ON THE

TREATMENT OF AXILLARY ANEURISM.

BY

JAMES SYME, F.R.S. EDINB.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF EDINBURGH,
AND SURGEON TO THE EDINBURGH ROYAL INFIRMARY.

Received March 17th.—Read April 24th, 1860.

THE operation for aneurism which constitutes the principal connecting link between the honoured name of John Hunter and practical surgery, has hitherto been regarded as one of the greatest improvements in surgical practice. The advantages of this procedure were indeed no less manifest than unquestionable with regard to the case for which it was proposed ; since popliteal aneurism is in all respects unfavorably situated for the old operation, while the long stretch of undivided femoral artery affords free scope for acting on the new principle. Dr. Wilmer, of Coventry, tells us that, at the time he wrote (1780), there was not a single well-authenticated instance of this aneurism having been treated successfully by the old operation ; and it is therefore not surprising that the facility and safety with which the disease was remedied by tying the artery in the fore part of the thigh, made a powerful impression upon all who became acquainted with this method of treatment. The old operation was consequently at once abandoned, and enterprising

surgeons, in this as well as other countries, by their bold and successful efforts, opened a wider field for carrying out the Hunterian principle. Some traumatic aneurisms, more especially those of the smaller arteries, were deemed proper exceptions from the new system, but as the great leading principle of practice, it was universally admitted that the disease should be combated by ligature of the artery beyond the confines of the tumour. Such is the principle which, in common with other teachers of surgery, I have inculcated for more than thirty years, and of which I now feel it my duty to question the soundness.

In every aneurism, whether large or small, traumatic or spontaneous, the aperture of the artery is situated towards the centre of the tumour, so that a portion of the vessel, longer or shorter according to the size of the sac, is contained within its cavity, or rather embraced by its wall. Thus, in a very large aneurism ascending from below the groin nearly to the umbilicus, for which I tied the common iliac, the arterial opening was found to be only a little higher than Poupart's ligament; and it might always be expected to possess this relation to the cavity, when the process of formation is kept in mind. It has become a long-established and generally received principle in surgical pathology, that the extent of artery thus enclosed in the aneurism, or rather comprehended by its sac, is unsound, and unsuitable for ligature, while the vessel beyond the confines of the tumour is free from any participation in the disease. But, when this opinion is fairly examined, it will be found devoid of any good foundation; since the artery, though in some measure isolated from its neighbouring connexions by the effused blood, still retains the same relation as before to its sheath, and consequently, receiving a full supply of nourishment, is nowise unfitted for the process of obliteration by ligature. Indeed, when we trace the progress of an aneurism from its small beginning to a large size, it appears inconsistent with reason to consider the vessel sound so long as it can be felt beyond the tumour, and diseased so soon as it becomes overlapped or enclosed by the expanding sac. Whether the case

be traumatic or spontaneous, there thus does not seem to be any reason for looking upon the portion of artery in question as unfit for being the subject of operative procedure. Under the influence of this consideration, I have treated all the aneurisms at the bend of the arm, resulting from wounds of the humeral artery though venesection, which have come under my care, amounting to ten in number, by opening the sac, and applying ligatures on both sides of the aperture. Proceeding upon the same principle, in a case of carotid aneurism caused by the thrust of a knife, at the lower third of the throat, and which extended from below the clavicle upwards, I did not scruple to lay open the cavity, and while hæmorrhage was restrained by pressure of my finger, to tie the vessel above as well as below the aperture, with the happy result of not only saving the patient's life, but also of preventing his assailant from forfeiting his, which under the circumstances he certainly would have done in the event of the case proving fatal. In a case of axillary aneurism, in a gentleman of about fifty-two years of age, where ligature of the subclavian was prevented by intense inflammation of the arm, rapidly running on to gangrene, I performed amputation at the shoulder-joint, cutting through the sloughy sides of the aneurism, and tying the artery where it lay within the sac. The patient made a speedy recovery, and lived in good health for several years afterwards. In another case of axillary aneurism, of which the subject was a gentleman of about twenty-two years of age, and in which also there seemed to be no alternative, I amputated at the shoulder-joint, with the same satisfactory result. But the following case, which lately occurred in my hospital practice, affords a much more striking illustration of the principle in view, and may, I think, not improbably suggest an alteration in the practice generally followed.

David Lockie, æt. 47, applied for admission into the hospital on the 26th of January, on account of a large tumour, which completely filled the left axilla, and greatly

distended the muscles, before as well as behind the shoulder. The skin was tense, but not at all discoloured, and an obscure fluctuation could be perceived throughout the whole extent of the swelling, which the patient positively stated had not existed more than a week, although for nearly two months he had felt pain in his shoulder, and observed that there was no pulse at the wrist. There was a distinct aneurismal bruit, but no pulsation that could be felt in the tumour, except at its upper part, which projected above the clavicle. As in these circumstances there could be no hesitation in regarding the disease as an aneurism, careful inquiry was made as to the probable cause of its origin, but at first without success, since the patient positively denied having experienced any blow or wrench adequate to produce the effect. At length, however, he stated that, being tenant of a saw-mill, he occasionally assisted his men in turning heavy logs by means of the "cant-hook," and that upon such occasions—having had his left hand amputated at the wrist-joint by myself twelve years ago, on account of an injury from a saw—he was accustomed to rest his elbow on the pole, which was apt to spring up with great force, and thus subject his arm to a violent jerk at the shoulder. Having met with a case of axillary aneurism which was caused by the patient simply raising his arm to prevent his hat from being blown off as he got out of a railway carriage, I deemed this explanation sufficient.

In the course of a few days after admission the tumour enlarged considerably, and assumed a dark colour on some parts of its surface; while a slough formed over the scapula, where the pressure was most severe. At the same time the patient began to wander in his ideas, and his pulse rose to 130. It was therefore manifest, that unless some decided steps were taken without delay to afford relief, the result must very soon prove fatal. Ligature of the subclavian was quite out of the question, from the tumour extending above the clavicle; and amputation at the shoulder-joint at first seemed to be the only alternative. But before

proceeding to this desperate remedy, I felt desirous of ascertaining the state of matters in the axilla, and therefore proceeded in the following manner.

On the 1st of February, chloroform having been administered, I made an incision along the outer edge of the sterno-mastoid muscle, through the platysma myoides and fascia of the neck, so as to allow a finger to be pushed down to the situation, where the subclavian artery issues from under the scalenus anticus and lies upon the first rib. I then opened the tumour, when a tremendous gush of blood showed that the artery was not effectually compressed; but while I plugged the aperture with my hand, Mr. Lister, who assisted me, by a slight movement of his finger, which had been thrust deeply under the upper edge of the tumour and through the clots contained in it, at length succeeded in getting command of the vessel. I then laid the cavity freely open, and with both hands scooped out nearly seven pounds of coagulated blood, as was ascertained by measurement. The axillary artery appeared to have been torn across, and as the lower orifice still bled freely, I tied it in the first instance. I next cut through the lesser pectoral muscle, close up to the clavicle, and holding the upper end of the vessel between my finger and thumb, passed an aneurism-needle, so as to apply a ligature about half an inch above the orifice. The extreme elevation of the clavicle, which rendered the artery so inaccessible from above, of course facilitated this procedure from below. Everything went on favorably afterwards. The edges of the wound, which had been brought together by stitches of the silver suture, united chiefly by the first intention. The ligature was found loose on the thirteenth day, the pulse gradually decreased in frequency as the patient regained his strength, and the discharge, which was at first profuse and mixed with clots of blood, progressively diminished. He was dismissed on the 14th of March, six weeks after the operation, and has since resumed his employment, in the possession of perfect health.

The circumstance in this case which appears to me most deserving of attention in a practical point of view, is the method that was employed to obtain command over the artery before it was tied, since, unless this had been done, it is obvious that a fatal hæmorrhage must have speedily ensued after the sac was opened. Thirty years ago I acted upon the same principle in my first operation for removing the superior maxillary bone. An attempt had been previously made by another person to accomplish this object, but without success, on account of the hæmorrhage; and, although at a loss to understand how it should prove troublesome, if the incisions were properly conducted, I resolved to obtain command over the only source from which the blood could proceed from the deep part of the wound, which was the internal maxillary artery. With this view I made an incision between the ramus of the jaw and mastoid process, so as to enable the gentleman who assisted me, the late Sir George Ballingall, to introduce his finger, and compress the vessel on the neck of the condyle. This had the desired effect, which, as I expected, proved quite unnecessary, and the operation was completed, for the first time in Great Britain, on the 15th of May, 1829.

I venture to hope that, through the employment of this expedient, axillary aneurisms not amenable to ligature of the subclavian artery may be remedied by the old operation; and I am inclined to think that, even in cases where the former procedure is practicable, the latter may be preferable. Upon two occasions I have tied the subclavian artery for aneurism with perfect success, and have therefore no prejudice against the operation; but, nevertheless, I feel satisfied that it is much more difficult of execution, more apt to be followed by hæmorrhage, as well as fatal inflammation of the deep textures, and less certain to afford relief, than the other method. For it by no means necessarily follows, that after the artery has been tied, the contents of the aneurism are always absorbed, while, when the sac is opened, the whole of the effused blood is at once removed.

How far the principle for which I now contend may be applied to aneurisms of the groin, requiring a high ligature of the artery, I shall not at present inquire. But if the practice should be so extended, those surgeons who prefer pressure and position to ligature for their treatment of popliteal and femoral aneurisms will find their field for performing the Hunterian operation so limited, that what has hitherto been held the rule of surgery, will be regarded as an exception.

POSTSCRIPT.

On the 15th of August, in accordance with the principles above explained, I performed the old operation for an aneurism, not traumatic, at the lower part of the axilla, in a gentleman about fifty, recommended to my care by Dr. Embleton, of Embleton, in Northumberland. The patient returned home on the 5th of September.

12th September, 1860.