

cases special attention was paid to the general health of the patient. In the tertiary and in some of the rupial cases the iodides of sodium and ammonium were used. All cases on being discharged from the wards were advised to undergo a further and prolonged course of the usual treatment in the out-patient department of the hospital. The cases are classified in the accompanying table as (1) primary and secondary lesions; (2) secondary lesions; (3) rupia; (4) tertiary lesions; and (5) cases not classified.

The patients whose cases I have described received their treatment in the wards of Mr. J. Ernest Lane and I have to thank him for his kind permission to publish the notes of the cases.

Colchester.

A CASE OF INTRINSIC CANCER OF THE LARYNX; TOTAL LARYNGECTOMY; RECOVERY.

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A MAN, aged 57 years, single, consulted me on Oct. 11th, 1898, complaining of pain in the throat, accompanied by loss of voice and difficulty of swallowing of five months' duration. The history of the case was as follows. The patient who is a fine, muscular, healthy-looking man complained in March, 1898, of gradual failure of voice unaccompanied by pain. In June he complained of a constant dull aching pain which was at times intensified but was always strictly localised in the larynx. About this time the failure of phonation was complete and a month later dysphagia was a marked symptom. He had also very distressing dyspnoea on exertion, but this symptom, together with a violent paroxysmal cough which was induced by swallowing liquids or solids, did not trouble him until shortly before he consulted me. While under my observation he began to expectorate after his attacks of coughing a small quantity of thick glairy mucous stained with bright blood which on microscopical examination gave no indication of the grave nature of his complaint. He was slowly losing flesh. On making a laryngoscopic examination when I first saw him the cords were seen to be fairly mobile and somewhat congested but no nodule was present; this, together with his complaint of a constant sense of dryness in the throat, made me somewhat doubtful about diagnosing what his other symptoms decidedly suggested—viz., malignant disease of the larynx. A fortnight later on again examining the cords a small pearly white nodule was seen in the middle of the right cord, while in a corresponding position on the other cord a smaller nodule was just discernible. The cords, which were markedly hyperæmic, were not so mobile as when seen on the previous occasion, the right cord being the more fixed. His symptoms meanwhile had been progressively growing worse, particularly the dyspnoea, which was most distressing on the slightest exertion. He had lost more flesh and was very anæmic. There was a total absence of any sign of glandular involvement and the larynx was freely moveable. There was no venereal history. His mother had died from malignant disease of the rectum. The diagnosis was now quite simple and, having informed him of the grave nature of his disease, of the only treatment at all likely to benefit him, and of the tremendous risk of the operation as shown by the statistics quoted by Jacobson and others, he elected after some consideration to have it performed. Before proceeding with an operation of such gravity as laryngectomy I submitted the case to my friend and former teacher, Professor Arnison, who quite confirmed my views.

The operation of tracheotomy and exploration was performed on Nov. 6th. Dr. W. D. Arnison administered chloroform and with the assistance of Professor Arnison who had kindly offered to help, I made an incision in the median line about half an inch above the upper border of the sternum right down to the trachea which was seized and pulled up. After opening the wind-pipe a Trendelenburg's tampon-tube was inserted and the tampon was freely inflated. The incision was carried upwards to the level of the hyoid bone and was deepened until the larynx was well exposed. An incision

was made into the crico-thyroid membrane and the thyroid, which was considerably calcified, was snipped through with a stout pair of scissors. On drawing asunder the halves of the thyroid the growth was seen to be more extensive than had been at first supposed. It was seen to involve the whole larynx and to extend downwards for some distance. To ascertain its exact extent the cricoid cartilage and the upper three rings of the trachea were snipped through, in the course of which the isthmus of the thyroid glands was divided, but with very little hæmorrhage. The extensive origin of the growth was then clearly visible. The disease was seen to be more extensive on the right side, extending as a somewhat flat, dark-red, irregularly granular mass of very friable consistence from the whole of the under surface and part of the margin of the right cord across the upper part of the crico-thyroid membrane to the posterior portion of the left cartilage and cord; below it implicated the whole of the right and posterior surfaces of the cricoid and also the upper two rings of the trachea on the right side only, where the growth was very prominent, and projected into the lumen of the tube for about three-eighths of an inch, causing some occlusion. At this stage, as the patient's breathing which was not at any period of the operation very good became rather critical and as he showed marked symptoms of collapse, it was deemed advisable, seeing that nothing but total extirpation could afford any hope of benefit, to postpone further interference. The wound was then closed with superficial silkworm gut sutures and was dressed and the patient was put to bed. Steam impregnated with oil of eucalyptus was sprayed over the wound and hot flat sponges were applied continuously till the more serious operation. Trendelenburg's tampon-tube which was left in the trachea was replaced in 24 hours by an ordinary Durham's tube. On being put to bed the patient speedily responded to stimulative treatment and the improvement in his general condition was most marked. So greatly had the tracheotomy relieved the dyspnoea and the cough that he was enabled to sleep for several hours every night and to partake of nourishment by the mouth without inconvenience. The exploratory wound healed up well and there was an entire absence of chest complications.

On Nov. 17th the operation of total laryngectomy was performed. Dr. W. D. Arnison administered chloroform and Mr. N. C. Bailes and Mr. T. S. Parkinson assisted. I reinserted Trendelenburg's tampon-tube into the trachea and freely dilated the tampon. The exploratory incision was then reopened and another incision was carried outwards at right angles to this for three inches on either side at the level of the lower border of the thyroid cartilage. This incision was deepened, no muscle other than the platysma being divided until the larynx could with the aid of retractors be freely exposed. An incision in the middle line was then made and the larynx was re-opened, a couple of small sponges secured by silk and artery forceps being packed above the tampon. The perichondrium and its muscular attachments were then carefully dissected off in front and laterally with a raspator, the *alæ* were separated from their connexions, and the thyro-hyoid membrane was cut through together with the thyro-epiglottidean and the aryteno-epiglottidean folds. The epiglottis was left moored by its hyo-epiglottidean fold. The cricoid was detached from the trachea, through the sides of which silk sutures were passed and held in position by artery forceps. Having carefully cleared the cricoid in front and laterally it was seized by a pair of vulsellum forceps and pulled forwards and upwards while it was carefully separated from the œsophagus. The dissection was continued upwards till the cricoid was freed, then the two cartilages were removed, not quite *en masse*, for owing to the calcification they were very brittle and they constantly broke in the grip of the forceps. As the first two rings in the trachea were considerably diseased, which was afterwards fully confirmed microscopically, the upper three rings were next removed. The hæmorrhage, which was never excessive, was easily controlled; indeed, no vessels were tied and only four vessels required twisting. The loose tissues in front of the exposed part of the œsophagus were then freely dissected off until the muscular fibres of that tube were clearly visible. All oozing was arrested by free mopping with hot carbolic lotion of one in 60. The cavity was next sprayed out with listerine and then with a little iodoform. The trachea being secured by a couple of silk sutures passed through each side of the severed end and brought through the skin at a

higher level, a small pad of iodoform gauze was interposed between the inner surface of the trachea and the silk sutures on both sides. The lateral incisions were closed with silk-worm gut and the cavity was well packed with Seabury's iodoform gauze, especially round the top of the tampon; the wound was then expeditiously dressed and the patient was put to bed again, the operation having lasted only one hour and 10 minutes. The condition of the patient being one of extreme collapse, 12 minims of solution of strychnia were injected subcutaneously, hot-water bottles were liberally applied, and an enema of two ounces of brandy and four ounces of strong black coffee was thrown up the rectum and was repeated in half an hour, and in an hour's time the great collapse symptoms had somewhat responded to the stimulation. I might state that in cleaning the front of the œsophagus I inserted a bougie almost to the cardiac orifice of the stomach in order to avoid button-holing.

After-treatment and progress.—A bronchitis kettle the steam of which was impregnated with oil of eucalyptus was kept boiling by the bedside and the tube was covered with hot flat sponges for a fortnight. Six hours after the operation the patient swallowed iced water without any inconvenience and there was a remarkable freedom from pain. Nutrient and stimulative enemata were given every four hours until the gut became intolerant. On Nov. 18th the sputum was quite normal and the cough was by no means troublesome. The patient swallowed semi-solid food without any inconvenience. The temperature was 98·4° F. His condition was well maintained on the 19th, when the sputum was somewhat blood-stained and purulent but not copious. There was some slight pain in the wound. The superficial dressings were changed and a bougie was passed from the wound into the mouth. On the 20th there was no change. All the dressings were renewed and the cavity was repacked. The cough was not very troublesome. On the 21st the sputum was somewhat offensive, purulent, and copious, and the cough was rather troublesome, but there was no pain. The wound was redressed and the tracheotomy tube was moved from the tracheal incision to the severed end of that organ. On the 22nd the sputum was less offensive and less purulent but it was still copious. The general condition of the patient was good. This condition was well maintained on the 23rd, when the sputum was much improved. Nearly all the sloughs had now separated from the walls of the cavity. This improvement continued on the 24th, 25th, and 26th. On the 27th the condition was excellent. All sloughs had separated and the patient sat up in bed for an hour and this improved condition was well maintained on the 28th. On the 29th the cough, possibly owing to saliva and food passing through the pharyngeal fistula, was very troublesome. The dressings had to be frequently changed on this account, as they quickly became soaked. The patient's condition, however, was excellent, and he got up and had exercise in his room. On the 30th he partook of mutton cutlets, swallowing solids with more comfort than liquids. On Dec. 1st there was continued improvement. The wound was perfectly healthy, and the patient was put on ordinary diet, and this improved condition was well maintained on the 2nd and 3rd. On the 4th the patient himself changed his tube and packed the cavity. He also passed the œsophageal bougie from the wound to the mouth without discomfort or inconvenience. On the 5th the patient went downstairs. He could now dress the wound and change the tube with perfect ease, and this improvement was maintained on the 6th. On the 7th he took walking exercise in the open air for about an hour and he swallowed solids and liquids without any portion passing through the pharyngeal fistula. The patient returned to Leeds alone on the 10th with an ordinary tracheotomy tube *in situ*, and taking with him a bougie which he was instructed to pass four times a day from the pharyngeal fistula to his mouth. An attempt at fitting Stewart's artificial larynx proved unsatisfactory owing to the unsuitable nature of the instrument for this case. On the 17th the patient found that the rapid contraction of the pharyngeal orifice entirely interfered with the passage of the bougie and he therefore returned to Newcastle. When I saw him the pharyngeal fistula would barely admit of the passage of a knitting needle. Dilatation was gradually produced by passing fine urethral bougies until the orifice permitted of the insertion of a small-sized sponge tent which was left in for three hours and replaced by larger ones, after which further contraction was kept in check by the passage

of full-sized urethral bougies four times a day, and on the 26th I fitted in a Guessenbauer's artificial larynx, made by Hawksley of London, in which the curves of both tubes were somewhat more pronounced than in Guessenbauer's diagram, and although it was the same length as the original an extra vertebra was added to the pharyngeal tube. The patient naturally suffered from considerable pain and inconvenience at first, but in the course of an hour the organs became more tolerant. With the reed inserted he could speak remarkably well in a loud, clear, well-voiced monotone distinctly audible at 20 yards, and when the cap was in his loud whisper could be heard 15 yards away. The irritation brought about by the apparatus caused much coughing and the reed soon became blocked. He was, however, sent to his abode in the town with the apparatus, minus the reed, in the wound. On the following day he pronounced the instrument unbearable and complained of difficulty in swallowing which he attributed to the pharyngeal tube being too long. On laryngoscopic examination the upper end of the pharyngeal tube could not be seen but the epiglottis was visible and apparently functionless. Another cause of complaint was that saliva, &c., were continually passing through the fistula, due perhaps to his not getting the obturator pushed well home. On removing the obturator and replacing it by either the reed or the cap violent coughing was very frequently induced by saliva passing into the trachea and the reed would thus speedily become blocked. The instrument was removed and was sent to a local silversmith to have certain alterations made. The artificial larynx was re-inserted after having undergone the following alterations: (1) the pharyngeal tube and the stem of the obturator were shortened for three-eighths of an inch; (2) the free end of the tracheal tube was somewhat bevelled; (3) the front plate was altered so as to present a convex instead of a plane surface to the wound (in fact, it was made identically like the front plate in Sankey's dilating tracheotomy tube); (4) the key which locked the obturator was so altered that on making half a turn more it also locked the cap and the obturator, the failure to do which indicated to the patient that he had not got them properly inserted; (5) the cap, on account of its small size, its greater frequency in use than the reed or obturator, and its liability to get lost, was secured to the front plate by a very fine silver chain; and (6) the sides of the front plate where the strings were attached were turned well forward—in fact, almost to a right angle with the plate. The object of the last-mentioned alteration was to enable the patient to fix the tracheal tube more firmly during the insertion of either the pharyngeal tube or any of the constituent parts of the instrument and consequently to lessen the irritation of the trachea by backward pressure which had been previously the cause of much distressing coughing. The pain and inconvenience were still present, but in a less degree, and swallowing was not nearly so difficult as before. After leaving the instrument in for a little time the patient became remarkably tolerant of its presence although the frequency with which the reed became blocked at first was a source of some annoyance; but this occurred less with the improvement in the coughing as soon as tolerance became established. The patient although somewhat shy of his new monotonous voice gave a recitation lasting 10 minutes just before his return home. He returned to Leeds that evening with the instrument in, having previously introduced and withdrawn it several times unaided to my complete satisfaction. Up to the time of writing the patient still complained of some discomfort and also of apparent inefficiency of the obturator in preventing saliva, &c., occasionally trickling down into the trachea. This, I consider, will eventually be overcome by the epiglottis adapting itself to the new condition.

The course of the temperature was as follows. The highest level reached was on the second day after the tracheotomy, when it was 101° F. On the day of extirpation the morning and evening temperatures were respectively 97·8° and 98·2°. On the fourth day after the extirpation (Nov. 21st) the temperature rose to 100·2°. On the evening of the 23rd it was 99·8°, but after that date it varied from 97·6° to 98·6°.

As to the microscopical appearances, on cutting and mounting sections which had been stained in bulk by the picro-carminic method the growth was seen to present the following conditions. A dense layer of squamous epithelial cells bounded the tracheal surface of the

growth, the most superficial of which having taken the stain very indifferently were rather indistinct. From the deep surface of this prolongations were to be seen here and there dipping into the subjacent tissues. In a dense stroma of new connective tissue in which there were marked cellular infiltration and nuclear proliferation numerous squamous nests of various sizes were seen. These were most abundant towards the free surface of the growth, diminishing markedly in number when followed outwards.

If I may be pardoned for presuming to offer suggestions founded on the experience of one case only I would like to make the following observations. 1. The advantage of an interval of time between the tracheotomy and the more serious operation which in this case at least was most marked, cannot be over-estimated. Not only by affording almost complete relief to the dyspnoea and to a less degree to the cough did it effect a profound improvement in the patient's general condition, but also by dividing the shock, as it were, it gave the patient time to rally under immensely improved conditions. The breathing, too, under the anæsthetic on the second occasion when tolerance to the tube had been established was much more satisfactory. 2. Seeing that this is an operation *par excellence* where time is of the utmost importance it is difficult to understand why in most of the recorded cases the operator has usually selected a Hahn's sponge tampon which necessitates a delay of 15 minutes for its dilatation. On this account and because Trendelenburg's tube which can be immediately dilated lends itself far more readily to asepsis than does Hahn's I very much prefer the dilating tampon-tube. 3. The extensive nature of the growth in this case with the entire absence of glandular involvement would seem to support Semon's view of the isolation of the laryngeal lymphatics, but unfortunately Sappey's anatomical investigations, which have entirely disproved that eminent laryngoscopist's contention, compel one to admit that the question yet awaits a satisfactory solution. 4. The ease with which deglutition was performed almost immediately after consciousness had been regained, the non-necessity for Symond's tubes, and the entire absence of anything like the alarming hæmorrhage which is often encountered in these cases and which in this case might have been excessive, as the patient had a short, stout, muscular neck, I attribute entirely to the adoption of the method suggested by Mr. Henry Morris of freeing the perichondrium and its attachments with a raspatory and avoiding the severance of any muscular structure other than the platysma. 5. The very low tracheotomy which was done in spite of Guessenbauer's contention to the contrary with a view to secure more ample working space was afterwards justified by the extensive nature of the growth. 6. Seeing that in cases of malignant disease of the larynx attempts at sampling the growth by intra-laryngeal snaring frequently prove abortive and moreover often stimulate growth, I consider thyrotomy to be infinitely preferable and that it ought to be performed in doubtful cases, as by this means the extent and nature of the disease are accurately determined and treatment can, if consent be previously obtained, be carried into effect immediately.

In conclusion, I beg to acknowledge the kind services of Mr. T. P. Parkinson who examined the growth microscopically and to thank Mr. N. C. Bailes for the preparation of the notes on this case. To nurses Duckett and Ranson I am also much indebted for their kind and skilful attention to the patient which contributed in no small degree to the success of the case.

Newcastle-on-Tyne.

PARTURITION FOLLOWED BY A BRAIN LESION INVOLVING THE SPEECH AND CERTAIN MOTOR CENTRES.

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ON August 25th, 1898, I was called at 5 A.M. to a multipara, aged 36 years, who was stated by the messenger to have just been delivered of a child and to be in a grave condition. I arrived at the house at 5.15 A.M., where I found the following state of affairs. The patient, a stout, big-built woman, was lying on her left side "huddled up" and

obviously in a state of collapse. The extremities were cold, the face and lips were blanched, the pulse was imperceptible at the wrist, and on being spoken to the patient responded only by an inarticulate mutter, but she knew that she had someone demanding an answer from her. I immediately examined the uterus and the bed in spite of the midwife's assertion (a perfectly correct one) that there had been no post-partum hæmorrhage. The uterus was firmly contracted, giving the usual cricket-ball sensation upon palpation per abdomen, and there was no such amount of blood upon the bed as would indicate a profuse hæmorrhage. The midwife (the patient's own sister) then gave the following account of what had happened before my arrival. The child, a healthy male, had been born without trouble two hours previously, the placenta following shortly in a natural manner, and the patient herself had been in a condition to call for no alarm until half an hour previously to my arrival. She had then suddenly become restless for a few moments, throwing her limbs about, and she was blanched and unable to be roused and could not be got to speak rationally. The possibility of a pulmonary embolism was the first thing that suggested itself to my mind, the notion of post-partum hæmorrhage being now excluded. The collapse was extreme and I set about trying to rally the patient before attempting any further diagnosis at all. She was lifted in the bed and the whole of the wet and blood-stained bed-clothing was removed, and then she was wrapped in warm blankets and packed all round with hot bottles. I gave her a stiff tumblerful of hot brandy-and-water by the mouth, the swallowing movements being perfectly coördinated although she remained quite apathetic to anything that was being done for her and made no attempt to help herself in any way. I now made some friction over the heart and in a short time had the satisfaction of perceiving that the beats were improving in force and lessening in frequency. The breathing also, which had been rapid and shallow in character, slowed down a little and became deeper *pari passu*. Some improvement being maintained by the continued application of warmth and friction I examined the chest and discovered nothing abnormal with the breath sounds. The apex beat was not to be felt upon the chest wall. On auscultation of the heart sounds a distinct systolic murmur was plainly audible over the second right intercostal cartilage, diminishing rapidly in audibility when traced downwards and outwards towards the ordinary site of the apical beat. No murmur was apparent in the pulmonary area, but the second sound in both aortic and pulmonary area appeared to me to be blurred in distinctness, but in neither position could I discover any reduplication of that sound. On careful continuance of auscultation over the aortic area I found that I could certainly separate the murmur from the true bruit of the systole—that the two sounds (the systole and the murmur) were distinct from one another although occurring simultaneously. And this view was borne out by the general state of the patient who although the murmur was constant presented no signs of any incompetence in the performance of the valvular office at the aortic orifice. I diagnosed a chronic endocarditis of the surface of the valves, one affecting the surface and interfering in no way with the apposition of the edges of the lunulæ, and concluded that as the result of the exertion of parturition a vegetation mass had become detached and was impacted as an embolus in the brain. The further progress of the case strengthened this view, for it soon became apparent that there was loss of power down the whole of the right side of the body. There was no facial paralysis, the most noticeable thing about the face being the totally vacuous expression, especially in the eyes, which rolled aimlessly about at intervals and when at rest gave the impression of entire apathy to surrounding objects. The patient made no voluntary effort to speak nor could any answer in speech be obtained from her until between 9 A.M. and 10 A.M. (four or five hours after the seizure), when she commenced to mutter to herself one particular sound. The first answer obtained from her at all was in response to the question, asked somewhat loudly and sharply after repeated failures to elicit reply, "Do you feel better?" She said shortly and distinctly, "Better," and then she began to mutter at intervals the same sound or word (it was not distinguishable as any ordinary word) as she had first been doing. I remained with her, and as the day wore on it became apparent that she was wishing now and then to speak but was unable to get beyond the inarticulate mutter, until in the afternoon, when asked by myself, "Who am I?" [no answer] "Am I the doctor?" she gave an affirmative