

## ELONGATION OF THE SCIATIC NERVE IN LOCOMOTOR ATAXIA.

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THE history of the whole subject of nerve-stretching for the relief of various diseases of the nervous system has been so thoroughly given quite recently by Drs. Fenger and Lee,<sup>1</sup> that it would be a work of supererogation for me to go over the ground they have so fully covered. I will only say, therefore, that it appears that for the relief of locomotor ataxia nerves have up to this time been stretched as follows:

1. By Langenbuch, of Berlin, in 1879, Sept. 13. Patient had for several months suffered with the ordinary symptoms of locomotor ataxia. Left sciatic was first stretched, and twelve days afterward the right sciatic, and both crural nerves were subjected to like treatment. All ataxic symptoms disappeared in the lower limbs, as did also the electric-like pains. Pains, however, appeared in the upper extremities, and it was determined to stretch the nerves of these parts. But the patient died while being anæsthetized with chloroform. The *post-mortem* examination, made by Prof. Westphal, showed that the spinal cord was healthy.

2. Esmarch, in 1880, stretched the nerves in the axilla for a supposed but doubtful case of locomotor ataxia. The

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<sup>1</sup> Nerve-stretching. This JOURNAL, April, 1881, p. 263.

operation was followed not only by the relief of the pains which had been experienced in the arms, but by the disappearance of all pain and ataxic symptoms from the lower extremities.

3. Erlenmeyer, in 1880. This was an old case. The right sciatic was stretched June 22d, the incision being made between the great trochanter and the tuberosity of the ischium. There was no relief of the symptoms. Nevertheless, on July 3d, the left sciatic was stretched, but the result was similar.

4. Debove, Paris, 1880. Patient had suffered for six years with pains in the lower extremities; subsequently there were incoördination and atrophy of the same parts.

November 18th, the left sciatic nerve was stretched, the incision being made in the middle of the thigh. The pains at once ceased, and the incoördination began to diminish. Two weeks after the operation the sensibility was normal, and the patient could move the legs without exhibiting more than slight traces of incoördination. He could stand, and could walk a few steps with the assistance of another person.

5. Debove, December 16, 1880. Pains mainly confined to the upper extremities, although there were plantar anæsthesia and incoördination. The right median and ulnar nerves were stretched. Pain lessened in right arm and abolished altogether in left arm. The incoördination was so much diminished that the patient was able to walk without assistance.

6. Dr. Fenger, of Chicago, was the first in this country to perform the operation in question in locomotor ataxia. The case was an undoubted instance of the disease, and had lasted about ten years.

December 28, 1880, the nerves of the lower extremities were operated upon. The crural nerves were first exposed

on each side by an incision just below Poupart's ligament. They were stretched, replaced in the wounds, drainage tubes were inserted, the incisions were closed with antiseptic sutures, and Lister dressings applied. The patient was then turned on his face, and both sciatic nerves were subjected to like treatment. Both wounds healed by the first intention, but there was no relief except as regarded the pain. Bed-sores ensued, and on February 15th the patient died pyæmic.

7. Socin, of Basle, 1881. The patient, a man, 33 years of age, had the ordinary symptoms of locomotor ataxia. The right sciatic nerve was stretched. The wound did not heal by the first intention, but the pain on the right side ceased. The left sciatic was then operated upon. Fourteen days afterward the patient died from multiple embolism, caused by thrombosis of the right popliteal nerve.

Up to the present time, therefore, seven cases of nerve-stretching for the cure of locomotor ataxia have been performed. Of these, two (Fenger's and Socin's) died from the effects of the operation, and one (Langenbuch's) from the narcosis of the chloroform administered. In one (Erlenmeyer's) there was no improvement. In all the others there was more or less amelioration, even in those in which death occurred. I have now to report the results of my own experience, which is based upon two cases.

CASE I.—Mr. F., of Newark, Ohio, consulted me, June 19, 1880, for an affection which there was no difficulty in recognizing as locomotor ataxia. There were electric-like pains in the lower extremities and marked incoördination, the patient being obliged to walk with a cane. The patellar tendon reflex was abolished on both sides; both pupils were strongly contracted. There was partial paralysis of the bladder.

I saw him at intervals till May 5, 1881, when, at my suggestion, he came to New York to consider the question of having the sciatic nerves stretched. I gave him the reports of several cases

to read, in which the operation had been performed with more or less success, and he determined to submit to the operation.

Up to this period his disease had steadily advanced. In walking he required not only the assistance of a cane, but also that of some person holding him by the arm of the opposite side. The pains were very distressing.

On the 8th of May, assisted by Dr. G. M. Hammond, I operated on the right sciatic nerve, the pains in the right leg being more severe than in the other one; the incoördination greater.

I made an incision, three inches in length, at about the junction of the middle with the lower third of the thigh, immediately over the usual course of the sciatic nerve. I intended to stretch it just before its division into the peroneal and popliteal, but I found that the division took place high up, the two nerves being situated, as they came from beneath the biceps muscle, over an inch apart. The internal or popliteal being by far the larger branch, and the pains being almost entirely limited to it and its branches, I placed the little finger of my right hand under it and gradually lifted it from its bed. It was apparently stretched about an inch. The wound was then closed with ordinary sutures and adhesive plaster.

During the operation the patient held a cone, made of a towel, and containing a sponge saturated with ether, to his mouth and nose; and though he was at no time completely under the influence of the anæsthetic, the sensibility was so benumbed that he felt nothing more than what he described as a slight scratching.

At his earnest request I allowed him to walk from the lounge to the bed, a distance of ten or twelve feet. He did so, he said, with greater ease than for two years past. That night he had almost constant twitching of the muscles above and below the point at which the operation was performed, but there were no pains. By the third day the wound had entirely healed by the first intention, and I then made a thorough examination with the view of ascertaining the results.

I found that the pains in that leg had entirely ceased.

That the coördination was so much improved that the patient was able to walk without any assistance, not even requiring a cane.

That the insensibility of the sole of the foot had almost disappeared.

That the patient could flex all the toes, an act he had not been able to perform for over a year.

Such being the apparent benefits it was determined to operate on the nerve of the left side, as there were still pains in that extremity. Accordingly on the 13th, assisted by Drs. G. M. Hammond and H. M. Norris, I operated as in the first instance. The nerve had, on this side, its usual course and distribution, and was stretched about an inch, rather less than more. The pains at once ceased, and the patient the next day noticed the most decided improvement in his coördinating powers. This wound also healed entirely by the first intention. On the 15th he returned home greatly improved, and very confident of an ultimate cure. He was then walking without a cane, could stand alone with his eyes closed—an impossible feat with him before the operation,—was free from pains, and there was, on both sides, slight patellar tendon reflex. The following letter just received from him, details his present condition :

NEWARK, O., *June 14, 1881.*

Dr. WM. A. HAMMOND.

*Dear Sir :*

Thirty days having expired since I left New York, I will now report.

During the past thirty days I have only had two slight touches of pain in my legs, and they were both very slight, and traceable to exposure and climatic changes. The incoördination in both legs is somewhat improved, and I can walk more erect, and do not have to look down so constantly when I walk, as heretofore.

There is still a weakness in my right ankle, first leg operated on, and stiffness of the foot, which seems slow to improve, and it makes walking rather tiresome. The cushiony feeling in the feet still remains, but there is an improvement over what it was before the operation.

Upon the whole, I think it safe to say that I am pleased with the results of the operation and would urge any one with same trouble to try it.

If you perform any more operations for this disease I should like very much to hear the results. From my own feeling in the matter I think you are on the right track, and the stretching will result in a cure in most cases if done in time.

P. S.—I can handle a pencil better this morning than for many a day.

CASE 2.—C. S., was sent to my clinique at the University of New York, by Dr. H. T. Boldt, May 12, 1881. It required very slight examination to discover the existence of an extensive development of locomotor ataxia. The incoördination was bad, and the patient described the pains in both legs as being very se-

vere. Standing or walking with the eyes closed was impossible. The disease had existed for over two years.

I described to the class, the operation which I had a few days before performed on Mr. F., and suggested to the patient that a like operation should be performed on him. He consented, and desired that it should at once be done.

He was accordingly placed on the operating table, a towel with ether was given to him to hold and inhale from, and the operation was performed on the left leg. An incision about three inches over the course of the sciatic nerve was made, and the nerve was found in its usual position. A very smooth director was bent and inserted under the nerve, a tolerably thick cushion of muscle being between it and the nerve. I performed the operation in this way so as to avoid, as far as possible, the destruction of the axis cylinder. The nerve was stretched apparently about an inch. The anæsthesia was sufficient to prevent pain, but not to abolish consciousness. The wound was closed, and the patient, getting off the table without assistance, walked around the room rapidly and well, exclaiming, "I am cured! I am cured!" and stating that all pain had ceased, and that he was as well as ever. I was assisted by Drs. G. M. Hammond, Osborn, and Boldt.

Although not showing the sanguine convictions of the patient, it was evident that he had very much improved in his coördinating powers. A few days afterward, I received the following letter from Dr. Boldt:

NEW YORK, May 20, 1881.

*My Dear Doctor:*

According to promise I give you some information regarding the case of locomotor ataxia in which you stretched the sciatic nerve, and am fortunate enough to add another case.

After the operation the man felt so well and strong on the leg operated that he *walked* home, did not use any car, as he was told by me, from the College to 11th Avenue, between 42d and 43d Streets. On the succeeding day he complained of severe pain along the course of the nerve and leg, which pain continued at intervals for five or six days, but I ascribe it to unusual long walk which he took, the distance being longer than any he had made for a number of years; besides, he being a barber has been at work at his trade, disregarding the wound, all the time. He says that he feels much "stronger" on the leg operated upon, and *thinks* he will have the other one attended to also. Otherwise the stretch-

ing has made no change, the girdle-like sensations in epigastrium and abdomen continuing, etc., etc.

Relative to the ultimately good effects of the operation, I am by no means so confident as some European neurologists. At the same time, it appears to me that there is ground for hope that it may prove successful in some cases. I am convinced that in those instances in which gangrene, thrombosis, etc., have occurred, the nerve has been stretched too much. A very moderate extension is, I think, sufficient.

Relative to the point of election, I think the best place is just as the nerve comes from under the biceps muscle, at the junction of the middle with the lower third of the thigh. The operation at this point is very simple, the nerve lying immediately under the aponeurosis.

My rules, therefore, are: Make an incision, three inches in length, at about the middle of the posterior face of the thigh, at such a point that the middle of the incision comes over the border of the biceps muscle, at the apex of the triangle formed by it and the external ham-string, that is, at the junction of the middle with the lower third of the thigh. Cut through the aponeurosis carefully, and exposing the nerve, place the little finger of the right hand under it, and gently lift it from its bed. Let the line of traction be alternately downward and upward, so as to stretch the nerve in both directions. Return the nerve to its position, and close up the wound hermetically.