Our Experience on Single-Port Bilateral Endoscopic Thoracal Sympathectomy for the Treatment of Palmar and Axillary Hyperhidrosis

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Abstract

Objective: In this study, we aimed to present our experience on endoscopic thoracic sympathectomy for palmar and axillary hyperhidrosis that does not respond to medical treatment and affects the social lives of people.

Methods: We retrospectively reviewed the data of 20 patients (11 men and 9 women) with a mean age of 25.4 (17–34) years who underwent 40 bilateral endoscopic sympathectomy operations in the same session in our clinic between April 2013 and July 2014. In 12 (60%) patients at the level of T2-T3 and in 8 (40%) patients at the level of T3-T4; the sympathetic ganglions and the Kuntz nerve were ablated by using a single port approach. Postoperative chest X-ray was performed to all patients. All data regarding surgical technique, duration of operation, perioperative and postoperative complications, patient satisfaction, and long-term outcomes were presented.

Results: In long-term follow-up, 12 (60%) patients developed compensatory hyperhidrosis in various body regions. There was no recurrence in any case. Eighteen patients were satisfied and two were partially satisfied with the results of endoscopic thoracic sympathectomy. One patient developed pneumothorax that required intervention, and there was expansion failure in two patients who did not require any intervention. The mean duration of operation was 34.2 (25–45) minutes. There was no surgical mortality. The mean duration of follow-up was 12.4 (5–22) months.

Conclusion: We conclude that endoscopic thoracic sympathectomy is a preferable method with a low mortality and morbidity and high satisfaction in the long-term, despite the risk of late onset compensatory perspiration in elective patients with palmar and axillary hyperhidrosis.

Keywords: Hyperhidrosis, sympathectomy, thoracoscopy

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INTRODUCTION

Excessive sweating that is essential for thermoregulation is called hyperhidrosis. When primary hyperhidrosis is seen at face, palm, axillary region, and feet, secondary hyperhidrosis can be seen at any body region. The etiologic factors are obesity, infections, endocrinological disorders, and malignancies (1). Endoscopic thoracic sympathectomy (ETS) should not be performed before the investigation of secondary etiologic factors. Nowadays, ETS is the method of choice for the treatment of palmar and axillary hyperhidrosis. The most commonly seen complication following ETS is the development of compensatory hyperhidrosis at various body regions (2).

In this study, we aimed to present technique and duration of operation, pre- and postoperative complications, and the results of long-term outcomes with palmar and axillary hyperhidrosis patients who underwent ETS.

METHODS

Forty ETS operations, which were applied to 20 patients (11 men and 9 women with a mean age of 25.4 [17–34] years) between April 2014 and July 2014, were evaluated retrospectively. All patients

underwent bilateral ETS with one thoracoport (Richard Wolf GmbH·Postfach 11 64·D-75434 Knittlingen). All patients were operated under general anesthesia by providing single-lung ventilation in semi-sitting position. Surgery was performed by using thoracoscopy, which surgical instruments can be passed through after 2 cm incision from anterior axillary line on the third intercostal area. The sympathetic ganglia and Kuntz nerves of all patients were ablated by cauterization. T2-T3 and T3-T4 sympathetic ganglia were cauterized without opening the mediastinal pleura for palmar hyperhidrosis and axillary hyperhidrosis, respectively. After one end of aspiration catheter was placed in chest cavity, positive pressure ventilation was applied to patients to provide negative intrathoracic pressure. After the discontinuation of air drainage, the catheter was removed and the skin incision was closed. The same procedure was applied to the other side. Chest X-ray was applied to all patients in the early postoperative period. The mean operation time was calculated in minutes by counting the time between the first incision of the operation and the last stitch. Postoperative follow-up was performed by outpatient controls.

Ethics committee approval was received for this study from the ethics committee as a decision number 2011-KAEK-25 2016/15-01 University of Health Sciences Bursa Yüksek İhtisas Training and Research Hospital Ethics Committee.

RESULTS

Surgical mortality was not observed in any of our patients. We observed that sweating in the hands ceased immediately after surgery. In 14 (70%) patients, sweating that did not affect their daily activities occurred in various parts of their bodies (Table 1). Compensatory sweating was most frequently observed at the dorsal (n=10, 50%) and abdominal areas (n=4, 20%). None of the patients needed thoracotomy. Pneumothorax was observed in three patients in the early stages after surgery, but tube thoracostomy was applied to only one; the other two patients were followed up with oxygen therapy. The mean operative time was 19.2 (15–25) minutes for each hemithorax. Patients were followed up by outpatient controls for an average of 12.4 (5–22) months after surgery. Eighteen (85%) of our patients stated that they were satisfied, whereas two (15%) of our patients were partially satisfied (Table 2).

DISCUSSION

Excessive sweating of hands and armpits directly and indirectly affects the social life of a person. These patients seek treatment to relieve complaints for a long time. Today, with a high success rate, ETS is a safe treatment option for patients whose response to medical treatment is poor. Thoracic sympathectomy was first defined in 1940 and has since been used to treat sympathetic dysfunction. ETS was applied first applied to treat hyperhidrosis by Kux in 1951 (3). Indications for sympathectomy include upper limb ischemia, Raynaud's disease, reflex sympathetic dystrophy, and hyperhidrosis, but today, ETS is used most often to treat hyperhidrosis. The process became even more widespread with the development of double-lumen endotracheal intubation. We used a double-lumen endotracheal tube in all our cases.

In their study, which included 530 ETS cases, Görür et al. (4) reported that operation-related morbidity was low, ETS was quite aesthetic and reliable with the help of two thoracoports, and the rate of patient satisfaction after surgery was quite high. In a prospective comparative study using two ports and one port, ETS was reported to be effective, reliable, and minimally invasive for both groups with perspiration on their hands, and the use of a single port was reported to be a process that may be preferred due to the less pain and shorter operating times rather than use of two ports (5). In our study, we used a single port for all patients, patients using single port experience less pain than two ports approach.

In thoracoscopic sympathectomy, we provided ablation by cauterizing sympathetic ganglia in all our patients. In some studies, ablation was applied to the ganglia using a cautery; however, sympathetic ganglia were removed in some studies as well. Similar postoperative results were observed after the operation of these two procedures (6). The most common and bothersome complication of ETS is compensatory sweating (7, 8). Compensatory sweating is seen in regions where sweating did not occur prior to sympathectomy—namely, the back, waist, groin, and legs. The incidence rate varies considerably from 3% to 98% in some publications (9, 10). Today, it remains unclear why compensatory sweating occurs. Compensatory sweating was found at a rate of 60% in our study. Although seriously increased sweating was observed in one of our patients, and moderately increased sweating was seen in two, which can affect their daily activities, sweating was found not to affect their daily activities on other patients. The T2 sympathetic ganglion plays a fundamental role in the upper extremities. Lin and Telarantal (11) observed that compensatory sweating occurred more often in patients who underwent T2 sympathectomy than in patients who underwent T3-T4 sympathectomy. Other studies have obtained similar results (12, 13). In our study, the majority of the patients who developed compensatory sweating were those who underwent T2 sympathectomy. Some

Table 1. Postoperative complications

Complications	n	%
Compansatory sweating	12	60
Back	6	30
Abdomen	3	15
Thorax	2	10
Neck	1	5
Pneumothorax	3	15
Minimal	2	10
Tube thoracostomy	1	5
Recurrence	-	-
Horner Syndrome	-	-
Bleeding	-	-

Table 2. Long term patient satisfaction

Patient satisfaction	n	%
Satisfacted	33	94.3
Partially satisfacted	2	5.7
Not satisfacted	-	-
Regretful	-	-

studies have indicated that T4 sympathectomy may reduce the compensatory sweating (14).

Another serious complication of ETS, detected in the early postoperative period, is Horner's syndrome. Horner's syndrome may not only occur as a result of a surgical trauma to stellate ganglia, may occur due to a change in negative intrathoracic pressure during the placement of thoracoport, too (15). Several studies have reported that the incidence of temporary and permanent Horner's syndrome is below 5%. Horner's syndrome was not observed in any of our patients.

Persistent bradycardia is another complication that is seen after sympathectomy. Transient bradycardia was seen in one of our patients during surgery and disappeared spontaneously shortly thereafter. Other complications of the procedure include paresthesia, pneumothorax, bleeding and infection, pain around the incision line, chylothorax, and esophageal injury (16). Leaking-style bleeding occurred in some of our patients during the surgery, but this complication was removed by cauterization.

In the chest X-rays taken in the early period after surgery, pneumothorax that required intervention was detected in one patient (5%). This patient's chest tube was removed shortly after the improvement of respiratory distress and after discontinuation of air drainage. Oxygen therapy was administered to the two other patients who did not require tube thoracostomy, and eventually air accumulated in the thoracic cavity was resorbed.

CONCLUSION

Endoscopic thoracic sympathectomy can be applied easily and effectively to treat hyperhidrosis. We believe that it is a reliable method with aesthetic and high satisfaction rate. Using single thoracoport, reduces operative time and causes less pain after surgery.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of University of Health Sciences Bursa Yüksek İhtisas Training and Research Hospital.

Informed Consent: Due to the retrospective design of the study, informed consent was not taken.

Peer-review: Externally peer-reviewed.

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