

FULL THICKNESS AUTOGENOUS NERVE GRAFT

REPORT OF A CASE*

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The bridging of large nerve defects constitutes one of the major problems in peripheral nerve surgery. When the surgeon has exhausted every maneuver to overcome the defect without success, the only alternative is nerve graft, if the nerve is to be saved at all. It is becoming increasingly evident that, in man, autogenous grafts have by far the best chance of survival.1,3,4,5,6,7

As pointed out by Björksten,1 in cases where a full thickness autogenous nerve graft is available, the apposition is much easier technically than in those cases where a cable graft needs to be used. He further points out the fact that full thickness autogenous grafts can be employed only in the presence of a severe lesion of two nerves, simultaneously preventing direct suture of either.

In view of the infrequency of such cases, and the evident need for analysis of all cases so treated, the following case report is presented.

CASE REPORT

A 26-year-old infantry officer was struck by a machine-gun bullet in the middle 3rd of the right thigh on 28 Aug. 1944. Immediately following this, there developed complete paralysis of the tibial and common peroneal components of the right sciatic nerve. About 2 weeks after the injury severe burning pain developed in the dorsum and heel of the foot. This was diagnosed as causalgia, and a lumbar sympathetic block with 1 per cent novocain was attempted. The patient experienced a severe novocain reaction, and the results of the block could not be evaluated. He refused further block, and in view of this, sympathectomy was not advised. Over a period of 4 months the pain gradually disappeared. On 24 Oct. 1944, the sciatic nerve was explored by another surgeon, and an 8 cm. defect between the nerve ends was found. The nerve ends were freshened and approximated with numerous interrupted tantalum wire sutures "under considerable tension." A tantalum cuff was applied. No hip spica was applied, but the knee was put up at 90° in a plaster cast, which was removed in 5 weeks.

Eight months later this patient came to the attention of the writer. He still had complete motor and sensory paralysis of the common peroneal and tibial nerves. There was no advance of the Tinel's sign from the middle of the thigh. Observation of the tantalum sutures in the roentgenograms of the involved thigh revealed an 8 cm. dehiscence of the nerve ends.

Operation. On 29 June 1945, under endotracheal anesthesia, the old mid-thigh incision was reopened and the tantalum cuff surrounded by heavy scar tissue was exposed and removed.

* Presented before the Chicago Neurological Society on October 8, 1946.
The proximal neuroma and distal glioma were then found. A distance of 8 cm. separated them. Both segments were resected to normal-looking funiculi on both sides, making a total defect of 9.5 cm.

Because the hiatus between the severed nerve endings of the sciatic nerve was too great for primary suture, the common peroneal portion of the sciatic nerve in the distal segment was sacrificed to act as an autogenous nerve graft for the tibial portion. The common peroneal nerve was resected to the head of the fibula, producing a graft 10 cm. in length. The graft was then placed between the tibial nerve ends with the proximal end of the graft directed proximally. Approximation at both ends was without tension using interrupted sutures of fine, tantalum wire on anatraumatic needle. Closure was effected with black silk in layers and a hip spica applied with the hip slightly extended and the knee in flexion.

Course. By gradual degrees the knee was returned to full extension over a period of 6 weeks, beginning the 3rd week. There was no change in the Tinel's sign in the first 3 months postoperatively. The patient was not seen until August, 1946. At this time examination revealed returning function in the soleus and in the two heads of the gastrocnemius. Tinel's sign was present along the course of the tibial nerve in the middle 3rd of the calf, and sensation was still absent in the entire tibial nerve area. Intensive physical therapy was prescribed.

Now (October, 1948) the contractions of the gastrocnemius and soleus are sufficiently powerful to enable the patient to stand on his toes. No function has returned to the flexors of the toes. The sole of the foot (except for the saphenous area) is anesthetic. Sensation is almost normal in the remainder of the foot with the exception, of course, of the common peroneal area which, in its peripheral portion, is hypalgesic and hypesthetic, and in its central portion is anesthetic. The patient wears a strong foot-drop brace and walks with a steady, sure gait.

SUMMARY

A case is reported in which complete return of soleus and gastrocnemius function and moderate sensory return (with the exception of the sole of the foot) were observed, 3½ years following the bridging of a 9½ cm. gap in the tibial nerve by employing the distal segment of the patient's simultaneously injured common peroneal nerve as an autograft.

REFERENCES