A CASE
OF
DESTRUCTION OF A PORTION OF THE
AXILLARY ARTERY
BY
SARCOMA.

BY
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A LABOURER, aged thirty-three, a fine, powerful man, came to the hospital in November, 1884, with a large tumour in front of the chest on the right side, plainly visible by its prominence, although situated beneath the pectoral muscles. It extended from beneath the clavicle to the axilla, where it could be seen and felt with a well-defined border, immediately behind and somewhat beyond the lower margin of the pectoralis major. The mass was uniformly soft; to some suggesting even fluid, but to most of us a texture like fat or cellular tissue. There was no pain or any material uneasiness in the part, but the pulse in the arm of that side was much smaller than in the opposite one. The man himself had been aware of something wrong for about nine or ten weeks, and during the fortnight or so that it was under observation the tumour manifestly increased.

It was decided to attempt the removal of the growth. I exposed its outer extremity by a free incision along the lower margin of the pectoralis major where it appeared, through the fat of the axilla, by the well-defined surface of a distinct capsule, but a little further dissection clearly showed it to be a soft sarcoma. The pectoralis major first, and then the minor, were divided so as to reach the upper portion of the tumour, which extended to the large vessels, and was found completely investing them for at least some three or four inches of their course. All that part of the tumour which lay below the vessels was easily removed, but it was determined to make no attempt to detach the portion which invested the vessels, and we proceeded to secure some small and insignificant arteries which had been divided in the operation. While thus engaged it was observed that the hæmorrhage, which up to that time had been but slight, began to increase considerably from the region of the upper portion of the tumour, but no particular vessel, as its source, could be distinctly seen. However, even every touch with the sponge seemed to make matters worse, and in a few seconds more there was such a gush of arterial blood that it was with the utmost difficulty controlled by Mr. Marsh, who dexterously grasped the bleeding mass. An endeavour was made to assist him by pressure on the sub-clavian above, but this had very little or no effect. In order to obtain a clearer view of the bleeding orifice I exposed for a short distance the axillary vein, a small part of which could be just seen, placed two ligatures on it, divided it between them, and turned the ends up and down. Then we could discover no artery in the situation where the axillary ought to have been found, but it was plain that the blood came from the place which it should have occupied—both from above downward and from below upward. After two or three ineffectual attempts, I succeeded in grasping the upper orifice with pressure forceps, which arrested the hæmorrhage in that direction, but the abundant hæmorrhage from below still continued

until the lower orifice was in like manner secured. When the immediate danger from this cause was over we could with more leisure secure two or three other bleeding points in the immediate neighbourhood by additional forceps, but no ligature would hold, and after one or two futile attempts to apply them, we were compelled to leave the forceps as they had been placed on the vessels. Around them, for additional security, some strips of lint, soaked in a solution of perchloride of iron, were carefully packed, and the wound was partially closed. It had become evident to us all that the integrity of the main artery had been destroyed by the disease; for in no other way could the furious hæmorrhage be explained, as the knife had never been used in that region at all, and when the vein was divided no trace of the vessel in its place could be found.

The man was in a state of collapse for some time, but he gradually rallied, and for just a week after the operation he went on as well as possible. There was no sign of any recurrence of the hæmorrhage, and his only complaint was of some numbness in the tips of one or two of the fingers. But then, on a sudden, there was a violent gush of blood from the wound, and before it could be arrested the man was dead.

The axillary artery was traced from below upward in a natural state, until it arrived at the substance of the tumour, into which it passed. When this was laid open, an irregular aperture was found in the artery just above the lower border of the tumour, and from this point upwards, for another few lines, the artery was completely broken up and rapidly disappeared, so that, for about two and a half or three inches, no further trace of arterial wall could be discovered. The boundary of the cavity beyond, through which the blood must have passed, appeared to be simply the substance of the tumour, until at its upper part, just below the clavicle, arterial wall was again found, and this was continued, surrounded by the tumour, into the subclavian artery.

The substance of the arterial wall, especially of its lower portion, was infiltrated with the sarcomatous growth, and was thus rendered soft and easily lacerable. Round cells, in abundance, were crowded through the whole thickness of the arterial tunics. The termination of the artery, below and above, in the tumour was very indefinite. The tissue of one blended with that of the other, so that it became impossible to define exactly where the artery ended and the growth began. The lower portion of the artery, for an inch and a half from the orifice, was occupied by firm pale clot, evidently of some duration.

Mr. D'Arcy Power has been good enough to favour me with the following note of the histological appearances presented by the axillary artery at a point immediately below the seat of rupture.

"The artery is embedded in a mixed-celled sarcoma, which has infiltrated the tunica externa in such a manner as to render it impossible to separate the vessel from the tumour. The middle coat is thickened by an increase of its fibrous tissue, and intermixed with the elastic fibres are a large number of sarcoma cells, most of them round, others fusiform. A distinct band of sarcoma tissue occupies the centre of the middle coat. The internal coat is reduced to a thin elastic membrane, which has, in some places, given way, thus allowing the sarcomatous tissue to extend into the lumen of the vessel. The same changes are visible in sections of the thoracic axis."

The axillary vein, which had been divided in the operation, was found to be but little altered—perhaps somewhat dilated where it passed through the substance of the tumour; but there was no breach of its continuity. It was filled with recent clot.

The nerves of the brachial plexus were found in a normal state.

The tumour itself presented all the characters of a round-celled sarcoma.

Another case like this is not within my experience, nor can I find a similar one on record. Of course, in-

stances of malignant tumours—both sarcoma and cancer—and others, involving large vessels, and even completely including them, have been frequently met with. Nay, instances are not very rare in which such vessels, by such means, have been seriously obstructed, and even penetrated or otherwise much damaged by the invasion of the growth. But here a considerable portion of the axillary artery was completely destroyed, and, for more than two inches, the blood stream must have passed through a channel whose walls were formed of the substance of sarcoma only. I suppose it would be generally affirmed that the arterial tunics are remarkable among tissues for the resistance they offer to destructive action of any kind. We all are familiar with cases in which they have been seen traversing long tracks of disease that has destroyed the surrounding structure, still in their integrity. There are indeed, I need not say, notable exceptions to this. For one, I may refer to a case recorded in the sixty-fourth volume of our 'Transactions,' in which several inches of the common carotid artery, as well as of the jugular vein and pneumogastric nerve, had disappeared in an abscess. But the present case is remarkable, and to me singular, in that there was not only complete destruction of a large portion of an artery, and this by a malignant growth, but that no other structure invaded by the tumour appeared to have suffered in any considerable degree.

The specimen is preserved in the museum of St. Bartholomew's Hospital.

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' New Series, vol. ii, p. 25.)