Retroperitoneoscopic lumbar sympathectomy for plantar hyperhidrosis

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ABSTRACT

Objective: The objective of this study was to assess the reduction in quality of life (QoL) caused by the persistence of primary plantar hyperhidrosis (PPH) symptoms and the level of satisfaction in PPH patients after retroperitoneoscopic lumbar sympathectomy (RLS). The efficacy, safety, and procedure of bilateral RLS in both sexes are also described in this study.

Methods: This is a longitudinal study of consecutive patients who sought specific treatment from a private practitioner for severe PPH as classified on the Hyperhidrosis Disease Severity Scale (HDSS) from October 2005 to October 2014. The patients were asked to report the symptoms of PPH experienced in the immediate preoperative period and to complete a standardized QoL questionnaire developed by de Campos at least 12 months after RLS. Disease outcomes, recurrence of symptoms, and any adverse effects of surgery were evaluated after 30 days and at least 12 months after RLS.

Results: Lumbar sympathectomy was performed 116 times in 58 patients; 30 days after surgery, PPH was resolved in all patients. Three patients (5.2%) reported transient thigh neuralgia, and 19 (32.7%) reported transient paresthesia in the lower limbs. There were no reports of retrograde ejaculation. At a minimum of 12 months after RLS, 49 of the 58 patients had fully and correctly answered the follow-up questionnaire and noted a mild (HDSS 2) to moderate (HDSS 3) increase in pre-existing compensatory sweating. One patient had a PPH relapse within 6 months. Improvement in QoL due to the resolution of PPH was reported in 98% of the 49 patients. None of the operations necessitated a change in the laparotomy approach, and none of the patients died.

Conclusions: RLS is safe and effective for the treatment of severe PPH in both sexes. There were no reports of retrograde ejaculation after resection of L3 and L4 ganglia. There was a mild to moderate increase in compensatory sweating in about half of the patients, but without any regret or dissatisfaction for having undergone the surgery because of a significant improvement in QoL. (J Vasc Surg 2017;66:1806-13.)

Focal or primary hyperhidrosis is an idiopathic disease that occurs in one or more body parts.[1] The most commonly affected sites are palms, soles, underarms, and face.[1,2] Evidence suggests that primary hyperhidrosis has a genetic factor, and its estimated prevalence is 0.6% to 16.7% in the general population[3,4] and 14.76% in specific patient groups.[5] Primary plantar hyperhidrosis (PPH) is characterized by excessive activation of the plantar eccrine sweat glands. Although its cause remains unknown, its onset frequently occurs during childhood or puberty. More than half of the cases of PPH are associated with palmar primary hyperhidrosis.[6,7] PPH patients suffer daily not only because of excessive sweating but also because they often present with bromhidrosis, a clinical condition caused by the bacterial decomposition of sweat that results in a characteristic and unpleasant odor of sweat. Other symptoms include cold and cyanotic feet; skin problems, such as fissures, eczema, and bacterial and fungal infections[8]; and increased fall and accident risk due to wet feet and foot hygiene problems.[9] These problems can lead to significant limitations in both professional and personal life as well as mental and physical stress by affecting the quality of life (QoL).[8]

The treatment of primary hyperhidrosis aims to reduce perspiration in the body areas where there is sweat hypersecretion. Nonsurgical management consists of anxiolytics, anticholinergics, application of astringent solutions or creams,[10] iontophoresis,[11] subdermal injection of botulinum toxin,[12] or destruction of axillary sweat glands with microwave technology.[13] Surgical treatment is typically considered after the failure of conservative approaches. It involves the excision of sweat glands or sympathectomy.[14,15] Studies of thoracoscopic sympathectomy, often directed at the treatment of craniofacial, palmar, or axillary primary hyperhidrosis, have demonstrated evidence of significant improvement or even cure of plantar hyperhidrosis in a few cases.[16-20] The next line of treatment is retroperitoneoscopic lumbar sympathectomy (RLS), which is the surgical approach used in patients who suffer from a reduced QoL because of profuse plantar sweating.

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The objective of this study was to report the effect of persistent symptoms of PPH on QoL and the level of satisfaction of PPH patients after RLS. Furthermore, the efficacy, safety, and technical steps of bilateral RLS in both sexes are also described.

METHODS

This is a longitudinal nonrandomized study conducted of consecutive patients who sought specific treatment for severe PPH in a private clinical setting. The patients who had undergone thoracic sympathectomy at least 6 months before RLS were included in the study. The patients who did not complete a minimum follow-up of 12 months after RLS were excluded from the study. The patients included in the study were operated on by the same surgical team from October 2005 to October 2014. The patients were asked to report the symptoms of PPH in the immediate preoperative period and to complete a standardized QoL questionnaire developed by de Campos et al[21] (Fig 1) at least 12 months after RLS. After 30 days and a period of at least 12 months after RLS, disease outcomes, adverse effects of surgery, and recurrence rate of symptoms were evaluated. All patients ranked their sweating as either 3 or 4 on the Hyperhidrosis Disease Severity Scale (HDSS).[12]

Scores on this scale are described as follows: HDSS 1, My sweating is never noticeable and never interferes with my daily activities; HDSS 2, My sweating is tolerable but sometimes interferes with my daily activities; HDSS 3, My sweating is barely tolerable and frequently interferes with my daily activities; or HDSS 4, My sweating is intolerable and always interferes with my daily activities (Fig 2).

Data collected from all the patients during the first 30 days after surgery were included in the study. The surgery outcomes were resolved, improved, or unchanged symptoms. The surgical complications included abdominal pain, compensatory sweating (CS), neuralgia, paresthesia, and retrograde ejaculation. Patients had to answer a QoL questionnaire at least 12 months after the operation. Based on the most commonly faced situations in PPH as mentioned in the validated hyperhidrosis QoL questionnaire by de Campos et al,[16] the QoL score before surgery was classified as excellent (1), very good (2), good (3), poor (4), or very poor (5); after surgery, it was classified as much better (1), a little better (2), same (3), a little worse (4), or extremely worse (5). The questionnaire was designed to evaluate patients' perceptions of various activities involved in the functional sphere (walking balance, use of shoes, plantar fungal infections), social sphere (being with friends), personal sphere (intimate relations), emotional sphere (I always justify myself), and interpersonal sphere (Other people reject me) of life. The level of satisfaction was evaluated on the basis of the patients' postoperative report, considering whether they regretted the decision to undergo surgery or would recommend it to other patients with PPH.

ARTICLE HIGHLIGHTS

- **Type of Research:** Single-practice retrospective analysis of prospectively collected data
- **Take Home Message:** In 58 patients with plantar hyperhidrosis who underwent bilateral retroperitoneoscopic lumbar sympathectomy at the level of L2-L4 in 36 women and L3-L4 in 22 men, there was no mortality and no retrograde ejaculation in men. At 1 year, quality of life improved in 98%, with one failure and mild to moderate recurrence of compensatory sweating in 51%.
- **Recommendation:** This study suggests that bilateral retroperitoneoscopic lumbar sympathectomy is an effective treatment for plantar hyperhidrosis at 1 year, without mortality or a risk of retrograde ejaculation in men.

The procedures were performed under general anesthesia with intubation on patients lying in the dorsal decubitus position with a small cushion below the lumbosacral region. A transumbilical incision was made to place a 5-mm trocar and to introduce a camera at a 0- or 30-degree angle after the creation of pneumoperitoneum (14 mm Hg; Fig 3, *A*). Visualizing the abdominal cavity, a 5-mm incision was made on the right flank between the anterior superior iliac spine and the costal margin, at the level of the midaxillary line. Subsequently, a hemostat was introduced to dissect the muscles from the parietal peritoneum, without drilling a hole, to place a 5-mm trocar under direct vision. The retropneumoperitoneum was created by carbon dioxide infusion while deflating the abdominal cavity pneumoperitoneum (Fig 3, *B*). The camera was then moved from the umbilical port to the retroperitoneum port and used to assist in the dissection of posterior parietal peritoneum from abdominal wall muscles (Fig 3, *C*). Subsequently, a 5-mm incision was made on either side of the flank incision in the posterior axillary line for placing the trocars that would be used as ports for grasping, dissection, cutting, and cauterization. Next, the psoas major muscle was identified, and the posterior parietal peritoneum was dissected for locating the lumbar sympathetic chain. It was on the medial edge of the psoas major muscle, on the right side of the lumbar spine, below the ureter and inferior vena cava (Fig 3, *D*). L2, L3, and L4 ganglia were isolated and resected in women and L3 and L4 in men. Hemostasis was revised, trocars were withdrawn, the skin was intradermally sutured, and bandages were applied. A similar procedure was performed on the left side, where the sympathetic chain was displayed on the medial edge of the psoas major muscle and on the left side of the lumbar spine below the ureter and abdominal aorta (Fig 4). All the resected nodes were referred for