**Indications:**

The most common indication for medial and lateral palmar digital neurectomy is to alleviate pain (chronic heel pain) associated with navicular syndrome. A variety of diseases or syndromes can contribute to chronic heel pain, the most common of which is pain associated with structures in the region of the navicular bone. Palmar digital neurectomy has also been used in horses with distal phalangeal fractures, navicular bone fractures and calcification of the collateral ligaments.

Despite aggressive treatment with intra-articular or intra-bursal injections, therapeutic shoeing, and systemic anti-inflammatory agents, a significant number of horses either fail to respond to treatment or respond temporarily, necessitating consideration of palmar digital neurectomy as a final treatment option. However, early surgical intervention may provide a more reliable resolution of lameness, slow the progression of the disease, and allow more consistent use of the horse before other sites of lameness limit its athletic career. Horses for which this treatment option is considered need to have the lameness improve more than 90% following perineural anaesthesia of the palmar digital nerves.

**Techniques:**

* The horse is groomed to remove loose hair and dander and the feet are picked and cleaned with a wire brush.
* Regional anaesthesia of the foot is provided by blocking the palmar digital nerves at the abaxial level of the proximal sesamoid bones. Anaesthesia was induced with guaiphenesin (0.5 to 1mg/kg, IV) given to effect, followed by a bolus of either ketamine (2mg/kg, IV) or thiopentone (5 mg/kg, IV).
* Blocking the foot prior to clipping the hair facilitates clipping as the horse is not as sensitive to the vibration generated by the clippers. The feet to be denerved are clipped circumferentially from the coronary band to the level of the fetlock joint using a clipper.
* The entire circumferential distal limb extending from the hoof wall to fetlock joint is prepared for aseptic surgery using standard techniques.
* Depending on the temperament of the horse, mild sedation may be necessary. We typically give most horses 3 mg detomidine intravenously immediately prior to surgery. Some surgeons may use xylazine (0.3 to 0.5mg/kg, IV). It is important to not over-sedate the patient as it will be difficult to pick up the leg to be operated. A second assistant is required to lift the limb to be operated off the ground. The limb is held by the assistant around the cannon bone, with the cannon bone parallel to the ground surface, and the foot is allowed to fall forward to its normal extended position. The surgeon operates on the lateral nerve of the left forelimb and the medial nerve of the right forelimb from the left side of the horse, and the lateral nerve of the right forelimb and medial nerve of the left forelimb from the right side of the horse. The assistant elevates the appropriate limb as required.
* If the procedure is to be done under general anaesthesia, an endotracheal tube will be passed orally, and anaesthesia maintain using halothane in oxygen following regional anaesthesia of the foot and sedation of the horse. The horse will then be positioned in dorsal recumbency on a padded surgery table. The forelimbs extended and secured to the horizontal crossbar of a metal frame using adhesive tape.
* A 1.5- to 2.0-cm incision through the skin and subcutaneous tissue is made with a #10 scalpel blade immediately proximal to the collateral cartilage over the palmar aspect of the palpable neurovascular bundle containing the digital vein, artery, and nerve.
* The nerve is isolated by carefully separating the perineural tissues with a small curved mosquito haemostat and elevated out of the incision.
* Gentle traction is applied to the exposed nerve to facilitate identification of the nerve in the proximal pastern region. A proximal 2-cm incision is made over the palpable nerve just distal to the base of the proximal sesamoid bone and the nerve is isolated from the surrounding connective tissue and elevated out of the incision.
* The skin is closed with stainless steel staples. A specific point of not burying any suture material in the subcutaneous area is made in an attempt to minimize any inflammatory response near the transected nerve ends. However, other techniques such as flushing the surgical site with sterile saline and then closing the site using a simple continuous layer of 2/0 polyglactin 910 in the subcutaneous tissue, and simple interrupted sutures of 0 nylon in the skin, may be performed. Legs were bandaged from the hoof to the carpus.
* Following surgery, a padded pressure bandage is applied extending from distal to the coronary band to the proximal cannon bone region.

**Complications:**

Lameness associated with painful neuroma formation is the most commonly reported complication after neurectomy. Others include residual lameness and horses with concurrent deep digital flexor tendon lesions were four times more likely to become lame again post-PDN. Another common complication after neurectomy is re-innervation due to regeneration of the palmar digital nerves. Surgical technique alone is unlikely to prevent formation of painful neuromas and it is imperative that horses undergo adequate postoperative management.

**Post-Op**

The bandage is changed every 4 to 5 days for 2 weeks at which time the skin staples are removed. The horse is stall-confined for 30 days after which time light exercise can resume. Compression bandaging of the surgical sites, strict box rest and small yard confinement are other postoperative management techniques. Return to full training occurs 60 days postoperatively.

**Prognosis** is good without complications and good post-op management.