

## Breaking the pain cycle successfully in a child with severe pain due to recurrent pancreatitis: A case report

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### Abstract

Abdominal pain, due to pancreatic diseases like idiopathic recurrent pancreatitis and chronic pancreatitis, is difficult to manage with medications alone in some patients. The Coeliac plexus innervates abdominal organs including the liver, gallbladder, pancreas, etc. We are presenting a case of the successful pain management of a 13-year-old boy with recurrent pancreatitis, by the application of coeliac plexus block. The patient was admitted to the hospital with severe abdominal pain in August 2019. Multimodal analgesia was provided to manage his pain, but he continued to have moderate to severe pain in the abdomen. So, he was scheduled for coeliac plexus block under fluoroscopy in the operating room. Block Procedure was performed with standard monitoring and under conscious sedation bilaterally, via paramedian technique at the level of L1 using 22G Chiba needle. The injection Ropivacaine 0.25% with dexamethasone was injected on each side. After the procedure, his pain was significantly reduced and he was discharged on oral medications after two days.

**Keywords:** Coeliac plexus block, Recurrent pancreatitis, Pain management technique.

**DOI:** <https://doi.org/10.47391/JPMA.302>

### Introduction

Pancreatic pathologies have a debilitating disease course in which pain is one of the most disturbing symptoms for the patient that affects the quality of life.<sup>1</sup> Abdominal pain due to pancreatic diseases like carcinoma, idiopathic recurrent pancreatitis, and chronic pancreatitis are difficult to manage on medications alone. Most of the patients cannot tolerate the side effects of medications. This leads to an increased frequency of hospital admissions, morbidity, and substantial financial implications.

The Coeliac plexus innervates abdominal organs including the liver, gallbladder, stomach, pancreas, spleen, both kidneys, entire small bowel and the first two-thirds of the large bowel. The Coeliac plexus is formed by coeliac, aortic, renal, and superior mesenteric ganglia. It is

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located anterolateral to the aorta at L1 vertebra level.<sup>2</sup> The Coeliac plexus contains both sympathetic and parasympathetic nerve fibres with sympathetic predominant. Sympathetic fibres of the coeliac plexus originate from anterolateral horn of the spinal cord at T5 to T12 level.<sup>3</sup> Pain originating from the pancreas is carried through sympathetic fibres at the level of T12 to L1. Different mechanisms are involved in pain transmission to higher centres like direct infiltration of nerve, inflammation and auto-digestion of pancreas and surrounding tissues, and neural sheath, the mass effects of which are due to pseudocyst.<sup>4</sup>

The Coeliac plexus block is usually offered to adult patients with moderate to severe pain due to pancreatic pathology.<sup>5</sup> However, coeliac plexus block in paediatric patients with pancreatic disease is infrequently reported. Limited data is available on the use of coeliac plexus block in paediatric patients. We are presenting a case of the successful pain management of a child with recurrent pancreatitis by the application of the coeliac plexus block.

### Case Report

A 13-year-old boy weighing 60 kg, a known case of recurrent pancreatitis was admitted to the Aga Khan University Hospital Karachi with severe abdominal pain in August 2019. The patient had a history of hospitalisation multiple times for pain management due to multiple episodes of epigastric pain for the last two years that were managed conservatively. This time once again, the patient was admitted to the hospital for his pain management. Workup was done which showed elevated lipase and amylase levels. CT scan of the abdomen was repeated which showed acute pancreatitis with pseudocyst formation.

The paediatric team requested a pain management team for evaluation and pain management. On assessment, the patient had severe epigastric pain; the pain was radiating to the back with pain intensity of 8/10 on the numeric pain rating scale. The pain was sharp, stabbing in nature, continuous, and aggravated with movements, and relieved minimally with medications. For pain management, patient-controlled analgesia with tramadol

was started (10 mg per hour background infusion, 10mg of bolus dose and 10 minutes of lockout time was set). Intravenous paracetamol 800mg every 6 hours and pregabalin 50mg per os at night was also started. By the next day, severity of pain had reduced to 6/10 on the above pain management regimen.

A detailed discussion was carried out with the pain and paediatric teams regarding the intervention of pain management options. After a detailed discussion, it was decided to offer coeliac plexus block for pain management. The patient and his father were counselled about coeliac plexus block under local anaesthesia and conscious sedation using fluoroscopy, that they both agreed to. Written informed consent was taken from the father, with the risks and benefits explained.

The patient was scheduled for coeliac plexus block under fluoroscopy in the operating room. After six hours nil per oral as per plan, the patient was shifted to the operating room to receive the block. Lactated Ringer's solution was started at 100 ml per hour and standard monitoring was applied. Patient was positioned prone and oxygen at 5 litres per minute via face mask was started. For sedation, the injection Propofol 50mg was given in incremental doses of 10mg and intravenous nalbuphine 5mg was given for analgesia. After all aseptic measures, the injection lidocaine 2% 5ml was applied for local anaesthesia at the level of L1. Under fluoroscopic guidance, coeliac plexus block was performed bilaterally via para-median technique at the level of L1 using 150mm 22G Chiba needle. The injection Ropivacaine 0.25% 15mls with 2mg dexamethasone was injected on each side.

The patient remained stable throughout the procedure and was shifted to the recovery room. Pain was significantly reduced to 1/10 immediately after the procedure. After 30 minutes the patient was shifted to the ward. Patient was followed in the ward next day for pain score and any possible complications. The patient remained pain-free for two days and was discharged for home in stable condition with oral Tramadol 50mg twice daily (if needed) and Tab. Pregabalin 50mg twice daily. There were follow-ups of the patient in the outpatient clinic after two weeks and due to mild pain, was advised to continue with pregabalin 50mg every night for 4 weeks. Upon a telephonic follow-up after 4 weeks, the patient was pain-free without any medication needed.

## Discussion

Paediatric patients with visceral abdominal pain due to cancer or chronic diseases of the upper abdomen are usually managed with pharmacological agents. However,

in adult patients, coeliac plexus block is often applied if conservative pain management fails to control moderate to severe abdominal pain. Physicians can make use of this effective technique to manage pain in paediatric patients.

Berde et al.<sup>6</sup> reported coeliac plexus block in severe refractory abdominal pain in a three years old patient due to hepatoblastoma, which improved the overall quality of life of the patient. Staats et al.<sup>7</sup> reported the use of coeliac plexus block in a seven year old girl with metastatic neuroblastoma. The patient remained pain-free for almost five weeks.

Due to anatomical variations and to confirm the spread of medication around the coeliac plexus, Goldschneider et al.<sup>8</sup> reported the successful use of a new radiologic technique called three-dimensional rotational angiography for the performance of retrocral coeliac plexus block in three children with abdominal pain arising due to different pathologies. A significant pain reduction after coeliac plexus block was observed in all three cases.

A retrospective case series was published by Anghelescu et al.<sup>9</sup> in which the coeliac plexus block was carried out under Computed tomography (CT) guided imaging. This case series has four patients of different age's viz. 8-year old (Rhabdo-myosarcoma), 14-year old (hepatoblastoma), 19-year old (tumour of adrenal) and 20-year old (rhabdomyosarcoma). This case series also yielded encouraging results in terms of successful blocks under CT guidance and decreased pain scores and reductions in morphine equivalent daily (MED) within 1 week of coeliac plexus block.

A relatively novel approach called therapeutic endoscopic ultrasonography (EUS) use has been reported in case series by Jia et al.<sup>10</sup> in which they demonstrated 6 successful paediatric therapeutic EUS procedures, including a coeliac plexus block for pain management in chronic pancreatitis.

In this case, we performed fluoroscopy guided percutaneous diagnostic coeliac plexus block in a patient with a history of recurrent pancreatitis which was successful without any complications. The dosage of local anaesthetic was according to the weight of the patient. Bilaterally coeliac plexus was targeted under fluoroscopy. The additional challenge that was faced during the procedure is the non-cooperation of the child; so intravenous conscious sedation was used.

## Conclusion

A paediatric patient with moderate to severe abdominal

pain benefitted from coeliac plexus block. This improved the quality of life and decreased dependence on opioids and their side effects.

**Disclaimer:** None.

**Conflict of Interest:** None.

**Funding Sources:** None.

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