

TRANSANTROSPHENOIDAL HYPOPHYSECTOMY

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In pituitary surgery the trans-sphenoidal approach has been the subject of much discussion. In 1910, Oscar Hirsch devised his trans-septal technique, which was used in a large number of cases for operation of tumors in this region. The two chief objections raised to this procedure have been the risk of infection, and the poor exposure considered to be provided by the operative field. As a result of the advances in neurosurgery, the transcranial approach subsequently became the method of choice in treatment of pituitary tumors.

The main reasons for which we adopted the trans-sphenoidal route are the following:

1. The risk of infection was regarded to have decreased greatly due to the use of chemotherapeutics and antibiotics.
2. An approach through the maxillary sinus does give excellent exposure; thus judgment as to whether the extirpation is complete is possible.
3. All manipulations of the optic chiasm and optic nerves could be avoided.
4. Certain complications which are apt to follow all intracranial operations of this magnitude could be eliminated.

It is convenient to classify sphenoid sinuses into 3 main groups — namely, conchal, presellar, and sellar types — depending upon the extent to which the sphenoid bone is pneumatized (Fig. 1).

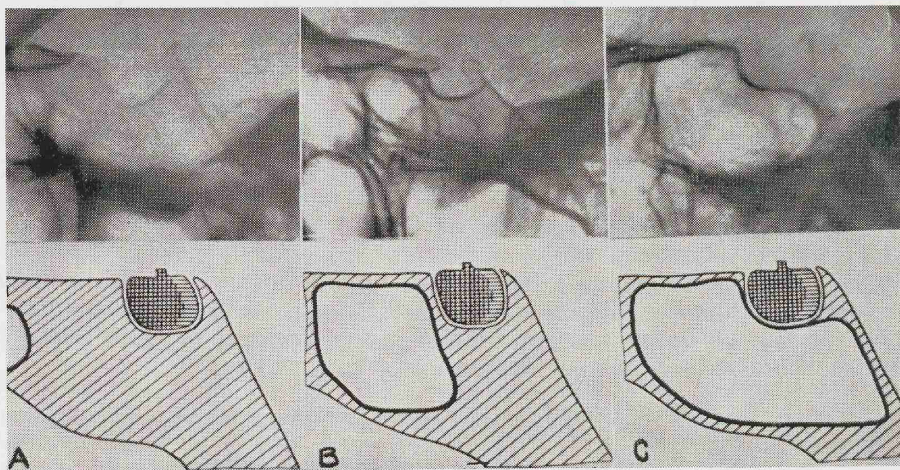


Fig. 1. Side projections of the 3 main types of sphenoid sinuses and their relative frequency **A**, conchal type, 3%. **B**, presellar type, 11%. **C**, sellar type, 86%.

Fig. 1. Projections latérales des trois variétés communes de sinus sphénoïdaux et leur fréquence relative. **A**. type en cornet, 3%; **B**. type présellaire, 11%; **C**. type sellaire, 86%.

The conchal type of sphenoid sinus does not reach into the body of the sphenoid bone. We consider this type to be a contraindication for trans-sphenoidal hypophysectomy.

A trans-sphenoidal hypophysectomy is possible in cases with the presellar type.

The sellar type of sphenoid sinus is so deep that, on average, the anterior wall of the sella turcica is only 0,5 mm thick. This type is most common and occurs bilaterally in 59% and at least on one side in 86%.

Other things to keep in mind in trans-sphenoidal interventions are variations in the position of the intersphenoidal septum and the possible presence of numerous bony septa in the sphenoid sinuses. These can be recognized on the radiograms.

The operation is done under intratracheal anesthesia. The operative procedure can be divided into 2 phases. The first is a sinus operation, and the second involves exposure of the sella turcica and enucleation of the hypophysis. The schematic drawing in Fig. 2 shows the route through the maxillary sinus, the ethmoid and sphenoid sinus to the sella turcica.

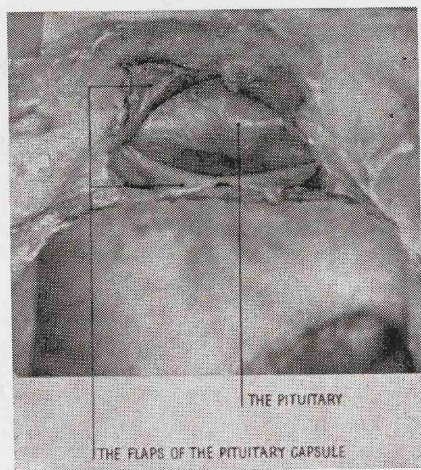


Fig. 2. The route through the maxillary sinus, the ethmoid bone, and the sphenoid sinuses to the pituitary.

Fig. 2. Voie d'accès vers l'hypophyse par le sinus maxillaire, l'os ethmoïdal et le sinus sphénoïdal.

After ethmoidectomy, the anterior wall of the sphenoid sinus is displayed. As a rule, the opening of the sinus is easily visible. The anterior wall of the sphenoid sinus can be punched out through the openings. The thickness of the wall varies greatly.

When both sphenoid sinuses have been opened by removal of the intersphenoidal sinus septum, the sella turcica is usually displayed.

The bulge of the internal carotid artery often protrudes in on both sides of the sella, but presents no great difficulties, since the vessel can be discerned in most cases through the usually thin bone. When the anterior wall of the sella has been definitely localized, removal of the bone is started. A thin chisel is used first. A lid about the size of a small pea is made, and lifted off with a small hook. When the grayish, glistening capsule of the hypophysis becomes visible, a dissector inserted between it and the bony interior of the sella permits easy orientation. The whole anterior wall can then be removed without any difficulty with a punch.

After exposure of the capsule thin veins can be seen to run between the cavernous sinuses. There is generally one such venous communication in the upper margin and one in the lower.

To understand how the capsule must be opened, it is important to be acquainted with the layers of its wall. There is underneath the bone, an outer periosteal layer, an intermediate vascular layer — in which the venous communications between the two cavernous sinuses run — and a thin, fibrous layer directly over the gland itself.

After cleansing of the operative cavity, vertical and horizontal incisions are made through the capsule with a fine knife or diathermy knife. It is important to start the former incision in an area devoid of veins, and then to widen the opening in the direction of the cavernous sinus. The hypophysis bulges increasingly forward. The flaps of the capsule are turned outward, so that the anterior wall of the gland is displayed to a successively greater extent (Fig. 3). At this point, there may be moderate bleeding from the internal aspect of the capsule, but it can be arrested by very slight pressure.

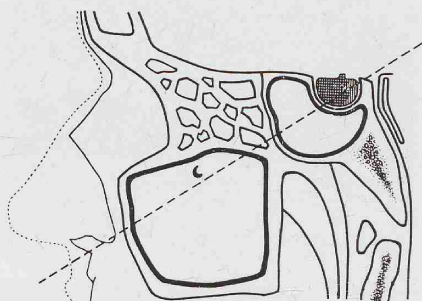


Fig. 3. The pituitary is displayed after a crucial incision in its capsule has been made and the flaps of the capsule have been turned outward.

Fig. 3. L'hypophyse est mise en évidence après incision en croix de sa capsule, dont un pan est rabattu vers l'extérieur.

The operation is then continued with a dissector between the capsule and the gland. As a rule, there is no difficulty in rotating out the gland. However, in some cases it seems to be adherent to the capsule, particularly at the sides. The gland is pressed downward, so that the stalk becomes visible and stretched. The pituitary stalk usually ruptures when the pressure on the

hypophysis is gently increased from above with the dissector. When the stalk has ruptured the hypophysis wells out. The stump of the stalk seems to plug the hole in the diaphragma sellae. The empty cavity is filled with a small piece of muscle, taken from the anterior aspect of the thigh. The cavity is then plugged with gauze, which is removed successively between the sixth and ninth days after operation.

SUMMARY AND CONCLUSIONS

We have performed about 200 operations on the pituitary. Of these 50 were for tumors of the pituitary region.

L'HYPOPHYSECTOMIE TRANS-ANTROSPHÉNOÏDALE

Au cours des 8 dernières années, l'hypophysectomie transsphénoïdale a été effectuée dans 200 cas environ. La technique opératoire fait l'objet d'une description détaillée et quelques illustrations montrent comment l'on accède à la cavité sphénoïdale en passant par le sinus maxillaire et l'éthmoïde. Une étude anatomo-radiologique indique que pour 97% toutes les cavités sphénoïdales sont assez pneumatisées pour permettre l'accès à la selle turcique par voie nasale. Il ne se produit pas de complications et la suite opératoire doit être considérée comme bénigne. En ce qui concerne la cancer du sein, les résultats sont en concordance avec ceux rapportés par d'autres opérateurs ayant choisi principalement la voie d'accès trans-cranienne. Les meilleurs résultats sont obtenus pour certains types de tumeurs hypophysaires et pour l'acromégalie.

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