A CASE
OF
POPLITEAL ANEURISM,
SUCCESSFULLY TREATED BY
CONTINUED FLEXION OF THE KNEE-JOINT.

BY
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W. T—, æt. 30, a house-painter, was admitted into the Middlesex Hospital, November 30th, 1858, for a pulsating tumour in the popliteal space of the left leg. Six years ago he had rheumatism, which lasted for four months: otherwise, his health has always been good. A week before his admission he began, without any apparent cause, to feel pain in his left knee. Four days afterwards, from slipping on a piece of cabbage leaf, he strained his limb, and the knee became swollen and more painful.

On the following day, which was Sunday, he thought to remove the stiffness by taking a walk; but the pain and lameness were so much aggravated by the exercise that he had difficulty in returning home. He rested his leg on Monday, and on Tuesday he was admitted into the hospital.

The tumour was as large as a common-sized lemon; it

completely filled the popliteal cavity, and was slightly prominent behind. It pulsated with much force: when grasped on each side, the fingers were expanded by the dilatation of the tumour as it filled; by compressing the femoral artery the pulsation was arrested: the peculiar *bruit* of aneurism was audible: the pulsation in the tibial arteries at the ankle-joint was perceptible, but obscure; there was an absence of œdema in the leg, and the temperature was natural.

It was considered, from the rapid growth of the tumour, the compressibility of its walls, and the distinctness of the pulsation, that the parietes of the sac were thin, and the contents chiefly fluid blood.

December 1st.—Having received information that a case of popliteal aneurism had lately been treated successfully, and the cure effected within a short period, with little suffering to the patient, by Mr. Ernest Hart, through adopting the simple measure of fixing the knee of the affected limb in the bent position, I resolved to give a trial to that treatment in the present case. The patient was directed to lie on his left side, and, with his thigh drawn up towards his body, to bend the knee-joint to the utmost; the calf of the leg was thus brought closely in contact with the back of the thigh: a broad strap was now coiled about the foot, then carried round the thigh near the hip, and fastened with a buckle. When the limb was secured in that manner, the finger, previously oiled, was inserted deeply into the angle behind the knee; but no pulsation could be perceived; nor was the patient sensible of any beating in the tumour, such as he had been lately accustomed to. In both tibial arteries near the ankle-joint the pulsation was so faint that it was doubtful whether it could be felt.

2d.—His sleep was broken last night from the pain and irksomeness of having his knee bound up; the chief pain being in the line of the ligamentum patellæ.

On the outside of the knee there was slight redness from pressure; an amadou plaster was applied to protect the skin.

3d.—Although he still complains of pain in front of the knee, and of his rest being disturbed, yet he looks fresh and well; and the night-nurse reports that he sleeps soundly for several hours consecutively. The strap was a little slackened.

4th.—Each day the finger has been introduced into the popliteal space, as far as the bent position of the knee would permit, to feel for pulsation; but none has been perceived. To-day the strap was removed, and the knee partially unbent, so that the tumour could be accurately examined. At once a decided improvement was manifest; the tumour had lost about one third of its original size; its walls were solid and incompressible, and the pulsation, compared with what it had formerly been, was feeble and indistinct. As the tumour had now receded into a deeper part of the popliteal cavity, before fixing the knee again in the bent position, a glass marble, an inch in diameter, covered with wool, was inserted into the hollow, to assist in compressing the artery and sac.

8th.—Since last report several examinations have been made by undoing the strap; but owing to the stiffness of the knee from having been kept constantly bent, the popliteal cavity could not be opened out sufficiently for ascertaining the true condition of the sac. However, yesterday the tumour appeared so much reduced in size, its walls so dense, and the pulsation so faint, that it was thought that a trial might be made of discontinuing the flexion. The strap was accordingly removed, and the patient instructed to straighten the limb as much as he could. But the result has been disappointing. Although the knee is still stiff and a good deal bent, yet the tumour can be felt to be more prominent, and the pulsation stronger, than was supposed to have been the case. It was, therefore, resolved to keep the knee fixed in the bent position for a longer time. The patient readily consented; for, although he has not lost the pain in front of his knee, and there is even slight heat and swelling at that part, for which a lead lotion is applied, yet he has shown no reluctance to continue the treatment; indeed, he

himself willingly superintends the use of the strap, and draws it with sufficient tightness round the limb to secure the knee in its greatest state of flexion.

January 7th, 1859.—It has not been thought necessary to insert the reports made at different dates since the last; for the purport of all has been nearly the same. Ten days subsequently the treatment was varied by removing the strap for some hours each day; or by taking it off during the night, and replacing it in the day. From relaxing the limb in that manner the patient obtained a little relief; but owing to the stiffness of the joint the knee remained, when liberated, nearly as much bent as before. In the examinations made at that time, the sac was observed to become gradually smaller and denser, and the pulsation to grow fainter. Between the third and fourth week from the commencement of the treatment, the pulsation was so feeble that it was daily expected to cease. It continued, nevertheless, to be felt; and eight days ago, with the hope of effectually stopping it, the patient was instructed to keep the knee for the four following days tightly bound. When the joint was released, at the expiration of that time, the beating in the tumour, though extremely faint, was not extinct; and it could be discerned yesterday. But this day, being the thirty-eighth from the commencement of the treatment, on the most careful examination of the tumour, not the slightest pulsation can be detected.

11th.—The pulsation is no longer felt. The tumour is hard, and of the size of a walnut. On examining the anterior and posterior tibial arteries, a very faint, almost imperceptible pulsation could be detected in the former, but there was none in the latter. Around the knee several anastomosing vessels could be felt beating. The patient is slowly regaining the power of straightening the knee. To-day he was allowed to get out of bed.

14th.—There has been some œdema of the left leg, from sitting with his feet down. He walks with difficulty, from not being able to extend his knee.

19th.—The stiffness in the knee is gone, and he has only

a slight halt in his gait. The tumour, so far as it can be distinguished from the surrounding condensed structures in the ham, is of small dimensions. The pulsation of the anastomosing vessels is distinctly felt in various parts over the joint, and is attended with a faint thrill, perhaps from their being tortuous. The temperature of the left knee is perceptibly higher than that of the right.

25th (the fifty-sixth day).—He was discharged cured.

Remarks.—In addition to what has been already said of the pain attending the confinement of the knee in the bent position, it may be stated that, on the whole, it was not considerable. After the first fortnight the patient ceased to complain, and he did not ask, at any time, to have the belt relaxed.

No particular system of diet was enforced.

In regard to the principle on which the cure by the above mode of treatment was effected;—it appears that three distinct causes co-operated to diminish the force of the circulation through the aneurismal sac, and thereby favour the deposition on its inside of successive layers of solid fibrine. First, by the bent position of the knee, the whole tumour was subjected to a general and equal compression within the popliteal cavity. Secondly, the mass of the tumour, confined in the limited space of the ham, would act as a compress or pad upon the artery, to diminish its calibre. Thirdly, chief importance is to be attached to the bent or doubled condition of the arterial trunk, consequent on the acute angle at which the knee-joint was kept flexed. It is, I believe, generally known that if a person bend his elbow-joint to the utmost, the pulse at the wrist will be stopped. By numerous trials on different individuals, I have satisfied myself that when the knee is similarly flexed, the pulsation in both tibial arteries at the ankle is arrested; and I have remarked that after the limb had been straightened, it took from three to five seconds for the pulsation to be restored.