C A S E
OF
ANEURISM OF THE EXTERNAL ILIAC
AND
COMMON FEMORAL ARTERIES,
TREATED BY
DIGITAL PRESSURE.
WITH OBSERVATIONS.

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JOHN RUDD, æt. 31, was admitted into St. George's Hospital on the 30th of January, 1862. He was a thin man, above the average height, with a light eye and a dilated pupil.

Three months previously he was running in order to catch a train, when his foot slipped, and he immediately experienced some pain in the left groin. He had on previous occasions felt pain in the same situation, but this he had attributed to rheumatism.

A fortnight afterwards he had a slight fall, and then his attention was directed to a swelling in the left groin, which he observed at that period "to jump." From that date he has had more or less pain in the part. Upon his admission into the hospital, the whole of the thigh was considerably

swollen, and some patches of livid discoloration existed on the outside of the limb. In the left groin was a tumour, four inches in diameter from side to side and from above downward. This extended some way above Poupart's ligament. It pulsated strongly in every part, and the sensation conveyed to the touch was as if very little solid matter were contained in the swelling.

Upon the application of the stethoscope the aneurismal bruit was heard most distinctly, and a very distinct thrill could be felt in every part of the tumour. All pulsation in the part could be arrested by pressure upon the external iliac artery, but this pressure, when long continued, gave considerable pain and inconvenience. Forcible flexion of the thigh upon the body did not stop the pulsation.

Twelve of the students of the hospital undertook, at my request, to keep up continual digital pressure upon the external iliac artery, as far as it would be borne without great inconvenience. Two gentlemen remained at the same time for four hours, and were then relieved by two others; and in this way the object was very effectually carried out. On the day following the commencement of this plan, the patient said that the pressure had given him pain, but not such as he could not readily bear. Pulse 68.

February 3rd.—The patient expressed himself as feeling a great deal better. The peculiar thrill which had been observed upon his admission could now no longer be felt; and the pulsation in the swelling was decidedly diminished. Pulse 80.

4th.—Upon measurement, the swelling appears to have decreased half an inch from above downward; some sharp pains are occasionally experienced in the part, recurring, perhaps, once or twice in an hour; when pressure is discontinued, there is now little pulsation in the swelling.

5th.—A consultation was held on the case, and it was determined that the treatment by pressure should be continued.

7th.—The pressure was discontinued for twenty-four hours. The sensation was conveyed to the touch of the swelling being much firmer and more solid than formerly.

Pulsation and a peculiar thrill now extend for three inches from above downward, and for three inches and a half from side to side of the tumour.

11th.—Last night he experienced much pain in the popliteal space. The pressure was now continued, sometimes by means of the fingers, sometimes by a very ingenious instrument made by Mr. Blaise, which answered the purpose extremely well. A comparatively slight amount of pressure now completely commanded the pulsation.

13th.—Pulse 92.

14th.—Felt sick and cold this morning, and was not so well.

17th.—The extent of the thrill and of the pulsation in each direction was found on measurement, to be two and three quarter inches.

24th.—Felt quite well in general health ; had experienced a little pain in the knee and calf of the leg.

March 3rd.—Had had very little sleep for the last two nights. The leg was swollen, and he experienced pain in it. Pulse 88, full ; some anxiety of countenance.

4th.—Had had a bad night from pain in the calf of the leg.

8th.—Had sat up occasionally for the last few days ; the pulsation and thrill in the tumour now entirely ceased when his body was slightly inclined forward.

10th.—Complained of soreness in the groin and aching pain in the knee.

12th.—The pulsation in the tumour had now again evidently somewhat increased, and the sensation was communicated to the touch of there being less solid matter in the sac of the aneurism than formerly. A second consultation was held, regarding the propriety of tying the external iliac artery.

The patient now expressed a wish to return home and to be with his family for a few days before undergoing any further treatment. He accordingly left the hospital on the 19th. Seen at his own home on the 22nd, he was found to be suffering considerable pain along the course of the femoral artery.

31st.—There was now the smallest possible thrill in the aneurism, which was firm and unyielding.

April 5th.—The patient's constitution appeared considerably disturbed ; pulse 120 ; complained of great pain and want of sleep. He was compelled to keep his thigh slightly flexed upon the pelvis, and was unable to straighten it. The pulsation in the tumour had completely stopped, with the exception of the slightest possible thrill, which could be distinguished, with care, at its upper part.

8th.—Pulse still 120. There was some tenderness, pain, and hardness in the course of the femoral artery, corresponding to its middle third ; an increase of the swelling had taken place.

11th.—Pulse 120. The patient was unable to move his thigh without the assistance of his hands. The motions of the leg and foot were unimpaired. There was still some tenderness in the course of the femoral vessels, and pain in the tumour.

15th.—The swelling had extended round the outer and upper part of the thigh. Pulse 100.

23rd.—Pulse 120. Tumour larger ; suffered occasionally considerable pain in the part. The whole leg now appeared quite powerless ; the leg and foot were much swollen from œdema ; the swelling around the upper part of the thigh had increased.

May 9th.—Pulse 112. The swelling now extended all round the upper part of the thigh ; any attempt to straighten the thigh gave him great pain.

16th.—Had suffered a great deal of pain, principally in the course of the artery. Pulse 108.

30th.—He died, the limb having become cold* on the previous day. Permission was obtained to examine the affected extremity only. This was carefully done by Dr. Dickinson.

The parts were dissected from below upward. The superficial femoral artery having been exposed, it was traced to its termination in the common femoral, and this was dissected to its termination in the remains of the sac of the

aneurism. All the coats of the artery were here seen to become suddenly dilated, and after the course of a few inches to terminate in an irregular and fimbriated margin. The greater part of the walls of the aneurismal cavity was formed by the surrounding structures, a complete separation having taken place between the upper and lower part of the artery. In the situation of the aneurism, when first observed, was a very firm coagulum of fibrin, of an oval form. This formed a sac complete in every part, with the exception of its two extremities, which lay in the direction of the natural course of the artery. The dilatation of the femoral artery into the lower part of the aneurism, and the layer of fibrin, which appeared to have answered the temporary purpose of a sac are shown in some drawings in my possession by Dr. Westmacott.

The left iliac fossa contained a large cavity filled with coagulated blood, which extended nearly as high as the umbilicus. The body of the pubes, and the femur for several inches below its lesser trochanter, presented a rough, irregular surface, from which small particles of bone could be detached with the nail. All the parts thus affected were in contact with the blood effused from the sac of the aneurism.

The superficial femoral artery was found to contain portions of decolorized fibrin, which had evidently passed into it from above. A piece of this artery was removed, and although not presenting any marks of disease to the naked eye, it was torn across by very moderate extension made with the fingers.

Remarks.—The case now related is peculiar in that a complete separation existed between the upper and lower portions of the artery which formed the aneurism. At what period this complete separation took place does not appear, but from the discoloured and swollen state of the thigh upon the patient's admission into the hospital it would appear that all the coats of the vessel had then given way.

Three principal points of interest present themselves for consideration :

1. The kind of treatment suitable to the case.

2. The effect of the digital pressure which was employed.

3. The cause of the deposit of bone on those portions of the periosteum of the pubes, and femur, which lay in contact with the effused blood.

1. It has lately been suggested in this Society that, in cases of carotid, axillary, gluteal, and iliac aneurisms, where a ligature cannot be conveniently applied to the artery between the aneurism and the heart, the sac of the aneurism may be laid open, the artery may then be found running by the side of the sac, and by a little dissection the vessel may be there exposed and tied.

An operation of this kind was attempted by Sir A. Cooper. In this instance a small incision was made into an aneurismal sac above Poupart's ligament, and, introducing his finger through the opening, Sir A. Cooper tried if it were practicable to pass a ligature round the external iliac artery within the cavity that he had opened; but the thing was found to be impossible, as, instead of the vessel, "only a chaos of broken coagula" could be perceived.

It has, however, been further suggested that, had Sir A. Cooper searched for the artery in a different part of the sac, he might have found it.

Now, an examination of the preparations of aneurisms of the larger arteries, as they exist in the museums of London, will show that the very great majority of these are of the fusiform character, formed by the dilatation of all the coats of the vessels. The cases in which the artery, of its natural size, is to be found running by the side of a portion of the sac in such a position as to admit of a ligature being applied to it, are very exceptional. It would, therefore, appear that the operation which has lately been described can be applicable to a very limited number of cases, and that, if repeated, the surgeon would in the great majority of instances find only "a chaos of broken coagula," as happened in Sir A. Cooper's operation. This would certainly have happened, had the operation of opening the sac been attempted in John Rudd's case; for not only were all the coats of the artery equally dilated at the lower part of

the aneurismal sac, but they were actually separated, and that by a very considerable interval, from the remains of the arterial coats in its upper position.

2. The digital pressure which was used in Rudd's case appears to have had the effect of causing the formation of a very complete and firm coagulum, which was found after death at the seat of the aneurism. So far the digital pressure seems to have answered its intended purpose. But the coagulum thus formed, being unsupported by the coats of the artery, gradually gave way.

At one time the pulsation in the tumour had entirely ceased. No better effect than this could have resulted from the ligature of the external iliac artery. Had this operation been performed, any coagulum which might have resulted, being unsupported by the coats of the artery, must ultimately have yielded before the arterial impulse.

3. The deposit of bone on those portions of periosteum which lay in contact with the effused blood deserves notice. In a case recorded by Dr. Donald Munro,¹ a similar circumstance is recorded, but there the affection is attributed to caries.

"The right crural artery, just as it passed over the os pubis, opened into a very large cavity, filled with a firm coagulum, larger than the head of a child three years of age, and a quantity of grumous and fluid blood, mixed with a black, very fetid matter.

"Upon emptying the sac and clearing it with a sponge and water, part of its fore and inner side appeared to be formed of the coats of the artery, and the rest of this and the other sides to be formed of muscles, cellular membranes, aponeuroses, &c. Part of the thigh-bone was bare and carious."

From the known power of the periosteum to form new bone, it is probable that both in Dr. Munro's case and in that above recorded the rough surface of bone in contact with the effused blood depended upon a fresh deposit, and not upon any disease in the bones themselves.

¹ 'Observations on Aneurism,' published by the Sydenham Society, p. 128.