[J Hand Surg Am.](https://www.ncbi.nlm.nih.gov/pubmed/7204915) 1981 Jan;6(1):3-12.

**Effects of graded compression on intraneural blood blow. An in vivo study on rabbit tibial nerve.**

[Rydevik B](https://www.ncbi.nlm.nih.gov/pubmed/?term=Rydevik%20B%5BAuthor%5D&cauthor=true&cauthor_uid=7204915), [Lundborg G](https://www.ncbi.nlm.nih.gov/pubmed/?term=Lundborg%20G%5BAuthor%5D&cauthor=true&cauthor_uid=7204915), [Bagge U](https://www.ncbi.nlm.nih.gov/pubmed/?term=Bagge%20U%5BAuthor%5D&cauthor=true&cauthor_uid=7204915).

**Abstract**

Compression applied to a peripheral nerve may easily interfere with intraneural blood flow. In the present experimental study, a vital microscopic technique was used to observe changes in intraneural microcirculation (intrafascicularly and extrafascicularly) when graded compression was applied to a rabbit's tibial nerve by a specially designed minicompression device. Interference with venular flow was observed already at a pressure of 20 to 30 mm Hg while arteriolar and intrafascicular capillary flow was impaired at about 40 to 50 mm Hg. At 60 to 80 mm Hg no blood flow could be observed in the nerve. Nerves observed 3 or 7 days after 2 hours of compression at 400 mm Hg showed no or very slow stagnant blood flow within the previously compressed segment. It is concluded that acute compression of nerve may cause persistent impairment of intraneural microcirculation due to mechanical injury to blood vessels.

[Orthop Clin North Am.](https://www.ncbi.nlm.nih.gov/pubmed/3275919) 1988 Jan;19(1):1-12.

**Intraneural microcirculation.**

[Lundborg G](https://www.ncbi.nlm.nih.gov/pubmed/?term=Lundborg%20G%5BAuthor%5D&cauthor=true&cauthor_uid=3275919)1.

[**Author information**](https://www.ncbi.nlm.nih.gov/pubmed/3275919)

**Abstract**

Peripheral nerve trunks are well-vascularized structures where a well-developed collateral system may compensate for local vascular damage. Interference with intraneural blood flow is reflected rapidly in disturbances in nerve function. In compression lesions and nerve entrapments, the microvascular factor plays an important pathophysiologic role for development of symptoms. Although endoneurial capillaries normally constitute a BNB helping to optimize endoneurial environment, damage to the vessels may induce a miniature closed compartment syndrome by increasing the permeability, thereby contributing to increased endoneurial fluid pressure and development of an intrafascicular edema. Surgeons, performing intraneural dissections, should be aware of the potential risks associated with intraneural bleedings, edema, and intraneural fibrosis.

[Hand Clin.](https://www.ncbi.nlm.nih.gov/pubmed/1613031) 1992 May;8(2):215-27.

**The pathophysiology of nerve compression.**

[Lundborg G](https://www.ncbi.nlm.nih.gov/pubmed/?term=Lundborg%20G%5BAuthor%5D&cauthor=true&cauthor_uid=1613031)1, [Dahlin LB](https://www.ncbi.nlm.nih.gov/pubmed/?term=Dahlin%20LB%5BAuthor%5D&cauthor=true&cauthor_uid=1613031).

[**Author information**](https://www.ncbi.nlm.nih.gov/pubmed/1613031)

**Abstract**

The basic pathophysiology of an acute and chronic nerve compression lesion is complex. Compression of a peripheral nerve induces marked changes in intraneural microcirculation and nerve fiber structure, impairment of axonal transport, and alterations in vascular permeability, with edema formation and deterioration of nerve function. The peripheral nerves of subjects with underlying neuropathies are more susceptible to compression injury.

[Hand Clin.](https://www.ncbi.nlm.nih.gov/pubmed/8724572) 1996 May;12(2):185-93.

**Anatomy, function, and pathophysiology of peripheral nerves and nerve compression.**

[Lundborg G](https://www.ncbi.nlm.nih.gov/pubmed/?term=Lundborg%20G%5BAuthor%5D&cauthor=true&cauthor_uid=8724572)1, [Dahlin LB](https://www.ncbi.nlm.nih.gov/pubmed/?term=Dahlin%20LB%5BAuthor%5D&cauthor=true&cauthor_uid=8724572).

[**Author information**](https://www.ncbi.nlm.nih.gov/pubmed/8724572)

**Abstract**

The basic pathophysiology of nerve compression injuries is complex and it is important to consider the microanatomy of the neuron and the peripheral nerve. The clinical stages of nerve compression lesions can be related to changes in intraneural microcirculation and nerve fiber structure; alterations in vascular permeability, with subsequent formation of edema; and deterioration of nerve function observed in experimental studies. The double-crush and reversed double-crush syndromes are related to disturbances in axonal transport induced by compression, followed by morphologic and functional changes in the nerve cell bodies. An underlying neuropathy in subjects can make the peripheral nerves more susceptible to compression injuries.