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SUCCESSFUL REMOVAL OF A LARGE GOITRE,

WITH REMARKS.

BY

EDWARD JESSOP AND JAMES BERRY.

The patient, John W., was sent to the Cottage Hospital, Retford, in the middle of February 1888. He was 27 years of age, and had had an enlargement of the neck, at any rate, as long as he could remember, but it occasioned him no inconvenience until seven years ago. Since then, however, the tumour had been gradually getting larger, especially during the last twelve months, and for the last seven months he had been quite incapacitated from doing any work.

The tumour, depicted in the photograph (fig. 1), consisted of an enlargement of both lobes of the thyroid body joined together by a somewhat narrow isthmus. The enlargement of the left lobe was about the size of a large Jersey pear, constricted round the centre, the long axis running from the lobe of the ear to the sterno-clavicular articulation. It had a smooth though somewhat lobulated surface; it was soft and elastic in some places, firm and unyielding in others, and gave the impression of being composed partly of cysts and partly of solid nodules. The right lobe was smaller and rounder, and about the size of a man's fist, and presented the same characteristics as the left.

The patient's difficulty of breathing was so great that he was in constant dread of suffocation; he could walk only at a very slow pace on account of the dyspnœa. He had considerable dysphagia, frequently having to stop eating in the middle of a meal, especially when taking solid food. He also complained a good deal of pain in the neck, which appeared to be due chiefly to the size and weight of the tumour. He was seized with dizziness when stooping in the slightest degree. He was unable to lie down, having always to sleep in the semi-recumbent position. The dyspnœa was much aggravated by a close

or foggy atmosphere. He was quite incapacitated for work of any kind. These symptoms caused so much mental depression that he was at one time on the verge of committing suicide.

At the end of February a hypodermic needle was inserted into the lower part of the left tumour, and a syringeful of a dark-brown fluid was drawn off, in which floated a number of cholesterin crystals. For six weeks iodide of potassium was tried, without any beneficial effect; consequently, at the patient's urgent request, it was decided to remove the left or larger lobe.

The operation took place in the Retford Cottage Hospital on the morning of April 15th, 1888. On the previous evening the neck had been thoroughly washed, and a carbolic dressing applied, which was kept on until the time of the operation. Throughout the operation antiseptic precautions were rigidly adopted. No spray was used. Cotton-wool sponges were soaked overnight in 1 in 20 carbolic solution; these were transferred to plain water just before the operation, and no other sponges were used. A single oblique incision nearly eight inches in length was made along the long axis of the tumour, and the expanded and thinned infra-hyoid muscles and various layers of fascia were then divided, a few vessels being clamped or tied. The front of the tumour was now exposed; its surface was mapped out with large veins, which were plainly seen ramifying beneath the delicate capsule. Great care was taken to avoid opening the capsule in front or wounding any of these veins. The various vessels entering or leaving the tumour above, below, and at the sides were carefully exposed and isolated, then tied, one by one, in two places with a catgut ligature and divided between. The superior thyroid vessels were tied at an early stage of the operation separately; both were much enlarged, being about the size of an ordinary cedar pencil. The three largest veins ligatured were the superior thyroid at the upper border of the tumour and two others below at the inner and outer borders respectively. The internal jugular vein lay spread out upon the outer side of the tumour, and had to be carefully separated from it. The mass was then turned over to the right side, and the various branches of the inferior thyroid artery were tied close to the tumour, the main trunk being not even seen. Care was taken whilst dissecting at the back to avoid the recurrent laryngeal nerve, which, however, was not seen at all. The connections on the inner side were now attacked, and this proved to be the most troublesome part of the operation, as there were so many small vessels, each of which had to be ligatured before being divided. One or two of these

vessels bled before being tied; none of the others did so. The isthmus proved to be a very narrow one, being only as thick as the little finger, and no hæmorrhage sufficient to require a ligature occurred from its cut surface. There were some vessels, however, in front and on the upper border of the isthmus. The tumour having been removed, a very large cavity was left in the neck; this extended down into the thorax to more than an inch below the upper border of the clavicle. The carotid artery was seen in about four inches of its length. The trachea, larynx, and œsophagus were of course all freely exposed. The first-named of these was flattened, and the tumour was somewhat closely attached to it. The wound was not washed out with any lotion, but two cotton-wool sponges were left in it, until the stitches were inserted, and were withdrawn before tightening the sutures. The wound was sewed up after a method adopted by Dr. Girard of Berne. Half-a-dozen pieces of thin india-rubber drainage-tubing were cut about an inch long; one piece was fastened at the end of a long silk suture, and a deep stitch taken. Another piece of tube was then run along the silk, and laid parallel to the long axis of the wound, and another deep stitch taken, and another piece of tube run along the silk, and made to lie on this side of the wound; this was repeated until there were three pieces of drain-tube on each side of the wound, running parallel to its long axis, and acting as a sort of button suture. This brought the deeper parts of the wound thoroughly into contact. A piece of stout drainage-tube was now put through a separate opening near the lower angle of the wound, the edges of which were brought together by a continuous suture. The wound was dressed with eucalyptus gauze soaked in carbolic acid, care being taken to keep up pressure after the last sponge had been removed, so that no blood should collect, and the dressing was bandaged very tightly round the neck, the bandage forming a figure of 8 round the shoulders. The patient was well propped up in bed, and the head fixed with sandbags.

Our best thanks are due to Mr. Edgar Willett for the very skilful manner in which he administered chloroform, a matter of no small difficulty; the total amount of chloroform given only amounted to 15 drachms. The operation, from the commencement of the chloroform administration, lasted two hours and thirty minutes.

For the next twenty-four hours retching and sickness were very troublesome. The patient was allowed to take nothing but teaspoonfuls of iced milk and water; he was very restless during

this time. The temperature in the evening after the operation was 99°, and the pulse 92. The next morning the temperature was 100°, and the pulse 102; after this, the temperature was always normal, and the pulse never rose above 100. The dressings were left undisturbed until the third day (April 18), when the wound was dressed, *the drainage-tube and all sutures being removed*, as the wound was practically healed.

The relief afforded by the operation was marked. On the day following, the patient had a little pain in the neck and slight difficulty in swallowing. The respiratory trouble almost entirely disappeared at once. The pain and dysphagia passed off in a day or two. On the fourth day he was allowed to get up for a short time, and to have a little solid food. On the eighth day (April 23) all dressings were discontinued. The patient's condition on the tenth day after the operation is depicted in fig. 2; on the twelfth, in fig. 3.

After leaving the Hospital the enlargement of the right lobe continued to diminish; it then slowly increased in size to a certain extent, as is usual in such cases. But the relief has been so complete that he has ever since been able to do the hard work of a farm-labourer.[1]

Pathological appearance.—The tumour after removal weighed 18 ounces. It comprised the whole of the left half of the thyroid gland.[2] It proved to be an innocent multilocular cystic tumour with solid nodules of a fibro-adenomatous nature. Immediately under the capsule lay numerous large veins and arteries, many of the former being as thick as goose-quills. These veins in the specimen have been injected with coloured plaster-of-paris, the arteries with red, and the veins with blue. The surface of the mass was irregularly lobulated, presenting here and there an indistinct sense of fluctuation. On section, the appearances presented were those shown in fig. 4. The tumour has been laid open vertically from the front, and the two halves turned aside to show the interior. At the upper part is a tolerably firm, elastic, largely fibrous, solid nodule with a definite capsule. Below this are several large cysts with tough fibrous walls, each containing colloid matter mixed with blood. In some of the cysts the contents were nearly solid, and in others had the consistency of treacle. The cysts were separated

[1] Since my removal to Hampstead I have not had an opportunity of seeing the patient again, but I have recently (October 1889) heard by letter from him, and the improvement in his condition has been permanent.—E. J.

[2] The tumour, bisected, is preserved in the Museums of the Royal College of Surgeons (No. 2908, F.) and of St. Bartholomew's Hospital (No. 2310, c.); a cast of the patient's neck before operation is also in the latter Museum (No. 138, g.).

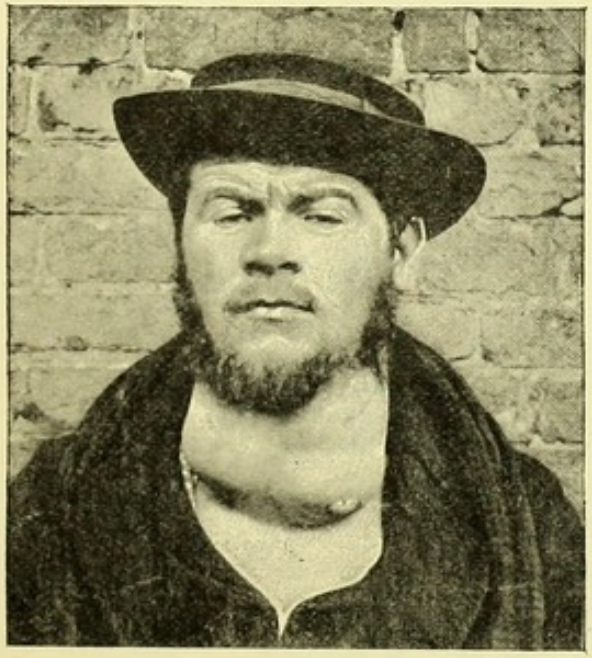

FIG. 1.

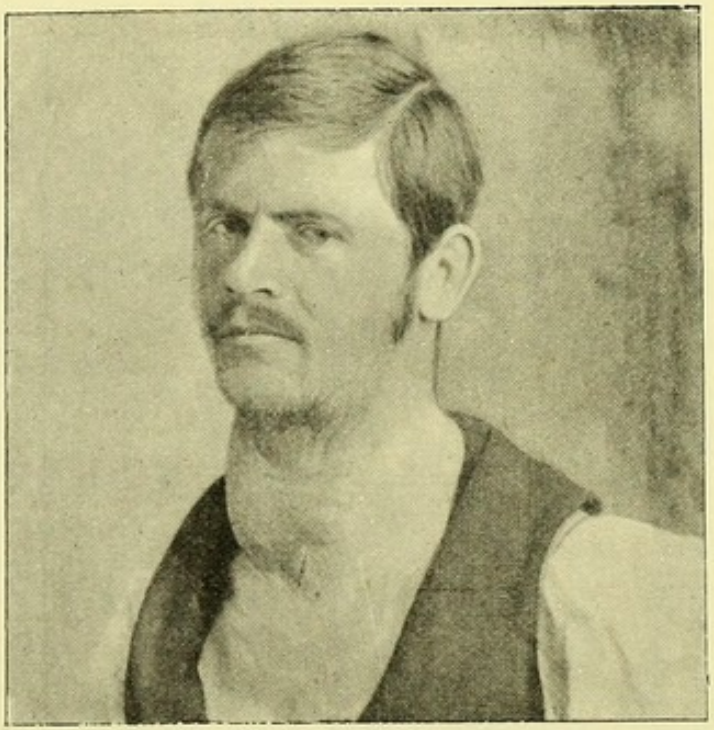

FIG. 2.

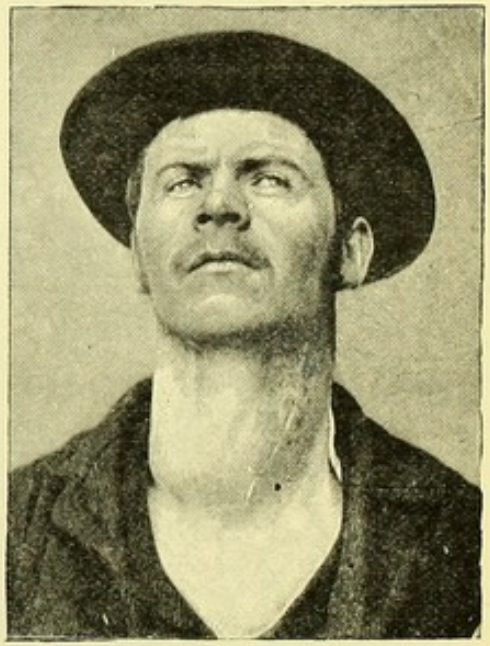

FIG. 3.

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from each other by tolerably well-marked septa of connective tissue, containing blood-vessels, all of which were much smaller

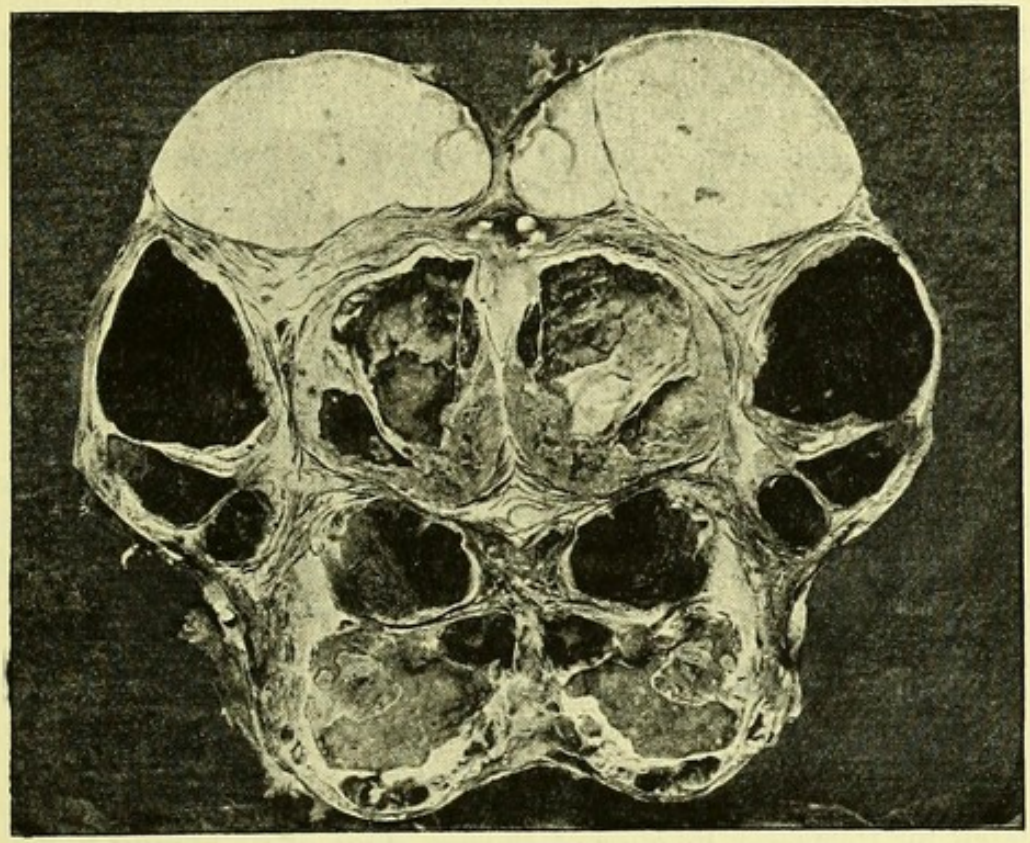

Fig. 4.

than those on the surface; at the lower part of the specimen the cysts are smaller, and the intervening connective tissue more abundant.

Remarks.

We venture to think that this case is worthy of publication, because it illustrates fairly well some of the troubles which may be caused by the presence of a large goitre; and also because it demonstrates several points in the details of the operation which we believe to be not without importance.

It is at once obvious, upon inspection of the tumour, that no operation short of excision could have been of benefit to this patient. The amount of solid tissue in the tumour and the toughness and hardness of the cyst-walls would alone have caused any injection, say of iodine or of perchloride of iron, to be useless, if not dangerous. Neither, for the same reason, was it the kind of goitre which could have been cured by internal remedies, by external applications, by division of the isthmus, nor by the recently revived operation of ligature of the thyroid arteries.

The whole of the left lobe of the gland was affected, not by a single tumour, but by a number of cysts and solid nodules. Consequently the operation of intra-glandular enucleation advocated by Socin of Basle would also, in our opinion, have been quite impracticable. The reasons which decided us to perform extirpation of a part or the whole of the left lobe were :—

That the patient was young, and that his general health was good.

That the tumour was causing him serious discomfort and inconvenience, to say nothing of danger to life on account of the interference with his breathing.

That the patient himself was extremely anxious that some operation should be undertaken ; he was quite willing to run a considerable risk in order to be relieved of his trouble.

That the prominence and mobility of the tumour were of such a degree that it seemed probable that the dissection would be more easily executed than is often the case ; as, for example, when the tumour is altogether very deeply seated, or is nearly immovable.

It is perhaps hardly necessary to add, that by removing one lobe only of the gland, we ran no risk of producing cachexia strumipriva (so-called myxœdema).

The operation was performed, in the main, upon the lines laid down by Professor Kocher of Berne. One of us having had the opportunity of witnessing several similar operations performed at Berne and at Geneva, we followed tolerably closely the method that was seen at those places.

The following are the chief steps in the operation to which we desire to draw attention :—

It is not necessary to do more than to allude to the antiseptic treatment of the neck during the twelve hours preceding the operation : the importance of this will be obvious to all.

We chose the straight incision parallel to the sterno-mastoid because it enables the subsequent suture of the wound to be effected somewhat more easily than does the angular incision originally recommended by Kocher ; with the latter incision the union at the angle of the wound is apt to be rather imperfect. Had the goitre been much larger, or had we anticipated much trouble in the removal of the tumour, we should probably have adopted the angular incision, as it would have given us rather more room. As it was, however, we found that the straight incision answered admirably.

As for the thin proper capsule of fascia which immediately surrounds the gland, we were careful to avoid opening it in front or at the outer side. Behind, where this fascia passes from

the gland to the posterior surface of the larynx and trachea, it was necessarily cut. The numerous large thin-walled vessels visible immediately beneath this were consequently not interfered with, and troublesome hæmorrhage was thus avoided. The various veins were tied at the points where they leave the edges of the tumour.

The position of the internal jugular vein is worthy of special notice. As is usually the case when the goitre is large, this vein lay spread out upon its outer side. Instead of bearing the normal relation to the carotid artery, that is, lying outside and slightly in front of it, it lay well in front of and *internal* to the artery. Consequently the pulsation of the artery in such cases is not a safe guide to the position of the vein.

We wish to lay stress upon this point, since we believe that it is mainly to ignorance of this altered relation of vein to artery that the not uncommon accident of a wound of the vein during extirpation of goitre is to be attributed. We believe that the explanation which Lücke gives of this abnormal relation is correct. The common carotid artery having no branches, is displaced outwards by the goitre; the internal jugular vein being attached by its branches to the front of the thyroid gland, cannot be displaced to an equal extent, and consequently comes to lie at first in front of, and then also internal to, the artery.

The superior thyroid vessels were tied without difficulty at the upper part of the tumour. The main trunk of the inferior thyroid artery, however, was not tied. In this respect our operation differed from that recommended by Kocher, who ties the main trunk just where it turns inwards towards the trachea. It seemed to us preferable to tie the branches close to the gland. As we had no trouble with hæmorrhage, we could see clearly what we were doing, and we ran no risk of wounding the recurrent laryngeal nerve.

The latter structure was avoided by keeping close to the posterior surface of the gland, especially when near the cricoid cartilage, where the nerve and the gland lie in close contact with each other.

In the treatment of the wound, we believe that it is best to abstain from washing it out with any carbolic or other irritating solution. All the sponges used during the operation had been previously thoroughly disinfected by soaking them for some hours in strong carbolic solution; they were wrung out and transferred to plain water just before being applied to the wound.

In relation to this matter we should like to mention an observation made to one of us three years ago by Professor Krön-

lein of Zurich. That surgeon had then performed extirpation of goitre in all twenty-four times: in the first nine cases the wound had been washed out with carbolic lotion, and he had lost four patients; he then gave up the use of carbolic acid, and in the subsequent fifteen cases no death had occurred.

The suture used for the wound was a modified form of continuous suture, first adopted, we believe, by Dr. Girard of Berne, and taught to us by him. It brings the deeper parts of the wound thoroughly into contact and facilitates union by first intention.

In applying the dressing, care was taken to make firm pressure upon the wound, and to fix the head and shoulders by bandages. Furthermore, the patient's head was fixed in bed by sandbags and pillows, and strict injunctions were given him that he should keep as quiet as possible for the first three or four days after the operation.

Some of the above points may perhaps seem to our readers almost trivial. We believe, nevertheless, that it is largely by attention to small details that primary union, which is all-important in these cases, is brought about.

In conclusion, we should like to refer to a paper[1] recently published by Professor Kocher, which has not, we think, attracted as much attention as it deserves. In this paper he gives statistics of the last 250 cases of extirpation of goitre performed by him in private and hospital practice at Berne.

Among these 250 cases there were only six deaths—a mortality of 2.4 per cent. But these 250 cases include twenty cases of malignant disease, and five of exophthalmic goitre. Excluding these, *there were only two deaths among the remaining* 225 *cases*—a mortality of 0.8 per cent.

More than this, of the two cases which ended fatally, one was a man who had postponed the operation so long that on his way to the hospital he had an attack of suffocative dyspnœa, and was admitted in a state of insensibility. In the other case, it is probable that the death was due more to the ether employed during the operation than to the operation itself, since a bad preparation was by accident used, and several other cases of poisoning from the use of the same ether had occurred in the hospital about the same time.

And yet these 225 cases included operations upon patients of all ages, some having large goitres, some having goitres lying partly behind the sternum, some having severe dyspnœa. Truly, it seems almost justifiable to say that, in the hands of Professor Kocher, the operation for removal of goitre is almost free from danger.

[1] Correspondenz Blatt. für Schwerz. Aerzte., January 1889.