CYST OF JACOBSON'S ORGAN

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AND

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(WITH SPECIAL PLATE)

The region of the anterior part of the floor of the nose and palate is the seat of cysts which cannot be ascribed to dental conditions. Four clinical types have been recognized: (1) retention, between lip and alveolus; (2) fissural, between the teeth; (3) incisive canal, behind the teeth; (4) dermoids (Roper-Hall, 1938). The cysts are of interest clinically and come within the domain of several branches of surgery; it must be stressed that they are not tooth tumours, in contradistinction to dental and dentigerous cysts which arise in direct connexion with the teeth. When the condition is well established it is not easy to decide what is the precise origin of the tumour. A cyst which arises in the floor of the nose may appear externally—(a) above the floor of the nose; (b) in the incisal sulcus; (c) in the palate via the incisive canal. The reverse in all cases is also true, so that the division into four is quite arbitrary and mainly of clinical interest.

There are several vestigial remnants in this region, and although it appears unlikely that dental debris is a cause, the dictum of Magitot—"Every spontaneous cyst of the jaws is essentially and exclusively of dental nature"—must be considered, as epithelium from the rests of Serres and Malassez may take on this type of cystic activity. Many writers have made suggestions and hypotheses as to their origin (including Jacobson's organ and its vestiges), but in very few cases has actual evidence been adduced to support theory. We confined our investigations to the possibility of such cysts developing in connexion with Jacobson's organ.

The vomero-nasal organ (Jacobson's organ) develops in the nasal septum close to the nasal orifice of the nasopalatine canal, and on account of its embryonic epithelium has a bearing upon the formation of cysts in the upper incisor region. It can hardly be considered to have vanished completely from man when its vast importance to the well-being of animals is considered, and it can well be understood that vestiges may be more common than was formerly thought possible. It is in close relation with the incisive canal (Le Double, 1906); and mucous glands in connexion with its development lead to cyst formation at the junction of the maxilla with the floor of the nose. Sieur and Jacob (1899), Hillenbrand (1933), and Noyes (1935-6) support the possibility of development of a cyst from Jacobson's organ, but the presence of a cyst in the wall of the septum in this region does not necessarily prove origin from Jacobson's organ, especially as there are many glands which surround the organ and may give rise to "retention" cysts.

We are fortunate enough to be able to show a foetal cyst of Jacobson's organ.

Material and Methods

The nasal area (including the nasal capsule laterally, the cribriform plate above, and the palate below) was removed from six human foetuses of different ages; the

specimens were embedded in paraffin, cut in serial sections of 10 μ , and stained with haematoxylin and eosin. In a foetus of 124 mm. total length it was found that Jacobson's organ on one side had developed a cyst in its posterior part. That organ has been reconstructed as a model enlarged 100 times (Plate, Fig. 3). The model consists of two parts. The anterior one is the nasal septum; the posterior represents the outer epithelial covering of the septum; the gap between is normally filled

FIG. A.—Relation of the cyst to the incisive canal: the opening of Jacobson's organ is anterior to the nasal opening of the canal.

with mesenchyme. At the right side of the illustration is the proximal thickened part of Jacobson's organ; the opening into the nasal cavity is at the other side. The bristle indicates the canal. The distal part is separated from the proximal part and has developed a cyst. The model shows its cut ends.

Description of the Cyst of Jacobson's Organ

Three hundred and twenty sections backwards from the tip of the nose Jacobson's organ opens into the nasal cavity. The longest diameter of the slit-like opening is in the sagittal axis. The organ is a longitudinal canal with a wider diameter at its proximal part near the opening and diminishing more and more in calibre distally. The canal is embedded in the loose mesenchyme between the epithelium and the cartilage of the septum and proceeds backwards and slightly upwards. The whole length of the normal organ extends over eighty-six sections, but the organ at the other side consists of a proximal part separated from its distal part by an interruption extending over thirty-three sections. The distal isolated part contains a lumen and is cylindrical in shape; both ends are conical and closed. This cyst is twenty-six sections in length. The lumen of the cyst is much narrower than that of the distal part of the normal organ of the other side. Apart from the interruption of one of the organs, both have the same length (eighty-six sections). The largest diameter of the proximal part of both Jacobson's organs is 0.5 mm. The lumen of the distal third of the proximal part of that organ which develops a cyst diminishes slowly to 0.4 and 0.3 mm., to be closed at its end. The largest diameter in the middle of the cyst is 0.2 mm., while the vertical diameter of the normal organ of the other side at that level is 0.8 mm., and its transverse diameter 0.6 mm.

As to the relations of Jacobson's organ to the incisive canal, the sections (see Fig. A, and Plate, Figs. 1, 2, and 4) show that *there is no relation of its opening to that canal, but the incisive canal has the same level as the distal part of Jacobson's organ—that is, the cyst in the present specimen.* The sections at the level of the cyst show the naso-palatine artery passing vertically through the canal between the fused right and left halves of the primary

palate. The immediate neighbourhood of the cyst to the incisive canal has some practical importance, as by the persistence and later enlargement of the cyst it may be protruded through the canal downwards towards the posterior surface of the central incisor teeth. The anterior or proximal part of Jacobson's organ has no interest clinically, as there is an opening and therefore a cyst cannot develop. Further, this opening has no relation to the nasal orifice of the incisive canal, being anterior to it.

The topographical relations of Jacobson's organ vary very much in different species of mammals.

Summary

The origin of cysts of the premaxillary region is discussed and an account is given of a cyst of Jacobson's organ.

The specimen here described lends support to the theory that cysts of the premaxillary region may arise from vestiges of Jacobson's organ.

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Clinical Memoranda

Repair after Femoral Herniotomy

Although it cannot be said that recurrence after femoral herniotomy is commonly seen, nevertheless the standard method of repair is not altogether satisfactory when the parts have been stretched considerably by a large and long-standing protrusion.

It is a frequent experience in this sort of case that the conjoined tendon does not come down kindly to the ilio-pectineal line and so must be fixed in its new position under tension—the acknowledged evil-doer in surgical suture. Further, the conjoined tendon is, as often as not, weak and attenuated, and is therefore unsuitable to take a principal part in the repair. It is noteworthy, too, that although considerable distortion of the local anatomy is thus brought about, the opening of the femoral canal is not itself mechanically closed. If this state of affairs is present, or in cases of recurrent hernia, not only may Lothiesson's method of repair be difficult to perform but the result is unlikely to be permanent. It is in this type of case that the following modification of the usual operation has been found more efficient than other fascial repairs that have been recommended.

THE MODIFIED METHOD

After the usual treatment of the femoral sac, when the stump has been drawn up and fixed behind the musculature of the abdominal wall, a piece of fascia lata is cut from the thigh. Its size and shape should correspond with that of the space which lies between Poupart's ligament and the ilio-pectineal line—the only two strong and stable structures which bound the femoral opening. The shape is of importance. The outer border is curved slightly to accommodate the femoral vein, thus allowing attachment as far down the ilio-pectineal line as possible. The inner border is, of course, short, as it corresponds with Gimbernat's ligament. The anterior edge is for attachment to Poupart's ligament; the posterior edge for

the ilio-pectineal line. It is therefore somewhat triangular in shape.

When the "fascial patch" has been trimmed the corresponding edge is sewn with silk to that part of Poupart's ligament which bounds the femoral canal above. Five or six silk sutures are now placed along the ilio-pectineal line at intervals in the usual way; good bites are taken, and the free ends of the sutures are clipped by haemostats until the deepest suture has been placed. Each suture, starting at the pubic end, is charged with a fully curved needle and passed through the related edge of the fascia at appropriate intervals. They are then tied in the same order.

A strong diaphragm of fascia is now securely fixed over the femoral opening, without tension and without undue distortion of anatomical structures. The repair not only looks most pleasing to the eye but is easily and quickly performed. A sufficiency of fascia can always be obtained to close the mouth of the largest femoral canal. The operation is completed by bringing the conjoined tendon down to Poupart's ligament, as in Bassini's operation.

This method has been used as a routine in both strangulated and "cold" femoral hernias, with satisfactory immediate results. Time will tell whether the late results are as good, but as a surgical procedure it seems to be more satisfactory both in theory and in actual practice than the usual method of repair, particularly in the gross or recurrent case.

It might be added that it has been used with equal satisfaction in conjunction with Hey Groves's excellent modification of the operation.

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Obstruction following Gastrectomy

Following gastrectomy it is usual to warn the patient to take small meals and to chew well, but the following possible result of disregarding this advice may not be widely known.

CASE REPORT

In March, 1936, a Polya-Balfour type of subtotal gastrectomy, with removal of the first part of the duodenum, was carried out on a man aged 43. This was done on account of a chronic duodenal ulcer, which had failed to respond to thorough medical treatment, and which was associated with a hyperchlorhydria. Some three months after operation the patient returned to heavy manual work, and was free from all symptoms until October 30, 1939. On that day he was seized with acute colicky pain in the lower abdomen, and he vomited.

He was admitted to hospital some ten hours later, and examination pointed to a small bowel obstruction. A laparotomy was carried out, and a mass was found in the small bowel some six inches above the ileo-caecal valve. The bowel above this point was dilated. It was not found possible either to break up the mass or to pass it on into the caecum, and so the small bowel was opened, and it was removed. Recovery was uninterrupted.

On examination the cause of the obstruction proved to consist of three sections of a very "pithy" orange, which had evidently escaped any serious attempt at mastication.

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For the year ending March 31, 1939, the total net receipts for medical stamp duty paid in England, Wales, and Scotland amounted to £725,640, a reduction of about £7,000 on the previous year and the lowest since 1934-5. There was a further increase in the number of licences issued, the total being 167,371 (163,959 in the previous twelve months), showing a net return of £41,852.

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FIG. 1.—Coronal section, to show the normal Jacobson's organ on the left side. On the opposite side is the interruption between the proximal and distal parts. The dark structure in the middle is the nasal septum. 10 μ ; Leitz objective No. 3; eyepiece $\times$ 6.

FIG. 2.—Coronal section of the distal ends of both Jacobson's organs, to show their equal total length. On the left side of the section is the distal end of the normal organ; on the right at the same level is the distal end of the cyst. 10 μ ; Leitz objective No. 3; eyepiece $\times$ 6.

FIG. 3.—Model of Jacobson's organ in a human foetus of 124 mm. total length. ($\times$ 100.) The photograph has been taken slightly obliquely from above.

FIG. 4.—Coronal section through distal part of normal Jacobson's organ on the left side; on the right side the lumen of the cyst is visible. 10 μ ; Leitz objective No. 3; eyepiece $\times$ 6.