will observe, with regard to treatment. The reason of this is that I had the opportunity of seeing each case on one occasion only. I had no opportunity of watching them and of personally carrying any treatment into effect.

REMARKS ON THE SURGICAL TREATMENT OF MALIGNANT DISEASE OF THE TONSIL.

By DAVID NEWMAN, M.D.,
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At the beginning of last year I showed at the Laryngological Society of London two cases of malignant disease of the tonsil treated by operation, and which are now well, more than six years thereafter. In describing these cases reference was made to statistics collected four years ago,¹ but since that time so many new cases have been recorded that it is well worth inquiring into the present position of surgery on the subject. Before doing so a short account of my two last cases may be given.

CASE I. *Carcinoma of the Left Tonsil Removed by Incision after Splitting the Left Cheek; no Glands Involved. No Recurrence within Five Months.*—The patient, a farmer, aged 69, consulted me on July 24th, 1896, and stated that during the last six weeks he had suffered from pain in the throat, especially in the region of the left tonsil, but sometimes the pain extended to the left ear and to the angle of the jaw on the same side. He had some difficulty in opening his mouth, but no swelling could be detected externally, nor was there any enlargement of the lymphatic glands. There was no dysphagia nor laryngeal trouble, and the patient's general health was remarkably good. On examining the tonsil it was found to be occupied by a firm hard swelling the size of a hazel nut, which was strictly limited to the tonsil itself, and did not extend even to the pillars. The surface, however, was fungating, and partly covered by a mucopurulent discharge. On August 3rd, a portion of the tumour was removed for microscopic examination, and on being demonstrated to be a carcinoma, immediate operation was advised, and was performed at the Sandyford Nursing Home the following day. With the assistance of Dr. E. A. Gibson and my house surgeon, Dr. Galloway, I split the cheek from the angle of the mouth to the ramus of the inferior maxilla. The skin and muscles were first divided, and when all bleeding was checked, the mucous membrane was opened except close to the tonsil, where it was pushed inwards and backwards with the finger; in this way the tonsil was easily freed, and by cutting with blunt pointed scissors the growth was completely removed. The patient recovered rapidly, and returned home on August 18th. Reported well December 20th, 1896.

CASE II. *Epithelioma of the Left Tonsil removed by Lateral Pharyngotomy, with Division of the Jaw in Front of its Angle.*—D. S., aged 54, was sent to the Royal Infirmary on April 23rd, 1896, by Dr. James Paton, of Greenock, who informed me that the patient was suffering from malignant disease of the tonsil. He said that he enjoyed good health(?) until six weeks previous to admission, when he began to suffer from pain in the throat, which had steadily become worse. While resting the pain was not severe, but during deglutition it was sharp and lacerating; the dull constant pain was referred to the root of the tongue and the faucial region, while a more acute pain extended to the ear. There was some difficulty in swallowing and considerable increase in the saliva, so that the secretion tended to collect, and when accumulated it flowed from the angles of the mouth. The voice was very little altered, only so far as the sounds were impeded by the pain produced by movements of the muscles of the mouth and pharynx. Examination of the pharynx revealed a tumour the size of a pigeon's egg occupying the left tonsil; the surface was very irregular, ulcerated, moderately hard, and showed a few small bleeding points. The growth was almost limited to the tonsil, but on very careful examination it was found to involve the anterior part of the posterior pillar, and extended down to, but did not involve, the base of the tongue. The anterior pillar was free, and there was no enlargement of the lymphatic glands. The larynx was normal. Thoracic and abdominal organs were normal. On April 30th a small portion of the tumour was removed for microscopic inspection, and when, on immediate examination, it was found to be an epithelioma, the tumour was excised at once by performing a lateral pharyngotomy, in which the lower jaw was divided at its angle on the left side. The patient made a good recovery, and is now well (December).

The question of how to gain access to the tonsil has been frequently discussed, and certain advantages have been claimed for each method.

It is not necessary to discuss many of the older and less efficient modes of operating, such as removal by chemical caustics and escharotics, by curetting, the ligature, the *écraseur*, or by electrolysis—as they have, very properly, been given up.

OPERATION THROUGH THE MOUTH.

Within recent years the galvano-cautery has been employed in the removal of malignant tumours of the tonsil *per vias naturales*. A preliminary tracheotomy may be performed or not according to circumstances, but this is a point which will be discussed presently. Two questions require to be considered: (1) Is it possible totally to remove a malignant tumour of the tonsil without an external incision? (2) In

making an external incision, is it advisable to incise the lower jaw or remove a portion of it?

Seven cases of cancerous disease of the tonsil have been recorded in which growths have been completely removed through the mouth without any external incision.

Wolff, Körte, McIntyre, Watson Cheyne, and Watson of New York, have each recorded one case in which this operation has been successful, and I have two cases in which a cure was effected. These cases show at least that it is possible completely to excise a cancerous tonsil without any external incision, but while this is so a large number of cases might be brought forward to prove that such an operation, while apparently successful at the time, completely fails to eradicate the disease. This is not to be wondered at when, for the purpose of avoiding hæmorrhage, the surgeon employs the wire *écraseur* or the galvano-cautery, or sometimes is even contented with removing the tumour piecemeal. From the very nature of the growth, and the great tendency to invasion of surrounding parts, not only must the entire tumour be removed, but also sound tissue in juxtaposition to it. There is no objection to using the electric cautery in place of a knife, so long as one is certain that the incision is being made through normal structures, but anyone will admit that it is much easier to distinguish between healthy and diseased tissues when cutting with a knife or scissors than when dividing with a cautery. The advantage gained from the avoidance of hæmorrhage by use of the cautery is greatly over-estimated. It is a question of risks: on the one hand the danger of hæmorrhage, on the other the likelihood of leaving remnants of malignant disease. Ligature of the external carotid artery has been employed to control bleeding, but if the disease has extended so far as to require such a procedure, then removal of the disease through the mouth is not likely to be efficient. It is only in cases where the disease is very limited that it can be removed *per vias naturales*, as, for example, in my cases operated on in 1890 and 1891,² who are still alive.

LIGATURE OF THE EXTERNAL CAROTID.

When, however, the disease is more extensive, and a very radical removal is demanded, the question of ligature of the external carotid may be considered. Mr. Watson Cheyne³ advises the division of the operation into two stages, on the ground that while giving a bloodless wound it avoids the danger of secondary hæmorrhage from ligature of the artery, and he says: "Failing this division of the operation into two stages, I am inclined, much against my will, to give up the preliminary ligature of the external carotid artery in most cases, and either tie its branches or control the bleeding by temporary compression of the artery during the removal of the tumour."

The advantages of ligature are more evident in cases where in the operation the lower jaw is not divided.

DIVISION OF THE LOWER JAW.

This leads us to the point: Is it necessary to divide the lower jaw in operating for malignant disease of the tonsil, and in what cases should section of the bone be employed? In Case I, where the tumour was small and hard, not larger than a hazel nut, and strictly limited to the tonsil, all that was required in order to have complete control over bleeding points was to split the cheek back to the ramus of the jaw. In Case II the tumour was the size of a pigeon's egg, was found to involve the anterior part of the posterior pillar, and extended down to the base of the tongue, so that the operation was more extensive than in the other case, but while it demanded division of the lower jaw, it did not require the ascending ramus to be removed.

The advantages of division of the jaw are at once manifest. In giving the surgeon more room to operate he has not only greater control over hæmorrhage, but he is also better able to completely eradicate the disease. On the other hand, the disadvantages are that in some cases there has been a difficulty in getting osseous union between the fragments, so that a false joint may result. There is a danger of necrosis of the ends of the bone, also of septic infection from the compound fracture communicating with the mouth. I have noticed, however, that compound fracture of the jaw, whether pro-

duced by the surgeon or by other means, very seldom causes septic poisoning. This may be due to the very dense nature of the lower jaw, or it may be the effect of the secretions of the mouth upon septic organisms. If the mouth is thoroughly washed out and cleansed for several days before and after an operation, I would almost go the length of saying that a compound fracture of the jaw is less likely to cause septic infection than a compound fracture of any other bone left exposed to the air as a fracture of the jaw must be.

LATERAL PHARYNGOTOMY.

For removal of the tonsil lateral pharyngotomy may be performed in six different ways, and the methods are known as Bergmann's, Cheever's, Küster's, Langenbeck's, Mikulicz's, and Polaillon's.

a. Bergmann's operation consists of a curved incision from the angle of the mouth to the angle of the jaw, and passing down the neck over the superior corner of the hyoid bone, it is carried along the margin of the sterno-mastoid muscle as far as is necessary. The soft parts are cut through, and the facial and lingual arteries found and ligatured. The muscles of the cheek being divided, the ramus of the jaw is exposed and sawn through close to the angle. The mucous membrane, which has been left intact, is now divided, backwards and downwards, and when this has been done a very complete view is obtained of the cavity of the pharynx.

b. Küster also commences his incision at the angle of the mouth, but in place of curving it downwards he carries it straight backwards across the ramus of the jaw just above the angle, till it reaches the anterior margin of the sterno-mastoid muscle. For the purpose of giving additional room Küster, after dividing the jaw, disarticulated, and removed the upper fragment. Polaillon's operation differs from Bergmann's in that he used a rectangular incision in place of a curved one. The first incision was made from the angle of the mouth backwards to the anterior border of the sterno-mastoid, and the second at right angles to it along the anterior aspect of the muscle. A segment of the ascending ramus of the jaw was excised, and the incision through the mucous membrane extended in a straight line from the angle of the mouth to the pharyngeal wall, and then downwards to the entrance of the oesophagus.

In these three methods the incision was begun at the angle of the mouth and extended backwards, and followed by section of the lower jaw. In Langenbeck's, in Mikulicz's, and in Cheever's operations the cheek is not incised.

c. Langenbeck makes a beginning midway between the chin and the angle of the jaw, and from the level of the lower border of the bone the incision is made to pass in a curved line downwards to the superior corner of the hyoid bone, and then along the anterior aspect of the sterno-mastoid. Having made a careful dissection and avoided the important vessels and nerves, these are retracted with the exception of the lingual artery, which should be ligatured. The stylo-hyoid and digastric muscles are then easily seen and divided, and the pharyngeal aponeurosis exposed. The latter structure with the mucous membrane of the mouth are then incised, and the pharyngeal cavity laid open. For the size of the incision this operation gives a good view of the pharynx, and section of the lower jaw is avoided.

d. In Mikulicz's operation the incision extends from the mastoid process to the level of the thyroid cartilage along the anterior border of the sterno-mastoid muscle. After dividing the deep fascia the great vessels are exposed, and the facial artery found and ligatured. The vessels are then drawn aside, the hypoglossal nerve carefully protected, and the angle of the jaw exposed and cleared carefully; the periosteum of the ascending ramus is then separated, and the ramus is sawn through and disarticulated. The posterior portion of the digastric muscle is found and divided, the stylo-hyoid drawn forwards, and the wall of the pharynx exposed and opened.

e. The only difference between Cheever's method and the one just described is that the bone is not divided and wider retraction of the wound is allowed for by making a short horizontal incision along the lower margin of the inferior maxilla.

In both of my cases the operations differed from any of those just described. In Case I the line of cutaneous incision was the same as in Küster's operation, but while the ramus of the jaw was exposed, I found it possible to remove the diseased tonsil without resecting the bone; whereas, in Case II, on the other hand, adopting Langenbeck's line of cutaneous incision, it was necessary to divide the body of the inferior maxilla at right angles, in front of the anterior border of the masseter muscle. Early in the operation the facial artery was ligatured close to its origin, so as to include its tonsillar branch, as well as the submaxillary and submental arteries. The lingual artery was also tied. In this way bleeding was completely controlled. The gustatory nerve and the hypoglossal were carefully drawn aside, but unavoidably the supra- and inframaxillary branches of the facial were divided, so that for some time after the operation the movements of the lips were impaired. Otherwise sensation and motion were normal.

Having exposed the pharyngeal aponeurosis and the mucous membrane of the mouth, the external wound was thoroughly washed with a 5 per cent. solution of carbolic acid, and all oozing being stopped the mouth was opened into, and the pharyngeal cavity laid open. The advantage of opening into the mouth only after the external wound is completed

lies in the fact that anæsthesia is easily kept up, by the discharges being kept out of the pharynx and larynx. In this way the necessity for a preliminary tracheotomy is also avoided.

PRELIMINARY TRACHEOTOMY.

As a safeguard against blood passing into the trachea, and to facilitate the administration of the anæsthetic tracheotomy has its advantages; it allows the surgeon to perform a very complete operation, and for these purposes it has been advocated as a preliminary to pharyngotomy; but it also has its complications. In many cases tracheotomy adds little to the danger or discomfort of the patient, but where the pharynx has to be opened and a malignant tumour removed it is, after the major operation, a distinct drawback; it interferes with the power of the patient to expel discharges from the pharynx, an additional septic wound is made, and the danger of septic pneumonia is increased rather than diminished. I do not refer to other diseases of the pharynx, but for the removal of a diseased tonsil preliminary tracheotomy should not be required as long as the lingual and facial arteries are tied during the early stage of the pharyngotomy, and the mouth is not opened into as the last step of the external operation.

REMOVAL OF TONSIL.

For the removal of the tonsil and tumour after pharyngotomy cutting instruments should be used. When the growth is small, and one can be sure of cutting through healthy tissue with the galvano-cautery, it may be employed with advantage, but when the disease is so far advanced as to require a pharyngotomy, then it is most important to avoid burning or crushing in order to see the precise nature of the cut surface. With scissors and the knife this is best done, and if possible a good part of the mucous membrane of the pharynx should be stripped off along with the tumour.

THE IMPORTANCE OF EARLY DIAGNOSIS.

With regard to malignant disease of the tonsil, it is of the utmost importance to recognise the disease early. I believe cancer to be primarily a local disease, which by total eradication may be prevented from invading the system. But while complete removal of a local cancerous growth should prevent the disease spreading from the primary focus, it must be held in mind that by such an operation the patient can only be placed, as regards predisposition, in the position which he occupied before the tumour appeared.

At the Laryngological Society of London I concluded my paper with the following remarks:

"Many cases have been recently recorded where the immediate result of operation has been favourable, but very few can be classed as cured—that is, where three years or more have elapsed without recurrence. But while cases of cure of malignant disease of the tonsils are very rare, the disease is more common than is generally believed. The statement that malignant disease of the tonsils is rare is due to the circumstance that until within the last ten or twelve years, the cases were not recognised or recorded. For example, in Mr. Butlin's valuable work on sarcoma and carcinoma, published in 1882, only 3 cases of cancer of the tonsil are collected; but now that more special notice is taken of diseases of the tonsils, considerably over 200 cases have been published. It is evident, therefore, that the subject is one of much greater interest than has been generally admitted. When the belief prevailed that malignant disease seldom attacked the tonsil, there was a great danger of the serious nature of the malady being overlooked during the early stage, and of its being mistaken for some inflammatory infection of the gland. In 1892 I published 10 cases of malignant disease of the tonsil, and since then I have seen several others, which I may bring before the Society at a future meeting."

The diagnosis of malignant disease of the tonsil must be made early in the course of the malady if surgical treatment is to be of any avail. The presence of a recently-developed unilateral non-inflammatory new formation in the tonsil of an adult past middle life suggests the probability of malignant disease; and if the tumour is hard, dense, and of rapid growth, the presumption is strengthened. In the early stage of the disease, the naked-eye appearances and the feeling to the finger are often quite characteristic, but just as frequently they are atypical, and therefore should not be de-

pended upon. The microscopic appearances of a cancerous tumour are more characteristic than the naked-eye picture. A portion of the suspected growth should therefore be removed and at once examined microscopically, and should the disease prove to be a simple one no harm is done, but if it is demonstrated to be malignant, then much valuable time is saved, and an operation for removal of the tumour may be resorted to immediately. In submitting a specimen, great care must be taken that the tissue placed under the microscope is a portion of the new formation, and not a part of the tonsillar tissue in which it is embedded.

OVARIAN CYSTS COMMUNICATING WITH THE RECTUM.

By HARRISON CRIPPS, F.R.C.S.,

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In February, 1894, I published a paper in the *BRITISH MEDICAL JOURNAL* with the above title, and gave the details of 4 cases in which I had performed ovariectomy, and in which the cyst communicated with the rectum. In 3 of these the communication was on the anterior surface of the rectum—that is to say, in that portion of the rectum which is covered by peritoneum. In 1 of these cases a portion of the cyst wall the size of a florin was purposely left adherent to the rectum, for the opening had already spontaneously closed, and to have dissected off the adherent portion would have been certainly to have reopened the rectum. In 2 other cases the openings were small, high up, and accessible, and it was possible to close them effectually by Lembert sutures. All these 3 cases recovered. The fourth case was one in which a suppurating tumour had spread beneath and between the layers of the broad ligament, and had burst into the rectum behind in the part uncovered by peritoneum. It was impossible in that case to see the opening, but it could be distinctly felt, and would admit the tip of the finger.

It is in this class of case that the difficulty arises in closing the opening—that is to say, when the cyst has burrowed beneath the broad ligament and opened into the rectum behind. The opening is most inaccessible; and even in the Trendelenburg position it can scarcely be seen, and anything like accurate closure by sutures is almost impossible. In the case recorded in my last paper an endeavour was made to close the opening by sutures introduced by a cleft palate needle, but owing to the inaccessibility of the position precision and neatness were impossible. A glass tube was passed into the bottom of the cavity, and the opened broad ligament was then accurately sewn up with fine sutures, with the exception of the place through which the drainage tube passed. This, however, fitted quite tightly. Owing to the depth it did not seem practicable to draw the opened broad ligament sac upwards, and fix it to the parietal peritoneum and skin. The patient did well for three days, nothing coming through the drainage tube except a small amount of serum. On the fourth day fluid feculent material came through the tube. The quantity soon became considerable, and it was most difficult to keep the patient clean, the discharge being very fluid and fetid. She died on the seventh day; there was no *post-mortem* examination, but I suspect there was a septic peritonitis from some leakage by the side of the tube. In commenting on this case I made the following remark:

Should I have the misfortune again to meet with a similar condition I would, in the event of its being impracticable to raise the edges of the opened broad ligament to the lower angle of the abdominal wound, prefer completely to close the broad ligament *in situ*, and trust to vaginal drainage rather than run the risk of suprapubic drainage through the peritoneum.

I have recently had nearly an exactly similar case, and, since the treatment adopted was absolutely successful, I give it in detail.

The patient, aged 35, was sent to me by my friend, Dr. Hind, of Stockton. She had been ailing for nearly two years, with vague pains about the abdomen, and was quite unable to take any hard exercise, to which she had been accustomed. For six months she had been rapidly losing flesh, and almost confined to her bed from general weakness. During this period one of her chief troubles had been the

irritable state of the bowels. She was constantly requiring to go to closet, at which times only a teaspoonful or so of muco-pus would be passed. On making an examination under ether the following conditions were found:

Abdomen.—On deep palpation an ill-defined hardness could be detected deep in the pelvis, though nothing like a distinct tumour could be made out.

Per Vaginem.—The uterus was fixed and pushed forwards a little to the right. Occupying the posterior vaginal roof could be felt a hard swelling the size of the fist; it was very fixed and apparently attached to the uterus.

Per Rectum.—At first nothing of the swelling could be felt, but afterwards, by passing up two fingers and forcibly pressing down the swelling from above, the tip of the finger came upon a soft fungating lump which had perforated the rectal wall, and was projecting into the bowel; the size of the projecting portion was about that of a large walnut; it was soft and had no indurated edge, and had quite a different feeling from ordinary malignant disease of the rectum. In the centre of the mass was a depressed opening which would just admit the finger tip; into this opening a large bent probe could be guided for a couple of inches. Bimanually the projecting portion was found to be continuous with the main mass. The condition of things was correctly diagnosed to be an ovarian tumour full of intracystic growth which had burst into the rectum. It was explained to the patient that the removal of the growth would be accompanied by more than ordinary risk. She willingly, however, consented to the operation.

Assisted by my colleague, Mr. Clarke, I did the following operation: The patient was placed in the Trendelenburg position. On opening the abdomen and raising the slightly adherent omentum the tumour came into view, lying as nearly as possible in the middle line behind the uterus. It was seen to lie between the layers of the broad ligament, which were separated and spread over it. The tube was seen running along the top of the swelling. Some coils of small intestine were adherent to the surface of the broad ligament which formed the posterior boundary of the tumour. An incision 3 inches in length was made transversely through the broad ligament, a little in front of the tube. Some difficulty was experienced in getting the proper line of separation, for the ligament was greatly thickened; but, when this was found by means of the finger tips and back of the knife, the whole tumour was shelled completely out. At the lower end of the tumour was a projection which had formed, the fungating part protruding into the rectum.

After removing the tumour, a small amount of faecal material escaped. On passing the finger down to the bottom of the sac, it passed through a hole nearly an inch in diameter into the rectum. By means of a long, fine, curved needle set in a handle, four ligatures were passed and closed the rectal hole. Owing to the depth, this was a matter of considerable difficulty, some of the sutures cutting out on tying them. Still, after a fashion, the hole was closed, but I felt far from confident in the security and accuracy of my stitches. Without undue tension, the edges of the emptied sac could not have been brought up to the abdominal wound for drainage. A knife guarded by the forefinger was now introduced into the vagina, and passed behind the cervix through the vaginal roof into the empty broad ligament sac, the amount of tissue traversed between the vagina and sac being nearly 2 inches. A long pair of forceps being substituted for the knife, an india-rubber tube, a quarter of an inch in diameter, was drawn from the sac through the opening into the vagina, about half an inch of the tube being allowed to remain projecting into the sac, and the other end projected 1 inch from the vagina. The opened sac, after being thoroughly washed out, was completely closed by fourteen interrupted silk fine sutures, the utmost care being taken to invert the edges so that opposed peritoneal surfaces should come into contact. After flushing the parts in the immediate neighbourhood, the abdominal wound was closed in the ordinary way.

For four days a small quantity of fetid blood-stained fluid escaped through the vaginal drainage tube. On the fifth day after some castor oil, flatus and fluid faecal material passed in considerable quantity through the tube. Dark brown fetid and purulent material continued to escape to about the amount of an ounce a day for the next week. The vagina was