

Subdermal laser treatment of axillary hyperhidrosis

Laser subdérmico no tratamento da hiperidrose axilar

ABSTRACT

Axillary hyperhidrosis is a common pathology that disrupts patients' social and professional lives and requires appropriate therapy. Traditional treatments include topical and systemic therapies, iontophoresis, botulinum toxin, and surgical procedures. An innovative technique that uses subdermal laser has shown excellent results, few side effects and high patient satisfaction. This paper presents a case report of treating axillary hyperhidrosis with subdermal laser with an excellent response.

Keywords: hyperhidrosis; laser therapy; botulinum toxins; ambulatory surgical procedures.

RESUMO

A hiperidrose axilar é patologia comum que implica distúrbios na vida social e profissional do paciente, necessitando de terapia adequada. Os tratamentos tradicionais incluem terapias tópicas, sistêmicas, iontoforese, toxina botulínica e procedimentos cirúrgicos. Uma nova técnica utilizando laser subdérmico tem apresentado ótimos resultados, poucos efeitos colaterais e alta satisfação do paciente. Relata-se caso de uso de laser subdérmico para hiperidrose axilar com excelente resposta.

Palavras-chave: hiperidrose; terapia a laser; toxinas botulínicas; procedimentos cirúrgicos ambulatoriais.

INTRODUCTION

Hyperhidrosis affects approximately 3% of the population and consists of excessive, permanent, and symmetrical sweating. It is caused by the hyperactivity of the eccrine sweat glands, independently of the sympathetic stimulation of the body's thermal regulation process; it is mainly triggered by emotional stimuli.^{1,2} Hyperhidrosis has a significant negative impact on patients' quality of life. It interferes with social relationships and professional activities, and often leads to social anxiety.²

In its primary form it is an idiopathic functional alteration, which is expressed by excessive sweating that typically occurs in the axillae, palms, soles, and face. The axillae are the most commonly affected regions, and are involved in more than 50% of cases.³

In a prospective study, primary hyperhidrosis had begun during puberty in 61.5% of patients, and the majority (75%) were women. In the present study, hyperhidrosis was classified as palmar in 61.5% of cases, plantar in 53.8%, and axillary in 59.6%. It was less commonly reported in other areas.⁴

New techniques

Authors:

Sandra Tagliolatto¹
Oriete Gerin Leite²
Vanessa Barcellos Duque Estrada
Medeiros³

¹ MSc in Surgical and Clinical Dermatology, Universidade Federal de São Paulo (Unifesp) – São Paulo (SP), Brazil

² Dermatologist Physician – Campinas (SP), Brazil.

³ Dermatologist Physician – Campinas (SP), Brazil.

Correspondence:

Dra. Sandra Tagliolatto
Rua Luzitana, 740 - 4º andar
Cep: 13015-121 - Campinas – SP, Brazil
E-mail: dermoclinica@dermoclinica.med.br

Received on: 30 August 2011
Approved on: 14 March 2012

This study was carried out at the authors' private practice – Campinas (SP), Brazil.

Financial support: None
Conflicts of interest: None

The traditional primary hyperhidrosis treatment options are topical aluminum salts, iontophoresis, the use of oral anticholinergic agents, local surgical interventions, and sympathectomy. Those treatments, however, are often limited and/or correlated to side effects.^{1,2} The results of non-surgical treatments are palliative, however when complications occur, they are transient. An example is irritative dermatitis caused by the use of topical aluminum salts.³

On the other hand, minimally invasive surgical procedures (e.g., local excision or curettage of axillary sweat glands) or sympathectomy are effective, safe, and permanent options for treating hyperhidrosis.^{1,2} However these alternatives are reserved for severe cases, since they can have permanent side effects, such as compensatory sweating, which affects approximately 48% of patients after sympathectomy.⁵

In a recent review on the subject, Gontijo and colleagues⁶ described the liposuction with curettage technique as a less invasive procedure than local open surgeries that can provide good results; therefore, it is one of the prime treatment options for axillary hyperhidrosis.

The use of botulinum toxin in recent years has completely changed the picture of the treatment of axillary hyperhidrosis. Its application is easy, swift, and effective in reducing focal sweating, and does not have major adverse effects, meaning it significantly improves patients' quality of life.³ Botulinum toxin can also be applied in the palmoplantar region, but these locations may require regional anesthesia techniques, which hinder its use. Another drawback is the temporary nature of its clinical effect.³

The use of subdermal laser in axillary hyperhidrosis has been seen as an effective alternative to botulinum toxin due to its more permanent results, few side effects, and high patient satisfaction.⁶ Ichikawa and colleagues⁷ first demonstrated the new technique in the treatment of osmidrosis with the ablation of sweat glands through the subcutaneous administration of 1,064 nm Nd:YAG laser. The technique was described as minimally invasive and highly effective, with a short post-operative recovery period and lasting results. During the clinical follow-up, all 12 study patients were very satisfied with the results after an average of 8.8 months following the procedure.

Another recent study used subdermal laser in the treatment of axillary hyperhidrosis in 17 patients who underwent Minor's iodine-starch, planimetry, and anatomical-pathological tests before and after the procedure, presenting a marked decrease in excessive sweating. This treatment method was less invasive and had a high degree of success.⁸

Satisfactory results are also reported after subdermal 1,320 nm Nd:YAG laser therapy in a case of hyperhidrosis that was refractory to previous treatment.⁹ The 924 nm wavelength diode laser is absorbed by the fat and is primarily used for treating localized body fat.¹⁰ However, the action of that wavelength in the fat near to the sweat glands can lead to the destruction of the latter due to an increase in local heat.⁹

CASE REPORT

A case of 924 nm laser (SlimLipo, Palomar, USA) use for treating axillary hyperhidrosis is described. A 29-year-old male patient, who had suffered from axillary hyperhidrosis since childhood, underwent various applications of botulinum toxin with excellent clinical results, which lasted approximately seven months. In search of permanent results, a decision was taken to perform the procedure with 924 nm wavelength laser in the axillary region.

METHODS

After the Minor's iodine-starch test, the patient was photographed and sent to the procedure room. Local asepsis was carried out using 2% chlorhexidine degerming solution, and the anesthetic point was previously chosen in order to allow proper movement of the hand of the surgeon. The opening of the orifice in the skin was carried out with scalpel blade number.¹¹ After applying Klein's tumescent anesthesia in the axillary region, the optical fiber that transmits the laser was introduced.

The specific parameters were adjusted for the procedure: the emission of 924 nm laser only, at an energy output level of 10W. The optical fiber was moved slowly in the subdermal plane, until the accumulated energy reached 3.5 kJ, at which point the increase in the local temperature could be perceived by touch. The same procedure was performed in the contralateral axilla. Local compressive dressing was performed and the patient was instructed to use antibiotic prophylaxis and restrict vigorous physical exercise with his arms for the first few days after the procedure, but was allowed to carry out routine activities immediately afterwards.

The total treatment time with the laser did not exceed five minutes per axilla. The entire procedure, including asepsis, anesthesia, and dressing, took 30 minutes.

RESULTS

Good clinical results and a high degree of patient satisfaction were observed one week after the procedure, at the first follow-up visit. The patient did not complain of pain or discomfort after the procedure, having described the period as "smooth." There were no side effects, such as burning, significant edema, seroma, or reduction of hair.

The second follow-up visit took place 30 days after the procedure, when the Minor's iodine-starch test was performed and more photographs were taken. At this time, the patient said the procedure was 100% effective, and the absence of sweating in the site was verified in the comparative photographic records (Figure 1). The patient was still being followed up at the time of writing, with the clinical outcomes sustained two months after the procedure.

DISCUSSION

The treatment of severe axillary hyperhidrosis is a medical challenge. Although it has a negative impact on patients' quality of life, due to its benign nature, minimally invasive, long-lasting and affective therapies must be preferred.

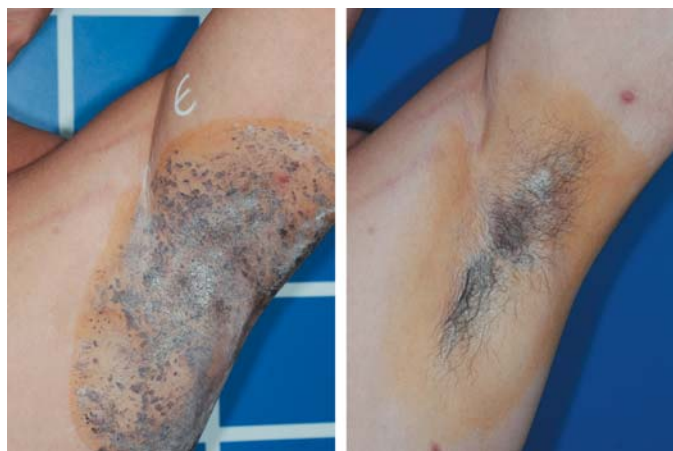


Figure 1: Minor's iodine-starch test. Left: Before the procedure; Right: one month after the application of subdermal laser

The use of laser was reported as a new alternative in the treatment of axillary hyperhidrosis, which has the advantages of being an outpatient procedure with a fast and easy execution, and highly effective and lasting results.

The results presented in this paper are similar to those described in the literature,⁷⁻⁹ both in terms of efficacy and the minimum post-operative discomfort. Long-term studies are needed to better assess its permanence, given that the longest follow-up described so far is 43 months.⁸ Although still scarcely available due to the high cost of the equipment, subdermal laser-based treatment of axillary hyperhidrosis is a promising therapy that can provide high patient satisfaction. ●

REFERENCES

1. Pomarède N. Management of axillary hyperhidrosis. *Ann Dermatol Venerol*. 2009;136 (Suppl) 4:S125-8.
2. Callejas MA; Grimalt R; Cladellas E. Hyperhidrosis update. *Actas Dermosifiliogr*. 2010;101(2):110-8.
3. Grunfeld A; Murray CA; Solish N. Botulinum toxin for hyperhidrosis: a review. *Am J Clin Dermatol*. 2009;10(2):87-102.
4. Marti N, Ramon D, Gamez L, Reig I, Garcia-Perez MA, Alonso V, et al. Botulinum toxin type A for the treatment of primary hyperhidrosis: a prospective study of 52 patients. *Actas Dermosifiliogr*. 2010;101(7):614-21.
5. Macia I, Moya J, Ramos R, Rivas F, Urena A, Rosado G, et al. Primary hyperhidrosis. Current status of surgical treatment. *Cir Esp*. 2010;88(3):146-51.
6. Gontijo GT, Gualberto GV, Madureira NAB. Atualização no tratamento de hiperidrose axilar. *Surg Cosmet Dermatol*. 2011;3(2):147-51.
7. Ichikawa K, Miyasaka M, Aikawa Y. Subcutaneous laser treatment of axillary osmidrosis: a new technique. *Plast Reconstr Surg*. 2006;118(1):170-4.
8. Goldman A; Wollina U. Subdermal Nd-YAG laser for axillary hyperhidrosis. *Dermatol Surg*. 2008;34(6):756-62.
9. Kotlus BS. Treatment of refractory axillary hyperhidrosis with 1320 Nd:YAG laser. *J Cosmet Laser Ther*. 2011;13(4):193-5.
10. Weiss RA; Beasley K. Laser - assisted liposuction using a novel blend of lipid- and water selective wavelengths. *Laser Surg Med*. 2009;41(10):760-6.