CASE OF WOUND OF THE INTERNAL CAROTID ARTERY, AND DIVISION OF THE PAR VAGUM, IN WHICH THE COMMON CAROTID ARTERY WAS TIED.

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(Read before the Provincial Medical and Surgical Association, at the Anniversary Meeting, at Derby, Thursday, August 5th, 1847.)

The rarity of the occurrence of a case of wound of the internal carotid artery, in which there is any opportunity of rendering surgical assistance, will, I trust, be a sufficient apology for intruding upon the valuable time of the meeting, whilst I relate, as briefly as is consistent with a full exposition of its most interesting features, the particulars of a case which has recently fallen under my professional care. The notes, as originally taken, during a period of upwards of eleven weeks, are very voluminous; but as it would be trespassing unnecessarily upon your attention to read the whole of them, I shall present to you, in as condensed a form as I can, the most important part of the details.

On Tuesday, February 2nd, 1847, Mrs. Osborn, aged 68, of spare habit and nervous temperament, (about five o'clock in the afternoon,) was savagely attacked by a man, armed with a pruning knife, who inflicted three severe stabs on the left side of the neck, and several others, of a more trifling nature, on the jaw and over the larynx. The most profuse hæmorrhage immediately followed, inducing syncope, and a state of insensibility, which continued for about an hour. Several medical gentlemen were shortly in attendance, and in about three quarters of an hour from the time of the injury I first saw her, having been from home when first sent for. I found her in a state of extreme exhaustion, lying upon the bed, her clothes saturated with blood, and barely able to recognize any one about her. There was a deep wound about three inches in length immediately behind the angle of the jaw, extending perpendicularly downwards; another, a jagged wound, over the transverse processes of several of the middle cervical vertebræ, and a deep gaping wound midway between the occipital spinous process, and the mastoid process of the temporal bone; the other wounds being slight, need not be particularly described. There was a slight oozing of blood, but I was unable to discover that any large arterial trunk had been injured. A ligature had been placed upon a small superficial vessel, by Mr. Harwood, before I arrived. After waiting some time, the wounds were dressed, and brandy-and-water, as far as the difficulty of swallowing would permit, was freely administered. The other medical gentlemen left the house, but I remained in attendance upon the patient.

At seven o'clock, whilst I was in an adjoining room, she got out of bed to the night-chair, when a most alarming return of the hæmorrhage took place. I was hastily summoned, and immediately stopped the bleeding by pressure. On removing the dressings I found the blood issued from the wound behind the

angle of the jaw; it was arterial, and came forth in a stream as large as a swan-quill. Convinced that some large arterial trunk must be wounded, and most likely the internal carotid, I directed additional medical aid to be sought, in order that I might be able at once to adopt some decisive proceeding to restrain the hæmorrhage. My friends Mr. Johnson and Mr. Borough being fortunately at hand, and agreeing with me that it would be impossible to get at the vessel in the situation of the injury, it was determined to place a ligature on the trunk of the common carotid.

I pursued the usual steps in the operation, and having opened the sheath of the vessels, I passed an armed aneurismal needle from without to within beneath the carotid, and when the gentlemen present had satisfied themselves that the artery was properly secured, the ligature was firmly tied. Only a few drops of blood were lost during the operation, which took about ten minutes for its completion, and was admirably borne by the patient, no expression of suffering or additional discomfort having escaped her. The hæmorrhage from the wound at once ceased, and the proper dressings having been applied, she was directed to be kept as quiet and free from excitement as possible, and a little tea and brandy and water to be given at intervals.

The patient had much trouble to make herself understood, and there was considerable difficulty in swallowing, but whether this arose from debility, or from injury to the pharynx and glottis, it was not possible to make out. Each time when she swallowed, the liquid seemed to get within the glottis, occasioning cough and retching, and many times during the night she vomited a dark-coloured fluid. I give this last portion of the notes as it was written at the time, but it will be seen in the sequel, when we come to the *post-mortem* examination, that the suffocative cough and difficulty of swallowing are abundantly accounted for by the fact that the nervus vagus was divided.

It should be mentioned here, that in defending herself from the attack of the assassin, the patient received a severe wound in the palm of the right hand, over the head of the metacarpal bone of the forefinger. This wound divided the flexor tendons and digital artery, and opened the capsular ligament of the joint. To take an anodyne draught every third hour.

February 3rd, 7 a.m. I have remained in attendance upon Mrs. Osborn all night; the pulse has maintained a speed of 140, and has been feeble; more decided re-action now seems to be taking place; there is considerable heat of skin, and the pulse is increasing in volume; the thirst has been very urgent, and she has repeatedly taken tea, cold water, and cold brandy-and-water by tea-spoonfuls. The difficulty of swallowing is very distressing.

3 p.m. Much the same; pulse 120, very full and throbbing.

Midnight.—But little change since last report; has slept for a short time at intervals.

4th, 7 a.m. Has passed a restless night, and has constantly wanted a change of position; has just now become suddenly worse; the pulse is fluttering and

intermittent, and she is unable to speak or to swallow; she lies with the mouth open, and there is a good deal of rattle in the throat.

1 p.m. Shortly after last report became insensible, and since then has lain in a state of stupor. There is considerable heat of skin, and perspiration; the pulse has lost its irregular character, and is full but compressible, 120.

4 p.m. Is now quite sensible, and able to converse in a whisper; has swallowed tea and cold water, and altogether appears to have rallied a good deal; pulse of good strength, 120; breathing tranquil.

7 p.m. Complains of cough. Habeat Linct. Oxy-mellis cum Opio, more solito. Bowels not open since operation. To have an injection of warm gruel and salt; to have arrowroot made with water, and a little brandy added. Pulse 115, with an intermission every twelfth beat.

11 p.m. Is much better; breathing tranquil; less difficulty in swallowing; pulse 100, and regular.

5th, 8 a.m. Rested comfortably till half-past two, since then has been uneasy; she has taken, however, several times, a little tapioca and isinglass; is now feverish, and the pulse 102, has again become irregular; bowels not yet moved. To take an aperient draught.

Vespere.—Has suffered severely during the day from pain in the abdomen; the pulse at times regular, and at others intermittent, has ranged from 100 to 180. Had an injection of warm gruel and castor oil in the afternoon, which acted copiously, after which she expressed herself as much relieved. To take at intervals an opiate draught.

6th, 8 a.m. Is much better; has had some refreshing sleep in the night, and has taken nourishment repeatedly.

Vespere.—Bowels acted freely at mid-day. Dressed the wounds, from which there is slight thinnish secretion.

7th, 9 a.m. A tolerable night; slept from twelve to three; is a good deal exhausted; skin moist; pulse intermittent, 108. To have beef tea at intervals.

Vespere.—Secretion from wound more puriform; wound made in operation, except at the point of ligature, has united by first intention; there is great throbbing pulsation in the carotid up to the ligature; is pretty comfortable.

9th. Has been much the same the last two days; has complained of much pain in the wound of the hand, to which, as well as to the wounds of the neck, water dressing has been applied; there is a good deal of cough and frothy expectoration; has had the bowels open from an injection, and takes the opiate draught occasionally, with a good effect; swallows more easily.

11th, 5 a.m. Has had a bad night, coughing almost incessantly, and the difficulty of swallowing has become as bad as ever; pulse feeble, 104; perspires freely, and feels low and exhausted, having taken scarcely anything during the night. I got her to swallow a tea-cupful of beef tea with much difficulty, the liquid at each effort seeming a little of it to get within the glottis, producing cough and sense of suffocation.

Vespere.—Has rallied a little, and has taken during the day a little milk porridge and beef tea.

12th, 2 a.m. Bleeding from wound of hand. Applied compress and bandage. Wounds of neck looking healthy, discharge less, and are healing.

15th. Has been very irritable and restless the whole night, and at times wandering and insensible; has taken but little nourishment, and is altogether not nearly so well.

11 a.m. Summoned in great haste to her as she was supposed to be dying. Found her extremely sunk and exhausted; skin clammy; pulse feeble and irregular, 150; does not complain of pain, but says she is very ill; got her to take some brandy and water, and later in the day some port wine.

In the evening she had rallied somewhat and complained for the first time of pain in the left ear. The pulse was still irregular, 108.

16th. Has had several hours sleep in the night, and feels much better; skin clammy; pulse steady, 104. To have wine and brandy and water at intervals.

20th. Much the same train of symptoms the last three or four days; at times great exhaustion and inability to swallow, and much trouble from the cough and abundant tracheal secretion, the pulse varying almost hourly in speed, volume, and regularity. To day the hand is very painful and there is a considerable fluctuating swelling over the injured joint. I have opened it and evacuated about an ounce of well-formed pus. There is a grating sensation communicated by moving the joint, occasioned probably by erosion of the cartilage. The wounds of the neck are healing gradually.

22nd. Ligature came away. Has suffered very much since last report from the choking and suffocative cough, and at times the faintness and exhaustion have been so extreme as to occasion great alarm. Is obliged to take frequently as far as she is able wine and brandy and water.

March 6th. Continues much in the same state; is able to take but little nourishment; suffers greatly from the pain of the hand, which discharges pus copiously. The joint being evidently diseased, I got my friend Mr. D. Fox to see the patient, and as he concurred with me in the propriety of removing the finger, I have done so immediately behind the head of the metacarpal bone. There was no bleeding to require a ligature.

10th. Has been much easier since the removal of the finger; the wound looks well, and is healing favourably; the cough and difficulty of swallowing are, however, very distressing, and she is taking but little nourishment. To have a blister to the chest, and to take the following:—R. Sodæ Sesquicarbon., dr. ij.; Mucil. Acaciæ, oz. ij; Tinct. Scillæ, dr. iij.; Tinct. Camph. Co., dr. vj.; Acidi Hydrocyanici, m. xij; Aquæ ad oz. viij. M. Sum. oz. iss. quartis horis.

15th. Still coughs a good deal, but expectorates more easily, and there is less trouble in swallowing; appetite improving. To continue the cough mixture. The wounds of the neck have been healed about a week.

April 4th. Matters have gone on much the same since the last report; the cough has continued to give much trouble; there is very abundant tracheal and

bronchial secretion, but little râle can be perceived by applying the ear to the chest, and I consider the secretion comes principally from the trachea and larger bronchial tubes. There is less strength than there was a month ago, and there is too much reason to fear she may ultimately be exhausted by the cough. Another blister has been applied to the chest, with some relief, and various cough medicines have been tried. The pulse is usually about 110. She takes but little food now.

11th. More prostrated and feeble; sleeps much; complains of pain at the vertex, and a coldness of the left side of the head; pulse variable in speed and volume, and at times intermittent, ranges from 100 to 160; still much muco-purulent secretion in the air-passages, which is easily expectorated; urine abundant, and of natural appearance as it has been throughout. I have repeatedly urged the use of broth injections, but she refuses to have them administered.

22nd. Mrs. Osborn died this morning a little before nine o'clock, having lingered since the last report in a state of the most extreme exhaustion, feebleness, and emaciation. For many days she has taken little else than cold water. She has suffered much latterly from the pain at the vertex, and in the ear, and along the course of the vessels on the left side of the neck. She died without a struggle.

Post-mortem examination ten hours after death.—Present—Dr. Heygate, Messrs. Wright, D. Fox, Borough, Greaves, and Taylor.

Body extremely emaciated. Heart loaded with fat; lungs did not collapse on opening the chest; the left lung a good deal congested posteriorly, and the right also congested posteriorly, but to a less extent; there was much frothy muco-purulent matter in the larger bronchial tubes, and the bronchial membrane was much injected. In the neck, at the site of the ligature, the cellular membrane was condensed and firmly adherent to the adjoining structures; the point of ligation was well marked, and the artery was filled with a dense brownish-coloured fibrinous coagulum, which commenced about half an inch from the origin of the vessel; the artery was considerably diminished in size; above the ligature, and especially at the bifurcation, the vessel was contracted and hardened, and contained the same kind of fibrinous coagulum, but in a proportionately less quantity; in this situation, too, there was a very minute abscess in the coats of the artery; the posterior face of the internal carotid, immediately above the point where it is given off from the common trunk, presented a well-marked appearance of the wound which had furnished the alarming hæmorrhage at the time of the injury, and in the same situation the *par vagum* was found to have been divided. (I have since found, in examining the parts after they had been some time in spirit, that the reddened line which had indicated the point of injury of the vessel, at the time of the dissection very distinctly, has disappeared from the maceration. The edges of the wound had closely united, and there is no trace of the wound on the internal coat of the artery. This condition of the parts is similar to what is stated to have occurred in the experiments of Bèclard, and the possibility of which

is likewise affirmed by Chelius. It should be stated that the wound of the vessel was *oblique* or *diagonal*, and that it had a length of about two lines. The vessel in the situation of the injury is perfectly permeable, and there is no appearance whatever of the "plug of plastic matter" observed in the experiments of Saviard, Petit, and Scarpa.*) The lower extremity of the divided nerve was shrunk and atrophied, and there was a slight enlargement (a neuroma,) at the extremity of the upper divided end; there was no observable indication of wound, either of the pharynx or glottis; the subclavian artery of the left side, and the innominate with its chief and lesser branches, appeared to me to be of unusually large size. The viscera of the abdomen, and the contents of the cranium, were not examined, the friends of the patient being unwilling that any further investigation than of the parts immediately implicated should be made.

Remarks.—The chief points of interest in the foregoing case, may, I think, be briefly stated to be the following:—1st. The extreme rarity of the occurrence of a case of wound of a vessel of so much importance as the internal carotid, in which there is any opportunity of rendering surgical aid. 2nd. The difficult deglutition and imperfect closure of the glottis in the act of swallowing. 3rd. The excited and variable state of the circulation; and lastly the engorged condition of the pulmonary vessels, and the consequent suffocative cough and abundant bronchial secretion.

With regard to the first point I may state that I have been unable to meet with more than one recorded instance in which the internal carotid was *proved* to have been injured and in which the common carotid was tied. The case is related in Mr. Cooper's admirable Dictionary, and was under the care of Andersch; the common carotid was tied after a wound of the internal carotid, and the patient died on the eighth day. In the present case life was prolonged beyond the eleventh week and looking to the state of the parts as revealed by the *post-mortem* examination, we may fairly be permitted to regard it in a surgical point of view as successful.

Secondly, the difficulty of swallowing and imperfect closure of the glottis, which in the first instance were, perhaps very naturally, attributed to some injury of the pharynx and upper part of the respiratory tube, are beautifully explained by the fact of the *par vagum* having been divided. As one effect of this injury must be a paralysis of the recurrent laryngeal nerve, (a motor nerve,) and as it supplies, as I need hardly remind you, the inferior constrictor of the pharynx, and the crico and thyro-arytenoidei muscles, we are at no loss to understand the double embarrassment of the patient in the act of swallowing. Indeed so great was the distress occasioned, that at times it was almost impossible to prevail upon her to take even the small quantity of nutriment necessary to sustain life.

* Vide "Chelius' Surgery by South," Vol. 1, p. 298.

The third and fourth points of interest,—namely, the irregular and hurried state of the circulation, and the difficult respiration, may properly be considered together. The irritation in the air-passages, and the abundant secretion and cough, arose probably from congestion of the pulmonary vessels, which I imagine to be caused by the sudden closure of one important outlet from the left side of the heart. It would naturally follow, if the free egress of the blood from the left ventricles were prevented, that the pulmonary veins must become engorged, and indeed the whole thoracic circulation must be obstructed—a condition which would give rise to great irritation of the pulmonary organs, and the abundant mucous secretion present in this case. A precisely similar state of things occurred in my patient, Mary Scattergood, upon whom I operated for aneurism of the arteria innominata, both after the ligature of the common carotid, and subsequently after tying the subclavian artery. I find too from an excellent paper by Professor Miller, of Edinburgh, in the *London and Edinburgh Monthly Journal of Medical Science*, 1842, that in the majority of the fatal cases of operation on the large arteries of the neck, he considers death is attributable to inflammation of the lungs; and my friend, Professor Fergusson, of King's College, seems to incline to the same opinion. Of course, under common circumstances, our sheet anchor in combating such symptoms would be repeated blood-lettings, and the administration of opium; but in the case of Mrs. Osborn, there were such frequent and alarming attacks of syncope, and the utter prostration and exhaustion from the loss of blood at the time of the injury were such, that we were repeatedly driven to the employment of stimulants in large quantity, when other symptoms seemed urgently to demand an antiphlogistic mode of treatment. In short, the advanced age of the patient, and the absolutely drained condition of the vascular system, in spite of the local engorgement, forbade the use of any other remedies than opiates, expectorants, and counter-irritants, due attention being at all times had to the state of the *primæ viæ*, and the persevering and almost hourly administration of nutriment.

I have not thought it necessary to make any observations on the operation of ligature of the carotid, but I may be pardoned, perhaps, for shortly pointing the attention of the meeting to a suggestion of my esteemed friend, Mr. Sibson, of the Nottingham Infirmary, in reference to it. In a case of aneurism of the right common carotid, in which the vessel was successfully tied by Mr. White, of Nottingham, Mr. Sibson advised that the patient should expire forcibly before the commencement of the operation, and that the chest should be firmly bandaged, the patient, during the operation, being directed to breathe as much as possible by the aid of the diaphragm and abdominal muscles alone. This expedient was accordingly adopted, and

had the effect of materially facilitating the steps of the operation. The neck was thereby considerably lengthened, and the alternate rising and falling of the sternum and clavicle, and the emptying and refilling of the cervical veins, in great measure prevented. It has also, according to Mr. Sibson, the very desirable effect of preventing the descent and deepening of the carotid during the inspirations.

HISTORY OF A CASE IN WHICH A MASS OF FOREIGN MATTERS, CONSISTING OF HAIR, WOOL, RAGS, THREAD, &c., WAS EXPELLED PER RECTUM.

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(Read at the Annual Meeting of the South Western Branch of the Provincial Medical and Surgical Association, held at Truro, July 16, 1847.)

A. C., a young woman, aged 16, voided with excessive pain, on the 12th of March last, two large lumps of foreign matters, the first about the size of an ordinary pullet's egg, the second larger and longer, much compressed, and very hard, having a thin albuminous coating, which served to conceal the character of the contents of the lumps until forcibly separated. After having been carefully washed and dried, the materials of which the masses were formed were found to be numerous small parcels of dyed wool, of various colours; of hair, of different colours; of thread; of worsted; and of cotton and linen rags, all compactly fitted together, and weighing one ounce and five drachms, *avoiropois*.

At the time of passing these lumps she was so reduced, by a severe illness of many months, as to be quite unable to sit up, and her mother was under the necessity of holding her in the sitting posture, whenever she attempted to relieve the bowels, so that she had the very best evidence of their expulsion from the rectum. She took them immediately to a pump in the yard, and having procured two sharpened sticks, she endeavoured to separate the materials of which they were composed, but it required considerable effort on her part, and the long continued pressure of a large stream of water, to accomplish the task. The patient had been so reduced by her previous illness, of which I will give an outline presently, as to give up all hope of recovery; and when I visited her on the day following this event, I asked her in the presence of her parents, and in the full consciousness of her critical condition, if she recollected having swallowed any part of the matters evacuated. She most solemnly assured me that she did not, and her parents added that they firmly believed her statement. The mother then said, in reply to a question which I put to her, as to the possibility of her obtaining access to such things, that when her daughter was learning to walk, she could get at the seat of a settle in the kitchen, by the edge of which she held, and that the children often amused themselves by turning over the contents of this box, in which old rags of all sorts were deposited;