Pak Armed Forces Med J 2007; 57(1): 92-95

# BILATERAL THORACOSCOPIC SYMPATHECTOMY

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## INTRODUCTION

Hyperhidrosis is an idiopathic condition characterized by excessive sweating occurring in up to 1% of the population, with an apparent increased prevalence in countries of the Far East [2]. Hyperhidrosis most commonly occurs spontaneously, or in response to temperature and emotional changes, or as a result of increased sympathetic activity [1]. Secondary causes include central nervous system conditions such as disorders of the hypothalamus or pituitary glands, or chronic diseases such as tuberculosis, lymphoma, diabetes, thyrotoxicosis, or pheochromocytomas. The areas of the body commonly affected in hyperhidrosis in order of frequency include the palms, feet, axilla, head, or face. These symptoms usually begin in childhood or adolescence, often representing an incapacitating and embarrassing disorder that can interfere with social and professional activities.

Early surgical management for hyperhidrosis required an open thoracotomy. This was accompanied by a prolonged recovery period and significant morbidity including Homer's syndrome [3,4]. However, with recent advances in video-assisted thoracoscopy, upper thoracic dorsal sympathectomy has emerged as a viable first line treatment for essential hyperhidrosis.

The incidence and severity of complications following treatment with video-assisted thoracoscopy has been shown to decline, with reported incidences of Homer's syndrome ranging from 0 to 1.9% [5]. This case report is of a patient undergoing thoracoscopic sympathectomy at department of thoracic Surgery to access the success and safety of this modality of treatment for essential hyperhidrosis.

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## CASE REPORT

A 34 years male Asian presented from skin department as referral case of bilateral increase in sweating both arms from axilla to palms. He was symptomatic for the last three years and was having different treatment from general OPD and Skin Department in the form of astringent local applications and oral medications. He was clerk by profession and had to use frequent cleaning of sweat during his work that was embaressing and was causing jeopardy to his job. He had no associated clinical features of vasospatic conditions. His base line investigations were normal, additional thyroid function and glucose profile was normal. His chest X-ray was normal with no apparent clinical or radiological evidence of lung parenchymal pathology which would hinder thoracocscopic dissection and approach. He went bilateral thoracoscopic surgical sympathectomy first on right side then on left all procedure was performed in modified decubitans position with patient slightly forward approx 15 degree beyond perpendicular. This allowed the ipsilateral lung to fall away from the posterior located sympathetic chain, first in right position under general anesthesia with double-lumen endotracheal intubation so that the lung on the operative side can be deflated. To enhance exposure of the posterior mediastinum an anterior rotation was given. The pleural space was then inspected using a zero degree 5-mm endoscope fifth intercostals space in midaxillary line. This was supplemented by two 5mm working trocars in third intercoastal space, one anterior and posteriorly. The rib

spaces and corresponding segment of the sympathetic chain were then visualized (fig. 1) by an area of bright yellow fat and the overlying parietal pleura incised.

Using monopolar cautery the sympathetic ganglia at T2, T3 are isolated and individually excised. Dissection was not carried above the upper border of second rib to preserve 5th stellate ganglion (fig. 2). Finally the bodies of the second and third ribs are horizontally with cautery from the costovertebral angle laterally for 3 to 4 cm, this divided the accessory fibers.

Hemostasis was then obtained and chest tube 28 Fr was passed through the axillary port of the endoscope. The procedure was then repeated on the left side. Lung was fully expanded and underwaterseal was finally checked again. A chest roentgenogram was then obtained postoperatively to confirm adequate expansion of the lungs. The patient was then observed for Homer syndrome. Lung was expanded chest tube was removed very next day with full radiological and clinical expansion. Patient was discharged next days.He had complete recovery of symptoms post operatively.

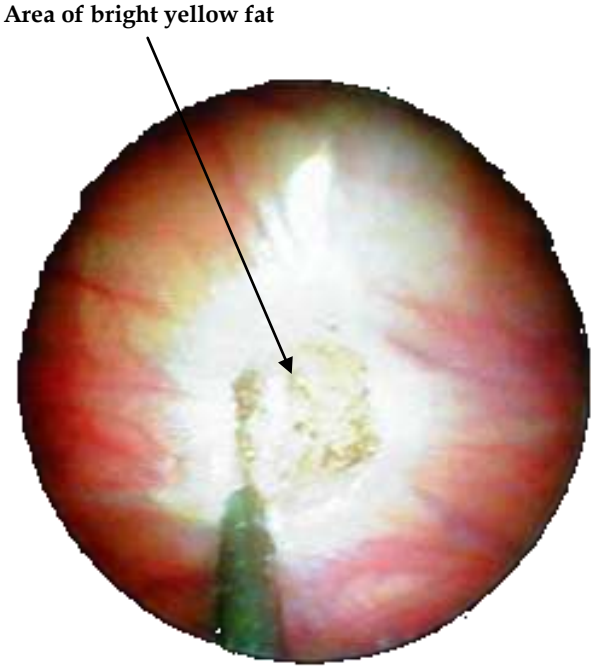


**Fig. 1: Visualization of sympathetic chain.**

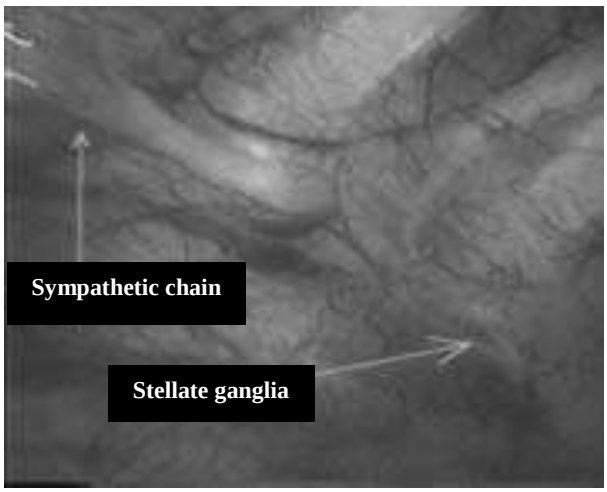


**Fig. 2: Stellate ganglion is identified.**

## DISCUSSION

The therapeutic options for the management of hyperhidrosis have traditionally been nonoperative. These include topical astringents, absorbing powders, and anticholinergic drugs. Other methods of treatment have included biofeedback, iontophoresis, botulinum toxin, and percutaneous phenol block. These methods seldom give sufficient relief, their effects are usually transient, and they are not without associated side effects [6]. The anticholinergics commonly cause dry mouth and blurry vision, making their long-term use undesirable. Botox (Botulinum toxin type A) is effective as treatment for axillary and palmar hyperhidrosis; however, the effects usually last only 3 to 4 months with repeated injections required. Therefore, surgical sympathectomy is assuming a larger role as primary therapy.

Thoracic sympathectomy for hyperhidrosis was first described in the 1920s by Kotzareff [7]. The original approach was a two-stage procedure, which involved a dorsal paravertebral incision for access to the sympathetic chain. Since that original report, multiple open surgical approaches have been developed, most of which are associated with significant morbidity. The approaches included the anterior supraclavicular [8], posterior paravertebral [9], posterior midline

[10], anterior thoracic [11], axillary thoracic [12], and the axillary extrathoracic with first rib resection [13]. Acceptance of surgical sympathectomy for hyperhidrosis proved limited as the risks of surgery were thought to outweigh the potential benefits in this benign condition. Kux advocated an endoscopic technique as early as 1954 [5]. Recent advancements in videooptics and specialized instrumentation have significantly facilitated syinpathectomy. The sympathetic trunk can be easily identified through the parietal pleura thoracoscopically and surgical division of the trunk can be safely performed with minimal associated morbidity.

Our operative technique is one of thoracoscopic T2 and T3 enbloc ganglionectomy with preservation of the TI stellate ganglion. A few points are worth noting mm ports). Second the procedure can be performed through open ports without $CO_2$ insufflation. Similarly, use of a double lumen endotracheal tube, is a major facilitating aspect. Any intrathoracic air leak is immediately apparent at closure and can be easily managed by transient chest intubation. Removal is usually possible within 1 to 24 hours. This method of air leak management has been sufficient.

The excellent view of the ganglion, together with adequate magnification, allows for precise division of the ganglion, which results in lower incidences of Homer's syndrome (0.4% to 2.4%) when compared with open sympathectomy [14]. Other complications, including air leak requiring chest drainage and bleeding, are relatively uncommon in accordance with other series [14,15].

The incidence and degree of compensatory sweating appear to depend on the extent of resection of the sympathetic chain, which may account for the differences in various series. Our technique involves limited excision of the ganglia at T2, T3 minimize. Methods described for performing sympathectomy include simple transection of the sympathetic ganglion, ablation with cautery or laser, or simple clipping of the sympathetic chain with titanium clips. Clipping of the sympathetic chain, without division or ablation, allows the theoretical advantage of reversal should the symptoms of compensatory sweating become unbearable. Irrespective of the chosen method of sympathetic chain disruption, the success rates as well as the incidence of postoperative compensatory sweating are quite similar). When compensatory hyperhidrosis is moderate or severe, management is difficult and generally unsatisfactory with no benefit. Specific complication includes compensatory hidrosis, which occurs in 60 to 70% of patients. It consists of excessive sweating in nondenervated areas, such as the back and goin. It is often tolerable but can be severe. Its etiolg is unclear but may well represent a normal thermoregulatory compensation [16]. Edmondson reported a 48% incidence of gustatory sweating (i.e facial sweating with salivary stimuli) Homer syndrome is rare with preservation of Ti .It may occur in 5% to 10 % patients, however, because of anatomic variability in the formation of the stellate ganglion [17]. Other specific complications include reccurence, intercoastal neuralgias, pneumothorax, and injury to the subclavian vessels or the esophagus. On the basis of the above case report we conclude that thoracoscopic sympathectomy is a safe, anatomically exact, cosmetically appealing and effective therapy with low complication rate.

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