Sciatic Nerve Injury After Gunshot Wound: A Role for Fat Grafting

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INTRODUCTION

Approximately 180 per million people a year develop peripheral nerve injuries with the most common causes gunshot wounds (GSWs). GSWs to peripheral nerves are and often complicated by soft tissue loss, vascular injury, and infection.

We are presenting a case of a GSW to the left thigh resulting in a distal femur fracture requiring open reduction and internal fixation and an intramedullary rod complicated by post-operative weakness, numbness, and pain in the affected leg.

Imaging with computed tomography (CT) scan and electromyography (EMG) demonstrated injury to the sciatic nerve with perineural bullet fragments present. The patient underwent neurolysis of the sciatic nerve with neuro-monitoring followed by fat grafting. To date, this is the first case report of neurolysis and fat grafting to the sciatic nerve after a GSW.

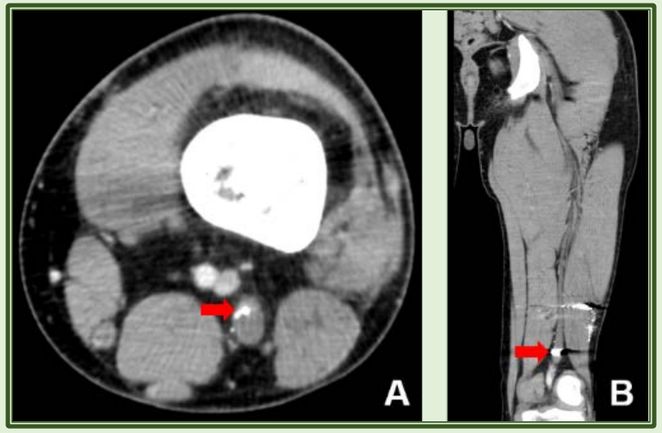

Figure 1: (A) Axial and (B) Coronal CT scan of left leg with ballistic fragments throughout the left lower thigh soft tissues and adjacent to the sciatic nerve (red arrow) with associated fusiform thickening.

MATERIALS & METHODS

A CT scan performed 1.5 months after the injury demonstrated extensive ballistic fragments throughout the left lower thigh soft tissues and adjacent to the sciatic nerve with associated fusiform thickening (Fig. 1). EMG performed 3 months after the accident demonstrated injury to the left tibial greater than the left peroneal divisions of the sciatic nerve.

The patient underwent neurolysis of the sciatic, tibial, and deep/superficial peroneal nerves 6 cm inferior to the gluteal muscle to the level of the fibular head along with fat grafting 4.5 months after his initial injury (Fig. 2).

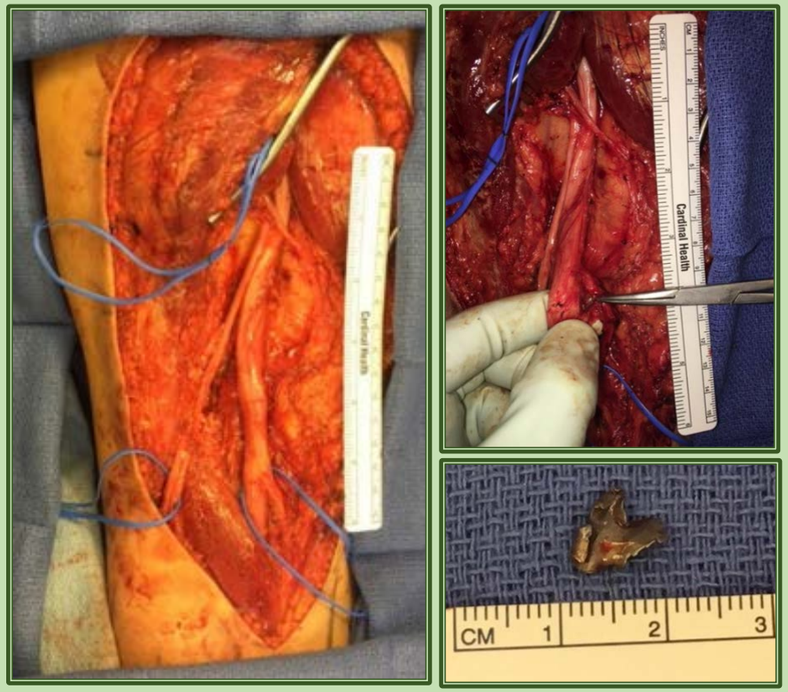

Figure 2. Neurolysis of the sciatic nerve, tibial nerve, and the deep/superficial peroneal nerves. A neuroma was identified 6 cm above the knee joint involving the tibial division of the sciatic nerve with an associated 8 mm bullet fragment which was removed from from the anterior surface of the neuroma.

RESULTS

On follow up 1.5 months after neurolysis and fat grafting, the patient reported improved left lower leg strength/function. On exam he had a well healed posterior thigh incision with no signs of infection, less plantar numbness, and improved ankle dorsiflexion.

CONCLUSIONS

Autologous fat grafting in other studies has shown a regenerative effect on scar tissue, peripheral nerve activity improvement, neuropathic pain relief, and extremity mobility in the setting of painful neuromas. A literature review shows this is the first case report of autologous fat grafting for a sciatic nerve injury with motor/sensory function improvement and reduced neuropathic pain. This case report demonstrates that fat grafting should be considered as an adjunct to neurolysis in complex peripheral nerve injuries.

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