ON
SECTION OF THE TENDO ACHILLIS
IN SOME CASES OF
FRACTURE OF THE BONES OF THE LEG.

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Received October 20th.—Read November 27th, 1849.

THE subcutaneous division of tendons for the removal of difficulties which sometimes occur in the treatment of fractures, especially of the bones of the leg, is an operation which has not met with much attention in this country, though in some cases it appears to have been successfully put in practice on the Continent.

In Germany, M. Dieffenbach¹ is reported to have often had recourse to the division of the ligament of the patella or of the quadriceps muscle in cases of ununited fracture, or fracture with wide separation of the broken portions of the patella; and to the division of the triceps brachii in fracture of the olecranon under similar circumstances. The conditions which would render such operations justifiable, must be extremely rare. In France, the operation to which the cases in this paper refer was first performed by M. Meynier.² A severe fracture of the tibia and fibula had been followed by violent spasm in the muscles of the leg, suppuration had taken place, and portions of the tibialis anticus, extensor communis digitorum, and extensor proprius pollicis had been destroyed. The ends of the bones were exposed and protruding, and the inferior portions were drawn behind, and formed an angle with the upper, owing to the continued spasm of the

¹ Caspar's Wochenschrift, No. 40, 1842.

² Gazette Médicale, 1840, p. 552.

muscles of the calf. After frequent and vain attempts to bring the bones to their place, the question was raised, whether the protruding end should be sawn off, or amputation be performed. Before resorting to either of these operations, however, the idea occurred to M. Meynier of dividing the tendo achillis. This was done, and the result was an immediate and almost complete success.

M. Berard,¹ in a discussion in the Académie de Médecine, on the proper mode of treating compound fracture at the malleoli, stated that he had, in such a case, succeeded in reducing the fractured bones by dividing the tendo achillis, and suggested the propriety of adopting this proceeding, and of thereby, if possible, preventing the necessity of removing the ends of the bones or of amputating the limb.

Malgaigne,² also, in his recent work on fractures, mentions that M. Laugier divided the tendo achillis as a means of reduction in a case of oblique fracture of the tibia; but that supuration took place, and death ensued.

So far as I have been able to ascertain, the following are the only cases in which the operation has been adopted in this country in the treatment of fractures of the bones of the leg, and the results have been such as to induce me to lay them before the Society.

My colleague, Mr. Shaw, has kindly furnished me with the report of the first case.

William Sutters, æt. 40, was admitted into the Middlesex Hospital on the night of February 12th, 1847, having just fallen down stairs, while intoxicated, and broken the bones of his leg. The fracture was found to extend through both the malleoli; and there was great distortion at the ankle-joint, owing to the foot being twisted to the outside. It was not difficult to restore the foot to its proper position; but as soon as that was done, violent spasm came on, and it was displaced as before. Numerous attempts were made by applying splints of different kinds, and placing the limb in various positions, to overcome the distortion; but the patient was so restless

¹ Archives générales de Médecine.

² Malgaigne, Traité des Fractures, vol. i, p. 794.

from being drunk, and the spasms so severe, that none of them were successful.

Mr. Shaw saw the patient early on the following morning; the foot was then drawn to a remarkable extent to the outside of the lower part of the leg, and it was at the same time twisted, so that its outer edge was turned upwards, and the sole directed obliquely outwards; it was also placed somewhat backwards, and the lower head of the tibia had the integuments stretched so tightly over it, that the borders of the articulating surface, and the part where the malleolus internus was wanting, could be distinctly felt.

Previous to attempting reduction, the patient was directed to bend the knee; but it was found that any slight movement brought on a violent fit of spasm; and these were not confined to the muscles of the foot and ankle, but they extended to those of the thigh, which became so rigid that he was unable to bend the knee. On grasping the foot and keeping up extension, the muscles would be quiescent for a short time, so as to allow reduction to be effected; but presently the spasm would come on with violence, and with a quivering motion, which, owing to the patient being muscular and the integuments thin, could be seen as well as felt—the muscles would forcibly drag the foot into its former position, making him cry out with the pain. During the continuance of the spasm, the skin over the inner edge of the tibia, where the malleolus was broken off, was drawn so tense that it was in danger of being pierced by the bone; and the tendo achillis became so tight that it was like the string of a bow. Attempts were renewed to secure the foot in a proper position, but these proved as unsuccessful as those made during the night. With the view, therefore, of getting rid of the violent action of the powerful muscles of the calf, Mr. Shaw resolved to divide the tendo achillis; which was accordingly done, by subcutaneous incision, in the usual manner. After that, all the difficulties entirely ceased; the foot was secured in its place by a back metal splint, passing from the sole, behind the calf and thigh, and with side splints along the leg; and there was no return of the spasm.

April.—No further trouble was met with in the treatment. He has been walking on crutches for some weeks, with his ankle secured in starch bandages.

May 7th. He was discharged last month. The ankle is still stiff. No pit or irregularity is to be felt in the tendo achillis where it was divided.

The success which attended the division of the tendon in Mr. Shaw's case induced me to repeat it under the following circumstances.

Mary King, æt. 66, a Billingsgate fishwoman, of drunken habits and broken down constitution, was admitted into the Middlesex Hospital, March 25, 1849, under my care. She had been knocked down by a cab; the tibia and fibula were found to be broken a little above the ankle. The fracture of the tibia was very oblique, the upper end overlapping the lower, and the lower part being drawn backwards, so that the two portions formed an angle with one another. The integuments were uninjured. With some difficulty the leg was placed in a proper position, and it was put up in an iron back splint with side pieces. The woman was very restless, throwing herself about incessantly, complaining of the pain in her leg, which was affected with continually recurring spasms of all the muscles of the ankle and foot, extensors as well as flexors, by which the foot was soon displaced to as great an extent as at first. The bowels were freely acted on; opiates and antispasmodics largely given, but with no effect. Change of position was then tried; the limb was laid on its outer side, with the knee bent, and the bones were again brought into good position. But the spasms immediately returned, and the displacement and the suffering were soon as bad as before. No adaptation of splints nor any change of position seemed to produce the slightest benefit. The pain she endured was very severe; the restlessness continual; she could get but little sleep, and that by snatches between the more violent attacks of spasm. The skin was now becoming tight and painful over the projecting part of the tibia. I determined to divide the tendo achillis, in the hope that the spasm would cease in the anterior muscles when the anta-

gonism of the muscles of the calf was removed. This was done on the 3d of April, nine days after the accident. The leg was at the time lying on the side. She did not know what was being done; but no sooner did the tendon give way than she cried out, "Oh, thank you, Sir, you have given me such ease." And, in fact, from this time all trouble ceased. The spasms never returned, and she remained free from pain. There was some little disposition to the falling back of the foot, but this was readily controlled by the application of an ordinary back splint.

On the 28th April, the chasm left after the division of the tendon, which had never been very great, had disappeared. There was a want of disposition to union in the broken bones. Still about the middle of May she was able to walk on crutches. The foot was free from deformity, save from some thickening around the fractured ends of the bones. She was kept for some time longer in the Hospital, that the case might be watched, and went out in June, being able to walk without crutch or stick, and with a good use of the ankle.*

There can be no question as to the twofold benefit derived in these cases from this simple operation, which, while it rarely fails in effecting the object for which it is performed, is not often attended with injurious consequences. The first and most important benefit was the immediate cessation of all opposition to the replacement of the fractured bones, and to their retention in their proper positions. After the division of the tendon, the simple and ordinary apparatus was sufficient for this purpose; whereas all the means adopted before had induced spasm, and increased only the evil they were intended to remedy. The relief given to the sufferings of the patients, was, however, not less immediate, and was hardly less important. The pain and the restlessness, which before had been constant, at once subsided; and the spasm which took place, not in the muscles of the calf only, but in all the muscles of the leg,—and in Mr. Shaw's case, in those

* Note by the Author. May 10, 1850. This woman is again under my care in the Hospital. Three months and a half before her admission she dislocated her shoulder. Reduction was effected under the influence of chloroform, and she has now a good use of the joint. There is not the slightest weakness of the ankle, and she can use one leg as well as the other.

of the thigh also,—were at once allayed. Nor did they, in either instance, return during the remainder of the treatment.

The cases of fracture of the tibia and fibula in which the surgeon fails, by ordinary treatment, to remove or obviate the difficulties incidental to such injuries, and in which, therefore, this operation might naturally suggest itself, are not of ordinary occurrence. But it may still be a question whether the division of the tendo achillis, or of other tendons, might not be advisable. The present state of our knowledge with regard to the results of tenotomy in general, is, perhaps, not sufficiently exact to justify a recommendation of the operation in such cases. As a means of relieving spasm consequent upon local injury, the operation has been too rarely performed to allow of any conclusion on the subject. If, however, it should be found that results as satisfactory as were obtained in the cases now brought forward might be calculated upon in those of less severity, but in which the means used by the surgeon were counteracted, or prolonged pain and restlessness were present in consequence of spasmodic contraction of the muscles, this operation would prove a valuable adjunct to the ordinary treatment.

Although not bearing directly upon the question of tenotomy as applicable to the treatment of fracture, yet it may not be altogether out of place to refer to the proposal by M. Bonnet, of having recourse to the operation, in certain cases, of diseased ankle-joint. After remarking on the advantage of maintaining inflamed joints in a natural position, and on the tendency to elevation of the heel in disease of the ankle-joint, M. Bonnet adds :—

“L’innocuité de la section du tendon d’Achille et la promptitude du redressement qui peut en être la suite, lorsque la rétraction de ce tendon contribue à l’élévation du talon, doivent engager à recourir à cette section de préférence à des moyens plus compliqués. Plusieurs fois je l’ai faite dans le but de redresser le pied étendu dans une maladie de l’articulation tibio-tarsienne ; j’ai eu lieu de me louer de cette pratique qui a permis d’atteindre promptement le but physique que j’avais en vue.”¹

¹ Bonnet, *Traité des Maladies des Articulations*, vol. ii, p. 443.