A CASE OF NEURECTOMY OF THE SCIATIC NERVE.

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The following is an account of an operation undertaken to save the limb of a patient who came to the Royal Infirmary, Dublin, to have his leg amputated, as he said it was useless and only gave him pain.

He was suffering from the effects of a gunshot wound received two years ago, which involved the sciatic nerve.

In rendering this report I wish to express my thanks to Lt.-Col. MacNeece, R.A.M.C., for his advice, and to Mr. W. S. Haughton, Visiting Surgeon, Dr. Steeven’s Hospital, Dublin, for his suggestions and assistance during the operation.

No. 4609. Private P. P., late Royal Irish Regiment, aged 29. Service eight years.

January 7, 1901.—Wounded in three places by Mauser bullets at Belfast in South Africa.

(1) Left buttock. Healed in South Africa.


(3) Right thigh. Bullet entered back of thigh 4 inches above knee joint. Smashed the bone. Emerged 3 inches higher up in front of the limb. Complete loss of power in the limb below the knee. Anaesthesia of outer half of leg and whole of foot except in front of internal malleolus. Sensation over distribution of internal saphenous nerve normal. Thigh muscles slightly atrophied from disuse, but otherwise normal.

Circumference of R. Thigh just above Patella ... ... 12½ ins.

"  "  " R. "  " greatest ... ... 17½ "

"  "  " L. "  " ... ... 19¼ "

"  "  " R. Calf "  " ... ... 10½ "

"  "  " L. "  " ... ... 12 "

He has use of the knee joint. The loss of function exactly corresponds to the distribution of the branches of the sciatic nerve below the bullet injury in the thigh. This wound healed quickly in South Africa. Fracture treated in box splint at No. 7, General Hospital, Pretoria. Firm osseous union established with 1¼ inches shortening.
August 30, 1901.—Invalided from the service at Netley.

October 24, 1901.—Fitted with a boot and discharged from Netley.

January 2, 1901.—Admitted to Waterford Infirmary with trophic ulcers in the right foot. Towards the end of that month Dr. Mackesy, Surgeon in Charge, operated on the patient's sciatic nerve and removed his great toe. I quote an extract from a letter for which I am indebted to the courtesy of Dr. Mackesy.

"In the case of P. P., the nerve when cut down on, at Infirmary, was found intact. Cicatricial tissue about it. Wound was closed and healed satisfactorily, but no improvement followed the operation. Toe was amputated, as it was much hypertrophied and gave discomfort in boot."

February 22, 1902.—Patient discharged from Waterford Infirmary. After three weeks, trophic ulcers commenced again in the right foot. These healed with rest in bed, but when patient was about for a few days they recurred.

Patient applied for admission to a Military Hospital to have his leg amputated.

November 20, 1902.—Patient admitted to Royal Infirmary, Dublin. He was then suffering from trophic ulcers under the heads of the metatarsal bones of the great and little toes. These healed in a fortnight under appropriate treatment.

No functional improvement in the limb followed massage and electricity (application of Faradic current twice daily for fifteen minutes); but limb increased in girth.

Above the entrance of the bullet a swelling could be felt on the sciatic nerve, especially with the aid of the patient, who complained of pain when this was handled. It was also very sensitive to electrical stimulation.

Operation.

December 19, 1902.—Longitudinal incision 2½ inches in length through the skin of back of thigh. Incision parallel and ½ inch internal to that used by Dr. Mackesy.

Large amount of scar tissue encountered. Nerve exposed and cleared with great difficulty at the site of the bullet track. On first inspection no apparent breach of continuity of the nerve trunk at this point.

Skin incision prolonged 1½ inches upwards and 1 inch down-
wards along the nerve, which was in all exposed 4½ inches. This procedure was deemed necessary to ascertain whether the nerve had been divided by the fracture, or injured by a spicule of bone which projected backwards.

On closer examination of the nerve its longitudinal fibres could be traced to the region which the bullet traversed. Here they ended in the neuromatous enlargement described above. One and a half inches below this a less distinct enlargement was present, succeeded by nerve tissue with the usual longitudinally striated appearance. The lower portion of the nerve was smaller and less firm to the touch than the upper segment. Between these two enlargements the continuity of the trunk was maintained by a structure which had the consistence and appearance of scar tissue, its fibres running in every direction. It had also firm fibrous union with the surrounding cicatricial tissue.

As Dr. Mackesy's operation of freeing the nerve from the scar had no beneficial result, it was decided to excise the apparently functionless portion of the nerve trunk, and to unite the healthy ends of the nerve together.

Rather less than two inches of the trunk were removed, including the two enlargements.

**Naked Eye Appearance of the Cut Ends of Sciatic Nerve.**

*Upper Segment.*—Arteria comes nervi ischiadici bled freely (a satisfactory point in considering the future nutrition of the lower segment). Nerve fibre bundles visible. A few of these appeared as if they had been cut through the position where they turned back to form the neuroma usually described as taking place at the proximal end of a severed nerve.

*Lower Segment.*—Nerve fibres separated into the two large bundles of the external and internal popliteal nerves, but still surrounded by a single sheath holding them together.

* The sciatic nerve of a sheep was procured for a graft in case it might be impossible to bring the ends of the patient's nerve together. The sheep was killed in my presence at 9.30 a.m. One hind quarter was removed and seared along the spinal canal. The limb was delivered in the operating theatre of the Royal Infirmary at 10.10 a.m. The surface of the leg was now seared, and the sciatic exposed with aseptic precautions, as for an operation on the living subject. The nerve was left in situ, the muscles being drawn over it, and the whole leg wrapped in a sterilised towel till it should be required. If necessary in this case the sheep's nerve would have been grafted about two hours after the animal was killed.
The divided ends were easily held in apposition by four Kocher's forceps, one grasping the nerve sheath at either side of each segment.

The nerve was darned together in the following manner, using a continuous No. 0 catgut suture prepared by Dobbin's formalin method. A fine full curved needle was passed from behind forward through the centre of the lower segment; then through the upper segment in a like position, but in the opposite direction. Suture tied, leaving the threaded end long. Similar stitches alternately through the segments, three about \( \frac{1}{2} \) an inch, and four \( \frac{1}{4} \) of an inch from the cut ends. Four more stitches to bring the nerve and its sheath accurately together. The long end of the suture finally tied to the short end. By this procedure good union of the nerve was obtained without any strain on it.

Two deep No. 1 silk sutures were passed through the hamstring muscles and tied loosely, in order to cover in and protect the nerve.

Silkworm gut sutures used for the skin incision.

Dressings.—Dry sterilised gauze covered by cyanide wool.

MacIntyre's splint applied to the limb in a flexed position, to prevent tension on the nerve.

Anaesthetic.—Nitrous oxide followed by ether.

December 19, 8 p.m.—Patient experienced some pain during the day, which was relieved by \( \frac{1}{2} \) grain of morphia hypodermically.

December 20.—Patient complained of great pain on the slightest movement, which he states shoots from the heel into his great toe. This is probably due to stimulation of the upper segment.

December 23.—Wound dressed. Looked quite healthy. Limb put up in flexed position in plaster of Paris.

December 28.—Window cut in plaster and skin sutures removed. Wound healed by first intention.

Patient is gaining flesh. He still complains of a pain radiating from his heel to his toes on moving the limb; also occasional pain in the shin. Right foot continually warmer than the left and suffering from no trophic lesions. There is no return of function to the limb, which cannot be expected for three months, according to the dictum of Waller.