

Medical Policy Manual

Topic: Surgical Treatments for Hyperhidrosis

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Section: Surgery

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IMPORTANT REMINDER

Medical Policies are developed to provide guidance for members and providers regarding coverage in accordance with contract terms. Benefit determinations are based in all cases on the applicable contract language. To the extent there may be any conflict between the Medical Policy and contract language, the contract language takes precedence.

PLEASE NOTE: Contracts exclude from coverage, among other things, services or procedures that are considered investigational or cosmetic. Providers may bill members for services or procedures that are considered investigational or cosmetic. Providers are encouraged to inform members before rendering such services that the members are likely to be financially responsible for the cost of these services.

DESCRIPTION

Hyperhidrosis

Hyperhidrosis may be defined as excessive sweating, beyond a level required to maintain normal body temperature in response to heat exposure or exercise. Hyperhidrosis can be classified as either primary or secondary.

- Primary hyperhidrosis
 - Primary localized hyperhidrosis is idiopathic in nature, typically involving the hands (palmar), feet (plantar), or underarms (axillae).
 - Primary focal hyperhidrosis is defined as bilateral, relatively symmetric, excessive sweating of at least 6 months' duration induced by sympathetic hyperactivity in selected areas that is not associated with an underlying disease process. The most common locations are underarms (axillary hyperhidrosis), palms (palmar hyperhidrosis), soles of the feet (plantar hyperhidrosis) or face and scalp (craniofacial hyperhidrosis).
 - The second (T2) and third (T3) thoracic ganglia are responsible for palmar hyperhidrosis, the fourth (T4) thoracic ganglia controls axillary hyperhidrosis, and the first (T1) thoracic ganglia controls facial hyperhidrosis.

- Secondary hyperhidrosis
 - Secondary hyperhidrosis is usually generalized or craniofacial sweating. It can result from a variety of drugs, [e.g., tricyclic antidepressants, selective serotonin reuptake inhibitors (SSRIs)], olfactory stimuli, or underlying diseases/conditions, such as febrile diseases, diabetes mellitus, anxiety, menopause, neurologic lesions, intrathoracic neoplasms, Raynaud's disease, and Frey's syndrome.
 - Secondary gustatory hyperhidrosis is excessive sweating on ingesting highly spiced foods. This trigeminovascular reflex typically occurs symmetrically on scalp or face and predominately over forehead, lips and nose.
 - Secondary facial gustatory sweating, in contrast, is usually asymmetrical and occurs independently of the nature of the ingested food. This phenomenon frequently occurs after injury or surgery in the region of the parotid gland.
 - Frey's syndrome is an uncommon type of secondary gustatory hyperhidrosis that arises from injury to, or surgery near, the parotid gland resulting in damage to the secretory parasympathetic fibers of the facial nerve. After injury, these fibers regenerate and miscommunication occurs between them and the severed postganglionic sympathetic fibers that supply the cutaneous sweat glands and blood vessels. The aberrant connection results in gustatory sweating and facial flushing with mastication. Aberrant secondary gustatory sweating follows up to 73% of surgical sympathectomies and is particularly common after bilateral procedures.

The consequences of hyperhidrosis are primarily psychosocial in nature. Excessive sweating may be socially embarrassing or may interfere with certain professions. Symptoms such as fever, night sweats, or weight loss require further investigation to rule out secondary causes. Sweat production can be assessed with the minor starch iodine test, which is a simple qualitative measure to identify specific sites of involvement.

A variety of medical therapies have been investigated for treating primary hyperhidrosis, including topical therapy with aluminum chloride or tanning agents, oral anticholinergic medications, iontophoresis, intradermal injections of botulinum toxin, microwave treatment. Treatment of secondary hyperhidrosis naturally focuses on treatment of the underlying cause.

Surgical Treatment

This medical policy addresses only surgical treatment of hyperhidrosis. Surgical treatments for axillary hyperhidrosis include transthoracic sympathectomy and surgical excision of axillary sweat glands. Transthoracic sympathectomy may also be used for palmar hyperhidrosis. Surgical removal of axillary sweat glands has been performed in patients with severe isolated axillary hyperhidrosis. Removal may involve removal of the subcutaneous sweat glands without removal of any skin, limited excision of skin and removal of surrounding subcutaneous sweat glands, or a more radical excision of skin and subcutaneous tissue en bloc.

A variety of approaches have been reported for sympathectomy. For transthoracic sympathectomy, transthoracic endoscopic techniques have emerged as minimally invasive alternatives to transaxillary, supraclavicular, or anterior thoracic approaches. Percutaneous radiofrequency (RF) sympathectomy has also been proposed as a sympathectomy technique in which RF lesions are made in the thoracic sympathetic chain under fluoroscopic guidance without the need for general anesthesia, intubation, or

lung collapse. Lumbar sympathectomy may be performed as a surgical treatment of plantar hyperhidrosis and may also be done endoscopically.

While accepted as an effective treatment, sympathectomy is not without complications. In addition to the immediate surgical complications of pneumothorax or temporary Horner's syndrome, compensatory sweating on the trunk can occur in up to 55% of patients, reducing patient satisfaction with the procedure. Gustatory sweating may also occur. Sympathectomy also results in cardiac sympathetic denervation, which in turn can lead to a 10% reduction in the heart rate. In addition to the complications associated with transthoracic sympathectomy, lumbar sympathectomy for plantar hyperhidrosis may have the additional risk of permanent sexual dysfunction in men and women. Medical researchers have investigated whether certain approaches, e.g., T3 versus T4 sympathectomy, result in less compensatory sweating, but there remains a lack of consensus about which approach best minimizes the risk of this side effect.

Tympanic neurectomy is a surgical technique that may be used for treatment of severe gustatory hyperhidrosis. The nerves are transected in the middle ear through a flap created in the ear drum. Possible risks from this surgery include rupture of the tympanic membrane, infection, hearing loss, and loss of taste in certain parts of the tongue.

MEDICAL POLICY CRITERIA

NOTE: This policy only addresses the surgical treatment of hyperhidrosis.

- I. Surgical treatment of hyperhidrosis, including gustatory hyperhidrosis, via endoscopic transthoracic sympathectomy or excision of axillary sweat glands may be considered **medically necessary** when there is clinical documentation that all of the following criteria are met:
 - A. Primary medical conditions causing secondary hyperhidrosis have been identified and treated where possible
 - B. The hyperhidrosis is persistent and severe, and has resulted in significant medical complications such as:
 1. Acrocyanosis of the hands
 2. Recurrent skin maceration with secondary bacterial or fungal infection
 3. Recurrent secondary infections
 4. Persistent eczematous dermatitis in spite of medical treatments with topical dermatologics or systemic anticholinergics.
 - C. A trial of nonsurgical treatments has failed or is contraindicated
- II. Tympanic neurectomy may be considered **medically necessary** for the treatment of severe gustatory hyperhidrosis if a trial of nonsurgical treatments failed or is contraindicated.
- III. Surgical treatment of hyperhidrosis via endoscopic transthoracic sympathectomy, excision of axillary sweat glands, or tympanic neurectomy is considered **not medically necessary** when the criteria in I. or II. above are not met.

- IV. All other surgical treatments of hyperhidrosis are considered **investigational**, including but not limited to the following:
- A. Lumbar sympathectomy
 - B. Axillary liposuction or curettage performed alone or in combination with any other procedure
 - C. Subdermal laser-assisted axillary hyperhidrosis treatment
 - D. Percutaneous radiofrequency sympathicolysis or sympathectomy
 - E. Radiofrequency ablation for palmar hyperhidrosis.

SCIENTIFIC EVIDENCE^[1]

Literature Appraisal

Endoscopic Transthoracic Sympathectomy (ETS)

Palmar, Axillary, Face/Scalp (Gustatory) Hyperhidrosis

Several randomized controlled trials (RCTs) and one meta-analysis compared different approaches to surgery:

- Deng and colleagues published a meta-analysis of data from RCTs and observational studies published to 2010 evaluating thoracoscopic sympathectomy for patients with palmar hyperhidrosis.^[2] The authors pooled outcome data from different approaches to sympathectomy, i.e., single-ganglia blockage (T2, T3, or T4), and multi-ganglia blockage (T2-3, T2-4, or T3-4). (Note: T refers to rib). Based on these analyses, they concluded that T3 (11 studies) and T3-4 (2 studies) had the “best” clinical efficacy i.e., postoperative resolution of symptoms. The T3 approach resulted in a 97.9% pooled efficacy rate, and the T3-4 approach resulted in a 100% pooled efficacy rate. In the studies for which data were available, the pooled rate of postoperative compensatory sweating was 40% after T3 surgery. Data on compensatory sweating after T3-4 surgery was only available from one study with 60 patients; a pooled analysis could not be performed.
- A 2013 study describes two groups of consecutive patients with isolated axillary hyperhidrosis who underwent thoracoscopic sympathectomy (n = 49) or local axillary surgery (n = 47) at the same university hospital over a 9-year period, depending on referral or preference.^[3] Patients received identical questionnaires to investigate local effect and side effects after surgery. Outcome after surgery for isolated axillary hyperhidrosis was significantly better after local surgical treatment compared with sympathectomy. Local effect was better and side effects fewer, but milder recurrent symptoms were more frequent. Authors suggest that local axillary surgery is preferable for isolated axillary hyperhidrosis and that R2-R3 or R2-R4 sympathicotomy should be discouraged.
- A 2011 study by Baumgartner and colleagues included 121 patients with disabling palmoplantar hyperhidrosis.^[4] Patients were randomized to receive bilateral sympathectomy over T2 (n=61 patients) or T3 (n=60 patients). Six of 121 (5%) patients, 3 in each group, were considered treatment failures, i.e., had recurrent palmar sweating to a bothersome level. There were no

significant differences between groups in the reported subjective change in plantar or axillary sweating after surgery. At 6 months, the mean level of compensatory sweating (0 to 10 severity scale) was 4.7 (standard deviation [SD]=2.7) for the T2 group and 3.8 (SD=2.8) for the T3 group (p=not significant). Similarly, at 1 year, the mean severity rating of compensatory sweating was 4.7 (SD=2.5) in the T2 group and 3.7 (SD=2.8) in the T3 group; p=0.09.

- An additional study was published by Ishy and colleagues in Brazil in which surgery at the T3 and T4 levels was compared.^[5] This study included 20 patients with palmar hyperhidrosis. All patients experienced complete bilateral remission of palmary sweating after 1 year of follow-up. The level of compensatory sweating did not differ significantly between groups at 1 week, 1 month, or 6 months, but at 1 year, there was a significantly higher rate in the T3 compared to the T4 group (20/20, 100% in the T3 group and 15/20, 75% in the T4 group, p=0.47).
- In an additional randomized, controlled comparative trial authors reported primary success rates of 96.3% for isolated palmar hyperhidrosis, 95.7% for palmar and axillary hyperhidrosis, and 66.7% for palmar and face/scalp hyperhidrosis.^[6] Complication rates were similar among the groups and included pneumothorax which required no intervention. Randomized controlled trials (RCTs) continue to be published comparing levels of sympathectomy.^[4,5] Large case series on ETS have reported success rates for of up to 98% for treatment of axillary and/or palmar hyperhidrosis.^[7-16]
- A 2013 series reported on complications after thoracic sympathectomy in 1731 patients with palmar, axillary or craniofacial hyperhidrosis.^[17] Thirty days after surgery, 1531 (88.4%) of patients reported compensatory sweating. Among the 1531 patients, compensatory sweating was mild in 473 (31%), moderate in 642 (42%) and severe in 416 (27%). Gustatory sweating was reported by 334 of the 1731 (19%) patients.
- Ibrahim and others evaluated the operative and postoperative results of two-stage unilateral vs one-stage bilateral thoracoscopic sympathectomy.^[18] 270 patients with severe palmar and/or axillary hyperhidrosis were included in the study. One hundred and thirty patients received one-stage bilateral, single-port video-assisted thoracoscopic sympathectomy (one-stage group) and 140, two-stage unilateral, single-port video-assisted thoracoscopic sympathectomy, with a mean time interval of 4 months between the procedures (two-stage group). The mean postoperative follow-up period was 12.5 (range: 1-24 months). Sixteen (12%) patients of the one-stage group and 15 (11%) of the two-stage group suffered from mild/moderate pain (P = 0.8482). Pneumothorax occurred in 8 (6%) patients of the one-stage group and in 11 (8%) of the two-stage group. Compensatory sweating occurred in 25 (19%) patients of the one-stage group and in 6 (4%) of the two-stage group (P = 0.0001). The authors concluded that both two-stage unilateral and one-stage bilateral single-port video-assisted thoracoscopic sympathectomies were effective, safe and minimally invasive procedures.

Plantar Hyperhidrosis

No RCTs were found for ETS for plantar hyperhidrosis. Case series have found lower rates of efficacy for plantar compared to axillary or palmar hyperhidrosis. In a retrospective analysis of prospectively collected data on patients who underwent ETS for primary focal hyperhidrosis, Wait et al. reported complete resolution of symptoms in 19 of 197 (9.6%) plantar hyperhidrosis patients compared to 99.7% and 73% for palmar and axillary hyperhidrosis, respectively.^[15] In addition to low success rates, concerns have been reported for side effects in sexual functioning in both males and females.

Lumbar Sympathectomy

No RCTs were identified for lumbar sympathectomy.

The evidence is limited to several case series trials that are unreliable due to the following: lack of randomization, lack of a control group for comparison, heterogeneous patient characteristics, lack of long-term follow-up, subjective outcomes, and the use of different surgical techniques.^[19-23]

Surgical Removal of Axillary Sweat Glands (Including Liposuction and Curettage)

There is sufficient evidence to suggest that excisional removal of sweat glands may be safe and effective as a treatment of severe, refractory axillary hyperhidrosis and this technique is considered a standard of care for surgical candidates.

There is insufficient evidence to determine whether liposuction or curettage of sweat gland is safe or effective as a treatment of axillary hyperhidrosis. Although this procedure has been performed for several decades, only scattered reports regarding its effectiveness were identified in a PubMed literature search.^[24-29]

Axillary Subdermal Laser Treatment

The evidence is insufficient to determine the impact of subdermal laser-assisted axillary hyperhidrosis treatment on clinical outcomes. The evidence consists of 2 small nonrandomized studies. One was a 2008 pilot study of 17 patients with 8 weeks followup which reported good or excellent results in 82% of patients.^[30] The other was a 1997 nonrandomized comparative study in which 20 patients underwent subdermal axillary laser ablation on one side and subcutaneous resection on the other side. Follow-up was 4-12 months and significant improvement was reported on both sides, with fewer complications and shorter time to suture removal on the laser-operated side. Despite these reports of positive outcomes, these are the only 2 studies published since 1997. The results of these two studies are considered unreliable due to the lack of randomization, the lack of a control group in the 2008 study, the small study population, and the short study duration.

Percutaneous Radiofrequency (RF) Sympathicolysis

No RCTs have been published for this procedure in the treatment of hyperhidrosis. One comparative case series from Europe was published in 2011 comparing patient outcomes following RF sympathicolysis (n=31) with surgical sympathectomy (n=27) for patients with hyperhidrosis or facial blushing. The improvements following RF sympathicolysis were significantly lower than those following conventional surgical sympathectomy for hyperhidrosis patients and facial blushing patients for treatment efficacy (p=0.0001 and p=0.005, respectively) and quality of life (p=0.0002 and p=0.003, respectively). No other clinical trial data were found.

Practice Guidelines and Position Statements

In 2011, an expert consensus statement on the surgical treatment of hyperhidrosis was published by a task force of the Society of Thoracic Surgeons.^[31] The document states that endoscopic thoracic sympathectomy is the treatment of choice for patients with primary hyperhidrosis. They further recommend the following treatment strategies (with R referring to rib and the number to the specific rib):

- R3 interruption for palmar hyperhidrosis; an R4 interruption is also reasonable. The authors note a slightly higher rate of compensatory sweating with an R3, but R3 is also more effective at treating hyperhidrosis.
- R4 or R5 interruption for palmar-axillary, palmar-axillary-plantar or axillary hyperhidrosis alone; R5 interruption is also an option for axillary hyperhidrosis alone.
- R3 interruption for craniofacial hyperhidrosis without blushing; an R2 and R3 procedure is an option but may lead to a higher rate of compensatory sweating, and also increases the risk of Horner's syndrome.

Summary

The current evidence supports the use of endoscopic transthoracic sympathectomy for surgical treatment of severe, refractory hyperhidrosis in selected patients. In addition, tympanic neurectomy and excision of sweat glands have evolved into a standard of care. Therefore, these procedures may be medically necessary when criteria are met.

The evidence is insufficient to determine the impact of the following surgical treatments of hyperhidrosis on health outcomes, including, but not limited to:

- Lumbar sympathectomy
- Axillary liposuction or curettage performed alone or in combination with any other procedure
- Subdermal laser-assisted axillary hyperhidrosis treatment
- Percutaneous radiofrequency sympathicotomy or sympathectomy.
- Radiofrequency ablation for palmar hyperhidrosis.

Therefore, these techniques are considered investigational.

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CROSS REFERENCES

[Botulinum toxin Type A injection](#), Medication Policy Manual, Drugs, Policy No. 006

CODES	NUMBER	DESCRIPTION
CPT	32664	Thoracoscopy, surgical; with thoracic sympathectomy
	64818	Sympathectomy, lumbar
	69676	Tympanic neurectomy
HCPCS	None	