Impar Ganglion Block in Patients With Pelvic Neuropathic Pain: Three case reports and surgical technique

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ABSTRACT
Pelvic pain and coccydynia are discomfort and disabling symptoms for many patients. Assessment and treatment are individualized. Among several options available, the sacrococcygeal ganglion or impar (known as ganglion of Walther), a sensitive station of the pelvis, is one of the main therapeutic targets. Although knowledge about the nature and extent of the innervation pattern of this ganglion in the pelvic region has not been completely elucidated, neuromodulation techniques have been described as efficient treatment options for pelvic pain and coccydynia arising from acute and chronic conditions such as endometriosis, trauma, post-surgical interventions and also from idiopathic factors. The main techniques include chemical rhizotomy with steroids and anesthetics injections or radiofrequency (thermocoagulation). In this review, we report three cases, two with endometriosis and pelvic procedures and one with coccydynia from fracture, who underwent ganglion impar injection. At 6 months follow up, the VAS (Visual Analogue Scale) improvement achieved varied from 70-90%, demonstrating to be a safe, less invasive and efficient technique.

Keywords: Impar ganglion; Block; Pelvic; Neuropathic Pain

RESUMO
A dor pélvica e a coccidínia são sintomas que trazem desconforto e incapacidade funcional para muitos pacientes. O protocolo de avaliação destes casos e seu tratamento são personalizados. Dentre várias opções disponíveis, o gânglio sacrococcígeo ou ímpar (conhecido como gânglio de Walther) é um dos alvos de escolha nestes casos. Apesar do conhecimento sobre a natureza e extensão do padrão de inervação deste gânglio na região pélvica não ter sido completamente elucidado, as técnicas de neuromodulação vêm sendo descritas como opções eficientes no tratamento de dor na região pélvica e coccidínia, sintoma decorrente da manifestação de doenças agudas ou crônicas, tais como endometriose, traumas, intervenções cirúrgicas e até mesmo de fatores idiopáticos. As principais técnicas incluem os bloqueios ou rizotomia química com esteroides e anestésicos locais ou a utilização de radiofrequência (termocoagulação). Relatamos nesta revisão três pacientes submetidas ao bloqueio do gânglio ímpar, duas com endometriose e histórico de cirurgias pélvicas e outra paciente com coccidínia pós-fratura de cóccix. Com seis meses de seguimento, a melhora obtida variou entre 70 e 90% na Escala Visual Analógica (EVA), demonstrando ser uma técnica segura, pouco invasiva e eficiente.

Palavras-chave: Gânglio ímpar; Bloqueio; Pélvico; Dor neuropática

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Received Mar 22, 2021
Accepted Apr 23, 2021
INTRODUCTION

The ganglion impar (GI) (also called Walther’s ganglion), corresponds to a small ganglion located at the confluence of two sympathetic trunks (Figures 1 and 2), establishing the caudal origin of the bilateral paravertebral chain, anterior to the sacrococcygeal joint, although subject to anatomical variations regarding its exact location. This ganglion, besides transmitting sympathetic impulses to the smooth muscles and glandular tissues of the pelvic region, contains visceral afferent fibers originating from the perineum, anus, rectum, vulva, vagina, and distal urethra, which are responsible for transmitting nociceptive (pain) sensations to the central nervous system.

The GI blocking or injection method was first described in 1990 by Plancarte et al., initially aiming at the treatment of sympathetic pain of malignant origin by using a spinal needle, and later was improved by Nebab et al., through the application of a curved needle, which greatly facilitated access to this region. However, it was only in 1995 that the procedure technique was refined when Wemm et al. performed the first trans-coccygeal intervention, through which Munir et al. were able to minimize the incidence of septic spondylodiscitis in their patients, making an unprecedented contribution and establishing the procedure.

After time and constant improvement of the methods and knowledge about the GI blockage, this technique has been increasingly used for the management of various types of pains, such as chronic prostatitis and endometriosis, which approach may involve, in addition to the administration of local corticosteroids and local anesthetics, the use of neurolytic agents, such as alcohol and phenol (chemical rhizotomy) or cryoablation (cold) and radiofrequency (heat) (physical rhizotomy). A chemical or physical rhizotomy would provide a long term benefit in terms of pain control when compared to simple blocks which tend to last less.
The aim of this article is to document the effectiveness of the Walther's ganglion injections in three female patients affected by neuropathic pain in the pelvic region. Two of them previously diagnosed with endometriosis and a history of gynecological procedures for the same condition. The third patient presented with chronic coccydynia following a coccyx fracture. Pain evaluation was recorded with the Visual Analog Scale (VAS)⁴.

Case Presentation

Case 1
A 29-year-old female patient diagnosed with endometriosis and a malignant tumor of the vulva was submitted to surgical resection. Afterwards she developed severe and refractory neuropathic pain in the pelvic region ranging from 9-10 in the Visual Analogue Scale (VAS). She underwent a percutaneous radiofrequency rhizotomy of the pudendal nerve, with no significant pain relief. Subsequently, she underwent a GI block through a transsacrococcygeal injection with 10 ml of alcohol 100%. During follow ups at 3 and 6 months a reduction of 70% was achieved (VAS of 3 at 6 months).

Case 2
A 38-year-old female patient diagnosed with endometriosis and a past medical history of multiple gynecological surgical procedures presented with intractable pelvic pain (VAS score of 9-10). Conservative management and rehabilitation were ineffective. Subsequently a radiofrequency rhizotomy to the pudendal nerve was performed not achieving good pain control. Afterwards she underwent a GI injection with Bupivacaine and Methylprednisolone having experienced moderate pain control for a few months. Subsequently, she underwent a GI block through a transsacrococcygeal injection with 10 ml of alcohol 100%. During follow ups a significant pain reduction of at least 80% was achieved at 6 months (VAS of 1-2).

Case 3
A 46-year-old female patient with a history of fall sustaining a coccyx fracture (Figure 3) approximately 2 years before. She developed severe pain around the coccyx and also in the pelvis with a VAS of 8-10. The patient underwent conservative management with rehabilitation and medication including neuropathic as well as opioid agents. Multiple combinations were tried with mild to moderate effect. During follow up the consolidation of the fracture was seen, but with little pain improvement. In February, a GI block was performed using a transsacrococcygeal injection with 8ml of Ropivacaine 7.5% and 80mg of Methylprednisolone (Figure 4). She experienced a significant reduction of the pain in the range of 60-70% (to a baseline of 3-4 in the VAS) for almost 8 weeks. The procedure was effective but she feels some loss of effectiveness overtime.

Surgical procedure
All patients were submitted to a standardized procedure which consists of the following steps: 1). Bony anatomy is recognized over the sacrococcygeal joint (SCJ) with image intensifier (Fluoroscopy) and preparation with antiseptic solution is carried out. 2). Lidocaine 1% is infiltrated in the overlying skin to provide analgesia. 3). A 22 gauge spinal needle is introduced in the SCJ reaching the anterior wall of the sacrum and if there is no aspiration of bowel / bladder contents or cerebrospinal fluid, the intrathecal compatible contrast is injected in the precoccygeal space to confirm location of the sympathetic chain. 4). Medication is injected (40mg of methylprednisolone with local anesthetic 8ml of Ropivacaine 7.5% or alcohol 100% or phenol).

Figure 3. Coccyx fracture at presentation (Patient 3).
Pelvic pain can be managed with the use of oral medication. However, in more critical or chronic cases, if considered refractory to medical treatment, the technique of GI block with steroids with local anesthetic (reversible procedures) or the use of alcohol or phenol (irreversible procedures) could be an option to treat pelvic pain and coccydynia. Other options include physical rhizotomy with radiofrequency or cryoablation. A more radical and also irreversible option is coccygectomy which consists in the surgical excision of the coccyx with excellent results9-11.

In the literature, some approaches to the GI were described, among them, the transsacroccocygeal, intercoccygeal, paracoccygeal and anococcygeal pathways, all requiring image guidance, and fluoroscopy being one of the most common techniques used for this purpose. Recently, however, studies have also described the efficacy and safety of computed tomography, ultrasonography and magnetic resonance imaging guidance as well7.

As any surgical intervention, the GI block has contraindications which are systemic or localized infections in the area of injection and coagulopathy. The risks of the procedure include internal bleeding, infection, intravascular injection and rectal perforation3.

We perform the GI block (Figure 1) in these cases by a trans-coccygeal approach, which is associated with a lower risk of rectal perforation, infection and rupture of blood vessels when compared to the anococcygeal approach3,12. Furthermore, despite the fact that any chemical neuroablative procedure is necessarily associated with the development of neuritis and neuralgia, in some patients, there is also, for this type of intervention, a potential risk of motor deficits, sexual, bladder or intestinal dysfunctions13. In our case series no complications were seen.

Pain can be described as an unpleasant subjective experience that influences people's quality of life. Therefore, it is essential to search for methods capable of alleviating this type of sensory discomfort in order to improve the pain control but also the function.

Techniques involving neuromodulation of the ganglion impar remain as viable and less invasive options to treat neuropathic pain in the pelvic region as well as coccydynia. Long term effectiveness from these injections depends on the type of medication used during the procedure lasting more time with alcohol compared with local anesthetic and steroids. There are still other options for patients who failed the ganglion impar injection and these include radiofrequency cryoablation rhizotomy and coccygectomy as a last option.
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