LETTSONIAN LECTURES ON THE OBJECTS AND LIMITS OF OPERATIONS FOR CANCER.

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By W. WATSON CHEYNE, F.R.S.,
Professor of Surgery at King's College; Surgeon to King's College
Hospital.

LECTURE II.

CANCER OF THE MOUTH AND THROAT.

HERE, as in the case of the breast, there is no real alternative operative procedure to that of removal with the view of cure. Esophagotomy, gastrostomy, or tracheotomy, although they may prolong the patient's life for a very short time, do not add materially to his comfort, and can in no way be looked on as alternatives to a radical operation, and in those cases, therefore, as in the breast, I do not think that we can do very much in the way of selection of cases for operation.

As compared with cancer of the breast, the disease in the throat is in some ways more favourable for cure, in other ways less so. As regards the primary disease the breast cancer is by far the most favourable of the two, for there it is fully exposed to view, and there is plenty of room for its free removal without endangering important structures. In the mouth and throat, on the other hand, the disease is close to, if not involving, many important parts; the space in which one has to work is very limited, one cannot get much margin of healthy tissue around, and the early spread of the cancer to muscle, especially in the case of the tongue, tends to distribute it over a considerable area. In the throat, also, the disease is much less favourable for operation, because the septic element comes into play, and thus, instead of having to do with an operation, as in the breast, where the mortality is practically *nil*, we have to face a very considerable risk of death from septic disease.

On the other hand, cancer in the mouth and throat is more favourable as regards the glandular deposits, for in the neck we have an extensive glandular area exposed to view which can be much more thoroughly dealt with than in the case of the breast. It is true that many surgeons look on the glandular trouble as a most serious part of the disease, but, for reasons which will be afterwards stated, I do not agree with this view. In one other respect, also, cancer in the mouth and throat is more favourable than that in the breast—namely, that metastatic deposits, which so often disappoint us in the latter case, are quite infrequent in the former.

Cancer in the mouth and throat is most conveniently considered under three heads—namely: (1) cancer of the tongue; (2) cancer of the pharynx, tonsil, soft palate, epiglottis, etc.; (3) cancer of the larynx.

1. CANCER OF THE TONGUE.

So much has been written already on cancer of the tongue that I will not take up time in discussing it. I may, however, be asked whether I adhere, in the case of the tongue, to the principles of treatment laid down with regard to the breast, more especially with regard to two points. First, as cancer of the tongue very soon spreads into the muscular substance, must Heidenhain's law be followed—namely, the removal of the whole muscle; and, secondly, should the nearest lymphatic glands be taken away in every case? The answer is practically, Yes, to both questions.

If we want justification for thorough operations in the case of cancer of the tongue, it is to be found in the great frequency of recurrence after operation, varying from 61 per cent. in Kocher's statistics up to 89 per cent. in Winiwarter's. It is difficult to estimate the relative frequency of local and glandular recurrence, and they most usually occur together, but on the whole local recurrences seem to be quite as frequent as glandular recurrences alone.

The question of how much of the tongue should be removed, and more especially whether the geniohyoglossus should be followed quite down to the hyoid bone, depends

very much on the situation of the disease. Cancer of the tongue, as it comes under the notice of the operating surgeon, presents itself under two chief forms—namely, either as a more or less superficial warty growth, especially along the sides of the tongue; or as a deep ulceration extending well into the substance of the organ. In the former case the deeper muscles of the tongue are not yet affected, in the latter they are; and corresponding to this we find a marked difference in the results of operation. Taking one of the most recent statistics of tongue cancer—namely, Kocher's results as published by Willy Sachs¹—we find that in 19 cases the cancer was more or less superficial, and that of these 3 were cured by operation (taking the three-year limit), or 15 per cent.; 4 had remained well for one year or more, 2 died, and of the remainder 5, or 27 per cent., certainly recurred, and the ultimate result of the others is not known; while there were 27 cases where the cancer had penetrated into the deeper substance of the tongue, of which only 2, or 7 per cent., were cured, 4 died, and the remainder either recurred or there is no note of the after-result, certainly 11, or 40 per cent., are known to have recurred. In the superficial form the tongue is not saturated with the cancer cells to anything like the extent that occurs where the disease has extended deeply into the muscle, and accordingly we have the more favourable results just alluded to, and the operation need not be so severe. Thus, in the superficial and laterally placed tumours, removal of half of the tongue is in all probability sufficient, and where the tumour does not extend deeply into the substance of the muscle the muscular fibres need not be followed down to the hyoid bone; on the other hand, where we have to do with a cancer which has penetrated into the substance of the tongue, we must look on the whole of the tongue muscles, at any rate on that side, as infected; and whether we content ourselves with removal of the affected half or not, we must follow the muscular fibres right down to their attachment to the hyoid bone.

A second point to be noted in connection with operation for cancer of the tongue is the distribution of the lymphatic vessels. Where the cancer affects the base of the tongue, we have to do with a large lymphatic plexus which is not unilateral, and under these circumstances we often find enlarged glands on both sides of the neck. This plexus runs into glands in the anterior triangle about the angle of the jaw, and the lymphatic vessels seem to be specially connected with or related to the posterior belly of the digastric muscle. On the other hand, many of the lymphatic vessels at the anterior part of the tongue and the floor of the mouth run towards the submaxillary region, and it is there and subsequently about the cornu of the hyoid bone that the first enlargement of lymphatic glands is usually evident.

Where the disease is superficial and affects the front part of the tongue the glands are not affected so early, and it is not so necessary to remove the glandular area in the first instance; but I think it is always well to take away the submaxillary and sublingual glands on the affected side along with the lymphatic glands so closely associated with them, and therefore I always tie the lingual artery in the neck and clear out these glands with the fat in the neighbourhood, even although no glands can be felt, and then clip out the tongue from the mouth. In this case the wound in the neck does not communicate with the mouth, and remains aseptic, and does not, therefore, add anything to the danger of the operation. Where, however, the cancer extends deeply into the substance of the tongue, and more especially where it is situated at the back part, some more severe procedure, such as Kocher's operation, with thorough removal of the glandular area and of the muscle down to the hyoid bone, becomes requisite.

The mortality in the latter case is naturally greater, but has been much reduced of late years in accordance with improved methods of treating the wounds. Kocher's results show this very markedly, for while prior to 1882 he had had 5 deaths in 29 cases, or 17.2 per cent., between 1882 and 1888, when he improved his methods, he had 1 death in 28 cases, or a mortality of 3.5 per cent. So also Winiwarter, publishing in 1878, gives a mortality of 42 per cent., while Volkmann had only 2 deaths in 91 cases, or a mortality of 2.2 per cent., Winiwarter's large mortality being essentially due to sepsis,

¹ *Langenbeck's Archiv*, vol. xlv.

septic pneumonia, etc. Taking mild and severe cases together, the mortality may be estimated at from 15 per cent. to 20 per cent.

As regards cures, they are not, of course, nearly so frequent as in the breast, but this is to a great extent due, I think, to neglect in taking away enough of the tongue muscles in deep-seated cases, and more especially to not clearing out the glandular area properly. And, further, some surgeons are very apt to look on glandular recurrences, unless very small, as inoperable, and thus abandon patients to their fate who might, I think, still have had a fair chance by operation. Winiwarter gives 2.3 per cent. of cures and 42 per cent. mortality, Koenig 12 per cent. cures and 28 per cent. mortality, Kocher (leaving out the last three years) 18 per cent. cures and 11 per cent. mortality. With regard to Kocher's cures, 8 in number (one after operation for recurrence) it must, however, be noted that in two of them cancer again appeared in the mouth, 10 and 12 years respectively after the operation; while 1 died seven years later of cancer of the stomach. The first two cases must, however, I think, be looked on rather as fresh disease than as recurrence of the former.

I feel sure that when the recent work on cancer is more thoroughly applied to the tongue, more especially as regards the removal of the glands, we may look for further improvement in the results. What I have to say about the removal of the glands and the after-treatment in connection with pharyngeal disease applies equally to cancer of the tongue, and therefore I shall for the present leave these points.

The limits of the operation for cure in cases of disease of the tongue are, in my opinion, the following: Very extensive infiltration of the tongue muscles, especially downwards towards the hyoid bone; extensive affection of the jaw in addition to the tongue; extension to the upper part of the larynx; and involvement of the carotid artery and vagus nerve in the large glandular mass. In these cases I doubt if we can do very much in the way of operation which can be beneficial to the patient. In cases where the glandular enlargement is marked, some surgeons advise the removal of the tongue with the view of taking away the disease in the mouth, which is the most distressing thing to the patient; but an essential for such a procedure is that there shall be a good probability of subsequent non-recurrence in the mouth, and for my own part I think that in most cases where the disease in the mouth is of such a small extent as to render it probable that it will not recur locally after operation, the glandular disease can also be taken away and a cure can be aimed at. In cases where the glandular enlargement is really inoperable, the removal of the tongue, if local recurrence did not take place, would no doubt be of advantage to the patient, but failing that, we must be content, so far as operative measures are concerned, with such substitutes as division of the gustatory nerve, tracheotomy, etc.

2. CANCER OF THE PHARYNX.

Cancer may begin anywhere in the pharynx, but most commonly (apparently in over 60 per cent. of the cases) it commences in the mucous membrane over the tonsils or pillars of the fauces, and spreads from thence over the neighbouring parts. From the tonsil the disease spreads most often and earliest on to the pillars of the fauces and upwards to the soft palate, next most frequently downwards on to the base of the tongue, and lastly backwards over the pharynx; indeed, in most cases which come under view, one usually finds most or all of these parts affected, even on the first occasion when one sees the patient. Epithelioma also, sometimes, though not nearly so commonly, begins about the epiglottis and orifice of the larynx, and the third point of selection is lower down, close to or at the commencement of the oesophagus.

It is remarkable how little trouble the disease causes at an early period; sometimes the patient does not observe anything wrong till the occurrence of bleeding attracts his attention. In other instances he first notices a frequent desire to clear his throat, or again, a feeling of uneasiness and dryness about the throat, and very commonly pain shooting up to the ear. Indeed, in not a few instances, the first thing which leads him to call in a surgeon is the enlargement of the cervical glands in the neighbourhood of the angle of the jaw. Consequently, as epitheliomata in this

region apparently grow very readily and rapidly, it is but seldom that the patient seeks advice before the disease has spread to an alarming extent, and generally he is condemned to palliative treatment. Nevertheless, a considerable number of operations have been performed for cancer in this region, the success, however, naturally being limited owing to the desperate nature of the case and the peculiar position of the disease, and also to some extent to the removal having been imperfectly carried out.

In considering the question of cancer of the pharynx, it is most convenient to divide this part into several regions, for the method of operation and the result of treatment vary very much according to the part affected. Thus we may speak of (1) cancer of the naso-pharynx; (2) cancer affecting the soft or hard palate alone; (3) cancer affecting the tonsillar region and spreading from thence to the neighbouring parts; (4) cancer affecting the pharynx proper; and (5) cancer affecting the pharynx and larynx. Of these, I have omitted entirely cancer of the hard and soft palate alone, because these cases are comparatively limited and readily dealt with from the interior of the mouth, and also because many of the palate tumours described as alveolar sarcomata and adenoid carcinomata are in reality quite simple growths, and have no tendency to recur after removal. Nor have I gone into the results with regard to cancer of the naso-pharynx, but I nevertheless mention three cases in which I have operated in this situation, more, however, with a view of putting them on record than for the purpose of discussing this part of the subject. Further, I have in my list included sarcomata as well as carcinomata, and I have done so on account of the great interest of the operative procedures, and the fact that apart from the likelihood of recurrence the question whether we have been dealing with a sarcoma or a carcinoma does not materially influence the methods of operation, the functional result, or the result as regards life.

Before going on with this matter further, I shall in to-day's lecture narrate the cases in which I have myself operated, and subsequently refer to the tables which have been placed in your hands, giving the operative results which have been attained in this disease. In the first place, I shall describe three cases of disease of the naso-pharynx:

CASE 1. *Lympho-sarcoma of the Left Side of the Naso-pharynx, involving the Eustachian Tube and Growing from the Base of the Skull.*—Male, aged 46; first seen by me on March 9th, 1892. The patient consulted Dr. Urban Pritchard about a year previously, on account of buzzing in the left ear. At that time there was no suspicion of new growth. About six months afterwards he noticed that he was becoming deaf on the left side, and for the last three months he had observed that there was some obstruction of the left nostril. He therefore saw Dr. Pritchard for the second time at the end of February, 1892, and, on examination, a growth was found on the left side of the naso-pharynx, blocking and apparently involving the Eustachian tube. Dr. Pritchard had a consultation with Dr. Greville Macdonald, and, as the result, the situation and extent of the growth were described to me, and the problem was put whether any operative interference was possible in the case of a malignant tumour in this region. The patient was particularly desirous, in connection with his private affairs, that if possible some extension of life might be obtained for him.

I decided that an operation was possible, and accordingly I saw the patient on March 9th, 1892, and found the following state of matters: Patient in good general health, not losing flesh or strength. The various organs of the body healthy. Hearing on the right side normal, on the left a watch only heard when applied to the ear. Breathing through left nostril almost completely obstructed; nothing seen from the mouth. With rhinoscope prominent tumour seen projecting on left side of the naso-pharynx, reaching inwards as far as the septum, downwards to and involving the soft palate, backwards to the back of the pharynx, and upwards to the base of the skull. The Eustachian tube was apparently involved in the growth, and in our opinion it had started from that part. Slight ulceration in the upper part. With the finger the outlines of the tumour could be readily made out. It did not seem to extend into the nasal cavity, but it pushed down the soft palate and extended into it. Mass of enlarged glands at upper part of left anterior triangle extending under the sterno-mastoid, not at all freely movable.

I explained to the patient the extent and seriousness of the operation, and the great probability of recurrence, but as it was of great importance to his family that he should live as long as possible, he decided in favour of the operation.

On March 16th, 1892, I performed the following operation, assisted by Messrs. Stanley Boyd and Burghard. An hour before the operation a pint of water containing half an ounce of chloride of calcium was injected into the rectum, and during the operation pledgets of salicylic wool soaked in Wright's fibrin ferment solution were applied to the freshly-cut surfaces under the superintendence of Dr. Wright. Whether as the result of this treatment or not, the fact is that extremely little blood was lost—I do not think more than an ounce or an ounce and a half in all. The glands were first removed from the neck; they were deeply seated, being attached to the fascia over the atlas, the spinal accessory nerve running in front of them. In addition, the fat and tissues in the vicinity were of

course also taken away. Tracheotomy and insertion of a Hahn's tube. I then proceeded to remove the upper jaw on the left side. The periosteum and mucous membrane of the hard palate were, however, detached from the bone and left behind, and the orbital plate of the superior maxilla was also left. After removal of the upper jaw the base of the pterygoid process was divided with bone forceps and removed; the front of the tumour could then be seen. The tumour was then detached from the external pterygoid muscle, the other tissues outside it, and the soft palate. It was then found to have originated from the periosteum of the base of the skull, and to have grown downwards along the side of the pharynx, involving the Eustachian tube in its course. A portion of the Eustachian tube was removed and the mucous membrane all around the tumour was divided. The periosteum over the whole roof of the naso-pharynx was then carefully detached as far out as the foramina for the vessels, and as far forward as the disease seemed to extend. A layer of the surface of the bone was then chipped off, and the whole bare surface cauterised with Paquelin's cautery; the hard palate was then stitched to the cheek, and the wound closed with sutures. As has already been said, very little blood was lost, and, as a matter of fact, the preliminary tracheotomy proved to have been quite unnecessary.

Remarkably little shock. Very little to say about the further progress of the case. The temperature only once reached 100° F., and that was on the morning after the operation, and the further progress towards recovery was uninterrupted. Tracheotomy tube was left out on the day after the operation; all the stitches were removed on the fifth day, the patient got up on the tenth day, and left town on the twenty-third day.

Very shortly afterwards he was able to resume business, and for about fifteen months there was no sign of recurrence in the nose, although in March, 1893, I removed some small glands from the left posterior triangle of the neck. In July, 1893, however, he began to have some bleeding from his nose, and accordingly I reopened the scar and found that recurrence had taken place at the roof of the nasal cavity, in front of the former seat of the disease, the situation of the original tumour, however, remaining perfectly well. Disease cleared away as thoroughly as possible, and for a time he went on very well; but in the spring of 1894, about two years after the first operation, he began to go downhill, bleeding occurring again from the nose, and glands enlarging on the other side of the neck. He gradually became worse, and ultimately died on December 14th, 1894, two and three-quarter years after the first operation.

CASE II. Lympho-sarcoma Growing from the Base of the Skull, and Projecting into the Naso-pharyngeal Cavity.—Female, aged 24. Had noticed stiffness in right nostril last August. It gradually became worse, and a few days ago she consulted Dr. W. H. Dobie, of Chester, who diagnosed the condition of matters, and sent her up to me. Patient is a young woman in good health, only complaining of stuffiness in the nostril. Nothing is seen from mouth. With rhinoscope rounded swelling found growing from roof of naso-pharynx and filling up most of the space; no ulceration, and it is not pedunculated. No enlarged glands in the neck.

On December 22nd, 1895, soft palate split in the middle line, the incision being carried through the mucous membrane and periosteum of the hard palate nearly to the front. The periosteum of the hard palate was then peeled off the posterior part, and a curved portion of the back part of the hard palate and the posterior part of the vomer chipped away, the head hanging down. Periosteum incised all round the growth, and as far from it as possible, and tumour detached. Raw surface thoroughly painted over repeatedly with nitric acid; action arrested by carbonate of soda. The soft and hard palate were then united with stitches. Recovery uninterrupted. Palate united perfectly, and patient sent home on January 10th.

In this case it will be seen that a totally different method of procedure was adopted from that employed in Case I. In the former case, however, the tumour was unilateral, and as far as one could judge, extended well into the side of the neck, and it did not seem at all possible to get satisfactory access to it from below; in the latter case it was centrally situated, and it seemed to me that the method employed would be sufficient. I must say, however, that of the two plans I believe the former, namely, the excision of the upper jaw, or at any rate a temporary resection of it, and removal of the pterygoid process, is much the more satisfactory. In the first case I could see exactly what I was doing, and had no difficulty in obtaining complete access to the whole affected area; in the latter case it was difficult to be quite certain whether I had got well beyond the growth at the anterior part, and though this last plan may be useful in cases where the tumour is quite small and centrally placed, I should be inclined in most cases to employ the former method. The remarkable absence of any septic phenomena in both these cases is very striking, and I attribute it mainly to the free escape of the discharge from the surface of the wound as the result of the position of the patient, and also to scrupulous care in cleansing the mouth and in avoiding the introduction of any septic infection from without. Both cases show that tracheotomy is quite unnecessary in these operations.

CASE III. Spindle-celled Sarcoma growing from the Roof of the Nasal Cavity, involving the Sphenoidal, Ethmoidal, and Frontal Sinuses, and Destroying the Upper Part of the Nasal Septum.—Female, about 40, sent by Dr. Edward Law. Patient had suffered from growths in nose for ten years. She had been operated on many times and in many ways. Recently she had been under Professor Volkmann, who used the thermo-cautery, and as a result the orifice of the nostril had been much burned, and had become so contracted that it was impossible to see into it. Right nostril completely filled up with growth, which distended the nose and destroyed the nasal bone,

and at the bridge of the nose a soft tumour was felt and seen projecting forwards; the frontal eminence was much more marked on the right side than on the left. The eye was pushed towards the right side, and projected forward. No swelling of the superior maxilla, but electric illumination of the mouth showed a greater area of opacity on the right side than on the left. By posterior rhinoscopy, a globular mass with a smooth surface and of a mucous appearance, was seen projecting into the naso-pharynx and pressing on the right Eustachian tube. Nasal septum pushed towards left almost blocking the left nostril.

On March 7th, 1894, I performed the following operation. Incision made along the right side of the nose, from the frontal bone to orifice of nostril, and the ala and right side of the nose detached and turned over to the left side. The tumour was partly cystic, and was gradually separated from its attachments along with as much healthy tissue as possible. It filled and distended the right frontal sinus, and projected somewhat into the left, but it came completely away, along with the mucous membrane. It opened and projected into the right orbital cavity, and it grew from the whole of the roof of the nasal cavity, especially on the right side, and had destroyed the vomer at the upper part. After removal of growth, surface of the bones was cauterised and sponged with undiluted carbolic acid; skin replaced in position and stitched, and a plug was introduced into the right nostril so as to keep it open during the healing process. The right antrum was full of pus, and was opened in the usual manner through the alveolus, and a drainage tube inserted into it.

Here, again, the subsequent progress of the case was absolutely free from any fever or other cause of anxiety. The temperature did not rise above 100° F., and she left the home within three weeks apparently well. She remained well up till a year ago, since which time I have not seen or heard of her. At that time she was hoping to get an engagement in an opera abroad, and probably was successful. The tumour was a spindle-celled sarcoma.

I have put these three cases together on account of their great interest, but I have not made any attempt at collecting the cases of operation for malignant tumours in the naso-pharynx, and therefore I shall not dwell on them. I have already mentioned the two modes in which access was gained to the tumours in the first two instances, and the remarkable freedom from sepsis in the after-progress of all the cases. How far the operation in these cases is worth while is a matter which is difficult to determine. I believe that in a carcinomatous affection of these parts it would certainly (unless the disease were very extensive) be well worth while, but lympho-sarcoma is notably a very disheartening disease to operate on. Nevertheless, in the first case to which I have referred, the result, although not a cure, was such as to place the patient in a very much better position than if the operation had not been done; and he himself was more than satisfied that the operation he had gone through was well worth the result obtained.

In the following cases we have to do with tumours lower down, in the pharynx proper or in the neighbouring parts; first a case affecting both pharynx and larynx, then 3 successful cases, then 3 fatal ones, and lastly one with local recurrence:

CASE IV. Epithelioma of the Right Side of the Pharynx, the Epiglottis, Right Aryteno-epiglottidean Fold, the Pharyngeal Mass being also adherent to the Thyroid Cartilage.—Male, aged 42, under Dr. Roxburgh, of Weston-super-Mare. About the end of June, 1892, the patient noticed a feeling of stiffness about the right side of the throat when he yawned, but otherwise he had no trouble or pain. He saw Dr. Roxburgh about it for the first time on July 24th, and he diagnosed a malignant ulcer of the pharynx. He saw also Dr. Greville Macdonald, who sent him to me.

On examination various organs healthy; nothing visible on inspection from the mouth, but with the laryngoscope a ragged ulcer, somewhat larger than a shilling, was seen on the right side of the pharynx, spreading on to the right aryteno-epiglottidean fold, and possibly as far as the right side of the epiglottis. As far as any of us who had seen the case could judge the disease was quite limited: until we came to the actual operation we had no idea that it had spread superficially in the mucous membrane to the extent which we found had taken place.

The following were the steps of the operation (August 1st, 1892): Preliminary tracheotomy. Hahn's tube; a long incision was then made parallel with the vessels, and a transverse one along the border of the great cornu of the hyoid bone. The vessels were pulled outwards, and the submaxillary gland was raised. Pharynx opened, and disease exposed. It was found to be much more extensive than had been supposed, because it spread superficially, and had not led to any marked thickening of the mucous membrane at the edge of the growth. It reached to the middle line behind on to the tongue in front, and was adherent to the wing of the thyroid cartilage, but it was very difficult to define its extent on account of its superficial spread. The whole mass was removed, namely, the affected portion of the pharynx, the right aryteno-epiglottidean fold, a small part of the tongue, the greater part of the epiglottis, and a piece of the wing of the thyroid cartilage. For three days the patient went on very well, but on August 4th signs of septic pneumonia appeared, and he went very rapidly downhill and died on the following day.

CASE V. Round-celled Sarcoma of the Right Tonsil, Side of Pharynx, Soft Palate, and Lower Part of the Naso-pharynx.—Male, aged 45. Sent by Dr. Felix Semou, and seen by me on June 13th, 1894. Six months previously an enlarged gland was removed by another surgeon from the right anterior triangle of the neck, and on microscopical examination was said to be of a simple character. At that time nothing was noticed in the

throat. About four months before I saw him he began to suffer from uneasiness and pain in the throat. Right tonsil much enlarged, ulcerated, hard, and fixed. The disease extended to the wall of the pharynx and on to the right side of the soft palate, and appeared to be adherent to the external pterygoid process. From the history of its rapid growth (for the history, as I understood it at the time, was but of a few weeks' duration) and its general characteristics it seemed to me to be infiltrating the tissues around to a great extent, and I thought that there was no reasonable prospect of taking away all the disease, and therefore advised him not to have an operation done.

I did not see the patient again till August 29th. I then found that the tumour had increased greatly in size, and was now filling up the pharynx to a considerable extent and reaching well beyond the middle line. It interfered greatly with swallowing and to some extent with breathing; he evidently had only a few weeks to live. As it had not infiltrated so much as I had expected, I reconsidered the question of operation, and came to the conclusion that it might after all be possible to remove the tumour.

On September 11th, 1894, an incision was made along the line of the vessels, some glands removed, and the external carotid artery tied, cheek split from the angle of the mouth to the masseter muscle. An incision was now made through the mucous membrane in front of the growth, the lower part of the pterygoid process was removed with bone forceps, and the affected portion of the soft palate was clipped away with scissors. At this stage it was found advisable to perform tracheotomy, and a Hahn's tube was inserted. Tumour then carefully removed, along with part of internal pterygoid muscle and Eustachian tube. The patient had practically no shock after the operation, and during the course of the case there was an entire absence of all septic complications, the temperature not once going above 100° F., and the patient went on well, except for a short attack of "Suakim liver." The tracheotomy tube was left out on the day after the operation. The patient left the home between three and four weeks after the operation, and is still alive and well, and is present here to-night.

The local result has so far been absolutely satisfactory; there has been no local recurrence whatever, and the functional result is perfect. There is no difficulty in speaking or swallowing. Although there has been no local recurrence, I found in March of last year that several glands had become enlarged in the lower part of the anterior triangle and under the sterno-mastoid, and I therefore performed a somewhat elaborate operation with the view of clearing them out. Last summer, also, he came to me and pointed out a small gland in the posterior triangle which he thought was enlarging, and I therefore cleared out all the glandular tissue from the posterior triangle and root of the neck, but found none which showed evidence of disease.

CASE VI. Epithelioma of the Left Tonsil and Soft Palate, with a large Mass of Glands in the Anterior Triangle of the Neck adherent to the Vessels, extending under the Sterno-mastoid Muscle, and up to the Base of the Skull.—Male, aged 55, sent by Dr. Felix Semon on October 13th, 1894. Patient began to feel uneasiness about the throat during the previous June. In July he first noticed a swelling on the left side of the neck. In September he saw a well-known surgeon, who said that the disease was malignant, but that no operation was possible. Towards the upper part of left tonsil there was a patch of ulceration with very hard base and edge and warty surface, spreading on to the pillars of the fauces and the soft palate. A very large mass of glands in left anterior triangle, firmly adherent to the vessels.

On October 15th, 1894, a long incision was made along the anterior border of the sterno-mastoid, and the jugular vein tied in two parts below the mass and divided between the ligatures. The vein and glands were then raised in one piece, spinal accessory nerve disentangled from the mass, and the jugular vein again tied at its point of exit from the skull, and the mass of glands, with the vein and all the fat and glands under the sterno-mastoid and well into the posterior triangle taken away. External carotid artery tied, and posterior belly of the digastric and the stylo-hyoid muscles were divided, head thrown over the table, mouth held open with a gag, soft palate clipped through well beyond the disease, mucous membrane incised all round the area of the growth, and the whole diseased mass clipped out. A large drainage tube was inserted from the external wound, and the skin incision closed at the upper part by sutures.

The patient was a good deal collapsed after the operation, but recovered the same evening and went on remarkably well. As in the previous case, there was no rise of temperature or septic complication. For three days he was fed by rectal enemata and suppositories, but on the fourth day he began to swallow a little and succeeded fairly well by following a suggestion made by Dr. Semon, which was that he should lie flat in bed with his head turned to the right or sound side, and hanging over the side of the bed. He got out of bed for the first time on the sixth day, and the drainage tube was left out on the eleventh day. The external sinus remained open for a few weeks, but closed before the end of the year without anything further being done for it. When I saw the patient last, in the middle of January, 1896, that is to say, fifteen months after the operation, there was no evidence of recurrence, and he was in the enjoyment of perfect health.

CASE VII. Epithelioma of the Base of the Tongue and the Epiglottis; a few small Glands in the Neck.—Male, aged 60, brought to me by Dr. C. A. Parker. For about six months the patient had noticed pain in swallowing, and lately had had neuralgic pains extending up to the ear. A small mass of enlarged glands at the angle of the jaw on the left side and at the cornu of the hyoid bone. By the aid of a mirror a superficially ulcerated surface was seen at the base of the tongue, especially on the left side, and extending into the hollow between the tongue and the epiglottis, partially filling it up. The epiglottis was also thickened and ulcerated on its anterior surface but the larynx was free.

Operation, November 23rd, 1894. Preliminary tracheotomy; long incision in the line of the vessels, and another along the upper border of the hyoid bone; glands removed; the external carotid artery tied, and the pharynx opened at the level of the cornu of the hyoid bone; cornu of hyoid bone clipped away. The superior laryngeal nerve was not divided; epiglottis detached from its attachment in the angle of the thyroid cartilage but left attached to the tongue. A transverse incision was then made completely across the tongue, well away from the disease, and the posterior part, together with the epiglottis, was taken away. After the

operation the patient had an attack of bronchitis, to which he was very subject, but it soon passed off, and otherwise his recovery was uninterrupted. He was fed for four days by rectal enemata and nutrient suppositories, and then he began to try to swallow some milk in addition. This he did not manage at all well, even with his head on one side, for about a fortnight, and then he gradually improved, and was able in another week to take the necessary quantity of food entirely by the mouth. Gland removed from left posterior triangle and one from right anterior triangle last December. As regards the mouth and anterior triangle of the neck, the patient still remains well. There has been no recurrence in either situation; the functional result is excellent; he is able to swallow without difficulty, and only extremely rarely does he have fit of coughing while doing so, and he is in excellent health at the present time, fifteen months after the operation.

CASE VIII. Epithelioma of the Right Tonsil, spreading on to the Tongue, Floor of Mouth, Soft Palate, and Side of Pharynx. A Mass of Glands at the Angle of the Jaw.—Male, aged 44. Had noticed some hoarseness for a few weeks and about a fortnight before admission he had found a swelling at the angle of the jaw. Large, ulcerated, warty growth on the right tonsil, extending on to the soft palate, pharynx, floor of mouth, and base of tongue. Larynx and epiglottis were free. Mass of glands at the angle of the jaw. On June 15th, 1895, preliminary tracheotomy. Enlarged glands with the material under the sterno-mastoid and the jugular vein removed. A second cut parallel to the hyoid bone, and the submaxillary gland with the adherent lymphatic glands removed, external carotid artery tied, cheek split from angle to masseter. With scissors, the healthy tissue around the growth was divided. The posterior half of the tongue on the right side was taken away, along with the floor of the mouth at that part, tonsil, pillars of the fauces, part of soft palate, and portions of the pharynx, the whole being removed in one mass. There was a good deal of shock after the operation, but the patient had recovered from that by the next morning, and he went on well, the temperature only twice reaching 100°. He began to try to swallow on June 21st, but without very much success. However, this rapidly improved, and at the time of his death he was able to swallow practically all that was required in the way of nourishment. The patient was doing remarkably well and it was a question whether he should not go home, when on July 7th, twenty-five days after the operation, while he was washing out his mouth previously to taking some food, it was noticed that the material was stained with red blood. This rapidly increased in amount, and in three minutes, before assistance could reach him, he was dead, the blood having apparently passed straight down his larynx and choked him, the blood having come from the external carotid artery.

CASE IX. Epithelioma of the Tonsil, Soft Palate, Side of Pharynx, and Right Side of the Tongue; large Mass of Glands on the Right Side of the Neck.—Male, aged 56, seen in consultation with Dr. Semon and Mr. Horsley on June 28th, 1895. Three weeks previously a quantity of blood suddenly came into his mouth along with some very foul-smelling discharge. For some time previously his throat had been uneasy, but he had not paid any attention to it. Considerable mass of glands at the upper part of the right anterior triangle, evidently adherent to the vessels, and extending under the sterno-mastoid muscle; projecting warty mass on the right side of the throat, and extending on to the tongue; it had apparently begun in the tonsil, which was deeply excavated, and from thence had spread on to the neighbouring parts. Only the back part of the tongue was affected, but there the disease went pretty deeply; above it had spread on to the palate, and behind to the side of the pharynx; the epiglottis and the larynx were free. The ulcer was constantly bleeding, and there was much foul discharge from it. The patient appeared to be a robust man, but was not so in reality; his urine contained one-eighth of albumen, and his pulse was quick and readily compressible, frequently numbering 120. From my experience of the preceding cases, especially the last, which was at that time going on extremely well, it was evident that the disease could be removed with a reasonable prospect of success, while it was clear that the patient had only a very short time to live, probably only a week or two, if nothing were done. The whole matter was therefore put before the patient, special stress being laid on the risks of the operation, and chiefly, as it happened, on the danger of septic pneumonia and septic disease generally; but he expressed himself as most anxious to have the chance.

On July 1st, assisted by Mr. Horsley and Dr. Semon, I performed tracheotomy, and put in a Hahn's tube. The mass of glands, which extended up to the mastoid process and under the muscle, removed along with the jugular vein, the external carotid artery, and the digastric and stylo-hyoid muscles which were involved; cheek was then split from the angle as far as the masseter, and the mass in the mouth was removed in one piece in the same manner as in the last case. It was then found that the internal carotid artery was involved in the growth, and lying almost bare on the surface of the ulcer of the tonsil. As the patient was by this time suffering a good deal from shock, more so than any of the other cases, and as his pulse was very small, I feared that the removal of the diseased portion of the artery would produce so much anæmia of the brain as to preclude the chance of his recovery from the shock, and therefore I thought it wiser to peel off the tumour as far as I could from the artery, and then remove it later, when he had somewhat recovered.

There was a good deal of shock, but he rapidly picked up, and on the morning of the fourth day seemed quite himself again. I therefore thought that the time had come when the piece of diseased artery might be taken away with safety, and accordingly, dividing the stitches, I passed a ligature above and below the diseased area, tied the vessel, and removed the intervening portion. This was done quite easily, with almost no disturbance of the wound, and no bleeding. The patient passed an excellent day, but towards night he began to cough, and had much difficulty in bringing up a quantity of tenacious mucus; his temperature began rapidly to go up, and signs of septic pneumonia set in, of which he died on the morning of the sixth day after the operation; it was noticed also on the fifth day that there was paresis of the leg and arm on the left side.

The occurrence of septic pneumonia after all operations in the throat is, of course, very common, quite apart from the severity of the operation, and it so happened that it was a danger to which I specially called attention before the

patient decided on the operation; and the only question which exercises me is whether the interference on the fourth day led to it or whether it would have occurred in any case; and also how far the paralysis which followed the ligation of the artery had to do with the fatal result. I do not think that it would have been wise to have left the diseased portion of artery in the wound for a longer time, and the disturbance caused by its removal was extremely slight, and I can hardly think that the infection occurred at that time. At the same time it is a perfectly open question whether it would not have been wiser to have risked taking it away at the time of the operation.

CASE X. Epithelioma of the Right Tonsil. Floor of the Mouth, Base of Tongue, Pillars of the Fauces, Soft Palate, Side of Pharynx, and Glands in the Neck.—Male, aged 55, sent by Dr. Harvey. Patient first noticed swelling of the glands in the neck about two months before admission, and about that time he also had shooting pain about the base of the tongue. About a month before admission he first observed a growth on his tongue. The patient was old for his age, was not a very strong man, but had no organic disease of any kind. Glands in the anterior triangle considerably enlarged, more especially towards the angle of the jaw, but also extending as low as the thyroid cartilage; large cauliflower growth at the back of the right side of the tongue, extending to floor of mouth, right tonsil, and adjacent part of the soft palate and side of the pharynx. The entrance to the larynx and the epiglottis was apparently free.

On July 24th, 1895, the glands and the neighbouring tissues were dissected out from the anterior triangle; internal jugular vein not removed; the posterior belly of the digastric, however, was found attached to the growth, and was taken away.

The wound healed by first intention, and on July 31st, 1895, the second part of the operation was proceeded with; trachea opened and a Hahn's tube inserted, the greater part of the former incision was reopened, and the external carotid artery tied. The incision was then extended forwards under the angle of the jaw, and the submaxillary gland taken away, cheek split, and half of the tongue freed right down to the hyoid bone, and the rest of the growth removed in one piece.

The patient did not have any very marked collapse, and passed a very good night afterwards. The next morning, however, it was evident that his mind was deranged, and he was most difficult to manage, both as to feeding and in other ways; and I may here say that from this time till the end of the case he never recovered his reason. He went on very well for some days, but there was more septic decomposition about the wounds than had occurred after any of the other operations. Temperature remained normal till the eighth day, when it became somewhat irregular, going up to about 102° in the evening and falling in the morning. On the twelfth day (August 11th) he coughed up a little blood, and a little was seen to be oozing from the wound. Pressure applied to the carotids, and the bleeding ceased. I was sent for, but being out of town, one of my colleagues ultimately arrived two hours later, and tied the common carotid artery low down in the neck. Next day there was paresis of the left arm and leg, and this had developed by the following day into complete hemiplegia. On August 14th there was a repetition of the bleeding, and when I opened up the wound I found that it simply came from the granulations, and it did not again recur. The patient gradually became worse, and died on August 31st.

On post-mortem examination gangrene of the upper lobe of the right lung was found, with a considerable quantity of pus lying in it. There was softening of the anterior part of the right cerebral hemisphere as far back as the fissure of Rolando. There was no clot in the carotid artery.

This case was a very unfortunate one, and was especially complicated by the ligation of the common carotid artery, which I must confess I do not think was necessary. At the time when it was done the bleeding had stopped for two hours, and, as was shown afterwards by the recurrence of the bleeding, the blood had not come from the external carotid artery. The immediate result of this ligation was the complete hemiplegia mentioned above, and after that the patient had no chance of recovery. I certainly myself would have been very chary about tying the carotid artery under the circumstances which were present. At the same time I doubt whether the patient would have recovered apart from this occurrence, for my own experience of post-operation mania, of which I have seen five or six cases, is very bad, and I think that as a rule the patients die, and I believe this is the experience of most other surgeons. At the same time the case furnishes a very instructive warning—especially when taken in connection with Case IX and several cases which will be found in Table III (published in the JOURNAL, February 15th, 1896, p. 390)—where ligation of the internal or common carotid artery after operation on the throat has been followed by hemiplegia; and it shows us that such a procedure is accompanied by the very greatest risk, and should only be done in the absence of any other possible method of meeting the circumstances of the case. Against this statement of course may be instanced the fact that in Case XII I ligatured the internal carotid artery for hæmorrhage without any such result, but in that instance the artery had been compressed in the midst of cicatricial tissue for some months, and was very much diminished in calibre, and by that time

no doubt the cerebral circulation had sufficiently adapted itself to the small amount of blood brought by it, and its ligation did not produce any serious effect.

CASE XI. Epithelioma of the Left Tonsil, Pillars of the Fauces and Soft Palate, spreading on to and involving the Lower Jaw at the Posterior Part; a Mass of Glands in the Anterior Triangle of the Neck.—Male, aged 55, sent by Dr. Harvey. Patient first noticed tenderness in his throat and gums about six weeks before admission, and very shortly afterwards a swelling appeared in the neck. There was a mass of considerable size at the posterior part of the left anterior triangle, and extending under the sterno-mastoid; this mass was very fixed. On looking into the mouth an ulcer with hard edges and warty surface was seen on the left tonsil, reaching and firmly adherent to the alveolar border of the lower jaw, spreading into the soft palate, and to a slight extent to the gum of the upper jaw; it also reached the floor of the mouth, but had not yet affected the tongue.

As the disease was extensive and the patient somewhat weak, and as I also had to leave town for a few days, I thought it would be better to divide the operation into two stages, removing the glandular mass in the first instance, and then subsequently the disease in the mouth. Accordingly on July 16th, 1895, I removed the glands along with the internal jugular vein, the external carotid artery and its upper branches, the hypoglossal nerve, the digastric and stylo-hyoid muscles (which were all involved), and all the fat and glands under the sterno-mastoid muscle. As the wound was an aseptic one, I had no anxiety about the matter, and the patient had no bad symptom.

On July 24th I proceeded to the second part of the operation, namely, the removal of the mass in the throat. After opening the trachea, the upper part of the first incision, which had healed, was opened up, and a fresh cut was carried forward from it in a curved manner over the submaxillary region, and the submaxillary gland with some enlarged lymphatic glands adhering to it was removed. This flap of skin, together with the masseter muscle, was then turned upwards, and the jaw sawn through in front of and behind the affected part. The interior of the throat could now be well seen, and an incision was made around the growth and it was removed, the pterygoid process being clipped off and taken along with the mass.

As a week had elapsed since the ligation of the external carotid artery, I was very much afraid that anastomotic circulation would have been re-established in the part, and that there would be great trouble from oozing. To my surprise, with the exception of the skin incision, which bled pretty freely, there was no more bleeding from the deeper parts than if the external carotid artery had just been tied. The wound was packed with cyanide gauze powdered with iodoform, and the greater part of the skin incision was stitched up, room being left at the lower part for the subsequent insertion of a drainage tube.

The patient went on very well without any febrile symptoms, and he was fed for about a fortnight with the stomach tube, passed when necessary. At the end of that time he began to swallow, and was soon able to take sufficient fluid nourishment. He was discharged towards the end of August in very good health. In the beginning of October, however, it was found that there was an excavated ulcer in the middle of the scar opposite the part where the angle of the jaw had previously been. Examination of scrapings from the interior of the ulcer showed numerous epithelial cells, and its margins were hard. It was therefore evidently a recurrence. The patient was accordingly readmitted to the hospital on October 7th.

CASE XII. Second Operation.—His condition on admission was that he had this hard nodule in the mouth. The greater part of it was ulcerated and the other parts were apparently sound. On October 9th, 1895, the following operation was performed: A curved incision was made from just in front of the ear forwards for about 4 inches, following the anterior border of the lower jaw. A considerable portion of skin above this incision, which was somewhat adherent, was removed. The cheek was split from the angle of the mouth to meet the former incision, and the whole of the upper part was dissected up, the edges of the wound being well separated, when the recurrence was seen to be much more extensive than was supposed. It involved the masseter and internal pterygoid muscles, and also the ascending ramus of the lower jaw. This portion of the jaw was disarticulated and removed, and the whole of the masseter and internal pterygoid muscles, part of the pterygoid plates, and as much of the scar tissue as possible, was taken away. As I was not quite certain with regard to the scar tissue whether I had quite got all the disease, I applied nitric acid to the raw surface; the wound was stuffed, a large gap being left; no attempt at a plastic operation was at that time made. No tracheotomy.

The patient was a good deal collapsed after the operation, but recovered and went on very well till the ninth day, when bleeding occurred from the wound, and on investigation it was seen to come from the internal carotid artery, which was lying free on the surface of the wound. The artery was tied above and below, and divided. No symptoms of paralysis followed the ligation of the artery, and the patient went on very well. He was fed with a stomach tube, it being impossible for him to swallow on account of the large opening in his cheek. The greater part of the wound having healed, the hole in the cheek was filled up by a plastic operation on November 20th, 1895, the edges being pared and a large flap of skin being brought over from the back of the neck. In three or four days he was able to swallow very well, and he was discharged on December 11th. When last seen there was no recurrence.

PRESENTATIONS.—Dr. Dobie, of Chester, has been presented with his portrait in oils, painted by Mr. W. Oules, R.A. The presentation was made by the Duke of Westminster.—Dr. Jackman, of Dunmore, has been presented with a testimonial in the shape of a purse of sovereigns subscribed for by his friends in the Woodstown Dispensary District.—Dr. F. W. Friend, late of Douglas and now of Liverpool, has been presented with a handsome illuminated address and a dinner service of silver plate subscribed for by a large number of his former patients and friends in Douglas.