

THORACIC SYMPATHECTOMY: SEDATION EXPERIENCE

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Abstract

Introduction/Study Goals: Thoracic sympathectomy is considered to be the most effective treatment for hyperhidrosis, a procedure traditionally performed under general anesthesia. Nowadays it's a minimally invasive procedure, which makes it possible to perform under sedation with local anesthesia. The goal in this study was to assess the efficacy and safety of this anesthetic technique in video-assisted thoracic sympathectomy.

Material and Methods: The study took place in Centro Hospitalar Universitário Lisboa Norte, between June 2017 and September 2019. The anesthetic technique consisted in a propofol infusion titrated to achieve a moderate to deep sedation, in addition to local anesthesia with lidocaine 2% and ropivacaine 0,75% on surgical incisions. All patients were assessed subsequently for pain and anesthetic or surgical complications, with a 30-day follow-up.

Results: From a final sample of 63 patients, most were female (70%), with age ranging between 15 and 57 years old. There were no intra-operative complications. On the immediate postoperative period there were only two cases of poorly controlled pain.

Conclusion: Results showed efficiency and safety with sedation associated with local anaesthesia as an anaesthetic technique for video-assisted thoracic sympathectomy. This anaesthetic approach avoids possible complications associated with general anaesthesia and one lung ventilation, with good analgesic efficacy. However, there is still the need for a bigger sample to confirm the obtained results and to strengthen sedation as an anesthetic approach in thoracic sympathectomy.

INTRODUCTION

Thoracic sympathectomy is presently considered the best treatment for localized hyperhidrosis, an idiopathic condition characterized by excessive sweating, not related to thermal regulation.¹ The estimated incidence ranges 0.6 to 1% and affects more often the palmar and axillary regions.²

In spite of not representing a serious health hazard, it impacts heavily on quality of life, with its emotional, social and professional implications of the mostly young working patients.

The pathophysiology underlying hyperhidrosis is not well established. Still, it is known that this condition is not associated to any structural or functional variant of the sweat glands, but to an autonomic nervous systems thermo-regulatory capacity dysfunction.¹

Other clinical indications for sympathectomy include facial hyperhidrosis, regional algic syndromes, cardiac angina, congenital long QT syndrome and upper limb ischemia.

Conservative strategies have poor results and are limited in time, so the surgical alternative by thoracic sympathectomy is the therapy of choice.³

Surgical procedure consists in the interruption of the thoracic sympathetic chain between T2 and T4 levels, beneath the parietal pleura, near to the costovertebral joint.^{1,4}

Surgery has the purpose of selectively interrupting sympathetic flow, and can be achieved by techniques such as cautery, resection or surgical clips placement, that allow for procedure reversal if these are removed in a second surgical intervention.

The extent of thoracic sympathectomy must be guided by the surgical indication and varies from center to center. In our center sympathetic flow is interrupted between T2 and T3 for palmar hyperhidrosis, T2-T4 for axillary Hyperhidrosis and T2-T5 for soles hyperhidrosis.

Traditionally, thoracic sympathectomy was performed under general anesthesia, with double-lumen selective intubation.^{5,6} However, surgical progress now allow for a video-assisted thoracic sympathectomy, by carbon dioxide insufflation into the chest cavity as a way to create the

room for surgical manipulation. In this way it consists in a minimally invasive procedure, compatible with ambulatory surgery, using sedoanalgesia as an anesthetic technique, as long as the proper patient selection is performed.⁷

At our institution the use of sedoanalgesia for thoracic sympathectomy began in 2017. The objective of this paper is to evaluate the efficacy and safety of this approach as an anesthetic technique for thoracic sympathectomy.

MATERIALS AND METHODS

The present study occurred at the Centro Hospitalar Universitário Lisboa Norte – Hospital Pulido Valente, from June 2017 to September 2019. To allow for thoracic sympathectomy, the anesthetic technique applied was sedation as an adjuvant to local anesthesia.

Intraoperative monitoring was the standard ASA monitoring. A facial mask or nasal goggles with the appropriate oxygen flow was used to maintain normoxemia. The patient was positioned in a sitting position with upper limbs abduction.

Just before starting surgery, a propofol perfusion was initiated after an initial bolus of 0.5-1 mg/Kg, titrated according to the patients needs (25-100 mcg/Kg/min) with the objective of keeping a moderate to deep sedation.

For pain control, an alfentanil bolus of 10-20mcg/Kg anticipated the pain peaks- the trocars placement. In the absence of counter-indications, paracetamol 1g and ketorolac 30mg were administered intravenously.

Weight adjusted surgeon infiltration of the local surgical wounds with lidocaine 2% and ropivacaine 0.75% was done in all cases. To decrease the bias of surgical technique, all procedures were performed by the same main surgeon, with altering second surgeons.

Antiemetic prophylaxis was achieved by the administration of dexamethasone and ondansetron, according to the Portuguese Society for Ambulatory Surgery, using a risk score stratification (Apfel score).⁸

In the immediate post-operative period the patients were admitted to the Unidade de Cuidados Anestésicos Pós-Operatórios (UCAPO) until discharge criteria for phase II (infirmery) recovery was fulfilled.

SELECTION CRITERIA

Eligibility for thoracic sympathectomy under sedoanalgesia in patients with hyperhidrosis was based in a rigorous multidisciplinary evaluation.

The patients were initially evaluated by the surgical team that clarified whether the complaints referred by the patients were caused by hyperhidrosis and if sympathectomy would be beneficial for the patients.

Patients to be treated by sympathetic trunk clipping were excluded from this study, as that technique requires complete immobility of the patient and should therefore be performed under general anesthesia.

After being considered as candidates by the surgical team, patients were observed by the Anesthetic team to insure that all anesthetic, surgical and social criteria for ambulatory surgery were met, and to exclude the presence of comorbidities that would exclude them from performing this procedure under sedoanalgesia.

Patients were informed of the risks and benefits of this intervention technique, assuring verbal and written consent from all candidates for treatment.

Patients were contacted by phone for the 30 day follow-up.

VARIABLES

The technique efficacy was evaluated on the basis of global satisfaction of the patient and the surgeon in relation to the anesthetic technique used, as well as the postoperative pain evaluation on a numeric pain scale.

Safety was estimated by the number and type of intra and post-operative complications.

All patients underwent a chest X-Ray prior to discharge from the UCAPO.

STATISTICAL ANALYSIS

In view of the sample size, a descriptive analysis was performed, without statistical conclusions.

RESULTS

The final sample included 63 patients with a bilateral procedure in all cases.

The main diagnosis leading up to surgery were palmar hyperhidrosis or the association of palmar and axillary hyperhidrosis with a prevalence of 30 and 41% respectively.

Patient age ranged from 15 to 57 years, with a median of 30 years old. Most were females (70%). ASA classification varied between ASA I and II, with a similar distribution of 50.8 and 47.6%, respectively.

In relation to personal history, over half the patients had associated prior conditions, being the most frequent respiratory pathology like asthma (8%), enhanced by smoking habits in 24% of patients.

No intra-operative complications were registered.

Immediate post-operative pain was classified as grade 1-2 in the vast majority of patients (87.3%). Only 2 cases of grade 5 pain were reported, both solved with additional non-opioid analgesia.

DISCUSSION

The results of our study seem to support the hypothesis that sedoanalgesia is a proper anesthetic approach for the performance of thoracic sympathectomies.

During the intra-operative period hemodynamic and respiratory stability were maintained as well as the adequate post-operative pain control and level of comfort of the patients. We highlight that the complications described were scarce in number and swiftly solved, with no future consequences.

This way, the efficacy and safety of the anesthetic technique here described seems to be confirmed for this surgical procedure.

It is essential to underline that the basis of this approach is an adequate patient selection. Considering the fact that most candidates for thoracic sympathectomy are young, relatively healthy patients, with little associated comorbidities, namely cardiorespiratory, this is the ideal population for the use of sedation. In this way, it is of utmost importance a careful pre-operative evaluation, in order to identify those patients that might not tolerate or be a candidate for the performance of the procedure under sedation only.

Critical analysis of the study concludes that the number of patients is small and enrollment of more patients for sedation thoracic sympathectomy is important to corroborate the preliminary results here reported.

CONCLUSION

In comparison with general anesthesia, sedation offers some advantages, namely avoiding the need to approach the airway, the need for selective intubation with all the risks associated with it; on the other hand, allows for a faster patient recovery, less disturbing to their daily living.

This way, sedoanalgesia is an anesthetic technique with a good efficacy and safety profile for thoracic video-assisted sympathectomies.

To guarantee the success of this approach it is essential an adequate patient selection in the pre-operative period.

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