

## Thoracoscopic Splanchnicectomy for Pain Control in Unresectable Pancreatic Cancer

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ABSTRACT

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**Introduction:** Severe pain is a major problem in patients with unresectable pancreatic cancer. The goal of this study is to evaluate the effects of Thoracoscopic Splanchnicectomy (TS) on pain control in these patients suffering from unresectable pancreatic cancer.

**Materials and Methods:** Between years 2000 to 2011, 20 patients suffering from unresectable pancreatic cancer underwent TS due to severe pain. They were studied in terms of age, sex, location of pancreas tumor, history of previous surgery, response to treatments for pain control (assessed with VAS scoring system) and complications of surgery.

**Results:** Male to female ratio was 14/6 with a mean age of 63 years. The most common tumor site was at the pancreas head (in 8 patients). The most cause of unresectability was local expansion to critical adjacent elements (in 10 patients). Surgery was performed successfully in all patients. Post-operative complication included only pleural effusion on the left side which was cured by proper treatment. There were no post-op mortalities. Fifteen patients had acceptable levels of pain at the end of a six month follow-up period.

**Conclusion:** TS provides good pain control, little side effects and minimal invasiveness, the technique is recommended for pain control in patients with unresectable pancreatic cancer.

### Introduction:

Severe pain is a major problem in the treatment of patients suffering from unresectable pancreatic cancer, which normally leads to the use of narcotics (1). To control the pain of these patients many different methods of treatment have been proposed, ranging from anti-inflammatory and narcotics to transdermal or laparotomic celiac plexus block and elimination of splanchnic plexus by thoracoscopic techniques (2). The thoracoscopic splanchnicectomy technique (TS) is a minimal invasive method which controls pain by cutting

off pain-conveying nerves. It controls pain with minimum side effects and have been widely used as an acceptable technique (3). The goal of this study is to evaluate the effects of TS on pain control in patients suffering from unresectable pancreatic cancer.

### Materials and Methods:

Between years 2000 and 2011, 20 patients suffering from unresectable pancreatic cancer underwent TS surgery due to severe pain. They were followed up for at least 6 months and at most to their deaths.

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Patients were studied in terms of age, sex, location of pancreas tumour and history of previous surgeries. All pre-op patients were analyzed by a visual analogue pain score (VAS). Pain-free patients received a score of 0 and maximum pain patients received a score of 10 (4). Patients were followed up after the first post-op day, one week, three weeks, one month and then 3 months after the surgery. The patients were fully oriented on the surgery and possible side effects and their consent was obtained for the surgery. They were then evaluated for cardiovascular conditions and the required medical tests were taken. Anaesthesia was administered by double lumen endotracheal intubation and the patients were put in a left lateral position. A port 10 was inserted in the 6th mid-auxiliary inter-costal space for camera and two 5mm ports were placed in the posterior 7th and 9th auxiliary lines. Dissection was done from T5 to the diaphragm, once the splanchnic nerve was found, all nerve connections were cut by clips and the dissection was continued up to the diaphragm. At diaphragm the nerve is clipped and cut and sent to pathology lab for verification. At the end of the procedure a chest tube of size 28 is placed inside the left thoracic space, to be extracted the day after radiography.

### Results:

Twenty patients were studied of which 14 were men and 6 were women (M/F=14/6) of an average age of 63 year. The tumor site was on the pancreas head in 8 patients (40%), on the pancreas body in 6 patients and on the pancreas tail in the remaining 6 patients. Previous surgeries of the patients included 8 cases of cystojejunostomy, 6 cases of gastrojejunostomy, 7 cases of diagnostic laparotomy, and 5 cases of diagnostic laparoscopy. The cause of unresectability was local expansion of the tumor and

involvement of major adjacent elements in 10 patients, liver metastasis in 4 patients, and peritoneal seeding in 6 patients. All patients received chemotherapy before pain control surgery; only 5 patients received radiotherapy with chemotherapy. Thoracoscopic sympathectomy complication included plural effusion in one patient, which was cured by needle aspiration. There were no other post-op complications or mortalities. The pain score was  $8.2 \pm 1.2$  before the surgery, but in a dramatic response it dropped to  $1.4 \pm 1$  in the day after the surgery and to  $1.7 \pm 1.5$  in the first week and to  $2.9 \pm 1.2$  in the first month and  $4 \pm 0.9$  in the third month. In general, 15 patients had acceptable levels of pain at the end of a 6 month follow-up period, with no need for narcotics, while 3 patients experienced pain relapse and needed narcotic drugs, and two patients passed away. Both mortalities were in good pain control conditions and did not need narcotic drugs. Figure 1 shows the mean VAS scores of the patients.

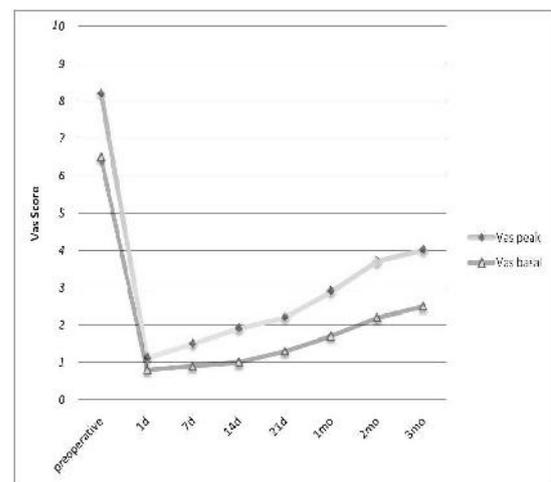


Figure.1: Mean visual analog scale (VAS)

### Discussion:

Severe abdominal pain is a serious symptom of unresectable pancreatic cancer. Given the fact that the disease normally has no final treatment, the main

goal focus on pain management. Numerous painkillers and narcotics are available for such patients, including varieties of non-narcotic and narcotic palliatives as well as silicate plexus block. There are also various surgical techniques such as splanchnic plexus block (5) and pancreatic denervation. In 1942 the first splanchnicectomy surgery was done by Mullet-Guy by means of laparotomy to control pain. He did the surgery to control chronic pancreatic pain (6). The first report on splanchnicectomy by thoracotomy was published in 1990 by Stone and Chauvin. They used the technique in controlling chronic pancreatic pain (7).

In 1993 the first report of successful pain control in a patient suffering from pancreatic pain by video assisted thoracoscopic splanchnicectomy was published by Meliei et al and Worsey et al (8, 9). One technique to control pain in patients with unresectable pancreatic cancer is pharmacological blockade of the celiac plexus. This is done either percutaneous or by laparotomy. In a study by Masaki et al in 2002, alcohol was injected into the celiac plexus through laparotomy in 15 patients. The results were then compared to other medical treatments including prescription of narcotics. They reported the technique as a very safe method with acceptable side effects and good results in pain control (10). Early side effects of injection of pharmacologic materials into the celiac plexus included paraplegia, acute pain, diarrhea, or urinary retention, orthostatic hypotension and pain due to chemical neuritis (11).

Due to some serious complications, today surgeons are inclined towards TS which is accompanied by maximum pain control effects. Many studies have been done on TS effectiveness. A study by Leksowski et al in 2001 introduced one-side TS as a very noteworthy technique

because of its excellent results in controlling severe pains of patients with unresectable pancreatic cancer (5). In another study by Piotrohissa et al in 2000 the TS was considered as a short-term effective method of control pain in unresectable pancreatic cancer patients with rare mortality rates (1). In a similar study by Saenz et al in 2000, the TS was recognized as an effective method in controlling pains, resulting in increased patient mobility and improving life expectancy and quality of life (2). In this study, TS has been established as a very effective method for controlling pains in patients with unresectable pancreatic cancer with minimum morbidity and mortality rates.

#### **Conclusion:**

TS provides good pain control, little side effects and minimal invasiveness, the technique is recommended for pain control in patients with advanced pancreatic cancer for which normal palliatives fail to respond.

#### **Acknowledgements:**

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#### **Conflict of Interests:**

The authors have no conflict of interests.

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