

## Endoscopic thoracic sympathectomy for treating facial blushing

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## SUMMARY STATEMENT:

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## REQUEST:

Is endoscopic thoracic sympathectomy (ETS) an effective treatment option for facial blushing?

## REQUESTED BY:

Mr Chris Hensman, Surgeon, GNS program, Monash Medical Centre, Clayton.

## SUMMARY OF FINDINGS:

- No systematic reviews, meta-analyses, or clinical trials that evaluated the effectiveness of endoscopic thoracic sympathectomy for treating facial blushing were identified. However, we have identified four case series related to the request (Drott et al. 1998, Rex et al. 1998, Telaranta 1998, Yilmaz et al. 1996). These studies were conducted in three countries (Sweden, Finland and the Netherlands).
- The four case series were not critically appraised because they are prone to bias and have significant methodological problems. These studies represent level IV evidence according to the NHMRC criteria and one should not draw firm conclusions from their findings.
- To date, the benefits or side effects associated with endoscopic thoracic sympathectomy for treating facial blushing have not been properly evaluated and reported.
- Further research using a well-designed controlled trial is warranted to assess the efficacy of endoscopic thoracic sympathectomy for treating facial blushing.

# METHODOLOGY

## Search Strategy

The Centre for Clinical Effectiveness defined the 'best available evidence' as that research we can identify that is least susceptible to bias. We determine this according to predefined NHMRC criteria (see Appendix).

First we search for systematic reviews, evidence-based clinical practice guidelines, or health technology assessments, and randomized controlled trials. If we identify sound, relevant material of this type, the search stops. Otherwise, our search strategy broadens to include studies that are more prone to bias, less generalizable, or have other methodologic difficulties. We include case-control and longitudinal cohort studies in our critical appraisal reports. While we cite observational and case series studies, and narrative reviews and consensus statements, in our reports we do not critically appraise them. Some studies can produce accurate results but they are generally too prone to bias to allow determination of their validity beyond their immediate setting.

## Details of Evidence Request:

### *Search terms:*

The following search terms were used to scour electronic databases and websites:

Table 1: Search terms used in the retrieval of articles from electronic databases and websites

Field of focus	Search term
Condition related	Facial blush\$, blush\$, red face, facial expression
Intervention related	Endoscopic thoracic sympathectomy, sympathectomy, ETS, sympathicotomy, Endoscopic thoracic sympathicotomy

### *Resources Searched:*

We searched the following databases and Internet websites:

Cochrane Library CD-ROM	Issue 1, 2001
OVID EBM Reviews-Best evidence	1991 to Nov/Dec 2000
OVID Medline	1966 to December week 4,2000
OVID PreMedline	January 19, 2001
OVID Current Contents/all editions	1993 week 26 to 2001 week 6
<a href="#">Journals@Ovid</a> Full Text	January 31, 2001
OVID CINAHL	1982 to December 2000
HealthStar	February 1, 2001
NHS Centre for Reviews and dissemination	

## Refinements, Searching & Reporting Constraints:

Our electronic searching was performed on 2 February 2001. We only searched for articles published in English and no other restrictions were applied.

### *Inclusion Criteria:*

- Primary, controlled studies that evaluated the effectiveness of endoscopic thoracic sympathectomy in the treatment of facial blushing.

### *Exclusion Criteria:*

- Study published in a language other than English
- Studies published prior to 1986
- In vitro experiments or studies involving animals

## RESULTS:

From our sources we identified a total of seven articles and no systematic reviews, meta-analyses, or clinical trials (see References). Of these seven articles, four, all case series, were relevant to the clinical question (Drott et al. 1998, Rex et al. 1998, Telaranta 1998, Yilmaz et al. 1996). These studies represent level IV evidence according to the NHMRC criteria (see Appendix) and were not critically appraised for reasons explained in the search methodology section. However, we have summarised the four studies in the attached spreadsheet. We are reasonably confident these four articles represent the most relevant findings published to date. In conclusion, as far as we are aware, the effectiveness of endoscopic thoracic sympathectomy for treating facial blushing has not been assessed in controlled clinical trials.

Table 2: Study designs of retrieved

Study Design	Number included
Systematic reviews or meta-analyses	0
Evidence-based clinical practice guidelines	0
Randomised controlled trials	0
Comparative study	0
<b>Descriptive case series</b>	<b>4</b>
Consensus reports, non-evidence-based clinical practice guidelines	0
Narrative reviews	0

## ARTICLES RELEVANT TO THE CLINICAL QUESTION BUT NOT CRITICALLY APPRAISED FOR THIS REPORT

- 1) Drott, C., G. Claes, et al. (1998). "Successful treatment of facial blushing by endoscopic transthoracic sympathectomy." British Journal of Dermatology April **138** (4): 639-643.
- 2) Rex, L. O., C. Drott, et al. (1998). "The boras experience of endoscopic thoracic sympathectomy for palmar, axillary, facial hyperhidrosis and facial blushing." European Journal of Surgery **164** (Suppl 580): 23-26.
- 3) Telaranta, T. (1998). "Treatment of social phobia by endoscopic thoracic sympathectomy." European Journal of Surgery **164** (Suppl 580): 27-32.
- 4) Yilmaz, E. N., A. H. M. Dur, et al. (1996). "Endoscopic versus transaxillary thoracic sympathectomy for primary axillary and palmar hyperhidrosis and/or facial blushing - 5-year-experience." European Journal of Cardio-Thoracic Surgery **10** (3): 168-172.

## ARTICLES NOT INCLUDED

1. Claes, G., C. Drott, et al. (1998). "[Treatment of facial blushing with endoscopic thoracic sympathectomy. 85 per cent of patients are satisfied, but there are adverse effects]." Läkartidningen **95** (35): 3660-2.
2. Drummond, P. D. (2000). "A caution about surgical treatment for facial blushing." British Journal of Dermatology **142** (1): 194-195.
3. Krasna, M. J., X. Jiao, et al. (2000). "Thoracoscopic sympathectomy." Surgical Laparoscopy, Endoscopy & Percutaneous Techniques **10** (5): 314-318.

# APPENDIX

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## Levels of Evidence

As defined by "A Guide to the Development, Implementation and Evaluation of Clinical Practice Guidelines" (National Health & Medical Research Council, Canberra, 2000):

Level I	Evidence obtained from a systematic review of all relevant randomised controlled trials.
Level II	Evidence obtained from at least one properly designed randomised controlled trial.
Level III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method).
Level III-2	Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomized, cohort studies, case control studies, or interrupted time series with a control group.
Level III-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies or interrupted time series without a parallel control group.
Level IV	Evidence obtained from case series, either post-test or pre-test/post-test.

# The effectiveness of Endoscopic Thoracic Sympathectomy for treating facial blushing

Author (Year)	Location	Patient profiles	Treatment	Outcomes measured	Results (as reported by authors)
Drott et al. (1998)	Department of surgery, Borås Hospital, Sweden	224 consecutive patients with facial blushing [median (range) age at operation 34 (15-67) years]	Bilateral Endoscopic Transthoracic Sympathicotomy (ETS). The sympathetic chain was divided over the caudal part of the first rib and over the second and third rib.	Complications Effects Side-effects  - A questionnaire and a visual analogue scales was used - Follow up was 8 months	-No mortality, conversion to open surgery or Horner's syndrome. Two patients with postoperative pneumothorax were treated with intercostal drainage and one small pulmonary embolus was detected. -Eight months after surgery, facial blushing (mean +/- SEM) was reduced from 8.7 +/- 0.1 to 2.2 +/- 0.2, P <0.0001. Heart palpitations in stressful situations were reduced (3.7 +/- 0.3 to 1.3 +/- 0.1, P <0.0001). The quality of life was substantially improved. -The main side effect was redistribution of sweating from the upper to the lower part of the body. Increased sweating of the trunk in 75% of the patients. Overall, 85% of the patients were satisfied with the result and 15% were dissatisfied, and four patients (2%) regretted the operation.
Rex et al. (1998)	Department of surgery, Borås Hospital, Sweden	1152 patients [41% men] operated on between April 1989 and April 1996 [Only 244 patients had facial blushing with mean age of 35 years]	ETS by transection of the sympathetic chain where it overlies the second and third rib. The nerve was divided also over the fourth rib in patients with axillary hyperhidrosis	Effect rate of surgery Satisfaction rate Complications. -A questionnaire and a visual analogue scales was used. -Follow up 8 months (range 2-29 months)	The response rate was 90%. For Facial blushing: <ul style="list-style-type: none"> <li>The mean follow up time was 8 months</li> <li>Effect rate was 96%</li> <li>Overall satisfaction rate 85%.</li> </ul>
Telaranta (1998)	Clinic, Tampere, Finland	51 consecutive patients suffering from social phobia [65% female with mean age 39 years; 35% males with mean age of 42 years]	Endoscopic thoracic sympathectomy	Qualitative ideographic inquiry.  -Questionnaire and a visual analogue scale were used.	Mental and physical abuse in 61%, paternal alcoholism in 26%. Four family subtypes were named: quarrelsome, cruel, alcoholic, and perfectionist. The pathognomonic symptoms of social phobia: hyperhidrosis, palpitation, blushing, tremor, and anxiety, were all highly significantly (p<0.001) alleviated by ETS. 88% of the patients were satisfied with the result. No complications.
Yilmaz et al. (1996)	Department of Vascular Surgery, Free University Hospital, Amsterdam, The Netherlands	5 patients received surgical sympathectomies and 23 patients received thoracoscopic sympathectomies.	A total of 50 thoracic sympathectomies (10 surgical and 40 endoscopic) were performed on 5 and 23 patients, respectively.	Complications Efficacy Cosmetic aspect Side effects	The efficacy for blushing was 93.3%. The late relapse rate of sympathetic activity was 14.3%. Compensatory sweating was seen in 67%, gustatory sweating in 37.5% and phantom sweating in 29% of the patients. None of them considered these side effects to be troublesome. Although there is no difference between transaxillary thoracic sympathectomy and the endoscopic intervention in terms of efficacy, the latter is associated with less postoperative pain, shorter hospital stay and a rapid recovery.

Drott, C., G. Claes, et al. (1998). "Successful treatment of facial blushing by endoscopic transthoracic sympathectomy." British Journal of Dermatology April 138(4): 639-643.

Rex, L. O., C. Drott, et al. (1998). "The borås experience of endoscopic thoracic sympathectomy for palmar, axillary, facial hyperhidrosis and facial blushing." European Journal of Surgery 164(Suppl 580): 23-26.

Telaranta, T. (1998). "Treatment of social phobia by endoscopic thoracic sympathectomy." European Journal of Surgery 164(Suppl 580): 27-32.

Yilmaz, E. N., A. H. M. Dur, et al. (1996). "Endoscopic versus transaxillary thoracic sympathectomy for primary axillary and palmar hyperhidrosis and/or facial blushing - 5-year-experience." European Journal of Cardio-Thoracic Surgery 10(3): 168-172