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Case Report

Ganglion Impar Block and Neurolysis for Perineal Pain in Anal Adenocarcinoma: A Case Report

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ABSTRACT

Background: Anal adenocarcinoma is a rare malignancy with symptoms including tenesmus, rectal bleeding, and pain during defecation. The pain can significantly reduce a patient's quality of life and there is currently no effective treatment for it. Ganglion impar block and neurolytic are one methods for managing pain in such cases. **Case**: A 60-year-old woman with anal adenocarcinoma and chronic pain in the anal region for two years despite oral medication underwent ganglion impar block and neurolytic treatment using a mixture of 96% alcohol and levobupivacaine 0.25%. **Conclusion**: Ganglion impar block with neurolysis using 96% alcohol can be an option for managing perineal pain, especially when previous medication therapy is ineffective. This combination is safe for patients and can reduce pain levels.
Keywords: Impar Ganglion Block; Neurolysis; 96% Alcohol; Anal adenocarcinoma; Perineal pain; Pain management.

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INTRODUCTION

Ganglion impar, also known as ganglion Walther, is a solitary ganglion located on the anterior surface of the sacrum. It is the source of the caudal sympathetic chain from the bilateral sympathetic trunk[1]. This ganglion provides sensory and sympathetic innervation to the perineum, distal rectum, anal region, distal urethra, vulva/scrotum, and the upper third of the vagina[2–4].

Ganglion Impar Block (GIB) was first described by Plancarte et al. in 1990 for the treatment of sympathetically mediated pain.[7] Since then, GIB has been used to alleviate pain caused by various other conditions, such as perineal pain not otherwise specified and coccygodynia. GIB is generally considered safe and effective for treating perineal and sacral pain.

Indications for GIB include pain in the sacral, rectal, anal, genital, vulva, and perineal regions that are sympathetically mediated (i.e., neuropathic or postherpetic neuralgia), coccydynia, or pain secondary to endometriosis or proctalgia fugax. Contraindications include known allergies to medications used, inability or refusal to cooperate, and the presence of infection or inflammation along the nerve pathway. Relative contraindications include coagulopathy, as ganglia are located near the main blood supply, which poses a risk of bleeding during the procedure.[8]

GIB is frequently conducted via a transcoccygeal approach. The procedure should be performed with strict sterility and proper monitoring. Using the transcoccygeal approach, the patient is positioned prone, and AP and lateral fluoroscopic images are used to identify the gap between the first and second coccygeal vertebrae. The needle is then advanced into this gap, with the tip of the needle located in front of the sacrum. After negative aspiration, contrast is injected to confirm the correct position, with the contrast spreading anteriorly to the sacrum in the pre-coccygeal space. With the assumption of negative aspiration, 4-8 mL of anesthetic and/or neurolytic agents are injected.[3,8]

In addition to using the transcoccygeal approach, GIB also uses the anococcygeal approach. This technique is performed with the patient in a prone position and a 22-gauge, 3.5-inch spinal needle is manually inserted through the anococcygeal ligament, guided by fluoroscopic AP and lateral views with a posterior and lateral orientation towards the sacrococcygeal junction. After ensuring a negative aspiration, contrast is injected to confirm the correct position, spreading into the retroperitoneal space.[8]

Complications of GIB include motor, sexual, renal, and gastrointestinal dysfunction, rectal perforation, and rare complications such as infection. Close contact with the rectum can cause visceral trauma and infection if the bowel perforates. In such cases, contamination can be traced along the nerve pathway during the removal of the needle, potentially leading to the formation of a fistula. Nerve root injury, renal, rectal, and erectile dysfunction, and periosteal injection are possible, although rare.[4,8]

CASE REPORT

A 60-year-old woman presented with a 2-year history of pain in the anal region, primarily in the anus, which was described as sharp and worsened when the patient was in a reclined position or during defecation. CT scan revealed a mass in the anal-perianal region that infiltrated the levator ani muscle on both sides and the posterior vagina/labia minora. The patient was diagnosed with adenomakarsinoma anus and underwent 25 sessions of chemotherapy. Despite taking analgesics such as oral morphine, tramadol, codeine, and paracetamol, the patient's pain persisted with a score of 7-8 on the NRS (Numeric Rating Scale). The patient was scheduled for a ganglion impar block using a neurolytic agent

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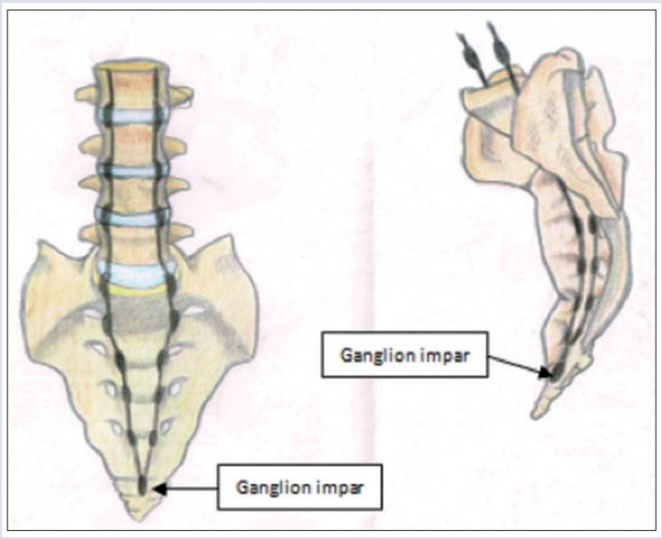

Figure 1. Ganglion impar anatomy.[5]

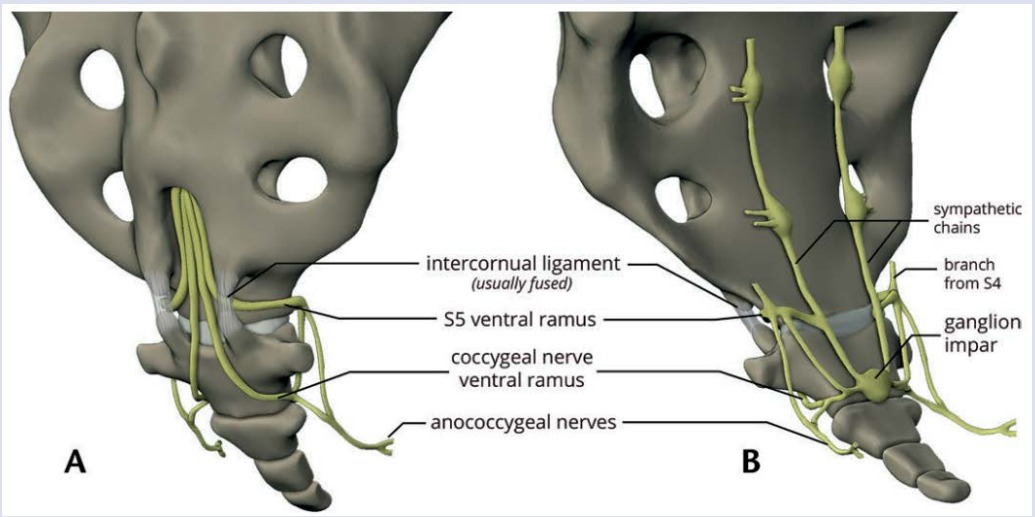

Figure 2. Illustration of Coccygeal Plexus (A) Posterior Oblique (B) Coccygeal Plexus Anterior.[6]

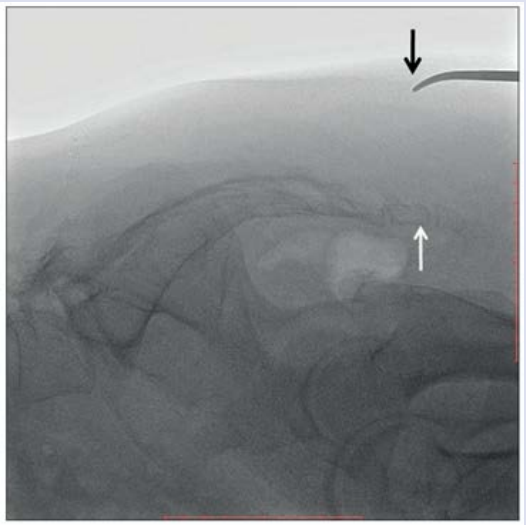

Figure 3. Lateral fluoroscopic view with a marker placed on the skin surface (black arrow) to mark the sacrococcygeal joint (white arrow).[9]

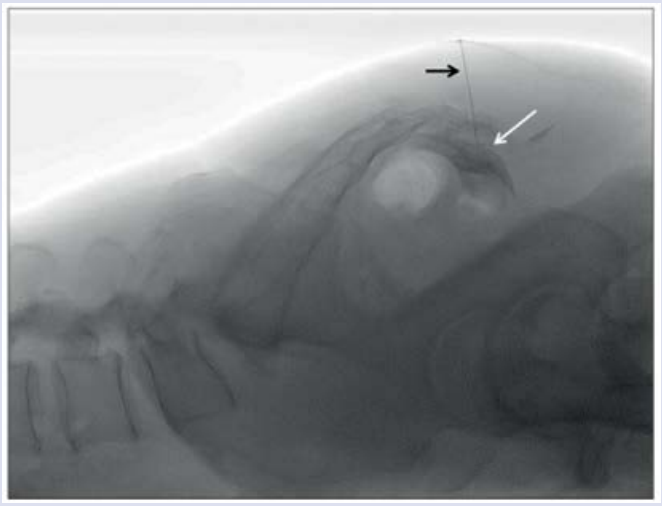

Figure 4. Position of the needle (black arrow) for injecting a local anesthetic steroid mixture into the ganglion impar. Before the injection, a small amount of contrast is injected, forming an appearance like a 'coma' (white arrow) in front of the sacrococcygeal joint, indicating the location of the ganglion impar.[9]

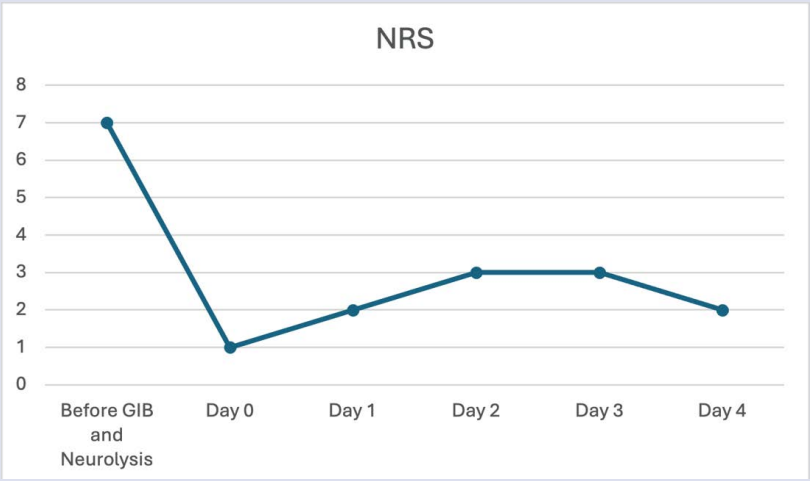

Figure 5. Pain score follow up after Impar Ganglion Block and neurolytic.

under C-arm guidance. The patient was informed about the procedure and gave consent.

During the procedure, the patient was positioned prone, and vital signs were monitored. The sacrococcygeal joint area was sterilized and covered with sterile drapes. Local anesthesia was administered with lidocaine 2% at the sacrococcygeal joint, followed by the insertion of a 100 mm radiofrequency (RF) needle. Contrast was injected to confirm the correct position of the RF needle, with the contrast spreading anteriorly to the sacrum in the pre-coccygeal space. The neurolytic agent, a mixture of 96% alcohol and levobupivacaine 0.25%, was then injected.

One hour after the ganglion impar block and neurolysis, there was a significant reduction in pain, with a score of 0-1 on the NRS. The patient was observed in the recovery room and discharged after 3 days with a score of 2-3 on the NRS. The patient was prescribed oral morphine and amitriptyline for pain management.

DISCUSSION

Anal adenocarcinoma is a rare malignancy in the gastrointestinal tract, with most cases being squamous cell carcinoma (SCC). An anal adenocarcinoma is a rare form of anal cancer, accounting for 5-10% of all anal cancer cases.[10] The most common symptoms of anal adenocarcinoma are tenesmus, rectal bleeding, and pain during defecation. Pain related to anal cancer is still not effectively treated, and it can significantly affect the patient's quality of life.[11]

Several case reports have shown the effectiveness of ganglion impar block in alleviating chronic perineal pain, such as in the case of coccydynia. A report by Turchan et al. demonstrated a reduction in pain scores in a patient with chronic perineal pain after undergoing ganglion impar block with alcohol 96% and radiofrequency thermocoagulation [5]. Similarly, a study by Gonnade et al. found that ganglion impar block improved pain scores in patients with coccydynia.[9] Varma et al. reported an improvement in pain scores experienced by women with severe vulvar pain over a period of six months. Patients underwent a ganglion impar block using bupivacaine and triamsinolon. Following the procedure, patients experienced an improvement in pain scores, even up to one year after the procedure[12]. The occurrence of postherpetic neuralgia (PHN) can also be managed using ganglion impar block, as reported by Parthasarathy and Batcha. They documented a case of PHN treated with a ganglion impar block using bupivacaine and dexamethasone. The patient experienced significant pain relief without any adverse effects.[13]

The transcoccygeal approach in performing a ganglion impar block must be done with utmost caution. This is to prevent complications that can occur due to the insertion of the needle through the transcoccygeal route. One such rare complication reported in a case report by Okcu et al. is rectal perforation during a ganglion impar block using the transcoccygeal approach.[14]

Neurolysis is a procedure that involves exposing a nerve to a chemical agent or physical agent, causing temporary or permanent degeneration of the nerve. The goal of neurolysis is to disrupt the transmission of nerve signals, resulting in a pain-free condition. Some common techniques used for neurolysis include radiofrequency (heat), chemoneurolysis (chemical), and cryoablation (cold).[15]

Radiofrequency neurolysis employs heat transmitted by the needle to the targeted nerve. The nerve is damaged, preventing the transmission of pain signals to the brain. Research by Ender and Sami comparing the effectiveness of ganglion impar block and pulse radiofrequency shows that both techniques provide satisfactory results for short- and medium-term pain control. However, for long-term pain control, pulse radiofrequency has an advantage over ganglion impar block due to its longer-lasting effect.[16]

Cryoablation neurolysis is a viable alternative for managing pain. Cryoablation employs a cryoprobe that can be cooled down to -60°C. This temperature drop causes axonal degeneration and neuronal damage. The extent of tissue damage depends on the size of the cryo probe used, the duration of freezing, the permeability of the tissue to water, and the presence of vascular structures nearby.[17] After cryoablation, the perineum and epineurium remain intact, allowing for neuronal regeneration and preventing the formation of neuroma. A case report by Loev et al. documented cryoablation of the ganglion impar for perineal pain. In the case report, a significant reduction in pain was observed, with 90% pain relief immediately after the procedure and 80% at six weeks post-procedure.[18]

Neurolysis using chemical substances can be performed using phenol or alcohol. Phenol is a chemical agent that includes acidic compounds such as carbolic acid, phenic acid, phenylic acid, phenyl hydroxide, hydroxybenzene, and oxybenzone. Phenol denatures proteins and can cause denervation when injected into areas of neural structures, leading to cellular fat loss, separation of myelin sheaths from axons, and axonal edema.[19] Several cases have been reported on neurolytic procedures using phenol, which have shown satisfactory results. A case report by Tashiro et al. documented intrathecal neurolysis using 10% phenol-glycerol, resulting in good outcomes where patients experienced pain relief and improved quality of life.[20] A case report on neurolytic procedures using phenol documented by Gebhardt and Wu, showed a Transversus Abdominis Plane neurolytic procedure using phenol on a patient with cancer pain due to abdominal wall cancer resulted in a decrease in total daily opioid use after the neurolytic treatment.[21]

On the other hand, neurolysis using alcohol works by denaturing proteins, extracting lipids, and precipitating lipoproteins and mucoproteins, resulting in damage to Schwann cells and sensory neurons, causing Wallerian degeneration. This leads to disruption of pain transmission, allowing patients to be pain-free for 3-6 months. However, the use of alcohol as a neurolytic agent has complications such as nerve necrosis, neuritis, anesthesia dolorosa, and prolonged motor paralysis.[22,23] Walker et al. performed neurolysis on the digital nerve using alcohol in a patient with chronic neuritis. After the neurolysis procedure, the patient experienced a significant improvement in pain scale up to 100% even up to two months after the neurolysis procedure.[24] A similar report by Dass et al discusses the efficacy of genicular nerve alcohol neurolysis in chronic knee pain. The study involved performing neurolysis on the genicular nerve using alcohol in patients with chronic knee pain. The results showed a significant improvement in pain intensity, exceeding 50% of the initial NRS score.[25,26]

The application of alcohol and phenol in neurolysis emphasizes specific considerations for their selection. The utilization of alcohol as a neurolytic agent is associated with a higher incidence of neuritis and can persist for several days. To mitigate this pain, the use of alcohol as a neurolytic agent is often combined with local anesthesia. In contrast, phenol does not induce pain in the injection area.[27,28] However, it is important to note that axonal regeneration occurs earlier with the use of phenol compared to alcohol as a neurolytic agent. This results in a shorter duration of clinical effect with the use of phenol.[29,30] The study conducted by Koyyalagunta et al. assessed the efficacy of alcohol and phenol in neurolysis of the splanchnic nerve and revealed no statistically significant disparity in their effectiveness. This implies that both agents, phenol, and alcohol, exhibit equivalent efficacy as neurolytic agents.[23]

The patient underwent a ganglion impar block and neurolysis procedure using 96% alcohol through a transcoccygeal approach with fluoroscopy guidance. The ganglion impar block was chosen based on the patient's previous treatment history and the appropriate location of pain, which includes sensory and sympathetic innervation to the perineum, distal rectum, anal region, distal urethra, vulva/scrotum, and the upper third of the vagina. With ganglion impar block and neurolysis, we expected damage to the ganglion impars, preventing pain transmission. Fluoroscopy was used to minimize the risk of complications from the ganglion impar block. After ganglion impar block and neurolysis with 96% alcohol, the patient experienced significant improvement in pain without any complication.

CONCLUSION

Ganglion impar block with neurolysis using 96% alcohol can be a safe and effective treatment for perineal pain, especially when previous medication therapy is ineffective. The use of fluoroscopy can help minimize the risk of complications. However, more research is needed to confirm the effectiveness of this procedure.

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CONFLICTS OF INTEREST

The authors declared that there is no conflict of interest in this study.

AUTHORS' CONTRIBUTIONS

A and DS have made substantial contributions to the conception; design of the work; the acquisition, analysis, and interpretation of data; and have drafted the work or substantively revised it.

CONSENT TO PARTICIPATE

The authors certify that they have obtained all appropriate patient consent forms. In the form, the parents have given their consent for images and other clinical information to be reported in the journal. The family understands that names and initials will not be published, and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

ETHICAL CONSIDERATION

Not applicable

DATA AVAILABILITY

The article contains all the necessary data to support the study; no supplementary source data is needed.

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