

Endoscopic thoracic sympathectomy in the treatment of upper limb hyperhidrosis

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Summary

The technique of endoscopic sympathectomy is described and its value in the treatment of upper limb hyperhidrosis is reported in an initial series of 7 patients (13 sympathectomies). It is recommended as the treatment of choice for this condition.

Introduction

Upper limb hyperhidrosis is a common and distressing condition which affects the hands alone in 20%, the hands and axillae in 43% and the axillae alone in 37% of cases (1). Localised axillary sweating, uncontrolled by topical agents, can be effectively treated by total excision of the eccrine sweat glands but the only permanent cure for palmar hyperhidrosis is sympathectomy (2,3,4). An open transaxillary approach is often used but has disadvantages. There is considerable postoperative pain with restriction of shoulder movement and chest drainage is commonly required. Bilateral sympathectomy often requires 2 separate admissions and hospital stay is up to one week. Accordingly, only those patients most severely affected are offered surgery. Kux (1) described a large series of endoscopic thoracic sympathectomies and found the procedure to be simple, safe and effective. However, this technique has not gained widespread acceptance and there are only 3 recent reports in the literature describing it (5,6,7). The purpose of this paper is to highlight the advantages of this procedure and the ease with which it can be learned. Since only one of us (PSM) has had previous experience with endoscopic sympathectomy our initial experience with 7 patients (13 sympathectomies) is described.

Surgical technique

A preoperative chest X-ray is essential to exclude lung pathology which might have caused pleural adhesions since adhesions are a relative contraindication. We used a standard Olympus double puncture laparoscope, a modification on previous descriptions where a single puncture scope was used. The single puncture scope is 10 mm in diameter but the double puncture instrument measures only 5 mm making its insertion through narrow intercostal spaces much less traumatic.

The patient is anaesthetised using a double lumen endotracheal tube and lies supine with both arms abducted to right angles. A 45° head-up position allows the lung to fall

away from the operative field. After the appropriate side of the endotracheal tube has been clamped and disconnected, the Verrez needle is inserted through a small skin incision overlying the third intercostal space in the anterior axillary line. A pneumothorax is produced using 1.5 l CO₂ and the laparoscope inserted. Occasionally unexpected adhesions are seen but it is sometimes possible to divide these endoscopically. The sympathetic chain is seen running vertically over the necks of the ribs from the second to the fifth thoracic ganglia (Fig. 1). Occasionally the chain is difficult to visualise but it can be identified by rolling it under the diathermy probe which is inserted through a separate incision in the fourth intercostal space (Fig. 2). Using a moderate current, coagulation 4, the ganglia are initially diathermied over the necks of the ribs until the periosteum is exposed and then the intervening portions of the chain are coagulated taking care not to damage the underlying intercostal muscles, vessels and nerves. Remaining sympathetic fibres are identified by rolling them under the diathermy probe and they can then be destroyed. The pneumothorax is released and lung inflation observed under direct vision. The skin incisions are closed with simple sutures and the procedure is repeated on the opposite side.

On the right side the sympathetic chain is closely related to the large intercostal veins (Fig. 1). By coagulating the overlying pleura it is possible to dissect the chain free and retract it away from the veins before it is destroyed. Even with this manoeuvre it is not always possible to destroy the entire length of the chain but this seems to have no effect on the end result.

Chest drains are not normally required but a postoperative chest X-ray is essential either in the recovery room or immediately on return to the ward.

Patients and results

Seven patients with bilateral upper limb hyperhidrosis were treated. Five had excessive sweating of the hands and axillae and two had axillary sweating only. There were 5 males and 2 females and their ages ranged from 16 years to 44 years.

Unilateral sympathectomies were performed on separate occasions 6 weeks apart in the first 3 patients but once we were happy with the technique simultaneous bilateral sympathectomy was performed in the remaining 4 patients.

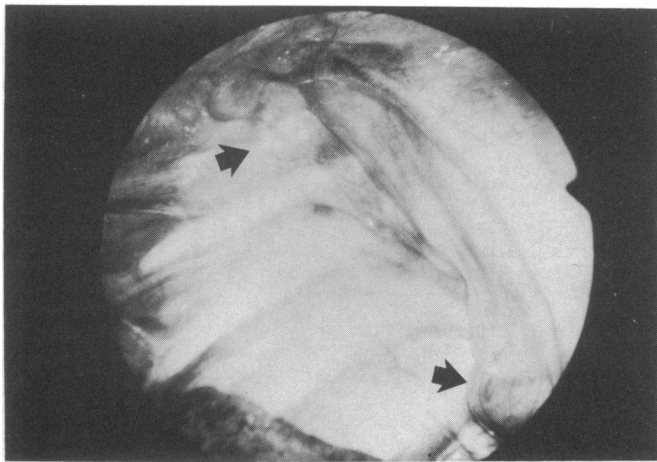


FIG. 1. Endoscopic view on right side illustrating the operative field from the 2nd to the 5th rib. Note the 2nd ganglion (upper arrow) and the azygos vein (lower arrow).

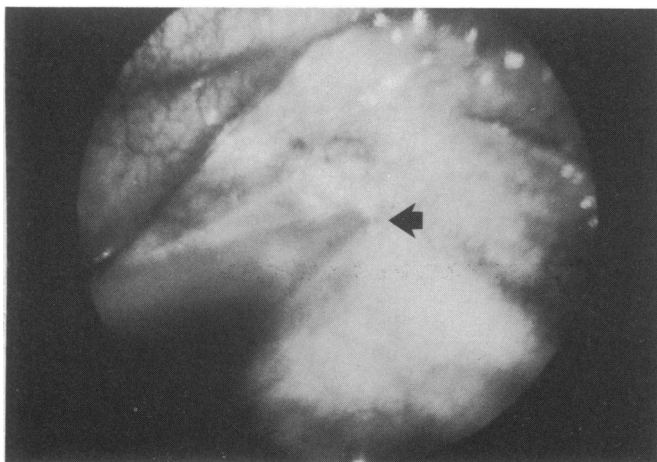


FIG. 2. The 2nd ganglion (arrowed) is seen being pushed laterally by the diathermy probe.

Thirteen sympathectomies were completed and with a follow-up period extending to 9 months all patients remain symptom-free. In one patient dense pleural adhesions were encountered, despite a normal chest X-ray, and the procedure was abandoned. A small puncture wound was seen in the lung and a chest drain was inserted for 24 hours. Recovery was uncomplicated. In 2 cases adhesions were successfully divided and sympathectomy completed. One patient developed a mild bilateral Horner's syndrome but this completely cleared within 48 hours. There were no other complications and with the exception of the case just described we encountered no other technical difficulties. The mean hospital stay was 3 days and patients returned to work within a week. We were impressed by the little postoperative discomfort experienced by the patients.

As we were learning the technique the time taken to perform the procedure was longer than previously recorded but we would suggest, that with practice, it should be

possible to complete a bilateral sympathectomy in less than 1 hour.

Discussion

Our initial experience with endoscopic sympathectomy has confirmed the opinions of others (1,5-7). It is a simple, safe and effective technique that can be easily learned and results are comparable with operative sympathectomy. As the standard laparoscope is the instrument used it can be performed in most hospitals without any additional capital expenditure.

The only problem we encountered was the unexpected finding of dense apical adhesions unilaterally in one patient. These were complicated by a small perforation of the lung and a chest drain was required for 24 hours but there were no long term problems. However, the finding of dense adhesions with a normal chest X-ray is uncommon (4). Minimal or moderate adhesions are more commonly seen but it is possible to dissect these and proceed with endoscopic sympathectomy. In our opinion it is the technique of choice for upper limb sympathectomy.

Advantages are:

- 1 It is simpler to perform than operative sympathectomy and the early results are identical.
- 2 Bilateral sympathectomy could be performed in less than 1 hour with experience.
- 3 There is little postoperative pain and scarring.
- 4 There is less risk of permanent Horner's syndrome than following "cervical" sympathectomy. There is a theoretical risk of damage to the stellate ganglion due to passage of heat through the tissues but no permanent case has yet been reported.
- 5 The average hospital stay is 3 days and patients return to work within a week.

Patients find the procedure highly acceptable and it should now be possible to treat most patients with distressing upper limb hyperhidrosis with endoscopic sympathectomy.

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References

- 1 Kux M. Thoracic endoscopic sympathectomy in palmar and axillary hyperhidrosis. *Arch Surg* 1978;113:264-6.
- 2 Ellis H. Axillary hyperhidrosis: failure of subcutaneous curettage. *Brit Med J* 1977;2:301-2.
- 3 Greenhalgh RM, Rosengarten DS, Martin P. Role of sympathectomy for hyperhidrosis. *Brit Med J* 1971;1:332-4.
- 4 Ellis H. Transaxillary sympathectomy in the treatment of hyperhidrosis of the upper limb. *The American Surgeon* 1979;45:546-51.
- 5 Weale FE. Upper thoracic sympathectomy by transthoracic electrocoagulation. *Brit J Surg* 1980;67:71-2.
- 6 Malone PS, Duignan JP, Hederman WP. Transthoracic electrocoagulation (TTEC)—A new and simple approach to upper limb sympathectomy. *Irish Med J* 1982;75:20-1.
- 7 Horgan K, O'Flanagan S, Duignan JP, Hederman WP. Palmar and axillary hyperhidrosis treated with sympathectomy by transthoracic endoscopic electrocoagulation (Abstract). *Brit J Surg* 1984;71:1002.