

ABSTRACT OF PAPER FOR FULL MEMBERSHIP

BONE AND JOINTS

MR imaging of the peroneal nerve around the knee

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Learning objectives: The purpose of this pictorial review is twofold: to present the normal anatomy of the peroneal nerve around the knee and to review the most common pathology as encountered on MR imaging of the knee.

Material and methods: Our cases were culled from the databases of a University Hospital and a major regional hospital. Twenty five cases were retrieved, 11 females and 14 males, with age ranging from 17 to 68 years.

Anatomic background: The peroneal nerve can easily be identified on conventional MR imaging and has some unique anatomical features. The superficial course of the nerve around the proximal fibula and the relative paucity of epineural supporting tissue make it vulnerable. At the level of the fibular neck there is a fibro-osseous tunnel under the insertion of the peroneus longus tendon where the nerve can be tethered or compressed. As it courses around the fibular neck, the peroneal nerve trifurcates in a deep, superficial and articular branch. The articular peroneal branch for the proximal tibiofibular joint has been shown to be a very common location and entrance port for intraneural ganglia.

General imaging features of denervation: The muscles of the anterior and lateral compartment, innervated respectively by the deep and superficial peroneal nerve, can support a diagnosis with the typical signs of denervation. There is no typical timeframe for each phase; there is some considerable overlap with different phases occurring at the same time. In the acute phase, starting after some days and lasting 4 to 6 weeks, STIR or T2-weighted images are most suited to detect muscle edema. Atrophy and fatty replacement are best seen on T1-weighted images without fat suppression. Atrophy begins after some weeks and fatty replacement occurs in the following months to years.

Spectrum of pathologic conditions: Two major patterns of peroneal nerve lesions can be identified. The first is *traumatic*, either direct or indirect, such as inversion of the foot putting stress on the peroneal nerve. The second pattern is *compressive*, either from extraneurally or intraneurally.

Many traumatic knee injuries can cause damage to the peroneal nerve, ranging from a relative minor direct compressive trauma to a major fracture-dislocation. Many of them are evident clinically

or on EMG and will not require imaging other than conventional X-rays.

Our series included several cases of direct impact injury, an accidental surgical transection, a degloving injury (Morel-Lavallée lesion), a large compressive synovial cyst originating from a pseudarthrosis in the tibial plateau and a proximal fibular fracture (Maisonneuve).

Bony lesions narrowing the osteofibrous tunnel, such as a tug lesion at the insertion of the peroneus longus muscle can compress the common peroneal nerve. Cartilaginous exostosis is another, less common cause of extrinsic osseous compression.

In our series, the most frequent soft tissue tumors causing compression of the peroneal nerve are (ganglion) cysts and neurogenic tumors. Cystic lesions around the knee, most often in a degenerative setting, can be very large and sometimes compress the common peroneal nerve. The peroneal nerve is the most common location for intraneural ganglion cysts. One should carefully look for a fine stalk originating from the proximal tibiofibular joint. Useful signs on axial imaging include the tail sign (indicating the cyst's origin anterior to the proximal tibiofibular joint), the transverse limb sign (horizontal cyst extension in the articular branch) and the signet ring sign (cyst expansion within the common peroneal nerve, displacing the nerve to the periphery).

Nerve sheath tumors originating from the peroneal nerve may be benign or malignant.

Differentiation between schwannoma and neurofibroma is impossible on imaging.

Size more than 5 cm, intratumoral bleeding and areas of necrosis are suggestive of a malignant nerve sheath tumor, but to differentiate with a plexiform neurofibroma biopsy is still required for a definitive diagnosis.

Conclusion: The peroneal nerve has some unique anatomical features contributing to its vulnerability.

A whole variety of lesions may cause potential denervation of the nerve.

In our series, lesions affecting the peroneal nerve are mostly traumatic or compressive.

Due to its exquisite soft tissue detail, MRI provides useful information about both the anatomy of the nerve, its innervated muscles and the etiology of nerve compression.

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CARDIOVASCULAR AND INTERVENTIONAL RADIOLOGY

Large-bore nitinol stents for malignant vena cava superior syndrome: factors influencing outcome

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Purpose: In this presentation, we report our findings concerning the use of large-bore Zilver nitinol stents for malignant vena cava superior syndrome. Factors potentially influencing outcome were analysed.

Materials and methods: From December 2004 until April 2011, 78 consecutive patients who presented with malignant superior vena cava syndrome due to malignant adenopathies (n = 16) or primary lung tumor (n = 62), underwent an endovascular procedure. Analyzed factors were the following: tumor type, need for additional balloon-expandable stenting and Kishi score. Overall survival was calculated until end of follow-up period or decease.

Results and discussion: Technical success was obtained in all but one patient (98%). Additional balloon-expandable stenting was required in 22% of the patients, in order to complete expansion of the nitinol stent. Occlusion of the stent during follow-up occurred in 8 patients (10%).

Overall survival at 6 months was 54% (n = 34) and 50% (n = 8) and at 12 months 37% (n = 21) and 21% (n = 3) for respectively patients suffering from superior vena cava syndrome related to malignant primary lung tumor and adenopathies (p = 0.376).

No difference in survival rate was noted as a function of additional balloon-expandable stenting ($p = 0.35$) or Kishi-score ($p = 0.80$).

Finally, compared to other studies, no more occlusion events have been noted in patients

Conclusion: Patients with stenosis of malignant adenopathic and primary

origin show no statistical significance in survival at 6 and 12 months of follow-up. Additional balloon-expandable stenting (22%) is remarkably not associated with higher thrombosis rate. Kishi-score appears not to be a prognostic factor, meaning all patients with SVC-syndrome are candidate for stenting, irrespective severity degree symptoms.

Large-bore bore nitinol stents are a safe and very effective for palliative desobstruction of malignant SVC stenosis with encouraging global survival data and low reocclusion rates, irrespective of symptoms degree.

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