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Publication/Creation

Glasgow : W. Mackenzie, 1855.

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CASE

OF

MIXED ANEURISM OF AORTIC ARCH,

SIMULATING

ANEURISM OF LEFT CAROTID,

WITH REMARKS.

BY JAMES G. WILSON, M.D.,

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From the January Number of the GLASGOW MEDICAL JOURNAL *for* 1855.

GLASGOW:
WILLIAM MACKENZIE, 45 & 47 HOWARD STREET.

1855.

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THE following case, which was admitted into the surgical wards of the Royal Infirmary under the charge of Mr. Watt, during the period I acted as Surgical Clerk, is in many respects unique. During the whole of its progress it excited an unusual degree of interest amongst the members of the profession in and around Glasgow, from the difficulties which were experienced in its diagnosis, and from the operative procedure adopted for the relief of the abnormal condition under which it was presumed the patient laboured, having been, it is believed, for the first time had recourse to in Scotland.

Case.—Daniel Poland, a quarryman, aged 38, presented himself at the Dispensary of the Infirmary with a pulsating tumour, about the size of a small walnut, situated in the neck, nearly over the left sterno-clavicular articulation. He was recommended to become an in-door patient of the hospital, which he agreed to do.

On the 11*th November*, 1851—five days after having been seen in the Dispensary—he was admitted into Ward No. 5. Patient stated that he had always been a temperate and sober-living man, and had enjoyed good health, without cough or difficulty of breathing. About a month ago, while over-exerting himself, he strained his neck, and at the same moment experienced a peculiar sensation in the left lower cervical region, as if something had given way. A few hours subsequently, his attention was first directed to a small "throbbing" tumour, about the size of a hazel nut, at the spot where the above-mentioned sensation was felt, which has continued slowly but progressively to enlarge, up to the period of admission. Ever since the tumour appeared, he has experienced more or less of darting pains in neck and shoulders, for which he used liniments and fomentations, under the belief that they were rheumatic. He also stated that he consulted a surgeon, who, believing it to be

an abscess, proposed thrusting a lancet into it, but patient would not submit.

On examination, a firm elastic tumour, about the size of a small orange, is observed over the course of left carotid artery, and above the sternal end of clavicle. It is prominent, and, for the most part, circumscribed and well defined, while the lower portion impinges so close upon the clavicle that it appears as if issuing out from within the chest. It can be partially diminished and emptied by pressure, and the pulsations, which are strong and synchronous with the systole of the heart, are somewhat arrested on compressing its lower part. No *bruit de soufflet*, or bellows murmur, can be heard in any part of the tumour. There is no discoloration of the superjacent integument. Careful auscultation and percussion of chest reveal nothing abnormal. No giddiness or uneasy feelings in the head.

On the 12*th*, a consultation of the medical officers of the hospital was held on the case. As neither *bruit* nor thrill was detected in the tumour, some doubts were entertained as to its precise character. The majority of the members, however, were of opinion that it was aneurismal, and that its probable site was at that portion of the left carotid artery, immediately above its origin from the arch of the aorta; but from the difficulty of decidedly determining its exact seat, it was agreed that in the meantime no surgical interference should be had recourse to, that the patient should be placed on low diet, and that the further progress and development of the tumour should be watched.

On the 15*th*, a second consultation was held, when the tumour was found to have rapidly increased, and acquired an alarming size, which was supposed to be accounted for in part by the manipulations to which it had on the former consultation been subjected. The force of the pulsations, however, was not so strong, but the superjacent integuments had a tense glistening aspect. Considerable pain and uneasiness in the tumour were complained of. The movements of the neck were much impeded, the voice slightly hoarse and husky, and deglutition rendered difficult, in consequence of the pressure upon and stretching of the surrounding textures. It was equally obvious, in this state of matters, that the tumour, if left to itself, would sooner or later give way, while delay would only diminish the prospect of success from an operation, and increase its difficulty. In the idea that the seat of the aneurism was most probably at the lower portion of the carotid, near to its origin from the aorta, and that deligation by the Hunterian method in the intervening space, if such existed, was impossible, or altogether out of the question, it was agreed that the operation for tying the vessel on the distal side, as originally proposed by Brasdor, approved of by Desault, attempted by Deschamps, and performed by Mr. Wardrop and others, with

a success warranting further trials, should in this case be had recourse to, as affording the patient the only chance of escape from a diseased condition of an artery which evidently would soon put a period to his existence. The attempt to produce coagulation of the contents of the sac by galvano-puncture was talked of, but was not recommended by any one. The danger and importance of the proposed operation having been duly explained to the patient, he expressed his willingness to submit to any surgical procedure which might be productive of any relief.

16*th.*—Patient having been previously prepared for the operation, with the shoulders elevated, head thrown back, and face inclined to right side, was placed under the influence of chloroform. Mr. Watt commenced by making an incision, about a couple of inches in extent, along the tracheal margin of the sterno-mastoid muscle. The platysma, cervical fasciæ, and cellular tissue were successively divided, and the vessel exposed by careful dissection, with a silver knife and the finger nail. On opening the sheath, the vessel seemed sound, and of natural size. An aneurismal needle, armed with a strong ligature, was introduced and passed below the artery from without inwards, just as it emerged from under the omo-hyoid muscle. The ligature happening to break near the vessel on tying the knot, and as sufficient reliance could not be placed on it, a second was applied immediately above. The jugular vein did not call for any special interference, and the different nerves were easily avoided. Little or no blood was lost. The wound was united by stitches, a few strips of adhesive plaster applied, and covered by soft dressings.

At 4, p.m. (two hours after the operation), patient declared himself free from pain or uneasy sensation about the head, wound, or tumour, and the size and pulsations of the latter were not sensibly altered. Pulse 112, soft and compressible.

At 8, p.m., patient still felt very comfortable, but complained of a slight pain over forehead and both temples, and the left pupil was found more dilated than the right. Pulse 100. Not having slept well the previous night, and not feeling now any disposition to sleep, he was ordered an anodyne draught at bedtime.

17*th.*—Slept well during the night; headache gone, as also dilatation of left pupil. The size of tumour rather increased, but its pulsations in the distal portion diminished in force. No abnormal sound detected in tumour or chest. Pulse 90, and of moderate strength.

18*th.*—Is easy and free from pain. The skin over the tumour has begun to assume a yellowish tinge, approaching in appearance to that frequently observed in scrofulous abscesses of glands, and the swelling when pressed upon conveys to the finger an obscure feeling of fluctuation, similar to that which is found in these abscesses.

20*th.*—No apparent change in size of tumour; the yellowish colour of the superficial integument still more marked, as also the feeling of fluctuation. The pulsations still more diminished in force, although no consolidation can be detected by the finger gently applied in any part of its extent. A slight discharge of healthy pus oozes through the dressings of the wound. Complains of a slight but dull pain in the back part of the head, not removed by the free action of a dose of castor oil taken early in the morning. An anodyne draught was again prescribed.

22*d.*—Pain of head gone. The yellowish hue of integument still continues, and extent of surface occupied by tumour not diminished, but the tumour is more irregular in shape, having lost the roundish form which it has hitherto presented, and become more flattened and nodulated. On removing the dressings from the wound, it was found that union by the first intention had not taken place in any point, but the edges were healthy, and the quality of the pus discharged good.

30*th.*—General state of patient continues satisfactory. The condition of the tumour, as regards size, pulsation, colour of integuments, and feeling of fluctuation, very little, if at all, changed. This day, being the fourteenth from the date of operation, the ligature was removed, the wound being lessened in extent, and presenting a healthy appearance.

Dec. 12*th.*—Size of tumour, although different in form, is about the same as before operation; but although the pulsation is more faint, no consolidation, such as might have been expected from formation of coagula, can be detected by the most careful manipulation. The investing integuments still present a yellowish aspect, less intense, however, than eight days ago, and the sense of fluctuation (although still perceptible) more obscure. The flattened and nodulated form continues as before, and at two points on its surface (one at upper part and the other near sternum) small nipple-like projections, not unlike the pointings of an abscess, are observed, divided by the sterno-cleido-mastoid muscle.

Jan. 19*th*, 1852.—The wound having now nearly closed, and the yellow discoloration having in great measure disappeared, although the prominences already described still remained, the patient, feeling tired of the restrictions of an hospital, was, at his urgent request, allowed this day to leave, on engaging to return occasionally and show himself, and with strict injunctions to allow no one to interfere with the tumour.

The patient remained out for upwards of two months, during which period he frequently presented himself at the hospital. His general health did not improve, but examination could detect no organic affection of the heart, lungs, or other viscera. The tumour in neck gradually extended in circumference, with some surrounding induration of the tissues, and became the seat of pains, of which the patient complained much, as preventing sleep. The two

conical projections resembling the pointings of an abscess, already referred to, had also become more enlarged, and although the integuments were not so attenuated as to give indication of their speedily giving way, it was evident that this would occur at no very remote period.

March 30th.—Patient's wife called at the Infirmary, during the hour of visit, to say that the swelling had been punctured—that a considerable discharge of blood had taken place, and that her husband was very desirous to be visited by Mr. Watt, who, shortly thereafter, accompanied by his hospital colleague, Professor Lawrie, proceeded to his residence, about four miles from town, when, finding him miserably lodged and otherwise cared for, they obtained, with difficulty, his consent, and had him conveyed back to the Infirmary. On his readmission, patient stated that, five days previous, he was induced, from the excessive pain which he suffered, to call in his surgeon, who, still insisting that it was merely an abscess, thrust a lancet into the outer and upper projecting point of the tumour, when there came forth a quantity of dark-coloured clotted blood. After this he punctured the lower prominent part, situated over the course of the carotid, and gave issue to a small quantity of the same kind of blood; altogether, patient thinks there escaped about four ounces. The surgeon seems to have apprehended something serious after his ineffectual attempts to empty the "abscess" thoroughly, for he placed himself behind the patient, and checked the further escape of blood, by pressing his thumbs against the openings he had made, at the same time desiring the patient to assist him. Finally, he applied a compress and bandage. On examining neck after admission, the tumour was found less in size, but still considerable in extent, and the openings made by the lancet patent and suppurating, but no coagula were to be seen; the wound from the operation was not yet altogether closed, and purulent matter oozed from a fistulous opening at the point from whence the ligature had been removed. A pledget of lint soaked in tepid water was applied over the wounds, covered with oiled silk, and sustained by a bandage loosely applied around the neck. An anodyne draught was ordered at bedtime, and to be repeated, if necessary, each succeeding night.

April 5th.—Since his readmission, clots of blood, intermixed with purulent matter, have been escaping; at times, also, pieces of matter resembling aneurismal coagula have been discharged from the wounds, which have enlarged considerably from extension of the ulcerative process.

7th.—To-day, at half-past two, was shown to a consultation. A large coagulum was found on the dressings, apparently just escaped from the larger opening. Whilst he was being examined, lying in bed, a slight gush of arterial blood took place. A compress and bandage were instantly applied, and the hæmorrhage arrested. About half-past three, another gush of blood took place. He was

seen immediately, and the blood was found streaming out in all directions, both above and below the bandage. Another compress and bandage were applied above the former, but without stopping the flow of blood. Pressure with the fingers over the compress, and above the openings from which the blood issued, was now had recourse to with the desired effect. From the great loss of blood, patient had become pale and collapsed, with all the symptoms indicative of approaching dissolution. He, however, revived wonderfully in a short while. A number of the hospital students having volunteered their assistance, they were appointed to sit by the bedside, and keep up constant pressure over the openings in the neck. At eight P.M., the dressings being now stiffened with dried blood, and the hæmorrhage having ceased, patient was considered safe for a short time.

19*th*.—Since the date of last report, hæmorrhage had not recurred, and patient appeared to be rallying quickly from the repeated losses of blood which he had sustained, although he still retained a pale exsanguine look. The tumour had become almost flat in the neck, the openings freely discharging purulent matter, and showing a disposition to close. At six o'clock this evening, however, another spontaneous effusion of blood took place, and he was instantly attended to. He was found in a semi-erect position in bed, pale and ghastly, yet quite sensible and collected, compressing the neck with his hands. Streams of arterial blood were issuing from both above and below the bandage, which, for about eight days, had been put slackly around the neck. He was also breathing with difficulty, coughing, and expectorating pure frothy blood, while a large quantity also issued from the nostrils. Compression easily commanded the external hæmorrhage, but he gradually became weaker and unconscious, the cough and expectoration of blood continued, and in less than a quarter of an hour he expired.

For the following account of the *post-mortem* appearances of this most interesting and obscure case, from the Pathological Register of the Infirmary, I am indebted to the kindness of Dr. Aitken:—

"*Mixed aneurism of aortic arch opening into left subclavian triangle of neck by rupture of sac, also into left lung and left sterno-clavicular articulation.*

INSPECTION OF BODY TWENTY HOURS AFTER DEATH.

EXTERNAL APPEARANCES.—Surface of body pale and bloodless. Three openings existed through the skin on the left side of the neck, two of these were situated immediately above left sterno-clavicular articulation. They both passed into the space between the sternal and clavicular portions of the sterno-mastoid muscle, and communicated with a slough, composed partly of bloody clots, and partly of dead texture, in connection with the cavity of the aneurism.

The third opening was situated in the upper third of neck, in the course of the carotid artery, and communicated with the spongy texture of the interior of that vessel, which had been obliterated by a ligature twenty weeks previous to death. This opening passed through a superficial jugular vein, which contained a coagulum of softened and decomposing blood, reaching downwards as far as the slough before mentioned. The textures in this region were much condensed and altered, by an increased amount of binding tissue, and by the sloughing of the softer parts. The lymphatic glands were also considerably enlarged, more especially in the subclavian spaces.

THORAX.—On opening the cavity of the thorax, the lungs were prevented from collapsing by numerous bands of fine fibres, binding their surfaces to the costal pleuræ on both sides; but the whole of the right lung, and the two lower thirds of the left lung, appeared to possess all the qualities of healthy pulmonary tissue. Firm adhesions of the pericardium to the sternum required also to be cut through before raising that bone; and as the density of adhesion increased between the manubrium and the parts immediately below it, the body of the bone was removed at this part. A small amount of pus-like exudation lay upon the surface of the exposed space. The pericardium, pleura of the left side, and the remains of the thymus gland, were firmly adherent to each other. On opening the cavity of the pericardium (which appeared more than usually distended), an increased amount of fluid escaped from it; and that portion of the inner surface of the membrane which is reflected from the aorta, the left pulmonary artery, and bronchial vessels, presented a marked increase in vascularity, approaching to an inflammatory state. As the parts immediately surrounding the left sterno-clavicular articulation, extending as far downwards as the origins of the great vessels, and a considerable portion of the upper lobe of the left lung, were involved in one solid tumour, it was deemed expedient to divide the clavicles at their outer third, and the first rib at the vertebral side of the subclavian groove, and separating the parts from the vertebral column, downwards from the base of the skull, as far as the diaphragm, so as to remove them in a mass for further inspection.

The following is an account of the pathological condition of the parts:—

After an injection of coloured size had been thrown into the thoracic duct, the veins and right side of the heart, along with the pulmonary artery, became moderately distended, and at the same time the injection oozed out from the lower openings, communicating with the slough in the lower part of the neck, showing that the cavities of veins or lymphatics communicated freely, by open orifices, with this sloughing part. The thoracic duct was entire. A large tumour was now evident, most con-

spicuously in the space behind and above the root of the left lung, and completely filling the space forwards and upwards towards the clavicle and the sternum in front. The left subclavian and carotid arteries were dissected from their origins at the arch upwards through the grooves on the posterior aspect of the tumour. The former vessel appeared unchanged, the carotid was obliterated (from ligature) downwards to its origin from the arch. The left subclavian vein was compressed by the upper and posterior part of the tumour. The pneumogastric nerve of the same side was flattened out, and firmly imbedded in the substance of the tumour; so also was the phrenic nerve towards its outer and anterior aspect, along with the internal mammary artery.

The aneurismal sac was observed to proceed from the ascending portion and arch of the aorta, at its anterior aspect, so as to involve the arteria innominata, and the origins of the other large vessels in its dilatation, and holding the relations with those parts which I have already described. The parietes of the sac were of a fibro-cartilaginous density, and appeared to be greatly thickened at the expense of the condensed surrounding areolar tissue, more especially behind and laterally. Through the medium of this substance, as well as through new formations, the sac was firmly coherent with the following surrounding textures:—

1st, Pleura of left side. 2d, Periosteum on inferior surface of clavicle and sternum. 3d, With the left subclavian vein. 4th, With the condensed tubular prolongations of fibrous tissue, received from the pericardium. 5th, Enlarged lymphatic glands.

The coalescence of all these parts with the sac of the aneurism was marked by a great increase of vascularity, and, in some parts, by destruction of the texture of the walls of the sac itself, so that the aneurism, originally circumscribed by the arterial tissue, strengthened by coalescence with surrounding parts, had at last given way, and permitted the blood to diffuse itself among surrounding textures.

The wasting of the parietes of the sac was observed to have taken place by slow degrees in two places: first, towards the sternal end of the clavicle; and this change had been accompanied by the disappearance of the periosteum between the sac and sternal extremity of the clavicle, and also of the capsular ligament of the sterno-clavicular articulation, so that the cavity of that joint had been made one with the aneurism. In this direction, the contents of the sac had been still further diffused into the left subclavian triangular space, passing up by the pleura of that side. The sloughy condition of this space may be attributed partly to the pressure of the sac upwards, and enlargement of the lymphatic glands, but more especially by external openings made through the skin, and the swollen parts penetrating the superficial vascular canals (venous and lymphatic), promoting thereby the destruction of parts from without inwards, and by permitting the

access of the external air to a part already in a state of inflammatory action. Secondly: An opening existed in the anterior and outer side of the aneurismal sac, which allowed its contents to be diffused into the space between the serous layer and fibrous prolongation of the pericardium over the aorta and pulmonary artery. This opening had, secondarily, penetrated into the pulmonary tissue on the anterior margin of the upper lobe of the left lung, which was condensed into about a third part of its substance.

Condition of the Arterial Tissue.—A section having been made so as to remove the anterior half of the sac, in connection with a portion of the aorta, the inner membrane of that vessel was exposed. Shining through it, a number of small roundish patches, with more or less sharply defined edges, were very apparent. Of an intense yellowish-white colour, they contrasted with the colour of the artery, somewhat dyed with the blood, and were very abundant, from the sinuses of valsalva, upwards to the aneurismal sac. Some of these patches were flat, others somewhat elevated, and the arterial tissue appeared corrugated and friable in their immediate vicinity. They varied also in consistence, from the softness of lard to the hardness of bone. A microscopic examination showed a large quantity of fat granules, broken crystals of cholestrine, and irregular, round, or angular crystalline masses of calcareous salts. The valves of the heart, and the heart itself, appeared to be quite healthy.

Contents of the Sac.—Fibrinous layers, in concentric series, almost completely filled the sac; but towards both openings in the parietes, these layers became deficient, and appeared to be crumbling down, to mingle with the sloughing and ulcerating textures. The sac appeared to have been originally formed of the external, and what remained of the middle coat, free from atheroma, and efficient to act as a yielding and confining texture. A membrane, of secondary formation, partially lined the cavity of the aneurism, and spread out, by the openings in the sac, to line the cavities formed by the dissecting agency of the blood."

Remarks.—It is at all times a difficult and perplexing matter to decide, with any degree of precision, the nature, seat, and relations of tumours appearing in the cervical, especially in the supra-clavicular regions. Generally speaking, few symptoms and appearances are more obscure, equivocal, and deceptive than those presented by tumours seated in the neck. There is a twofold difficulty to encounter in these cases:—1st, to diagnose their precise character and nature; and 2d, to ascertain their exact origin and seat. The case above detailed is one illustrative of both these difficulties. Aneurisms, abscesses, sarcomatous or encysted tumours, and enlarged glands, are very apt to be confounded with, or mistaken for, one another. It is no uncommon thing for an aneurism to exist with entire absence of many of the

supposed ordinary or pathognomonic symptoms, while tumours, particularly those having fluid contents, may simulate aneurism by pulsation or impulse derived and transmitted from some subjacent or neighbouring artery. It is not always easy to distinguish the difference between "independent and communicated pulsation" in such cases. The entire absence of the *bruit de soufflet* does not necessarily prove that no aneurism exists. Pressure on the tumour may cause it to recede from beneath the fingers amongst the subjacent soft parts, without either being emptied of its contents or diminished in size. If much coagulum is present in the aneurismal sac, it may convey a firm solid feel, without being materially affected by compressing the vessel between it and the heart. Serious and even fatal mistakes have occurred, and that, too, in the practice of distinguished surgeons, by placing too much confidence on one or two symptoms. These and analogous points were suggested to the mind during the early history and progress of the foregoing case.

Another difficulty which we have to notice in the case of aneurisms appearing in the neck, is the determination of their exact source, relationships, and site. In many cases it is almost impossible to arrive at anything like a correct diagnosis during the lifetime of the patient. The true state of matters can only be revealed by dissection after death. In Poland's case, for instance, there was an external tumour, which presented all the usual appearances of carotid aneurism, but which, on *post-mortem* inspection, was found to proceed from the aortic arch—to be purely intra-thoracic in its origin—to be altogether unconnected with the vessel supposed to be involved; and lastly, to arise on the right side, and then cross over, so as to become prominent on the left. Neither auscultation nor percussion of chest, although carefully and frequently performed, served in the least degree to clear up the difficulties in diagnosis which from the first beset the case.*

In illustration of the difficulty found in the diagnosis of the exact seat of aneurismal tumours in the lower part of the neck, Dr. Norris, in his paper enumerating the cases in which Brasdor's operation was performed on the carotid for aneurism, states—"That in three of the cases in our table, where the root of the carotid or the innominata was supposed to be the seat of the tumour, it was found actually to have arisen from the aorta itself."† Hodgson,‡ Macfarlane,§ and Allan Burns,‖ notice cases in which similar

* For an able and elaborate paper by Dr. Holland, on the Differential Diagnosis of Aneurismal Tumours, see Dublin Quarterly Journal of Medical Science, 1852.

† American Journal of the Medical Sciences for July, 1847

‡ On Diseases of the Arteries and Veins, p. 90.

§ Surgical Reports, p. 18.

‖ Surgical Anatomy of Head and Neck, p. 41.

errors in diagnosis occurred. Two other interesting and instructive instances are mentioned by Velpeau, and noticed by Norris, where Brasdor's method of operating was had recourse to on the carotid for supposed aneurism of that vessel:—"One of these was observed in the civil hospital of Amsterdam, in a man affected with an aneurismal tumour projecting above the sternum. M. Tillanus, believing the left carotid to be the seat of the disease, tied that vessel a little beyond the tumour. The patient recovered from the operation, but died suddenly, five months afterwards, when the tumour was seen to arise from the cross of the aorta, and to be completely filled with a white clot. . . . In the other case, the aneurism, which appeared to be on the point of bursting, showed itself, as the preceding one, just above the sternum. Looking upon it as an aneurism of the carotid, M. Rigen placed a ligature above the tumour on the 21st Feb., 1829. After the operation, the tumour diminished considerably in size, and the sufferings of the patient became less. On the 13th June following, he died with symptoms of asthma. The autopsy showed the aneurism to have its origin in the arch of the aorta, between the left carotid and the innominata, and was filled up, as in the case of Tillanus, by coagula."*

These cases, and that of Poland, show that an aortic aneurism may so extend and manifest itself at the root of the neck, as to resemble aneurism of the carotid, and be mistaken for such. One deceptive appearance in such cases may be thus so far accounted for. The sternum and clavicle tend to prevent the direct anterior projection of the tumour. It is thus diverted from its course, passes behind the clavicle, and bulges out above it, thus giving it a constricted appearance, as if altogether confined to the neck. Besides, it is but natural to suppose that aneurisms tend to enlarge in the direction in which the dilating or distending force is applied, and where they encounter the least resistance. It seems to be generally admitted, that the ascending portion and arch of the aorta is the most common or frequent seat of aneurisms. The statistics of aneurismal pathology support and confirm this opinion. It was indeed long ago stated by Dr. Monro, primus, that aneurisms so seated were more frequent than aneurisms of all the other arteries together. Of 63 cases of aneurisms in the different arteries of the body—collected and arranged in a tabular form by Hodgson—21, or one-third, were found to originate in the arch and ascending aorta.† This great frequency has been ascribed by authors to two causes. 1st, Pre-existing disease of the arterial coats from calcareous or atheromatous deposits. 2d, The angle of curvature at the arch receiving the full force and effect of the impetus or momentum of the blood, as it is forcibly

* Nouveaux Eléments de Mèdecine Opératoire; and also Norris, in American Journal, July, 1847.

† Hodgson on the Pathology and Treatment of Aneurism, &c., p. 87.

propelled from the left ventricle of the heart. On looking over numerous published cases of aneurism, I have, more than once, been struck with the great frequency of aneurisms situated in the right, as compared with those on the left side of the neck. It is now a well-known and undisputed fact, that aneurismal disease, in general, is not nearly so common in women as in men, although aortic aneurisms are generally supposed to be about as frequent in the one sex as the other. Of the 21 cases of aortic aneurisms in Mr. Hodgson's table, 16 were males, and 5 females. Guthrie, in his work "On the Diseases and Injuries of the Arteries," says:—"Women are less liable to internal aneurisms than men, but not in the proportion usually attributed to them. The difference in external ones, and particularly of the lower extremities, is certainly remarkable."*

In an aneurism of the nature of that which was revealed by inspection in Poland's case, it is clear no benefit could be derived from any operation. If, however, as was supposed, the seat of the aneurism had been at the aortic portion of the carotid, the obliteration of the cavity of the vessel which took place after the deligation, entirely arresting the circulation of the blood through the sac, and favouring its coagulation, gives fair grounds for the belief that Brasdor's method of treating aneurismal tumours by ligature on the distal or capillary side, may, in certain cases, prove successful. Until Brasdor's time, all cases of aneurisms, where the Hunterian operation could not be performed, were virtually considered hopeless and incurable; and much difference of opinion still exists as to the propriety of, and benefit likely to result from, his operation. It has been condemned by several eminent surgeons, amongst others, Guthrie, Sir A. Cooper, Allan Burns, &c. After a very extensive research, I had collected from various sources cases illustrative of Brasdor's operation on the carotid, but subsequently found that Dr. Norris, to whom reference has already been made, has published 15 such cases, and which he has arranged in a tabular form. Of these, and four other cases in addition to those noticed by him, 12 were males, and 7 females. The ages varied from 28 to 75. The operation was performed 15 times on the right, and 4 times on the left carotid; 4 are said to have been cured; 7 recovered, and were benefited by operation; 7 proved fatal after a longer or shorter interval; and in 1 case, where there was some doubt as to artery being tied, no relief was obtained; 10 were for aneurisms, or cases supposed to be such, of the arteria innominata; of these, 5 are reported as having recovered, and 5 died; in 6 cases the aortic arch was the seat of aneurism; in 3, derangement of cerebral functions followed the application of the ligature, and in one of these there was paralysis of the left side of the body.

* Guthrie, page 87.

The following are the chief points of interest, in a surgical point of view, in Poland's case:—The sensation experienced at the period of supposed strain or torsion of the neck, and the speedy discovery thereafter of a pulsating tumour, probably cotemporaneous with the rupture of the sac into left subclavian triangle; the situation occupied by the tumour; the signs indicating the left carotid to be the seat of the aneurism; the absence of symptoms of cardiac and pulmonary disease; the rapid enlargement of the tumour after first consultation; the diminution of force in pulsations; increase of pain, hoarseness or huskiness of voice; dysphagia, &c., are all interesting features in the case. The difficulty which was found in deciding upon an operation, the facility with which the vessel was secured, the non-interference of the vein, and the accident of the breaking of the ligature, although its strength was tested beforehand, are all circumstances worthy of note. The increased frequency of pulse after operation, probably caused by the combined influence of fear and chloroform; yellowish colour of integuments of tumour; feeling of fluctuation; projecting points on its surface; the mistake made in treating it as an abscess, and the length of time the patient survived thereafter, are all points well deserving attention. If the patient had been seen, and the operation performed at an earlier period, although life might not have been preserved, the final catastrophe might have been longer averted, by allowing increase of fibrinous deposits in the aneurismal sac, less distension of its parietes, and delay in the ulcerative process, which led to the immediately fatal result. The fatal hæmorrhage, it will be observed, was at once both external and internal; the former proceeding directly from the orifices in the tumour, the latter from the mouth and nostrils, which, together with the pure frothy character of the blood, the suffocative symptoms induced, as well as from what dissection disclosed, proved that the aneurism had burst into the left lung.

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