

Laryngological Section.

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Dr. STCLAIR THOMSON, President of the Section, in the Chair.

Demonstration of Osteoplastic Radical Frontal Sinus Operation on the Dead Body.

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(1) FIRST skin incision from the outer orbital angle along the upper margin of the eyebrow and curving downwards till it reaches a point at the side of the nose corresponding with the most receding portion of the fronto-nasal junction, and thence the incision is carried transversely across this most receding line. The skin and soft tissues above the incision are raised, leaving the periosteum intact.

(2) The periosteum is divided by a transverse curved line corresponding to the upper portion of the frontal eminence, and above this line the periosteum is raised, the frontal sinus exposed by chisel or trephine, and the whole of the anterior wall is removed above the curved line, which corresponds to the upper margin of Killian's bracelet. The sinus is denuded of mucous membrane, and the fronto-nasal duct is enlarged by a narrow chisel, so that a large smooth-walled fronto-nasal opening is formed.

(3) Second skin incision from a point about $\frac{1}{2}$ in. below the inner canthus and extending for $\frac{1}{2}$ in. or more outwards and slightly downwards, corresponding with the lower margin of the lachrymal groove. A chisel or periosteal elevator is made to enter the lachrymal groove below and to the inner side of the duct which is thereby turned safely out of the groove. Then a narrow chisel or cutting forceps is driven right into the nasal passage through the thin bone at the bottom of the lachrymal groove. This bone opening into the nasal passage is enlarged

downwards and inwards so as to partially divide the nasal process of the superior maxillary bone.

(4) A curved saw is passed up through the naris till its tip projects out of the enlarged lachrymal groove opening, and the nasal process of the superior maxillary bone is then divided from within outwards, the superficial soft tissues being left intact. Then the bone above the



Diagram of the osteoplastic frontal sinus operation, illustrating the method of forming the osteoplastic flap after the frontal sinus has been opened. 1, the nasal process of superior maxillary bone being divided subcutaneously by the saw passed in through the nose so as to emerge at the opening in the lachrymal groove; 2, 2, a Gigli saw, passed from above down the enlarged fronto-nasal duct so as to emerge at the lachrymal groove opening to divide the bone subcutaneously; 3, the osteoplastic flap which then results on the vertical division, by knife and saw, of the skin and bone near the mid-line, and which is then turned outwards like a doorway on a hinge; 4, the facial artery running up to 3, where it becomes the angular artery. As it courses inwards below the bony margin where the saw divides the nasal process, the artery is not injured, and the preserved vascular supply of the osteoplastic flap ensures its vitality and the rapid reunion of its cut edges.

lachrymal groove is divided from within outwards by means of a Gigli saw passed down through the enlarged fronto-nasal passage so as to emerge at the large opening in the bottom of the lachrymal groove.

(The passing of the Gigli saw is a simple procedure if the author's flexible copper frontal sinus probe with a hooked end is passed down the fronto-nasal duct, so that the hooked end projects at the lachrymal groove, when the Gigli saw is hooked on and drawn up as the probe is withdrawn.) The bone is divided from within outwards, leaving the superficial soft tissues intact. In this way the hinge of the osteoplastic "door" has been made, and it only remains to divide the bone and soft tissues in the mesial line to form the doorway.

(5) Final incision. A longitudinal mesial incision extends from the centre of the transverse incision across the root of the nose downwards as far as the lower free margin of the nasal bone, the periosteum not being divided. The soft tissues are raised for about $\frac{1}{4}$ in. from the mesial line. Finally, by again passing the Gigli saw through the fronto-nasal duct down the nasal passage till it emerges below the nasal bone, just outside the margin of the septum nasi, the bone is divided longitudinally. The osteoplastic flap thus formed is carefully opened outwards like a doorway, the soft tissues left undivided by the former saw-cuts acting as a hinge. The nasal passage and the whole length of the fronto-nasal duct are in this way laid freely open to view. The anterior end of the middle turbinal and all the diseased ethmoidal cells are cleared away, if desirable, right back to the sphenoidal sinus, which may also be freely opened. When the frontal sinus floor and ethmoidal cells have been removed and the whole of the diseased area removed, the osteoplastic flap is carefully replaced and the skin incisions sutured.

If both frontal sinuses have to be opened, the first incision may have to be extended to the other side. But I now avoid making a second flap by removing not only the frontal sinus septum but also the corresponding upper portion of the bony septum nasi, thus throwing the denuded frontal sinuses and the upper portion of the nasal passages anteriorly into one cavity.

DISCUSSION.

The PRESIDENT (Dr. StClair Thomson) said the Section was much obliged to Dr. Watson-Williams for his excellent demonstration, thus making clear a matter which was so difficult to describe. The thanks were due all the more as Dr. Watson-Williams was a provincial member, and had not the instruments and accessories close at hand here.

Mr. WAGGETT said he had seen Dr. Watson-Williams do the operation a year ago and was much struck with the admirable view it gave of the whole of the nose. It was an excellent piece of work, and he could make no criticism

of it except a theoretical one—namely, the danger of losing the osteoplastic flap by necrosis. This was a question to be answered by results, and it would be interesting if Dr. Watson-Williams would say what his results had been. The scars which he had seen in two or three patients had been excellent.

Mr. HERBERT TILLEY said he was glad to have seen the present operation, because for pansinusitis it seemed ideal, though he did not know that one could say so much for it when the frontal sinus and a few anterior ethmoidal cells were involved in suppuration. With a combination operation on the basis of Killian's method, excellent results could be obtained with a less extensive procedure than Dr. Watson-Williams's operation, and the occasion had not yet arisen with him (the speaker) when the larger operation was called for. The diseased ethmoidal cells could very well be removed through the nostril. If the orbito-ethmoidal cells extended outwards to the temporal fossa, did Dr. Watson-Williams find his operation made those cells as easy of access as by the Killian operation? It was very easy to remove the roof of the orbit by the Killian operation, especially when the ethmoidal cells extended there. It was comparatively easy to cure suppuration in the frontal sinus, but not so easy to check it when the ethmoidal cells were involved. The whole secret of the frontal sinus operation was to remove the adjacent and diseased ethmoidal cells.

Dr. WATSON-WILLIAMS, in reply, said that although by the Killian operation one got at these cells and removed the orbital roof, and he had done that operation a number of times, he found his own method easier in a considerable proportion of cases. But cases varied very much. He never performed a radical operation upon the frontal sinus cases unless the conditions obliged him to; but when radical operation was called for, he thought it was best to make it as radical and thorough as possible. Removal of the inner orbital wall or not depended on removal of the orbital roof. If the floor of the frontal sinus was removed, the inner orbital wall must be removed at the same time. The operation he had just demonstrated made it easier to get at the ethmoidal cells in connexion with the frontal sinus—those which ran out towards the orbit. The case which Mr. Waggett saw him operate upon at Bristol was one of the most extensive they had had there; it extended to the right external orbital angle on both sides, and upwards nearly to where the hair began on the forehead. He showed the case at the Bristol meeting of this Session. The patient completely recovered, with very little scarring considering the extent of the operation. He had not had cases where there was necrosis of the flap, and an important point was that by this operation one was able to preserve the facial artery to the top of the flap. It was because he had had two cases of necrosis of the bridge in Killian operations that he felt he would like to devise another procedure. With a narrow bridge there was greater liability to necrosis, whereas with a broad bridge it was difficult to get at the ethmoidal cells. In his own method, however, there was less chance of necrosis, and the exposure was so much better that once the flap had been turned out the operation could be more freely and safely and successfully completed.