

## PHARYNX.

Godlee, Rickman J., and Bucknall, T. R. H.—*A Pharyngeal Pouch of Large Size removed by Operation.* "Lancet," May 18, 1901. (Read at the Royal Medical and Chirurgical Society on May 14, 1901.)

The patient whose case forms the subject of this paper came under Mr. Godlee's observation accidentally on May 18, 1900. He had then a swelling which looked exactly like an enlarged gland on the left side of the neck, at the level of the hyoid bone in front of the sternomastoid. It was, however, soft, and on percussion gave a tympanitic percussion note, and was clearly anchored to the top of the larynx, the movements of which it followed during deglutition. On squeezing it a squeaking sound was produced, and a most uncomfortable sensation was experienced by the patient, which shot up to the ear, and which lasted for some days. The pressure caused an obvious diminution in the size of the tumour. It was clearly, therefore, a case of pharyngeal, or possibly œsophageal, pouch. He was not seen again until December 31, 1900, when the following history was elicited: The patient, who was thirty-one years old, had been in the habit of smoking to excess, and had habitually taken more alcohol than was good for him. Twelve years previously he had received a blow from a fist on the left side of the neck, which was painful, but which was followed by no special symptoms at the time. Two years later he began to feel something working up and down the left side of the neck on swallowing. During the last three years he had been liable to acute attacks, lasting usually about a fortnight, during which a lump developed at the left side of the neck, and swallowing became difficult and painful, until at last he could only swallow liquids. At the end of the attacks the lump disappeared, sometimes gradually, sometimes suddenly during the night. He had had about seven such attacks, and also slighter ones, which he had cut short by squeezing the lump, which always caused the expectoration of a quantity of phlegm, and almost daily he had coughed up what he described as "a piece of flesh," about 1 inch long and curled up, which sometimes stuck in his throat and caused him to choke and vomit. On admission, the swelling reached the middle line in front, and the posterior border of the sternomastoid behind, overlapping and pressing back this muscle. It reached upwards to a point just above and behind the angle of the jaw, and downwards to the clavicle, the upper border of which just overlapped. It projected fully one inch and a half from the normal surface of the neck. The tumour was very painful and tender, the skin was movable over it, and it was freely movable over deeper parts, except near the upper part of the larynx, to which it was fixed, and at which part it appeared to be thickened, though the rest of the swelling was evidently a very thin-walled cyst. The carotid vessels passed behind it. The percussion note all over it was tympanitic. When he held his breath and blew he could slightly inflate the tumour, which procedure produced a slight change in the percussion note. A laryngeal examination showed the parts to be normal.

*Operation.*—The pouch was removed on January 2, 1901, by a long incision over the most prominent part of the tumour. It was a delicate matter to dissect the thin skin from the surface of it, and whilst doing so the lump collapsed. It was not apparent that the wall had been

pricked, but it is possible that this may have been the case. The anterior border of the sterno-mastoid (with the spinal accessory nerve entering it) was drawn back, and the thin lower part of the cyst was then opened, in order to make it easier to dissect it from the sub-adjacent structures. The dissection was less difficult when the thicker upper part of the pouch was reached, and this was found to consist of two portions communicating by a rather small opening. At last the narrow pedicle was reached which passed through the thyro-hyoid membrane, but very careful probing failed to discover the actual communication with the pharynx. The superior laryngeal nerve was not seen. The thyro-hyoid was stretched over this deeper part of the cyst, which lay altogether in front of the large vessels. The tubular pedicle was then secured by catgut stitches, a fresh portion of it being divided as each stitch was passed. Finally, the stump was invaginated by four stitches passed after the manner of Lembert's sutures, and the larger wound was closed, except immediately over the site of the pedicle, where a small plug of gauze was placed in case the stitches should give way. The wound, however, healed perfectly, complete asepsis being maintained.

A careful report of the examination of the pouch after removal is given.

It is possible to obtain records of nearly 200 cases of pharyngeal pouch and fistula. They probably all arise in connection with one or other of the visceral clefts, and the following varieties occur, which depend upon the position of the obliteration of the cleft: (1) It may remain open throughout its entire length, giving rise to the complete fistula opening into the pharynx and on the side of the neck; (2) no external opening may be formed, and a pharyngeal pouch with a blind extremity may remain; (3) the internal aperture may become shut off from the pharynx, leaving a blind external fistula; and (4) both internal and external openings being closed, a "dermoid" cyst of the neck may remain. In more than a third of all the cases the fistula was complete, and of the remainder the majority presented an external fistula, either blind or with the internal orifice so concealed that it could not be found. In several a pharyngeal pouch was observed to burst externally, giving rise to the formation of a complete fistula; and conversely the external orifice of a fistula has been known to close, giving rise to a pharyngeal pouch, or the internal orifice, once patent, has become occluded, and a blind external fistula has remained.

These facts point, among others, to the unity of origin of the various conditions. The internal orifice, when present, has always been found in the pharynx, and not, as at one time was stated, in the larynx. This has been proved by dissection in three cases, by passing the probe in twelve, by the laryngoscope in three, and by injection from below in seventeen cases. It is usually small, and, like the orifice of Stenson's duct, situated on a small papilla, but in one case it was large enough to receive the last joint of the finger. In those cases in which its anatomical position has been accurately defined it opened on the side wall of the pharynx, close to the margin of the tonsil, and frequently in connection with the fold of the palato-pharyngeus.

The external orifice, if it exists at birth, is situated at some point along the anterior border of the sterno-mastoid; it is single, and is sometimes guarded by a subcutaneous nodule of embryonic cartilage. The most common position is just above the sterno-clavicular articulation, but it may be found at some higher point along the anterior

border of the sterno-mastoid, and it has been noted opposite the cricoid, on a level with the top of the thyroid, close to the great cornu of the hyoid bone and opposite the angle of the jaw. If it results from the bursting of a dermoid cyst or pharyngeal pouch, as a rule it is still generally situated at the edge of the sterno-mastoid, but the pouch may have reached some other position before it burst, and several external fistulous apertures may in some cases be formed.

It is interesting to try to determine which of the visceral clefts is concerned in the development of such a pouch; but the problem is a difficult one, and the difficulty is increased by the uncertainty existing at the present time with regard to the structures that correspond to the particular clefts and arches.

It is generally held that in the first (or mandibular) arch the lower jaw is developed; in the second the styloid process, the stylo-hyoid ligament, and the small cornu and part of the body of the hyoid bone; and in the third the great cornu of the hyoid bone. The relation of the larynx to the visceral arches has not been determined. As the neck of this pouch passed through the thyro-hyoid membrane, it is clear that it could not have been connected with any cleft above the third. It remains to be seen whether, supposing it was connected with the third, it bears a right relation to vessels and nerves.

The relation of nerves to the upper clefts is held to be constant, and is, shortly, as follows: The nerve that is associated with each cleft divides at the dorsal end, and is distributed partly to the arch above (anterior) and partly to the arch below (posterior). Thus, the seventh nerve is distributed partly to the first arch and partly to the second; the ninth (glosso-pharyngeal) partly to the second and partly to the third; and the tenth (vagus) partly to the third (external laryngeal) and partly to the fourth arch and to lower parts of the body. Unfortunately, the position of the external laryngeal was not ascertained at the time of the operation; the main trunk of the vagus was certainly behind the neck of the pouch. It is not possible, therefore, to say whether the external laryngeal was in front of the neck, as it ought to have been if the pouch were connected with the third or some lower cleft; it is, however, almost certain that it did occupy this position.

The relation of the carotid arteries to the clefts is not yet definitely settled, and the issue is confused by the fact that the embryo of the chick has been so much employed in the study of embryology, and that the development of the carotids does not appear to be the same in birds as in mammalia. Another source of confusion arises from the fact that the vessels are displaced downwards (towards the thorax) in the course of development.

According to many good authorities, the external carotid is developed from the ventral aortic vessel, and thus passes in front of the visceral arches, the internal carotid from the third arch and that part of the dorsal aortic vessel which is above (anterior to) it. If, then, this pouch were developed from the third cleft, its neck ought to have passed behind the two carotids. But such was not the case. Both carotids were behind the neck, and only one explanation suggests itself—that the pouch was quite small at the time when the vessels were displaced downwards (towards the chest), and that in its subsequent growth it pushed up in front of the external carotid.

If we turn to the descriptions of other observers, it is found that it is not infrequent for the neck of the pouch to pass between the external and internal carotids, and that the relation of some of them to the

second cleft appears to have been clearly made out. Thus König, Watson, Heuter, Rehn, Tricomi, and Gussenbauer all noted that the canal passed beneath the lower border of the digastric, and Watson and Heuter traced it between the external and internal carotid arteries to the pharynx, the seventh nerve lying above it and the ninth nerve and the stylo-hyoid ligament below it. This seems to have been the course of the canal in the very few cases that have been dissected post-mortem. Some others have been traced into the same position by operation, but though a few others, like the present case, have been traced up to the thyro-hyoid membrane in operation, the exact position of the internal opening has not been ascertained. In Watson's case a branch of the ninth nerve innervated the walls of the pouch, and in the case recorded by Berger probing of the fistula caused cough and stopping of the pulse and other symptoms of distress, thought to be due to irritation of the superior laryngeal nerve. In Cavazzani's case vomiting followed the use of the probe. In most cases the walls were found to consist of fibrous tissue, and striped muscular fibres have been noted by some observers. The lining epithelium was either of the stratified flattened variety or columnar and ciliated, as in the present case. König noted two canals side by side, one lined with flattened and the other with columnar ciliated epithelium; and other observers have described pouches lined with flattened epithelium below and columnar and ciliated at the upper part—that is to say, the part of the pouch nearest to the pharynx.

The facts pointing to the congenital origin of pharyngeal pouches and fistulæ, and to their probable connection with the visceral clefts, may be summarized as follows: 1. They are frequently hereditary. 2. They are often bilateral. 3. Though they often do not appear till early adult life, they may be present as fistulæ at birth or very early in life, and it is probable that they are often overlooked, as the symptoms they give rise to are slight, and may take some time to develop. 4. The peculiar course of the canal. 5. The presence of a lining of ciliated epithelium, although they are derived from a portion of the pharynx normally covered with squamous epithelium. 6. The fact that the neck of the canal or pouch often passes between the carotids in the position of the second visceral cleft. 7. The fact that striated muscle has been found in the wall of such pouches and fistulæ, and that in one case a band of striated muscle ran from the end of the pouch down the course usually pursued by complete fistulæ. 8. The fact that in several cases glands having a similar structure to the normal mucous salivary glands have been found opening into the lumen of pouches and fistulæ. This may account for the discharge noted in cases like the present. 9. The fact that around the lumen a considerable quantity of lymphoid tissue was noted by König in three cases, and also by others, while cartilage has occasionally been met with in the walls of such fistulæ.

As this pouch was obviously of the pharyngeal variety, no reference is here made to the so-called pressure pouches of the œsophagus, but it is at least possible that some of these should be placed in the same category.

*Bibliography.*—The following references include nearly all the recorded cases. The writings giving most information on the subject are marked with an asterisk. \*Kostanecki and von Mielicki: *Archiv für Pathologische Anatomie*, 1890, cxxi., pp. 55 and 247, containing a summary of all cases up to the year 1890. Sachs: *Jubiläum von Theo. Kocher*, Wiesbaden, 1891, p. 63. Hektoen: *Chicago Medical Record*, 1891, ii., p. 128. Tietze: *Zeitschrift für Chirurgie*,

Leipsic, 1891-92, xxxii., p. 421. Tricomi: *Riforma Medica*, Napoli, 1891, iii., p. 541. Cavazzani: *Riforma Medica*, Napoli, 1891, iv., p. 31. \*Paci: *Sperimentale*, 1891, xlv., p. 425. \*Lejars: *Progrès Médical*, Paris, 1892, xv., pp. 113-117. Berger and Fevrier: *Bulletin de la Société de Chirurgie*, Paris, 1892, xviii., pp. 75-80. \*Gussenbauer: *Beiträge zur Chirurgie*, von Billroth, 1892, pp. 250-286. Arndt: *Berliner Klinische Wochenschrift*, 1892, p. 532. Shat-tock: *Transactions of the Pathological Society of London*, 1892, xlv., p. 62. Schlange: *Archiv für Klinische Chirurgie*, Berlin, 1893, xlvi., pp. 390-392. \*Karewski: *Archiv für Pathologische Anatomie*, Berlin, 1893, cxxxiii., pp. 237-249. Buscarlet: *Revue Médicale de la Suisse*, 1893, xiii., p. 1. Sulicka: *Thèse doc.*, Paris, 1893-94, No. 492. Parker: *Bristol Medico-Chirurgical Journal*, 1893, xi., p. 1. Hamann: *Cleveland Medical Gazette*, 1893-94, ix., pp. 110-112. \*Giordano: *Riforma Medica*, Napoli, 1895, xi., pp. 530-544. Kopfstein: *Wiener Klinische Rundschau*, 1895, ix., p. 41. Lichtwitz: *Gazette Hebdomadaire de la Société de Médecine*, Bordeaux, 1895, xvi., p. 471. König: *Archiv für Klinische Chirurgie*, Berlin, 1896, li., pp. 578-618. Kontnik: *Gazette Hebdomadaire*, Paris, 1896, xliii., pp. 1216-1218. Binnie: *Kansas City Medical Index*, 1897, xviii., pp. 49-53. Von Hacker: *Centralblatt für Chirurgie*, Leipsic, 1897, xxiv., pp. 1073-1076. De Stella: *Annales de la Société de Médecine de Gand*, 1898, lxxviii., pp. 174-181. \*Sultan: *Deutsche Zeitschrift für Chirurgie*, Leipsic, 1898, xlvi., pp. 113-155. Vaughan: *Brit. Med. Jour.*, 1899, i., p. 148. \*Nieny: *Beiträge zur Klinischen Chirurgie*, Tübingen, 1899, xxiii., pp. 89-108. Pouches similar in many ways to the one forming the subject of this paper are described by Watson, Pertick, Zuckerkandl, Kirchner, Schmidt, Kostanecki, and Kopfstein. The references of the first six will be found in Kostanecki's paper mentioned above.

*StClair Thomson.*

**Lapeyre.**—*Medical Treatment of Adenoid Growths.* "La Médecine Moderne." No. 42, October 16, 1901.

Lapeyre reports twenty-eight cases of adenoids in which he gave tincture of iodine internally in doses varying from 18 to 60 minims per day, the patients' ages ranging between five and nine years. Iodism was rarely produced. The adenoid symptoms disappeared rapidly. Lapeyre has used this treatment for three years, and highly recommends it.

*Anthony McCall.*

## LARYNX, Etc.

**Milton, H.**—*Removal of a Foreign Body from the Bronchus by Intra-thoracic Tracheotomy.* "Lancet," January 26, 1901.

The patient was a Fella, aged about forty years, on whom tracheotomy had been performed some years previously for syphilitic stenosis of the larynx. A short time previous to his readmission to hospital the tubular portion of the outer silver tube had become detached from the shield and had fallen into the trachea. On admission, the patient seemed in no ways incommoded, except for a slight fixed pain behind the sternum. No signs could be detected by external examination, and the laryngoscope showed nothing beyond the stenosis of the larynx. A long silver probe passed through the tracheotomy wound into the trachea as far as its bifurcation gave at first no indication; eventually, however, after bending its tip to the right, so as to facilitate its introduction into the right bronchus, a loud metallic click was produced, audible to the bystanders. During the following days many attempts were made to seize and withdraw the foreign body with various shaped forceps, blunt hooks, coin-catchers, slings, and mounted sponges without