



## A CASE REPORT OF CELIAC PLEXUS BLOCK FOR CHRONIC CALCIFIC PANCREATITIS PRABHU

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**Abstract :** A 42 years old female known case of chronic calcific pancreatitis, pain refractory to analgesics and pancreatic enzyme supplementation was referred to pain clinic for pain relief. Celiac plexus block was performed with 100 percentage ethanol under fluoroscopic (C arm) guidance after a trial block with 0.25 percentage bupivacaine. Pain relief was adequate after the block and was without any complications.

**Keyword :** Celiac plexus block, Chronic calcific pancreatitis, Pain assessment

### INTRODUCTION :

Chronic pancreatic pain can be caused both by malignancy and benign disease. Regardless of the cause, pancreatic pain is often difficult to manage even with strong analgesics and can be debilitating to many patients. Despite being an invasive procedure, neurolytic celiac plexus block (NCPB) is reported to be an effective treatment option with a low complication rate for patients with abdominal pain of non malignant cause that is not controlled with regular analgesics. [1]

### CASE REPORT :

A 42 years old house wife Mrs. Saraswathy presented with the history of recurrent epigastric pain of 2 years duration. Pain was radiating to the back, relieved by leaning forward and was diagnosed to be chronic calcific pancreatitis, associated with nausea and vomiting. Patient was on analgesics and pancreatic enzymes supplementation for the past 3 months, but because of the severity and frequency of attacks patient was referred to pain clinic in our hospital. All blood investigations were done and was found to be within normal limits. CT abdomen showed multiple calcific foci involving entire pancreas viz head, body and tail. Intensity of pain was assessed by Visual Analogue Scale (VAS) and Numeric Rating Scale (NRS). The score was rated 70-80 in VAS and 7-8 in NRS. Hence we decided to perform CELIAC PLEXUS BLOCK as a mode of pain relief for the patient. The procedure, its outcome and adverse effects were explained to the patient in detail and written informed consent was obtained.

### PROCEDURE:

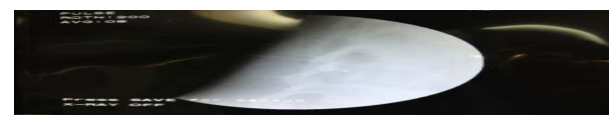
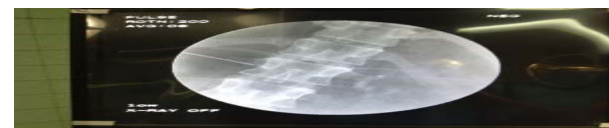
After shifting the patient into operation theatre, IV line was secured in right cephalic vein with 18 G cannula. ECG, NIBP, and SpO2 monitors were connected. Inj. Midazolam 2mg, Inj. Fentanyl 100 mcg IV given. Oxygen 5 L/min through face mask administered. Patient turned to prone position, Using tuffier's line as landmark guide, L4 was marked initially followed by L2, L1, T12.



Under strict aseptic precautions, at 7 cm lateral to L1 spinous process site of needle insertion was marked and local infiltration of skin with 2 ml of 2% lignocaine was given. 25 G quincke needle advanced anteriorly towards the midline until positioned just anterior to the cephalad portion of the L1 vertebral body. Needle position was confirmed by using C arm both in AP & Lateral view.



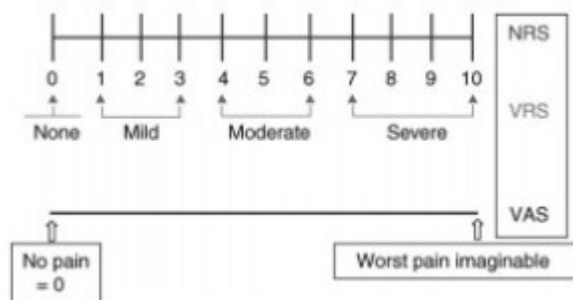
After negative needle aspiration for blood, 5 mL of 30% iodinated contrast (iohexol) material was injected without resistance.



Correct needle placement was confirmed by observing cephalo caudal distribution of contrast material under fluoroscopy. After confirmation of the correct position of the needle tip, test dose of 10 ml 0.25% bupivacaine injected on each side. Patient was turned back to supine position and observed for an hour. Vitals were stable and the pain decreased to 25-50 %. VAS score was 40-50 and NRS score was 4-5. Hence we decided to proceed with neurolytic agent. Patient was positioned back to prone, using the same technique under C arm guidance, 10 ml of 100% ethanol injected on each side. Patient shifted to ICU for observation and assessment of pain.

#### PAIN ASSESSMENT<sup>[7]</sup>:

TIME PERIOD	VAS SCORE	NRS SCORE
BEFORE NCPB	70-80	7-8
1 HOUR AFTER NCPB	40	4
24 HOURS	20	2
48 HOURS	20	2
1 <sup>ST</sup> WEEK	10	1
2 <sup>ND</sup> WEEK	0	0
3 <sup>RD</sup> WEEK	0	0



#### **DISCUSSION:**

##### **Anatomy [2]**

The celiac plexus proper consists of the celiac ganglia with a network of interconnecting fibers. The coeliac plexus is also known as the solar plexus. It is the main junction for autonomic nerves supplying the upper abdominal organs (liver, gall bladder, spleen, stomach, pancreas, kidneys, small bowel, and 2/3 of the large bowel). The ganglia lie on each side of L1 (aorta lying posteriorly, pancreas anteriorly and inferior vena cava laterally).

##### **Sympathetic supply:**

Sympathetic supply of celiac plexus consists of

- 1) Greater splanchnic nerve (T5/6 to T9/10)
- 2) Lesser splanchnic nerve (T10/11)
- 3) Least splanchnic nerve (T11/12)

The upper abdominal organs receive their parasympathetic supply from the left and right vagal trunks, which pass through the coeliac plexus but do not connect there.

##### **Indications for celiac plexus block [2]**

Celiac plexus block is usually indicated in the following conditions :

- 1) Performed during surgery for postoperative pain relief.
- 2) Chronic severe upper abdominal visceral pain - e.g. chronic pancreatitis
- 3) Upper abdominal organ cancer pain and is frequently used for carcinoma of the pancreas

##### **Contraindications**

The absolute contraindications are :

- 1) Coagulopathy
- 2) Local skin infection.

It is dangerous to perform the block in the presence of a large aortic aneurysm.

##### **AGENTS INJECTED IN CELIAC PLEXUS BLOCK [3]**

Nerve destructive agents such as ethanol and phenol have been used. 25-50 ml of alcohol in concentrations of 50-100% is the most commonly used agent.

**The mechanism of action of alcohol** is by extraction of cholesterol and phospholipids from the neural cell membranes, causing precipitation of lipoproteins and mucoproteins. Phenol in concentration greater than 5% in water induces necrosis when applied directly to neural tissues. But disadvantages of phenol include its slower and shorter duration of action and increased

viscosity which limits its use in clinical practice. Local steroid injections mixed with local anaesthetics have also been used in patients but with disappointing results.

##### **IMAGING MODALITIES USED TO PERFORM BLOCK : [3]**

Before 1970s, celiac plexus blocks were performed blindly, either using an anterior or posterior abdominal approach. In 1979, Hegedus stressed the importance of using radiologic guidance with fluoroscopy for correct deposition of the neurolytic agent. Using fluoroscopic landmarks, the radiologist placed spinal needles bilaterally 6.5-7.5 cm lateral to the L1 spinous process with the patient in a prone position. Both needles were advanced anteriorly towards the midline until positioned just anterior to the cephalad portion of the L1 vertebral body. In current practice, sonography and CT are used to locate the exact level of the celiac axis. Open MR imaging guided posterior celiac plexus block using MR imaging compatible needles have been reported but still under trial.

##### **APPROACHES : [3]**

Celiac plexus block can be performed using either an anterior or posterior approach depending on the operator's performance and anatomic considerations in each patient. Published data have not shown any clear advantage between the anterior and posterior approaches in the coverage of the neurolytic agent. In the **anterior approach**, the patient lies supine and CT or sonographic guidance is used to advance a single needle to the level of celiac artery. Puncture of the liver, stomach, colon or pancreas may be unavoidable. The major advantage of anterior approach is the reduced risk of neurologic complications because the tip of the needle is anterior to the spinal arteries and spinal canal. In posterior approach patient lies in either prone or lateral decubitus position.

The **posterior retrocrural approach** is the traditional technique used for celiac plexus block. With this approach the patient lies in prone, and a needle is directed to slide past the anterior surface of the L1 vertebral body without traversing the crus of the diaphragm. This approach is actually a splanchnic nerve block, which supplies the preaortic celiac plexus.

The **posterior transaortic approach** uses a single midline needle tip that is passed through the posterior and anterior walls of the aorta via a left posterior paramedian approach. The disadvantage of this approach is associated with a higher risk of retroperitoneal haemorrhage reported in up to 0.5% patients. The **posterior trans intervertebral approach** involves passing a single needle posteriorly directly through the T12-L1 or L1-L2 inter vertebral disc space to a para aortic location at the level of celiac plexus. The reported advantage of this approach is the increased access to the anterolateral or lateral wall of the aorta especially in patients with abnormal retro peritoneal anatomy. Because of the disadvantages like discitis, disc herniation and spinal cord puncture.

##### **Complications [2]**

Complications usually involved with the celiac plexus block are,

- 1) Severe hypotension
- 2) Bleeding due to aorta or inferior vena cava injury by the needle.
- 3) Intravascular injection (should be prevented by checking the needle position with radio-opaque dye).
- 4) Upper abdominal organ puncture with abscess/cyst formation.
- 5) Paraplegia from injecting phenol into the arteries that supply the spinal cord (prevented by checking the needle position with radio-opaque dye).
- 6) Sexual dysfunction (injected solution spreads to the sympathetic chain bilaterally).

- 7) Intramuscular injection into the psoas muscle.
- 8) Lumbar nerve root irritation (injected solution tracks backwards towards the lumbar plexus).

**CONCLUSION :**

Chronic calcific pancreatitis is a disease which produces excruciating pain which may produce adverse hemodynamic changes in patients. Even though multiple modalities of pain relief like analgesics, surgical options are available, celiac plexus block stands as an effective and reliable option for pain relief in patients suffering from chronic pancreatitis. Major abdominal surgical procedures for treating the conditions involves high rate of postoperative complications and oral/ parenteral analgesics are not without side effects. By using advanced imaging modalities like fluoroscopy, celiac plexus block can be performed with accuracy and without major complications. Hence this block was chosen for our patient and the pain relief was superior and rate of patient well being is highly satisfactory as observed by VAS and NRS scoring.

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