Management of Plantar Hyperhidrosis with Endoscopic Lumbar Sympathectomy

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KEYWORDS

• Plantar hyperhidrosis • Endoscopic lumbar sympathectomy • Retroperitoneoscopy

KEY POINTS

- Primary plantar hyperhidrosis is defined as excessive secretion of the sweat glands of the feet and may lead to significant limitations in private and professional lifestyle and reduction of health-related quality of life.
- Conservative therapy measures usually fail to provide sufficient relieve of symptoms and do not allow long-lasting elimination of hyperhidrosis.
- Endoscopic lumbar sympathectomy is effective and safe in the treatment of plantar hyperhidrosis, which can be eliminated in more than 95% of cases with low morbidity and an acceptable rate of unwanted side effects.

INTRODUCTION

Primary plantar hyperhidrosis is characterized by the excessive secretion of eccrine sweat glands of the feet. The etiology is unknown; however, a disturbance in the regulation of the sweat glands via the autonomous nervous system may play a role. In most times, the onset of the disease is in childhood or puberty but late onset in adults may occur. In more than half of the patients, plantar hyperhidrosis is associated with palmar hyperhidrosis.

The excessive sweating may be associated with cold and cyanotic skin, bromhidrosis, skin maceration, and bacterial and fungal skin infection and may lead to significant limitations in private and professional lifestyle as well as to physical and mental stress with potential reduction of health-related quality of life.[1–3]

Primary therapy includes hygienic measures, topical use of aluminum chloride and tannin-containing solutions, iontophoresis, and in selected cases botulinum toxin injections.[1,3] Although these measures may lead to a temporary relief of symptoms, they do not allow long-term elimination of the excessive sweat gland secretion.[4] Lumbar sympathectomy has been considered as a therapeutic option in severe cases of plantar hyperhidrosis because interruption of the sympathetic innervation of the eccrine sweat glands causes anhidrosis of the feet. However, the invasive nature of the procedure and the danger of significant unwanted side effects have prevented wide clinical application.[3]

In the following, we describe our experience with endoscopic lumbar sympathectomy for the treatment of patients with severe plantar hyperhidrosis.

PATIENTS

From December 2004 until August 2015 a total of 188 patients underwent bilateral endoscopic lumbar sympathectomy for severe

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plantar hyperhidrosis at the surgical department Salzkammergut-Klinikum Gmunden, Austria. There were 105 male patients and 83 female patients with an average age of 34 years (range 13–69). All patients had severe primary plantar hyperhidrosis that could not be controlled with conservative treatment methods such as the topical use of aluminum chloride solutions, iontophoresis, and in some cases botulinum toxin injections. A total of 75 of the patients (40%) had bilateral endoscopic thoracic sympathectomy for palmar hyperhidrosis 3 to 192 months previously.

TECHNIQUE OF ENDOSCOPIC LUMBAR SYMPATHECTOMY

The surgical technique has already been described elsewhere in detail.[5] In brief, all procedures are carried out under general anesthesia and endotracheal intubation in supine position with hyperextended flank. To facilitate the localization of the various levels of the lumbar sympathetic trunk and its ganglia, the projection of the lumbar vertebral bodies onto the anterior abdominal wall is marked with fluoroscopy (Fig. 1). The procedure is carried out endoscopically with 3 trocars in the flank and continuous CO2 insufflation (see Fig. 1). The lumbar sympathetic trunk is presented at the level of the third and fourth lumbar vertebral body, whereby on the right side the caval vein and on the left side the para-aortal fatty and lymph node tissue must be dissected to medial. After the placement of metal clips to the cranial and caudal transection site, the segment of the sympathetic trunk situated between the clips is resected together with the ganglia L3 and/or L4 (Fig. 2). All specimens are sent for histology analysis.

CLINICAL RESULTS

In several studies[6–8] we investigated the effectiveness and safety of endoscopic lumbar sympathectomy for the treatment of patients with primary plantar hyperhidrosis. The following section summarizes the results with respect to elimination of hyperhidrosis, morbidity and mortality, occurrence of unwanted side effects, rate of satisfaction of the patients with the postoperative result, and effect of the operation on quality of life.

It clearly could be shown that endoscopic lumbar sympathectomies can be performed with low morbidity and no lethality. Morbidity ranged from 3.0% to 4.6% and included only minor surgical complications like muscle or wound hematoma at a trocar insertion side as well as postoperative pneumonia in one and pulmonary embolism in another patient. Clinically relevant cardiovascular or blood pressure changes were not observed.[6,7]

So far, all operations were performed endoscopically, conversion to an open procedure was never necessary. There were no severe intraoperative complications; however, in approximately 25% of cases the endoscopic operation proved to be technically difficult due to a limited exposure of the retroperitoneum (most times due to the development of a pneumoperitoneum) or a difficult dissection of the sympathetic chain behind the vena cava.

In one study it was demonstrated that lumbar sympathectomy leads to an effective sympathetic dennervation of the blood vessels and the sweat glands of the feet. After the operation, the skin temperature of the sole increased an average of 2.8°C and transepidermal water loss of the feet was reduced significantly in all cases.[6]

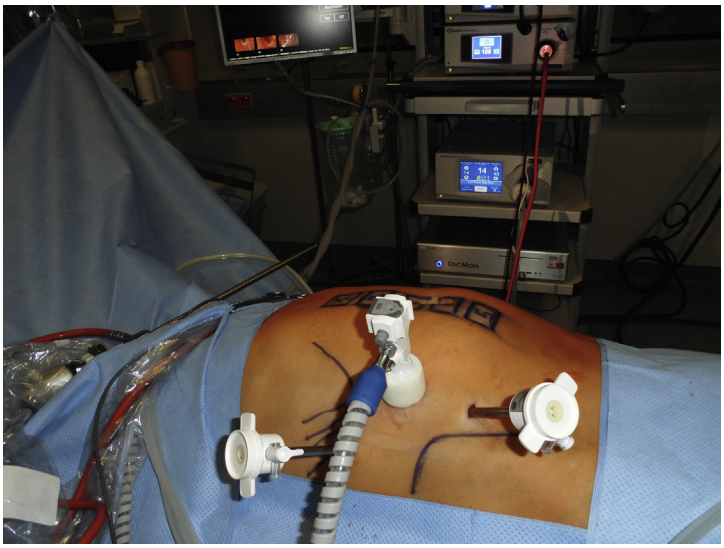

Fig. 1. Trocar placement during right-sided endoscopic lumbar sympathectomy. On 10 mm and two 5-mm trocars are placed in the flank. The lumbar vertebral bodies are marked on the abdominal wall.