



Role of histoacryl in controlling hemorrhage during needlescopic thoracic sympathectomy

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Abstract

Palmar hyperhidrosis has been a troublesome medical problem for many asian youth causing much discomfort and inconvenience.

Aim: Hemorrhage during the procedure is a potential complication if the ganglion is traversed by a vessel. IT is difficult to dissect the vessel away from the ganglion as the operative field is limited. WE present one case report in which hemorrhage was controlled using Histoacryl injection at the bleeding site.

Methods: 28 years old male patient underwent needlescopic thoracic sympathectomy for palmar hyperhidrosis. During the procedure while coagulating 2nd thoracic sympathetic ganglion, one vessel which was adherent to the ganglion started bleeding profusely which could not be controlled with usual diathermy. Histoacryl was injected into the bleeding site through 2mm port needle. The bleeding stopped instantaneously.

Results: The complications of this procedure are quite the same in all series published till now. Almost in one third of patients, the sympathetic chain is not clearly visible. Kao observed significant pleural adhesions and no reliable method of controlling haemorrhage. But with Injection Histoacryl the bleeding stopped immediately. The potential complication for which either a new port placement or conversion to open thoracotomy was required, was prevented by Histoacryl injection.

Conclusion: Histoacryl which was initially recommended for use in the closure of small and fresh skin wounds and later used extensively in Endoscopy rooms for bleeding duodenal/gastric ulcers can be safely used to stop the troublesome hemorrhage during needlescopic thoracic sympathectomy.

Keywords: Palmar hyperhidrosis, thoracic sympathectomy, histoacryl, hemorrhage

Introduction

Palmar Hyperhidrosis is a common disorder that interferes with the functional activities of many patients. The symptoms appear early and may persist throughout adult life.

Palmar Hyperhidrosis refractory to conservative therapy are commonly treated surgically by interruption of the sympathetic supply to the hand. In the past this was treated by posterior approach [1]. This procedure was associated with a low (25%) incidence of complications but requires up to one week of hospitalization, is technically difficult and time consuming operation [2]. Because of this, patients even declined bilateral treatment even though they have sweating on both sides. Other therapeutic methods such as the application of topical agents like Aluminum chloride or ionophoresis-the electrical

coagulation of sweat glands are used in mild cases, but the results are not satisfactory. Moreover, a regular treatment is required.

Sympathectomy developed in the mid-19th century, when it was learned that the autonomic nervous system runs to almost every organ, gland and muscle system in the body. It was surmised that these nerves play a role in how the body regulates many different body functions in response to changes in the external environment, and in emotion.

Thoracic sympathectomy has been indicated for hyperhidrosis since 1920, when Kotzareff showed it would cause anhidrosis. Percutaneous Radio-frequency sympathectomy is limited by its imprecise localization of the thoracic sympathetic chain. Various endoscopic procedures have been described involving

thermo-coagulation, laser coagulation and non-video-assisted methods [3-6].

Video-assisted endoscopic Trans-axillary thoracic sympathetic ganglionectomy is the preferred treatment of choice for Palmar Hyperhidrosis. The success rate has been reported to be in the range of 87-100% with low complication rate and shorter hospital stay [7,8]. Thoracic sympathectomy by interfering with the sympathetic innervation to the sweat glands through ganglionectomy gives excellent results and prompt relief of sweating.

The complications of this procedure are quite the same in all the series published till now, namely-compensatory sweating, pneumothorax, Horner's syndrome to name a few [11-14].

Hemorrhage during the procedure is a potential complication, if the ganglion is traversed by a vessel. It is difficult to dissect the vessel away from the ganglion as the operative field is limited. Significant intra-operative bleeding is an important complication described in the literature. It occurs in up to 5.3% of patients undergoing endoscopic thoracic sympathectomy [15]. Mostly it is because of injury to the intercostal vessels which can be controlled endoscopically with cautery either by adding another port or converting a 3mm port to either 5mm or 10mm port.

In a series reported by Kao, [16] using 2.4mm operating thoracoscope, he noted that in 1/3rd of cases, the sympathetic trunk was not clearly visible. He also observed significant pleural adhesions and no reliable method of controlling hemorrhage.

Histoacryl consists of monomeric n-butyl-2-cyanoacrylate, which polymerises quickly in connection with tissue fluid. It is a watery solution, which polymerizes and hardens within 20 seconds in a physiological milieu and instantaneously upon contact with blood. This makes it ideal for obliterating vessels and controlling bleeding. It is necessary to dilute it with the oily contrast agent Lipiodol, which is not only compatible with the tissue glue for dilution but also allows fluoroscopic monitoring of delivery of the substance. Histoacryl is available for topical as well as in injectable formulation. Histoacryl is indicated for the treatment of bleeding peptic ulcer disease, esophageal varices and for closure of smooth and fresh skin wounds. It has also been used for non-traumatic mesh fixation in hernia repair but it has not been described to be used for control of bleeding.

We present one case report in which Hemorrhage was a controlled using Histoacryl injection at the bleeding point.

Case presentation

23 years old male patient underwent bilateral Trans- axillary needlescopic Thoracic sympathectomy using 3mm and 2mm ports.

Under general anesthesia with double lumen endotracheal tube, patient was placed in the left lateral position with the arm flexed to expose the axilla. Temperature probe was fixed to both palms to record the peripheral cutaneous temperature.

The ipsilateral lung was deflated and a 3mm cannula was inserted in the 4th intercostal space in the mid-axillary line. Low flow carbon dioxide was insufflated to 10mm of Hg pressure. Then 3mm needle scope with camera (Karl Storz) was inserted to view the thoracic cavity and the sympathetic chain running horizontally over the neck of the ribs. Then 2mm trocar was inserted in the 5th intercostal space in the posterior axillary line. First rib and the stellate ganglion over it identified and preserved.

A 2mm ball-tipped electro cautery was introduced through the 2mm port to ablate the two ganglions over the 2nd and 3rd rib from superior to inferior edge. There was a small vessel adherent to the 2nd ganglion, which in spite of all precautions started bleeding. The bleeding could not be controlled with the cautery. A suction tip was passed through the 2mm port after taking out the ball tipped electro cautery probe. The suction tip was placed right on top of the bleeding vessel.

Histoacryl injection was given through the 2mm port using 23-gauge disposable injection needle catheter. It contained 0.5-1.0 cc of Histoacryl and an equal volume of Lipiodol. The bleeding stopped immediately.

The gas was allowed to escape during inflation of the lung under direct vision. Once the lung was fully inflated, needlescope and the 2 ports were removed. Chest drainage was not required. The wounds were infiltrated with 0.5% Marcaine and air tight dressing was applied. Then the patient position was changed to the right side and same steps for thoracic sympathectomy were repeated. A chest X-ray was obtained in the recovery to check for any residual pneumothorax.

Discussion and conclusion

Palmar Hyperhidrosis has been a troublesome medical problem for many Asian youth, causing much discomfort and inconvenience. It is well recognized now that surgical treatment is superior to medical therapy in the cure of the disease [9,10].

In recent years Endoscopic thoracic sympathectomy has been used in many centers to treat Palmar Hyperhidrosis for its simplicity and effectiveness. The second and the third thoracic ganglion can be easily identified with vedioscope and destroyed using diathermy. In the Minimally Invasive Surgery Center, at N. U. H. we are doing Needlescopic Thoracic sympathectomy using two holes-3mm port for camera and 2mm port for diathermy.

Histoacryl is a tissue adhesive composed of monomeric n-butyl-2-cyanoacrylate. It has been indicated in the closure of small and fresh skin wounds.

Presently it is being used extensively in the Endoscopy rooms throughout the world to control the bleeding from the peptic ulcer both duodenal and gastric, where initial hemostasis is not achieved with the injection of adrenaline. The results have been quite encouraging in case of bleeding duodenal/gastric ulcers. But we haven't come across any reference of its use to stop small but troublesome bleeding in laparoscopic or needlescopic surgery.

However if one is using 3 ports one 10mm and two 5mm ports in 2nd, 4th and 5th intercostal space for Thoracic sympathectomy as described by D P Robertson, then one can use the third port for hemostasis using either dissecting or grasping forceps.

But in the era of Minimally Invasive Surgery or as it is rightly called Needlescopic surgery, a needle with a Histoacryl is a better option to stop the small and troublesome bleeding than restoring to creating one more unnecessary wound.

Competing interests

The author declares that he has no competing interests.

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