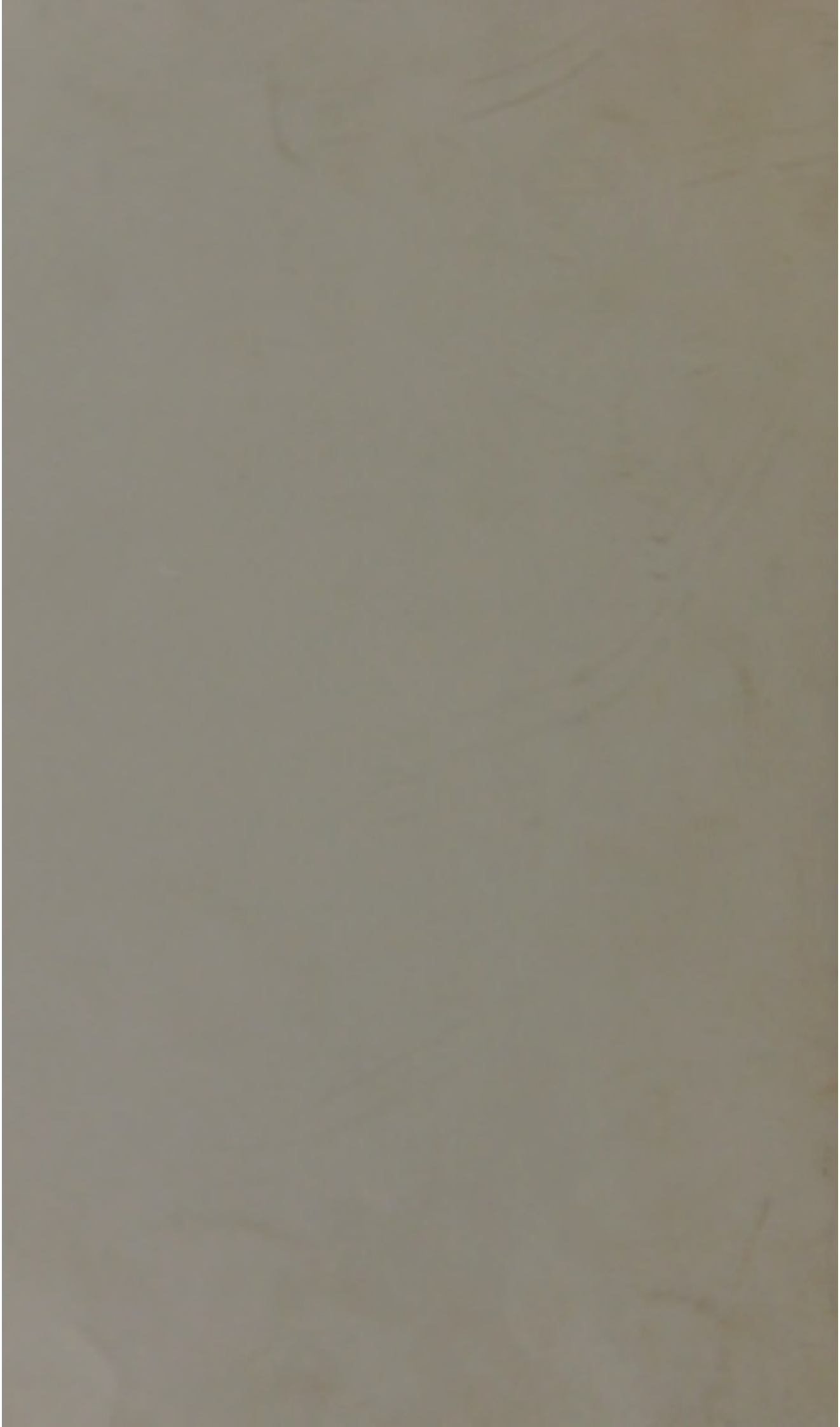
Case of carotid aneurism / by James Duncan.



CASE
OF
CAROTID ANEURISM.

By JAMES DUNCAN, M. D.,
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(From the Edin. Med. and Surg. Journal, No. 160.)

Elizabeth Haugh, aged 30, unmarried. Admitted into Ward No. 1. of the Surgical Hospital, December 19, 1843.

This patient was placed under my care by my friend, Mr Gilchrist of Leith, who has kindly furnished me with the early history of the case.

She was, by her own and her mother's statement, about 30 years of age; but she looked much older, and had the appearance of a person who had led an irregular life. In her early years she had been in domestic service, but for some time previously to her coming under Mr Gilchrist's care, she had been working in a herring-curer's yard,—an employment in which she was much exposed to cold and wet. Like most of those engaged in the same occupation, she considered the use of ardent spirits indispensable, —drank whisky as often as occasion offered, and also, according to Mr Gilchrist, under favourable circumstances, frequently allowed her indulgence to run into excess. As might have been expected, this irregular mode of life told considerably upon her,—her complexion was bloated, her person flabby, and her whole appearance indicated a depraved state of the constitution.

From several circumstances, ascertained by Mr Gilchrist in his examination of the patient, he was led to infer that, some years previously, she had laboured under some form of syphilis, and likewise, that mercury had been exhibited at that time so as to produce salivation.

She was first seen by Mr Gilchrist on the 21st October last, in consequence of an attack of the epidemic fever. The attack was not characterized by more than usual severity, but the subsequent articular and rheumatic pains were exceedingly troublesome.

Subsequently to this she had a bronchitic attack, but of no great severity, as it yielded speedily to a simple opiate tincture.

She was casually seen by Mr Gilchrist on the 7th December, and she then spoke of a small swelling which had been accidentally discovered two or three days previously, below the angle of the jaw on the right side.

The patient herself spoke lightly of the tumour, regarding it merely as an enlarged gland, and Mr Gilchrist being at the time hurried made no examination. On his calling, however, two days afterwards, about some pauper certificate, she informed him that the tumour had become much larger, and that she thought it must soon burst. Mr Gilchrist now examined it, and immediately ascertained the true nature of the case.

The swelling was situated below the angle of the jaw on the right side, and was somewhat elliptical in form. Its longest diameter, the vertical one, measured about two inches, and its shortest, the transverse, an inch and a-half. It was uniformly smooth on its surface, soft, and easily compressible. When firmly grasped, a pulsation synchronous with that at the wrist, and accompanied with a peculiar thrill, was perceptible over the whole mass; but the thrill was more particularly felt towards its posterior part.

The sac could be emptied of its contents by slight pressure, and was rapidly refilled when the pressure was removed.

When pressure was applied in this manner, the patient complained of a disagreeable throbbing in the temples; or, as she described it, the pressure had the effect of "putting the pulse into the head."

Having thus ascertained the disease, Mr Gilchrist explained to the patient the nature of the case, urged her to submit to the operation for ligature of the artery, and tried to impress upon her the danger of delay. To this, after some days' hesitation, she consented, and was sent to the hospital on the 19th of December, fifteen days after the appearance of the tumour, or, I should perhaps rather say, its discovery by the woman.

During the short period which had elapsed between the date when the tumour was first examined by Mr Gilchrist and the patient's admission into the hospital, it had increased considerably. Its measurements at the time of admission were as follows: $4\frac{3}{4}$ inches vertically; 6 transversely; $4\frac{1}{3}$ at base; $3\frac{3}{4}$ from base towards chin; $16\frac{1}{2}$ in circumference. The tumour occupied the greater part of the right side of the neck from the mastoid process and angle of the jaw to within two fingers' breadth of the clavicle. Anteriorly it extended as far forward as the symphysis of the jaw, consequently the trachea was very much displaced to the left, and on examining the fauces, a distinct bulging could both be seen and felt behind the pillars of the pharynx on the right side.

The tumour was irregular in form, and its most bulging point was immediately below the angle of the jaw. It varied somewhat in consistence in different parts. Anteriorly it was pretty firm, but posteriorly it was soft and somewhat compressible. When grasped, distinct pulsation was felt, and, in fact, the pulsation could be distinctly seen. At a point about the middle of the tu-

mour posteriorly, a distinct thrill was felt, and a loud bruit heard synchronous with the dilatation of the carotid artery. Nowhere else was there so loud a sound, or so perceptible a thrill; but a little way from the point mentioned, especially downwards, both vibration and sound were perceived in a slight degree. By applying pressure with the point of the finger over this spot, so as to push the tumour slightly to the left, the bruit and pulsation in the tumour ceased, but the pulsation of a deep-seated vessel coursing the posterior part of the tumour could still be felt. On relaxing the pressure, the pulsation in the tumour immediately returned.

The patient was in a highly excited state when admitted into the hospital, and this was so much increased by the visit, that for some time she insisted upon leaving the house; and it was with considerable difficulty, and only by representing to her in the strongest light the danger of her situation, that she was induced to remain. The pulse at this time was rapid, about 130, but fell afterwards to 110, and was of pretty good strength; the skin was moist; the tongue loaded; respiration was hurried and noisy, particularly during inspiration, and, when excited, she had occasionally very slight cough; the face was somewhat bloated, the lips rather livid, and the countenance expressive of considerable anxiety.

The chest was carefully examined, and no morbid sound either in the lungs or heart could be detected. From her excited state, and her expressed determination to leave the hospital, it was impossible to hold any consultation until the 21st.

The propriety of ligature of the carotid was then decided upon; but it was advised to keep her for a day or two at perfect rest, to allow the state of excitement to subside before operating. Gentle purgatives and small doses of digitalis were administered during the interval. She remained in much the same state until the morning of the 25th, having occasionally slight attacks of dyspnœa, but, on the whole, improving; the respiration becoming less frequent, and the pulse gradually sinking to 90.

At 4 P. M. on the 25th, she had what appeared to be a spasmodic attack of dyspnœa of considerable violence. During the paroxysm, the respirations sank to 8 in the minute; but it lasted only for a minute or two, and the breathing then became tolerably easy.

At 6½ P. M. she had another attack, but of longer duration and greater severity.

At 7 P. M. she had a third, still more severe than any of the others, and this had continued for some minutes before I arrived, having hurried over to the hospital on hearing what had occurred.

I immediately decided upon tracheotomy; but before this could be accomplished, the patient had become comatose; the respirations had sunk to 4 in the minute, and the pulse had become almost imperceptible; the face was purple, the lips livid, the extremi-

ties cold, and the body covered by a profuse sweat; the trachea was opened close upon the sternum, the projection of the tumour not admitting of its being done higher with safety, and a large tube introduced. The patient did not evince the slightest indication of consciousness during the operation, which was performed as rapidly as possible. As soon as the tube was introduced, a slight amendment in the symptoms took place. The pulse gradually improved in strength; the respirations gradually increased in frequency, until they became 16 in the minute; the face became florid; the patient began to move a little, opened her eyes, and in about 8 or 10 minutes, started up in great surprise and alarm, which was increased on her attempting to speak, and finding she could not do so.

On explaining what had occurred, she became calm, and expressed a desire to have the operation completed.

Sir G. Ballingall, who arrived immediately before I had opened the trachea, agreed with me as to the propriety of doing so as soon as possible. We had been led to this opinion by the observation that the tumour had increased considerably since morning, and had become exceedingly tense; so much so, that we dreaded its giving way if the operation were delayed until next day,—a delay which otherwise would have been most desirable, to avoid the increased difficulty of performing such an operation with imperfect light.

Assisted by Sir George Ballingall, Professor Miller, and Mr Shand, I commenced the operation by an incision of about 2½ inches in length along the inner margin of the sterno-mastoid. The upper part of the incision through the integuments extended some way upwards upon the lower part of the tumour, and was continued downwards over the clavicle, so as to allow the skin to be drawn more freely aside. The sterno-mastoid was raised, and its sternal and part of its clavicular attachment divided. The sterno-hyoid and thyroid muscles were next raised by means of the forceps and likewise divided, and the sheath of the vessel exposed. There was some little difficulty here in consequence of the displacement of the parts, the artery being drawn outwards by the tumour, and the trachea pushed to the left side, so that they were fully an inch and a quarter removed from each other. The position of the artery, however, being ascertained by the finger, the sheath was carefully opened on its inner side, and the needle, armed with a ligature, passed under the vessel. Having ascertained that nothing but the artery was included, the needle was withdrawn, leaving the ligature under it; the ligature was then secured in the usual manner, and the pulsation in the tumour immediately ceased. The edges of the incision were brought together by two points of interrupted suture. No disturbance whatever followed the obstruction of the circulation through the vessel.

The patient bore the operation without the slightest expression of pain or impatience; the respiration continued perfectly easy, being 16 in the minute, and the pulse, though accelerated, was of tolerable strength.

26th. The patient is still in a very satisfactory condition; respiration natural; pulse 90, and of good strength.

27th. Continues the same as at last report. It was thought well, however, as a precautionary measure, to abstract a few ounces of blood, which was accordingly done. The blood drawn was natural.

28th. The tracheotomy tube was withdrawn to-day at 11 A. M., and, after its removal, she continued to breathe with perfect ease, and almost entirely through the natural passage; no air, except when she spake or coughed, passing through the opening into the trachea.

29th. Respiration continues perfectly easy, and in every other respect the patient is in a satisfactory state.

31st. In much the same state as at last report. The tumour is much diminished in size. The following are its present measurements: 4 inches in length; 4 in breadth; $3\frac{1}{4}$ at base; $12\frac{1}{2}$ in circumference. No pulsation has been felt in the tumour since the operation.

January 7. Up to this time, the thirteenth day from the operation, the patient has continued in as satisfactory a condition as possible. She is becoming ravenous for food, and her diet has been somewhat improved. The expression of anxiety which existed at the time of her admission has given way to one of satisfaction and good humour.

8th January. The patient has had a slight rigor this morning, and on removing the dressings a small quantity of grumous decomposed blood was found to have exuded from the lower part of the wound, which had united through the greater part of its extent. This was believed to have been discharged in consequence of a fit of coughing, with which she had been seized at 3 A. M. The chest was carefully examined, and not the slightest trace of any morbid sound could be detected, either anteriorly or posteriorly.

On examination at the visit, the tumour, which had, as I have already mentioned, diminished very considerably, was found to have again enlarged somewhat, and to have become tense. The integuments over it had become red, hot and painful, and imperfect fluctuation could be detected at its anterior part.

The respiration had likewise become somewhat affected and slightly noisy, but by no means so much so as on her admission into the hospital. The pulse had risen to 100, and the patient had become evidently alarmed. The face was somewhat flushed. Twelve leeches were ordered to be applied to the tumour, and

small doses of *Tart. Antimon.*, with *Sulph. Magnes.*, to be administered every two hours. I likewise left instructions with Mr S. to dilate the opening in the trachea, which had not yet quite closed, and reintroduce the tube, if the dyspnœa should return, so as to be at all alarming.

9th, 3 A. M. Had an attack of spasmodic difficulty of breathing, but by no means such as to require the introduction of the tube.

Noon. Breathing very easy; fluctuation in tumour somewhat more distinct. I at this time thought that an incision might be made into the tumour with advantage, but it was thought safer to delay doing so until next day, if circumstances should not demand it earlier.

8½ P. M. Some ounces of decomposed blood were discharged from the mouth, the tumour, at the same time, suddenly collapsing.

It was evident from this that the sac of the aneurism had given way internally, and it was likewise evident that it might be opened externally without fear of hemorrhage, the dread of which had prevented us doing so previously. I accordingly made an incision of about two inches in length through the most projecting part of the tumour, and turned out as much of the broken down coagula as I could, with some purulent matter, which was present in small quantity, in all, a little more than a table-spoonful, with considerable relief to the patient.

I left her in what both Sir George Ballingall, who was present, and myself conceived to be a most satisfactory state; the respiration easy, and the pulse of moderate frequency, and good strength. She was seen by Mr Shand at 12 P. M. She had then been sleeping quietly for an hour, and on waking expressed herself as being perfectly easy.

10th January, 2 A. M. The nurse was alarmed at a sudden change in her respiration. This, from being easy, had become suddenly noisy, and, as was described, croupy. She immediately called Mr Shand, who, in a very short time, was at the bedside, but found the patient dead.

Post mortem examination.—This was conducted somewhat hastily, inasmuch as it was done surreptitiously, the friends having refused permission to inspect the body, and those engaged in the examination being in constant dread of their arrival.

The whole anterior part of the neck, from the base of the skull to the origin of the aorta, including part of the upper lobes of both lungs, were removed and laid aside for more careful examination afterwards.

Chest.—Sections were made through the lungs at different parts, and not the slightest trace of any morbid appearance was discovered. The trachea and bronchial tubes were perfectly

healthy, and contained no more than the natural quantity of mucus, and none of the sero-sanguineous fluid which had been discharged by the mouth some hours before her death.

The heart was perfectly healthy.

Head.—The vessels of the brain were slightly congested, but no more than might have been expected from the mode in which the woman died. The brain itself was perfectly healthy.

The parts removed were very carefully dissected by my friend Mr Goodsir, and I have annexed a drawing of them.

The aneurism, as I have already mentioned, though much contracted, was found still to be of very great size, extending from an inch from the base of the skull to little more than an inch from the clavicle. In breadth it measured nearly three inches. The parts were necessarily much displaced laterally, the carotid coursing the outer side of the tumour, and the larynx being pushed to the left. The sac of the aneurism was composed of the surrounding condensed cellular tissue, and was partially filled by decolorized fibrine in considerable masses, but was free from any recent coagulum. All the parts were matted together by lymph, so that it was with considerable difficulty that they were exposed. The recurrent of the left side was traced as far as the lower part of the tumour, but beyond this it could not be followed without destroying the preparation as it passed into it and became intimately incorporated with it. The opening by which the artery communicated with the sac was situated at the bifurcation of the common carotid, and was fully half an inch in length, and occupied the greater part of the circumference of the vessel. Below the opening, as far down as the point where the ligature had been applied, the vessel was empty and somewhat contracted. Above the opening it was very much contracted, and, from about an inch above the aperture, was filled with decolorized coagulum. The ligature had been applied a little more than half an inch from the innominata; it was lying loose, and the ends of the vessel were surrounded by a dense mass of lymph. In the vessel, on the cardiac side of the ligature, there was a small coagulum of the usual form, extending nearly to the innominata. I have already mentioned that, a few hours before the woman's death, the aneurism had given way internally. It was found to have done so into the pharynx. The opening was exceedingly small, scarcely sufficient to admit a very slender probe, and was situated on the right side of the pharynx, on a level with the glottis.

This case is interesting in several points of view. 1. The rapidity of the growth of the aneurism was such as is rarely met with, it having attained the very large size which it presented on the woman's admission into the house in less than three weeks.

The causes which led to the formation of the aneurism are of

course unknown; in fact, but little is known generally, in regard to the causes which operate in producing the diseased state of the vessels which leads to the formation of aneurism.

The cause of the rapid growth of the tumour is more easily explained. It is well known that the rapidity of the progress of an aneurism is much influenced by its situation, by its being a true or false one, and likewise by the size of the aperture leading into the sac. In this case we had all these concurring to favour its rapid increase. 1*st*, Its situation favoured its increase, as it was one amply provided with loose cellular tissue, and not bound down by any tense or very resisting fascia in the first part of its progress at least.

2*dly*, The aneurism was a false one, all the coats of the vessel having been destroyed.

3*dly*, The opening was very large in proportion to the size of the vessel.

The next point of interest in the case is the production of asphyxia by the tumour, and the very striking effect which tracheotomy had in relieving this state, even when it had proceeded so far as to have induced a state of complete insensibility.

The asphyxia in this case depended, I believe, not so much upon the pressure of the tumour upon the air passages, as upon the irritation of the recurrents which it produced. The dyspnœa was intermittent; not constant, and I have seen the same effect produced by aneurisms and tumours in other cases, in which they did not press materially upon the air passages; and, in two such cases, I have seen relief afforded to the asphyxia by tracheotomy, although the opening into the trachea was above the seat of the tumour.

The next point worthy of remark is the occurrence of inflammation of the sac, and the effects which it produced, viz. the return of the dyspnœa, and the giving way of the sac by ulceration into the pharynx.

The occurrence of the inflammation was a circumstance which, at the time of applying the ligature, I looked upon as almost certain to follow; but subsequently, from the rapidity with which the tumour diminished, I was led to hope that it might not take place.

When the rigor occurred, and, along with that, when the nurse mentioned to me that the dressings had been slightly tinged with blood, I was led rather to apprehend secondary hemorrhage. My mind, however, was speedily relieved on this point, by examining the nature of the discharge which had exuded from the wound, and likewise by observing what had taken place in the sac of the aneurism.

The return of the dyspnœa at this time I cannot help regarding as the consequence rather of irritation of the recurrents, than

as caused by pressure from increase in the size of the swelling. The nerve, as may be seen, is imbedded in the tumour, and, besides, the swelling, though considerably increased, by no means equalled what had existed at the time of the woman's admission into the hospital. It is possible that relief might have been afforded, or the result which followed prevented, by more early incision; but we had no reason to apprehend what actually occurred; and, besides, from some little dread in our minds of the occurrence of hæmorrhage, we were by no means certain as to the safety of such a step. All dread of this kind was of course removed by the spontaneous giving way of the sac into the pharynx, and then incision was had recourse to without hesitation, and with some slight relief.

The cause of the woman's death is involved in some little obscurity. It could not possibly be the consequence of internal hæmorrhage. The symptoms were not those following death from hæmorrhage; and if any doubt existed previously, this was completely removed by the *post mortem* inspection. As little could it be the consequence of disease either of the lungs or brain. The former were carefully examined some little time before the woman's death, and, besides, no trace of disease was met with on dissection. Under these circumstances I do not know to what else to ascribe the fatal termination than to spasm of the glottis, and I cannot help thinking that if time had been afforded, the reintroduction of the tube into the trachea might have led to a different result.

The accompanying sketch represents the parts as seen from behind.

a. The point where the ligature was applied.

b. The opening by means of which the vessel communicates with the aneurism.

c. The sac laid open, showing the coagula with which it was in part filled.

p. A bristle passed through the opening leading from sac into pharynx.

s. A portion of the posterior wall of the pharynx removed, exposing the glottis.

d. Par vagum.—The recurrent laryngeal passing into lower part of tumour.

Another case has recently come under my care, requiring ligature of the carotid, and I add an abridgement of it from the journal of the hospital, principally because, in the condition of the vessel at the point where the ligature was applied, it presents a striking contrast to the one I have just related.

The man, who was a sailor, and about 60 years of age, was put under my care by my friend Mr Small, in consequence of exten-

sive phagedenic ulceration of the fauces, following a rheumatic fever with which he had been seized after a voyage to the West Indies.

When the patient was admitted into the hospital, the ulceration was very extensive, occupying chiefly the right side, and extending down the pharynx as far as could be seen. The surface of the ulcer was covered with a greyish slough, and the surrounding mucous membrane was of a dull red colour.

His complexion was of a sickly yellow hue, and altogether his aspect was very much that of a person who was labouring under some malignant disease.

The phagedena was arrested by two applications of the nitric acid, and under the occasional application of the nitrate of silver, everything appeared to be proceeding favourably, the ulcer presented a healthy granulating surface, and it was much diminished in extent. On the morning of the 29th March, the twentieth day from his admission, violent hæmorrhage, to the amount of one pound and a half, took place from the left side of the fauces. This ceased spontaneously, but returned in the evening with still greater violence, one pound and a-half of blood having been lost in little more than twenty minutes. The blood was evidently arterial, and as its flow could be arrested by pressure on the left carotid, that vessel was tied immediately above the *omo-hyoid.* The hemorrhage from the left side never returned after the ligature of the vessel, but, on the fourth day, about half an ounce of blood was lost from the right side. With this exception, every thing went on well until the 7th of April, when the patient had a slight rigor, and, on examining the dressings, they were found slightly tinged with blood,—the wound, which previously looked healthy, had changed its character, having become pale and flabby, and the parts where union had taken place had become disunited; pulse 106; skin temperate; tongue rather dry.

On the 8th, the dressing was again slightly stained, but there could not have been lost above a tea-spoonful in all.

On the 9th, there was no return of the bleeding; in other respects the patient was much in the same state as before.

On the 10th and 11th, there was no return of the bleeding; on the latter day it is stated in the report, that "the patient, though weak, was not in a state to excite any immediate alarm, but that he was annoyed by efforts to expectorate some tenacious mucus which had collected in the trachea." There was little or no cough, and on examination of the anterior parts of the chest, which alone could be examined, no morbid sound was detected. Pulse 96; tongue a little moister.

On the morning of the 12th, at five A. M., the nurse became alarmed by difficulty of breathing, which had come on suddenly,

and called the house-surgeon, Mr Shand, who found him labouring under very urgent dyspnœa, but perfectly sensible:—the respiration was described by him as being noisy, and resembling that met with in œdema of the glottis. Under these circumstances he performed tracheotomy, after which the patient revived a little and expectorated some mucus through the tube, but died in a few minutes after the operation.

Post mortem inspection.—The head and chest were carefully examined. In the former no morbid appearance was found; in the latter, there was considerable congestion of both lungs posteriorly, but not to a much greater extent than might have been anticipated in a patient who had been confined to the horizontal position so long as this person had been, in the very debilitated state in which he had been left by long-continued disease, and the hæmorrhage which had demanded ligature of the artery.

The parts concerned in the operation were removed and carefully dissected.

The ends of the artery, which had been divided by the ligature, were found lying separated from each other by about a third of an inch, and surrounded by unhealthy purulent matter, but without the slightest effusion of lymph between them. The distal end was closed, the ligature still adherent, and the canal of the vessel filled with coagulum to the extent of an inch. The cardiac end was found contracted to about half its diameter, but perfectly patent for about an inch downwards, and for the same distance, the internal coat of the vessel was separated from the middle by a thin layer of purulent matter. Below this, again, the vessel was completely blocked up by a dense mass of non-adherent decolorized coagulum, which alone had prevented hæmorrhage from taking place.

I have related this case principally, as I have said, to point out the difference in the state of the vessel from that found in the preceding one.

In the first, the process by means of which an artery, after the application of a ligature, is obliterated, was complete, both as regards the internal coagulum and the effusion of lymph around the ligature and the ends of the vessel. In the second it was far from being so; the distal end of the vessel, it is true, was closed, and the canal completely filled with partially decolorized coagulum, but the lower end, as I have said, was patent; there was little or no effusion of lymph between the two, and the only obstacle to the occurrence of fatal hæmorrhage was the coagulum blocking up the canal about an inch from the orifice. In all probability the slight hemorrhage which had occurred some days before the man's death took place from the cardiac extremity of the artery, the blood escaping between the parietes of the vessel and the coagu-

lum; and I have no doubt that it would have occurred to a much greater extent, had the man lived longer, without a more healthy action in the parts supervening, as the softening of the coagulum had already commenced.

The fatal termination of the case was, I have no doubt, occasioned by the obstruction to the respiration from the tough mucus, which the man, in his weak state, was unable to expectorate.

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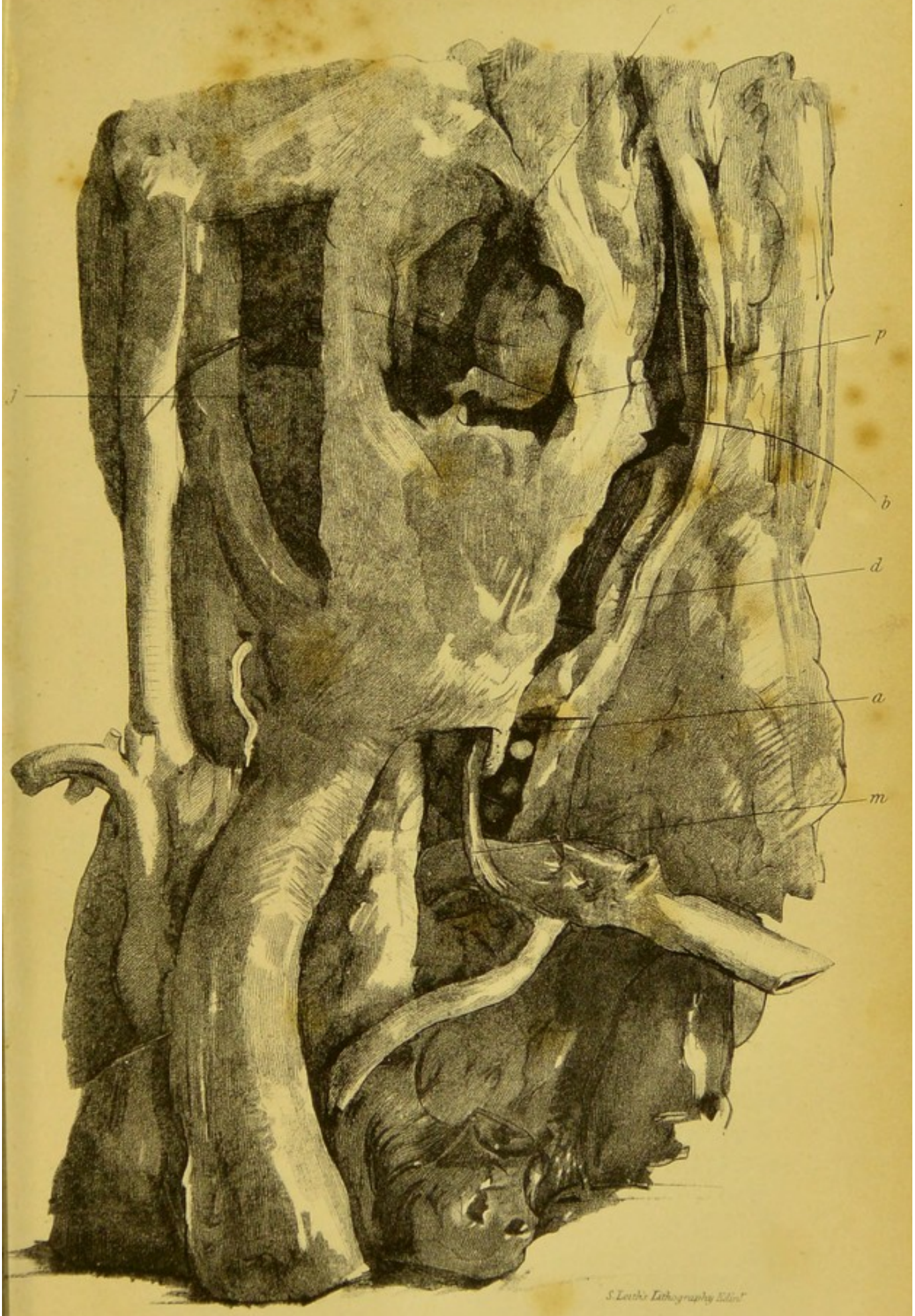

Dr DUNCAN'S CASE OF ANEURISM.