THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

NOVEMBER 1, 1886.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XI.—*Pharyngocoele and Dilatation of Pharynx, with Existing Diverticulum at Lower Portion of Pharynx lying Posterior to the Œsophagus, cured by Pharyngotomy, being the first case of the kind recorded.* By W. I. WHEELER, M.D. and Master of Surgery, Univ. Dubl.; F.R.C.S.; M.K.Q.C.P.; Past President, R.C.S.I.; Surgeon to the City of Dublin Hospital.^a

HAVING already had the pleasure of bringing before the Surgical Society of Ireland the operation of pharyngotomy for the removal of a foreign body, and a second case before the Academy of Medicine for the removal of a tumour of the pharynx, both successfully treated by me, I have now the gratification of detailing another most interesting and instructive case, the first of the kind recorded:—

CASE.—Captain E. E., aged fifty-seven years. Antecedent history good. During recent years he suffered from frequently recurring attacks of tonsillitis, bronchitis, and laryngitis, whereupon the submaxillary glands became temporarily enlarged and painful. In 1880 he had had a severe attack of erysipelas, and in 1884 he suffered from hepatic dropsy. His voice was of a stentorian character, and during his military career he prided himself on being able, by his own word of command, to drill an entire brigade. Subsequently to his retirement from the service he

^a Read before the Surgical Section of the Academy of Medicine in Ireland, Friday, February 19, 1886.

still frequently exerted his voice to its extreme limit. During the autumn of 1884 he first complained of the present affection, which caused him the following train of symptoms:—He was unable to remain lying down for any length of time, in the same position, without feeling a sensation of choking, as though his throat were impeded by some large mass. So great did the distress become that he was obliged to exchange his bed for an upright chair. In rising from the horizontal to the perpendicular position he was subject to intense fits of coughing, in which (using his own phraseology) “his eyes were starting out of his head and his brain bursting.” During a night he would expectorate about a saucerful of “clear sticky fluid, with occasional froth.” Talking was always followed by coughing, and was very indistinct, the sound resembling that of the voice of one whose vocal chords had been eroded, so much so that at times he became unintelligible, and, if the effort to speak was to much extent persisted in, the result became a hoarse whisper. To swallow food, except in small particles, was extremely difficult, and even then they stuck in his throat only to be subsequently coughed up and helped into his mouth by manual pressure, tasting exactly as when swallowed. Fluids also were partaken of with occasionally the same result. Captain E. observed a small tumour on the right side in the submaxillary space in front of the sterno-mastoid, pushing forward, which, though occasionally diminishing in size, always to some extent remained. It was at about this period that he sought advice. The tumour was pronounced to be a cyst, and was treated accordingly; however, it gradually increased, growing forwards and upwards over the ramus of the jaw and extending to below the thyroid cartilage. At times, audibly to himself, air would escape with a gurgling sound into the pharynx, and the tumour, when percussed, had a tympanitic sound, such as that produced by percussing a coil of the large intestine; its anterior edge was very thin, and appeared to be next the skin; the entire tumour was freely movable on the deep tissues, as was the skin covering it. Flexing the neck and drawing the tumour backwards produced a marked improvement in the voice, which relapsed into its normal hoarseness upon the tumour being allowed to resume its natural position. The first time I saw Captain E. was in consultation with Dr. Mayne, on the 9th of January, 1885. The tumour then appeared as already described. On 8th June of the same year I again saw him. During the interval the tumour had increased somewhat in size. I passed a sound into the dilated upper portion, and examined him by electric light with the laryngoscope, which showed the larynx to be in an extreme state of congestion and the right vocal chord appeared paralysed. On the 13th June he came under treatment in preparation for an operation advised by me, and which, on the 13th June, was undertaken in the following manner:—The patient was placed upon a suitable table and anæsthetised

by Dr. Duffey; I was further assisted by Drs. Mayne, Harley, and Middleton. I may here pay a trifling tribute to the revered memory of my much-esteemed and greatly-lamented friend, the late Mr. Tufnell, by testifying to the excellent assistance so capably rendered to me by him upon this occasion as well as upon many others. I made an incision from approximately the centre of the ramus of the lower jaw, extending it downwards and outwards in the line of the platysma to well below the thyroid cartilage. The platysma, along with the other muscular tissue, was carefully dissected off the tumour, which was then seen to be very thin; upon opening its most prominent part a gush of air escaped, and the tumour immediately fell back and collapsed. The opening was cautiously enlarged and then retracted, by which means the pharyngeal cavity was exposed. The most prominent portion of the tumour was precisely upon the site of the sinus pyriformis—hence at this juncture of the operation the arytenoid cartilages and vocal chords became visible, also the epiglottis and epiglottic folds. The action of the larynx was beautiful to look at, as one had the opportunity of doing now by the unaided eye—the contraction of the chords each time the patient uttered any sound, the approximation of the cartilages, and the opening and closing of the rima glottidis, revealed a mechanism and routine as perfect as it was interesting, beautiful, and instructive. The foramen, through which the most prominent part of the tumour bulged, appeared to have the following boundaries:—Above, superior constrictor; inferior, middle constrictor; posterior, stylo-pharyngeus; and anterior, palato-pharyngeus or salpingo-pharyngeus. The mucous membrane of the pharynx was continuous with that of the tumour, which at this point might be styled *aneurysma herniosa* of the pharynx.

Simultaneously with opening the tumour the patient's voice returned almost to its normal condition. I cut a large piece out of the pharynx, extending from the ramus of the jaw to the lowest part of the dilatation, at which point I suddenly discovered the existence of a pouch filled with particles of food, situated at the inferior portion of the pharynx and lying posteriorly to the œsophagus, measuring approximately the dimensions of a walnut, for the purpose of eradicating which it was necessary to draw up the pharynx at its lowest point, where it joins the œsophagus. This having been accomplished, the pharynx was now brought together by sutures; subsequently the muscular tissues and platysma; finally the skin, but leaving a few openings for drainage.

The patient's successful recovery was uninterrupted. His temperature remained almost normal, rising at night to 99·8°. He was fed by a spoon with gruel, beef-tea, &c., and remarked that the relief obtained by him had continued without intermission from the time of the operation. Nineteen of the sutures were gradually discharged, both through the mouth and externally; some of the deeper ones, however, remained for a

length of time, the last being discharged in January, 1886. The patient's health has since been excellent, his voice clear, and his power of deglutition normal.

My impression with regard to the primary cause of the tumour is that Capt. E.'s habit of so violently exerting his voice originally led to the dilatation of the entire pharynx; this would result in certain muscular fibres, originally mere anatomical items, becoming in some places pathological sphincters. The tonsillitic and bronchitic attacks (chronic) had relaxed the mucous membrane, which remained flabby and weak. Some more than ordinary violent effort had probably then produced a slight protrusion of the mucous membrane, at what subsequently proved the upper portion of the tumour, and which the same causes daily augmented, such as the entrance of food and drink, &c., which by acting as irritants would cause excessive secretion from the mucous membrane; this being retained gave further cause for dilatation and also produced the symptoms above described. The secretion, "thick, sticky," &c., may have been a pseudo-saliva of parotid nature, which, being an unremitting secretion, would have accumulated in the cyst continuously.

The distress experienced in assuming the horizontal position on the right side was produced by the pressure of the large mass of tumour upon the structures of the neck, and that experienced upon the left side resulted from the constant flow of a little secretion across the rima glottidis. In rising to the perpendicular, the natural tension of all cervical muscles caused a sudden gush of fluid and consequent coughing, then, by each violent cough, the tumour would become further distended; hence, not alone the ordinary retardation produced by coughing, but also the increased pressure of the now enlarged tumour upon the right side, gave additional rise to cerebral stasis (veins in vicinity of tumour very numerous).

The constant inability to speak articulately resulted from the mucous membrane being stretched by the tumour, by which the right arytenoid cartilage and chord would be drawn towards the right, as though the right chord were paralysed. Proof of this was obtained in the improved phonation observable when the tumour was drawn backwards and the neck relaxed.

The incessant cough was caused by irritation of the superior laryngeal nerve, resulting from its being stretched—on the right—

over the tumour in an outward and downward direction. A special tendency on the part of those fibres of the pneumogastric supplying the pharyngeal plexus to be acted upon by this irritation, would induce spasm of the muscles forming the sphincter of the opening already described. Increased difficulty of speaking during phonation was caused by greater dilatation, the result of repeated attempts to speak louder.

The arytenoideus proprius, arytenoideus posticus, and lateralis, were not paralysed from the fact of the inferior laryngeal nerve not being affected, and their natural contraction may, by drawing the tissues forwards and inwards, have tended further to close the opening by a valve-like movement.

I have been induced by two reasons to bring my notes of this case before the Academy—viz., the paucity of literature upon the subject already in our possession, and also the statements made upon high authority to the effect that these pressure diverticula of the pharynx are incurable. Indeed, hitherto, I have been unable to discover one single similar case for which operation has *been even attempted*. Von Ziemssen has recorded twenty-seven autopsies in cases of pressure diverticula, and remarks that “the radical cure of diverticula from without is, at the present time, one of our vain wishes.” He adds—“Yet we should hope that this operation, conducted on Lister’s plan, might, at some future day, be performed without danger.” I did not adopt Lister’s plan. These diverticula and dilatations have been divided into two classes—pressure diverticula and traction diverticula; the existence of the latter in the pharynx at any time is denied, and is pronounced to belong exclusively to the region of the œsophagus. Pressure diverticula are of rare enough occurrence to be seldom if ever seen; yet from them ensues the worst form of dysphagia, and finally death by inanition. They are, almost without exception, situated at the lower part of the pharynx, and at the superior portion of the œsophagus, sometimes being lateral and sometimes in the median line. Very rarely more than one actual diverticulum exists, the smaller excrescences being in reality but protrusions of the pharynx; the larger ones are more correctly described as pouches hanging from the pharynx between the spine and œsophagus. The walls of these pouches are thick and firm, and their covering was thought to be identical with that of the pharynx; but since muscular tissue in them, if as usual not totally absent, exists only at the neck of the pouch, it is therefore evident that such sacs are formed

by the mucous membrane bulging between the muscular fibres—hence the application of the term pharyngocele.

The meagre amount of information extant upon this subject may be judged from the fact that, since 1764, only thirty-four cases altogether have been collected from all European sources, and of these seven are only hypothetical, never having been proven by operation or autopsy.

In all cases the age of the patient was that of adolescence, except in one, where seventeen is given as the age at which symptoms first showed themselves. In the authenticated cases the first symptoms declared themselves as follows:—

17	years	-	-	-	1 case
35	"	-	-	-	1 "
40-50	"	-	-	-	3 "
50-60	"	-	-	-	4 "
66	"	-	-	-	1 ", (Zenker)

The above authority accounts for the immunity from this disease of the female sex, by stating that their larynx is smaller, scarcely ever ossified, and that their pharyngeal cavities are not subjected to the same strains as those of men.

All cases recorded were of a protracted character, and death took place in them all at an advanced age, except in those cases where intercurrent disease caused fatal termination. The following is given by von Ziemssen as the ages at which death occurred:—

40-50	years	-	-	-	2 cases
50-60	"	-	-	-	3 "
60-70	"	-	-	-	8 "
70-80	"	-	-	-	5 "
In 80th	year	-	-	-	1 "

Watson describes a case in which the opening existed as a large slit behind the posterior pillar of the fauces, and the sac extended downwards in the neck as far as the manubrium sterni.

Heller mentions the case of a clergyman which in some respects resembles the present one:—History of chronic laryngitis, &c., loud speaking, and a previous healthy life, comparatively rapid growth of the tumour, and a train of symptoms, all closely agreeing with the case under present consideration.

A few cases have been ascribed to congenital malformations; they are compared in those cases to the pouch often observable in the ileum, formed by the remains of the vitello-intestinal duct;

but the analogy is incorrect, as no case is yet recorded where a complete muscular coat surrounded the sac, except as a sphincter at its base. If these sacs were possessed of a complete muscular coat they would empty themselves at each contraction, and not remain full, as we generally observe. One case only points to any possibility of congenital origin—viz., one, recorded by Kurz, occurring in a child three years old; but his description at once places it in the category of “congenital ectasiæ,” instead of among true pharyngoceles. In all cases recorded, stress has been laid on the presence of an adventitious sphincter surrounding the neck of the sac.

Concerning the ætiology of such pouches, the majority of statements must be hypothetical, because patients, as a rule, fail to assign any cause, yet some cases are carefully described, and reliable accounts given for the probable reason of their developments.

“A limited region or spot on the wall of the pharynx loses its power of resistance against the pressure exercised upon it in each act of swallowing. The morsel of food or fluid swallowed, compressed by the rest of the pharyngeal muscles, will press most forcibly against that spot which most readily yields. The mucous membrane begins to bulge slightly, and with this constant and frequently repeated act gradually protrudes more and more, until finally a sac is formed in which food may remain at other times than during deglutition; then from the weight the sac will be distended and dragged downwards, and so it is developed into one of those sacs which hang down behind the œsophagus, between it and the vertebral column, and which must, when distended, press the œsophagus forward, so that the cavity of the diverticulum is in direct continuation with the pharynx, and thus all ingesta fall into the diverticulum, while the compressed œsophagus, whose opening into the pharynx is thrown out of the axis, receives no more food unless with great difficulty by means of artificial manipulation, manual compression of the diverticulum, or the introduction of a sound (von Ziemssen). Various causes may influence a spot in the pharynx to give way and become dilated. Some small foreign body may be retained in the pharynx and separate the muscular fibres, through which the mucous membrane will protrude.”

In one case the diverticulum appears to have been originated by a cherry-stone, in another by a crust of bread, in a third by a

chicken-bone, and again by the rupture of the pharyngeal muscles from violence. Should there be a stenosis at the upper portion of the œsophagus it would facilitate the formation of a diverticulum. The reason for these pressure diverticula being situated at the base of the pharynx on its posterior surface is easily understood, for here the muscular structures are very thin, running in parallel lines, while above they run obliquely and are freely interlaced. This affection is much more frequent in males than in females, and is undoubtedly a disease of middle and old age. The symptoms in the latter stage of this disease will be a tumour of the neck in the œsophageal region, either at one or at both sides, out of which food can be forced by pressure, when it will return into the mouth, and, consequently, the enlargement will temporarily subside. Introduce a sound; it will enter the pouch without being able to pass beyond it, and the greatest dexterity will be required in the transmission of the instrument beyond the verticulum into the stomach.

Traction diverticula belong more to the œsophagus, and are, therefore, outside the range of my present subject. Before concluding, however, I may remark that they are usually originated by some inflammatory swelling of the parts adjacent to the œsophagus; in consequence of contraction following such inflammation, a portion of the œsophageal wall will be drawn outwards most frequently at a point corresponding to the division of the trachea. That the best treatment for diverticula of the pharynx is that which I adopted in the present case, and which I have just described, there can be but little doubt. The most suitable treatment for traction diverticula of the œsophagus is, however, quite a different matter, and is a subject upon which time forbids my dwelling to any extent. Beside the exclusive use of fluids, and the introduction of food through a tube, electric irritation of the œsophageal muscles is recommended. In my opinion, the proper treatment would be gastrostomy or jejunostomy, provided further experience of that operation proved its superiority.

The subjoined Plates (published by permission) have been most satisfactorily and accurately executed by Messrs. Forster & Co., Dublin.