INTRA-NASAL DRAINAGE OF THE FRONTAL SINUS. INGALS' AND HALLE'S OPERATIONS.

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In May another short article appeared from Max Halle regarding our operations for Intra-Nasal Drainage of the Frontal Sinus. In calling attention to this subject once more, I wish my readers to thoroughly understand that Dr. Halle and myself have no controversy. He naturally has faith in his operation and I in mine, but in order that the reader may not be misled I wish to call attention to two or three points only, and then I will ask them to wait for a paper that I shall prepare within a few months, that I think will make the technic clear and will show that in suitable cases (which constitute at least 90% of all chronic empyemas of the frontal sinus) my operation is quite as effective as any other operation, and that it is less difficult and less dangerous than the external operation or any other internal operation yet described.

As stated in the third paragraph of Halle's article, page 378, LARYNGOSCOPE for May, I use a steel probe; but it is malleable, so that it can be given any desired curve, and I do *not use force* in passing it into the frontal sinus, nevertheless I can pass it into the sinus in fully 90% of the cases, by gentle manipulation and without the slightest danger. I readily admit that force would be dangerous in many cases. I have felt, and still believe, that the operation as originally recommended by me is as safe as any other, but the danger of perforating the tabula interna, which Halle thinks so great, has caused me to make three modifications in the technic that I believe fully eliminate all the risks that have been mentioned.

First, I pass the probe gently into the frontal sinus, and then have two Roentgen negatives made with it *in situ*, one from squarely in front, and the other laterally. This I have done several times, and I find that it shows accurately the relation of the naso-frontal duct to the tabula interna. If the duct is far enough away to cause no danger, the operation is done as originally proposed. If it is a little too close, a strong string is attached to the distal end of the spiral shield in which the cable of the burr revolves, and when the burr is set in motion the string is firmly drawn upon so as to draw the whole instrument as far forward as possible, as sug-

gested by Halle's criticism. If, however, the canal is close to the tabula interna, a shield is slid on over the burr to prevent it from cutting toward the point of danger. The opening made by my operation is 6. m. m. in diameter, and it never becomes narrower, because it is kept open by a gold tube until it is lined with mucous membrane.

That this opening is large enough in all cases when there are not great changes in the frontal sinus has been proven by the results in numerous cases. I believe it will be found large enough in 95% of all cases in which the operation is suitable; in the others, an external operation must be added to clear out the frontal sinus, and then the drainage canal made by my operation will be sufficient. It appears to me that there are serious objections to the very large opening into the frontal sinus, which appears so desirable to Halle.

Halle's operation, although appearing difficult and hazardous, certainly has some points of vantage as compared with the radical external operations, which are so much in favor by many physicians; and, from my standpoint, any safe and efficient intra-nasal operation that can adequately supplant the external operation is a boon to the patients. From present indications, I think that not more than 2% or 3% of all cases should receive the external operation, as the others can be cured quite as well by Halle's or my operation.

In conclusion, 1st, numerous operations by myself and others appear to have proven that my operation, as originally described, for draining the frontal sinus, is as safe as any other yet described.

2d. Numerous cases prove that the drainage is efficient and the gold tube absolutely prevents the canal from becoming narrower.

3d. The criticisms made have suggested to me modifications (already tried) that seem to eliminate all danger of perforating the tabula interna.

4th. I doubt the wisdom of making a very large opening into the frontal sinus, because it has been amply demonstrated that cures in nearly all cases take place with a canal only 6 m. m. in diameter.

After some further tests have been made I shall fully describe modifications of instruments and technic.

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