirit, which may easily find its way under the splint and remain in contact with the wound for some time. For this purpose, however, I shall in future have the opsonic index taken; and if it be low to the germs within the mouth, an injection of vaccine will be administered a day or two before the operation, when there will be little or no possibility of infection. Thus one has overcome all the causes that tend to prevent union.

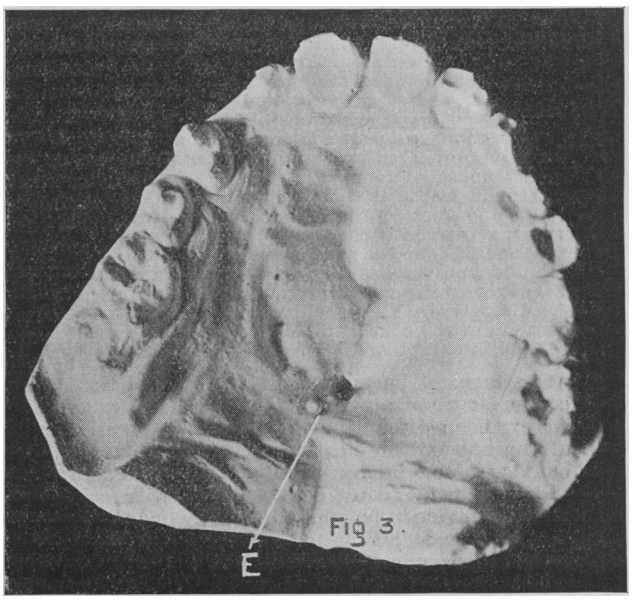

Fig 3.—E, Pin through small opening.

REFERENCE.
1 *Annals of Surgery*, January, 1906.