Video-Assisted Thoracic Sympathectomy for Hyperhidrosis

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KEYWORDS

• Hyperhidrosis • VATS • Sympathetic denervation • Primary hyperhidrosis
• Thoracic sympathectomy

KEY POINTS

- By the 1980s, open surgery or supraclavicular approach was in use by some groups in sympathetic denervation of the upper limbs with vascular indications.
- Low morbidity, cosmetic results, reduction in the incidence of Horner syndrome, and shortened time in hospital made video-assisted thoracic sympathectomy (VATS) better accepted as a treatment for hyperhidrosis.
- Over the last 25 years, VATS has become routine, leading to a significant increase in the number of papers on the subject in the literature.

INTRODUCTION

The beginning of the 19th century saw improvements in microscopy that allowed Remack[1] to describe histologically the sympathetic ganglia and communicating ramifications; the white and hardened myelinated nervous fibers, and the soft grey matter containing unmyelinated nervous fibers. Toward the end of that century, anatomic and functional investigations allowed for better comprehension of the sympathetic nervous system resulting in the practical application of such knowledge seen in the form of surgical intervention upon the sympathetic system. Initially, sympathectomy was performed empirically to deal with conditions that had no adequate treatment.

The first cervical sympathectomy is attributed to Alexander, who in 1889 treated an epileptic, patient followed by Jonnesco in 1896, who carried out surgical interventions in a large number of epileptic patients. In 1899, Jaboulay resected the lower cervical chain in a patient with exophthalmia and goiter. Failure to achieve success using surgical methods for those conditions as well as for others that had no medical or efficacious surgical alternatives (migraine, kidney pain, and poliomyelitis) led to loss of interest in surgical interventions of the sympathetic nervous system until 1916. It was then that Jonnesco successfully conducted the first clinical application of cervicothoracic sympathectomy on a patient suffering angina bringing pain to a halt. Four years later, Kotzareff adopted the surgical procedure to treat hyperhidrosis for the very first time. By the end of the 1930s, the main indications for cervicothoracic sympathectomy began to take shape, those being hyperhidrosis, thromboangeiitis obliterans, and conditions involving vessel spastics.[2]

The development of thoracoscopy, which was first introduced by Jacobaeus in 1910, allowed Hughes to perform thoracoscopic sympathectomy for the first time in 1942, a method that was later

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adopted by Kux to operate on an expressive number of patients publishing his great experience in 1954. Despite the satisfactory results achieved by these authors, and for unknown reasons, the technique did not find international acceptance for more than 30 years.[3]

By the 1980s, endoscopy was in use by some groups in sympathetic denervation of the upper limbs with vascular indications, but it was only in the 1990s that advances in optical systems and instrumentation for thoracic endoscopy made it possible to adopt the technique to perform thoracic sympathectomy as it is known today.[4,5] Low morbidity, good cosmetic results, reduction in the incidence of Horner syndrome, and the shortened time in hospital made video-assisted thoracic sympathectomy (VATS) better accepted by those undergoing treatment for hyperhidrosis. Over the last 25 years, VATS has become routine in the treatment of hyperhidrosis, leading to a significant increase in the number of papers on the subject in the literature.

We considered nowadays that VATS is a definitive and successful treatment option; it is a safe procedure that yields satisfactory results, better quality of life although it still remains associated with compensatory hyperhidrosis (CH), which can occur in virtually all patients with greater or lesser intensity, mainly in the trunk, with unknown physiopathology.[6–8]

PRIMARY OR IDIOPATHIC HYPERHIDROSIS

Primary hyperhidrosis (PH), sometimes referred to as idiopathic hyperhidrosis, is a condition in which there is excessive production of sweat, disproportional to thermoregulation needs. Is typically limited to the palms of the hand, the plantar region, and/or the armpits, and its manifestation is of a symmetric nature. It may also affect the head and face, and often occurs in 2 or more regions of the body. The mechanism underlying PH is not fully comprehended, but it is generally accepted that it results from stimulation of the sympathetic nervous system at its center. What triggers or aggravates PH are either diseases or factors associated with a psychosomatic component. Such conditions can persist well into adulthood, but may also decrease in intensity in some patients as they age. HP affects close to 2.8% of the population and in 12.5% to 56.5% of the patients, there is a positive family history.[9] Weather is not an etiologic factor, but hot damp conditions aggravate perspiration. There are 2 papers reported by Moura Júnior and associates[10] and Garbelin and colleagues,[11] who describe interesting findings in these patients: there is a higher expression of acetylcholine and alpha-7 neuronal nicotinic receptor subunit in the sympathetic ganglia of patients with PH and the diameter of the thoracic sympathetic chain ganglia is larger than the normal controls. Also, there is a greater number of ganglion cells within the ganglion and a greater number of cells in apoptosis.

Palmar Hyperhidrosis

Palmar hyperhidrosis has been observed to be frequently associated with excessive plantar perspiration and tends to start during childhood, but can become aggravated at adolescence. Its clinical significance is far greater than that wrought by plantar or axillary cases, because palmar hyperhidrosis may lead to marked social, educational, professional, and relationship issues aggravating disturbances of personality that may already be in place. Such individuals wet whatever they touch, hampering writing, reading, and school tasks.[12] From a social and affective point of view, such patients tend to be ostracized, avoiding handshakes, parties, dances, and relationships. Not infrequently do they carry towels about so as to keep their hands dry for at least a while. Palmar symptoms may render a professional incapacitated to perform duties when it comes to handling metals, being called “rusters” owing to the oxidation caused by their sweat. Under such circumstances, those who handle electric or electronic components may even become endangered (Fig. 1).

Plantar Hyperhidrosis

Plantar hyperhidrosis often comes associated with palmar symptoms and is thus classified as palmoplantar hyperhidrosis. Less frequently, it has been observed to be associated with axillary hyperhidrosis. The condition is aggravated by footwear made of plastics or rubber that, when tied shut,

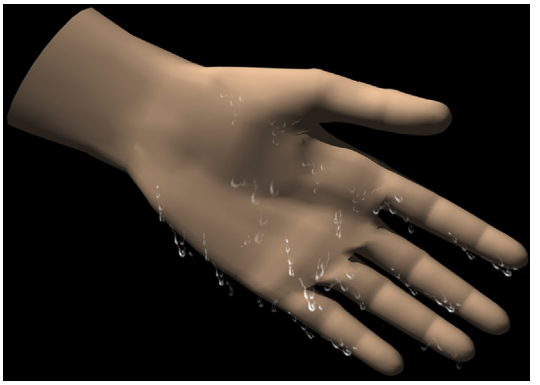

Fig. 1. Palmar hyperhidrosis.