J Turk Spinal Surg 2019;30(4):253-6
DOI: 10.4274/jtss.galenos.2019.0007

GANGLION IMPAR BLOCK IN PATIENTS WITH CHRONIC COCCYDYNIA

Salih AYDIN

Emsey Hospital, Clinic of Neurosurgery, İstanbul, Turkey

ABSTRACT

Objective: Coccydynia refers to pain in the terminal segment of the spine caused by abnormal sitting and standing posture. Coccydynia is usually managed conservatively; however, in nonresponsive patients, ganglion impar block is used as a good alternate modality for pain relief. This article studied the effect of ganglion impar block in coccydynia patients who were not relieved by conservative management.

Materials and Methods: We retrospectively reviewed 39 patients who underwent fluoroscopy-guided trans-sacro-coccygeal ganglion impar block between April 2014 and April 2016. We included four patients with coccygeal fractures. General demographics and parameters including operative time, length of hospital stay, mean time to return to work, complications, and recurrences were recorded. Clinical outcomes were evaluated using Visual Analog Scale (VAS) for pain.

Results: The study included 25 (64.1%) female and 14 (35.9%) male patients. The mean age of the patients was 48.6 years (range, 14 to 81 years). Coccydynia was the leading symptom in this series. The mean duration of symptoms was 16 months (between 1 and 36 months). All patients were followed up for a 12-month period. A significant decrease was found in the mean VAS scores. The mean preoperative VAS score was found to be 8 whereas the mean postoperative VAS score at the 12th month was found to be 0.3.

Conclusion: This study recommends the trans-sacro-coccygeal "needle inside needle" technique for local anesthetic block of the ganglion impar for pain relief in patients with chronic coccydynia. This should be integrated with rehabilitative measures including ergonomic modification for prolonging pain-free period.

Keywords: Coccydynia, ganglion impar block, trans-sacro-coccygeal approach, VAS score

INTRODUCTION

The success rate of the treatment of coccydynia varies widely. It is not well understood whether treatment outcome is related to any predictable patient factors[7]. There are no standard treatment guidelines despite the existence of many modalities, including physical therapy, local infiltration of local steroids and anesthetics, caudal epidural block and neurolysis of the sacral nerve root. Furthermore, coccygectomy is not recommended due to problems, such as high rate of infection[8]. The ganglion impar (GI) is a solitary retroperitoneal structure that is located at the level of the sacro-coccygeal junction with a variable position in pre-coccygeal space which marks the end of the two sympathetic chains[5]. A trans-sacrococcygeal approach to a GI block, described by Wemm and Saberski[13] in 1995, was developed to improve the technical feasibility and overcome the associated risk for visceral injuries with a conventional technique; this approach is easy to perform and considered extremely quick[5,12]. It occurs when the pain is caused by a fracture of the tailbone changing from a dull to a severe sharp pain. Patients with coccydynia generally have complaints of pain while sitting on a hard chair and during defecation. The force to the coccyx seriously affects their daily lives[4,12]. Coccydynia has many causes. This may occur after a trauma, following a fracture or contusion or after difficult vaginal delivery. Chronic microdamage to the coccyx from an incorrect posture or bursitis on the coccydynia periosteum is also a part of the pathogenesis. Moreover, coccydynia is related to the body mass index, and the etiology is usually unknown[11,12].

MATERIALS AND METHODS

We identified all patients who presented with primary diagnosis of coccydynia from April 2014 and April 2016. Data were obtained by retrospective review of the hospital clinical files. We reviewed all the case notes and clinic letters for patients identified with a primary diagnosis of coccydynia and excluded those with other primary spinal pathologies. We confirmed the diagnosis in the clinic through a combination of clinical presentation and typical local tenderness over the coccyx on clinical examination, plain radiographs or magnetic resonance imaging.

The patient is in a prone position, and the C-arm is pushed in

Address for Correspondence: Salih Aydın, Emsey Hospital, Clinic of Neurosurgery, İstanbul, Turkey
Phone: +90 532 455 54 66 **E-mail:** salihadnan@gmail.com **Received:** 04.08.2019 **Accepted:** 08.09.2019
ORCID ID: orcid.org/0000-0002-4535-1328

from the patient's side. The shape of the sacral hiatus is an inverted "U". The two ends of the "U" are called the sacral cornu. Identifying sacral cornu on a lateral fluoroscopic image of the sacrum may aid in performing the caudal epidural steroid injection (Figure 1).

Trans-sacrococcygeal approach was reported by Wemm and Saberski[13] in 1995. The patient was placed in the prone position with a support under the lower abdomen. The site of the needle insertion was located by palpating the sacral cornu and by using a fluoroscope after sterilization of the skin overlying the interspace. Following localization, the area was infiltrated with 2-3 mL of local anesthetic (lidocaine 2%). Under the guidance of a fluoroscope C-arm in a lateral position, a 22-gauge type B beveled, 5 cm needle was inserted through the skin piercing the dorsal sacrococcygeal ligament at the midline. The needle was then inserted into the vertebral disc until the tip was placed anteriorly to the ventral sacrococcygeal ligament, following an absence of resistance. The position of the needle tip was confirmed by injecting 1 mL of radio-opaque dye into the retroperitoneal space. The shape of the spreading dye resembles a "reverse comma" in a lateral view. Once the position of the needle tip was confirmed, 4-6 mL of 7% phenol in saline was injected followed by 1 mL of saline to avoid the deposition of phenol within the intervertebral disc material (Figure 2A, 2B).

We assessed the pain using the Visual Analogue Scale (VAS) (0 = "no pain" and 10 = "worst imaginable pain"), measured in pre-procedural 30 minutes; 10 days and 6, 12 months after the procedure. A failed block was defined as failure to lower the VAS by 50% of the preprocedural measured VAS. The hemodynamic parameters (blood pressure, heart rate, SpO_2) before, during, and after the procedure were assessed during hospitalization in the daily inpatient clinic. The patient was discharged after 1-3 hours, to be followed up for the next 10 days at the first, sixth, and twelfth months.

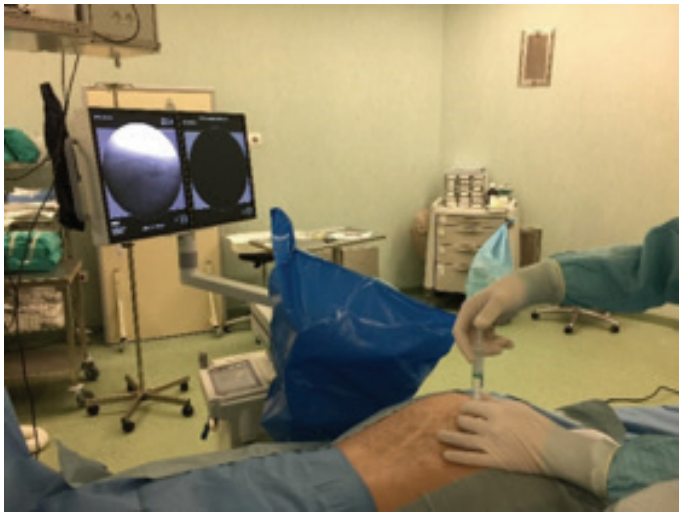


Figure 1. Surgical positioning of the patient and c-arm position can be seen in figure

Statistical Analysis

Data were analyzed by using Statistical Package for Social Science (SPSS version 21). Descriptive statistics including mean, standard deviation, median, and minimum-maximum values of the numerical variables of the study population were

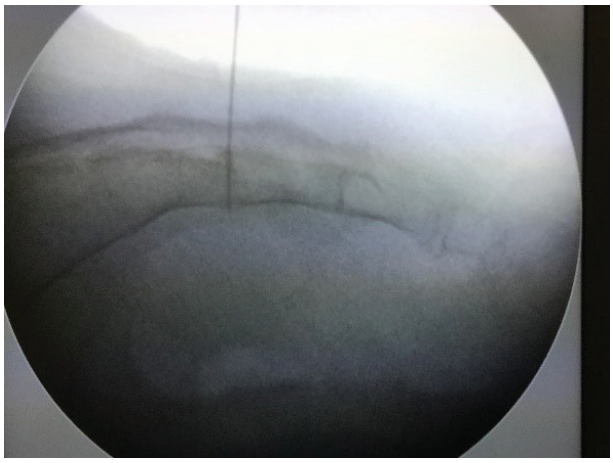


Figure 2A. Needle insertion to ganglion impar with trans-sacro-coccygeal approach seen in lateral fluoroscopy view

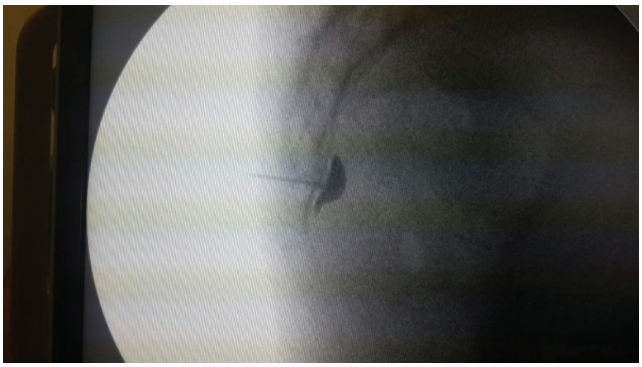


Figure 2B. Contrast medium has been delivered through needle for the confirmation of ganglion impar puncture

Table 1. The patient characteristics were summarized

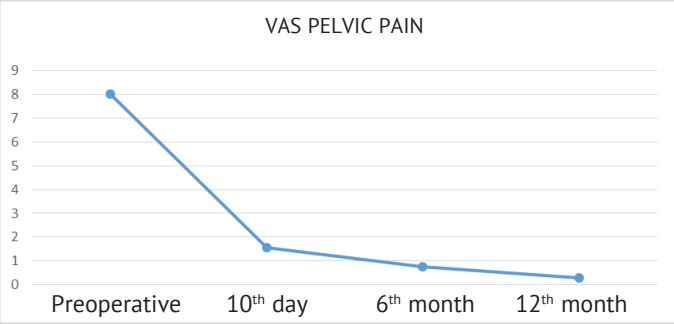
	Mean	Standard deviation	Median	Maximum	Minimum
Age	48.64	13.47	48.00	81.00	14.00
Mean duration of symptom (month)	16.05	10.73	12.00	36.00	1.00
Mean operative time (min)	35.18	4.41	35.00	47.00	25.00
Number of C-arm-fluoroscopy	4.36	0.87	4.00	7.00	3.00
Mean length of hospital stay (hour)	2.13	0.59	2.00	3.00	1.00

analyzed. Also, frequency and percentage values were used for categorical variables.

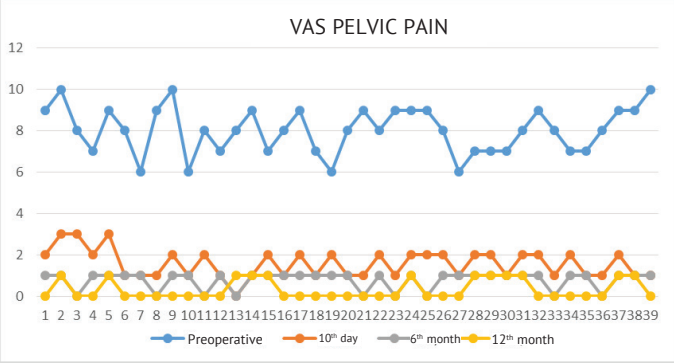
RESULTS

A total of 39 patients, following up in the pain, underwent GI block. General demographics and parameters including operative time, length of hospital stay, mean time to return to work, complications, and recurrences were recorded (Table 1). The mean age of the patients was 48.6 years (range, 14 to 81 years). The study included 25 (64.1%) female and 14 (35.9%) male patients. Coccydynia was the leading symptom in this series. Four patients were presented with coccygeal fractures (10.2%). There was no other significant causes for pain in the rest of the patients.

The mean duration of symptoms was 16 months (between 1 and 36 months). GI block through a trans-sacrococcygeal approach took a mean duration time (± standard deviation) of 35.18±4.41 minutes with a minimum and maximum duration of 25 and 47 minutes, respectively (Graphic 1, 2). The mean number of intraoperative radiographs obtained with c-arm fluoroscopy was 4.36 (range, 3 and 7). The mean hospital stay was found to be 2.13 hours following the intervention (range one hour and 3 hours).



Graphic 1. Graphic shows the decrease in Visual Analog Scale (VAS) scores for coccydynia in time. Note that there was a sharp drop in VAS scores at the 10th day postoperative visit. The decrease moderately continued until the end of the follow-up time
VAS: Visual Analog Scale



Graphic 2. Graphic shows Visual Analog Scale scores of each individual according to the pre- and postoperative examinations
VAS: Visual Analog Scale

All patients were followed up for a 12-month period. A significant decrease was found in the mean VAS scores as seen in Graphic 1 and 2. The mean preoperative VAS score was found to be 8 whereas the mean postoperative VAS score at the 12th month was found to be 0.3.

During the follow-up time, a transient paresthesia occurred in 3 patients (7.7%) in early postoperative period. It was completely resolved in all these three patients within 1 month after surgery. Another issue was the persistent postoperative local pain in 4 patients (10.3%) and it was successfully managed with medical treatment and resolved completely within 6 months. Recurrence of coccydynia was present in 4 patients (10.3%). No further surgical intervention was performed for these patients and despite medical treatment, coccydynia was persistent. No other complications were encountered during the follow-up period.

DISCUSSION

Coccydynia is a pain radiating to the sacral and perineal area, located around the coccyx. The cause of the pain is often unknown. Coccydynia is encountered five times more frequently in female gender than male gender. Women have more posteriorly located sacrum and coccyx, so they may be more exposed to this phenomenon[4,12]. The occurrence of a sacrococcygeal ligament injury during vaginal delivery can also cause pain. The coccyx is mobile and supported by the sacrococcygeal ligament; therefore, sprains are more commonly seen compared to the fractures. Microtraumas resulting from inadequate body positioning while seating can also cause chronic sprain of the coccyx[11]. However, careful differential diagnosis is needed as the cause of the pain can often be idiopathic[1,6].

The trans-sacro-coccygeal "needle inside needle" approach adopted in this study is better than the classical and paramedian approach to the ganglion, and is a technically feasible method which is easy to learn and perform. There is minimal risk involved in this technique compared to surgical treatment. The complications of this technique are neuritis and inadvertent injection of the neurolytic agent into the rectum, which can be avoided by meticulous care. All the patients required only one attempt without any difficulty. The technique was originally described by Wemm and Saberski[13] and then modified by Nebab and Flonehce[9].

First, irrespective of approach, the injectate usually flows cephalad rather than caudal. Thus, the first intracoccygeal approach results in an excellent coverage with smaller volumes of neurolytic agents compared to sacrococcygeal approach (injectate flowing too far superior to the ganglion impar)[3]. Second, in the lateral view of fluoroscopy, the bilateral cornua from the first coccygeal bone often obstruct and cause difficulty with visualizing and traversing the sacrococcygeal junction. At the first intracoccygeal junction, fluoroscopic visualization is better as these cornua are angled cephalad

and the other coccygeal segments lack any cornu. The second intracoccygeal (between the second and third coccygeal bones) approach again requires a higher volume of injectate[2]. Third, the sacrococcygeal junction is obstructed by joint fusion in 51% of patients with coccyx pain, compared with only 12% fusion at the first intercoccygeal joint[10].

CONCLUSION

Our study shows the long-term effectiveness of GI block for patients with coccydynia in providing pain relief by the trans-sacro-coccygeal "needle inside needle" technique. Fluoroscopically guided trans-sacro-coccygeal ganglion impar block may offer a safe and effective treatment option for chronic coccydynia. The integration of ganglion impar block with other rehabilitative measures including ergonomic modification may be needed for prolonging pain free period. The systematic review of the literature revealed a lack of evidence supporting conservative interventions for coccydynia.

Ethics

Ethic Committee Approval: Retrospective study.
Informed Consent: Retrospective study.
Peer-review: Internally peer-reviewed.
Financial Disclosure: The author declared that this study received no financial support.

REFERENCES

1. De Andres J, Chaves S. Coccygodynia: a proposal for an algorithm for treatment. J Pain 2003;4:257-66.
2. Foye PM. New approaches to ganglion impar blocks via coccygeal joints. Reg Anesth Pain Med 2007;3:269.
3. Foye PM, Buttaci CJ, Stitik TP, Yonclas PP. Successful injection for coccyx pain. Am J Phys Med Rehabil 2006;85:783-4.
4. Fogel GR, Cunningham PY, Esses SI. Coccygodynia: evaluation and management. J Am Acad Orthop Sur 2004;12:49-54.
5. Gupta D, Jain R, Mishra S, Kumar S, Thulkar S, Bhatnagar S. Ultrasonography reinvents the originally described technique for ganglion impar neurolysis in perianal cancer pain. Anesth Analg 2008;107:1390-2.
6. Hodges SD, Eck JC, Humphreys SC. A treatment and outcomes analysis of patients with coccydynia. Spine J 2004;4:138-40.
7. Kodumuri P, Raghuvanshi S, Bommireddy R, Klez Z. Coccydynia - could age, trauma and body mass index be independent prognostic factors for outcomes of intervention? Ann R Coll Surg Engl 2018;100:12-5.
8. Maigne JY, Doursounian L, Chatellier G. Cause and mechanism of common coccydynia: role of body mass index and coccygeal trauma. Spine (Phila Pa 1976) 2000;25:3072-9.
9. Nebab EG, Florence IM. An alternative needle geometry for interruption of the ganglion impar. Anesthesiology 1997;86:1213-4.
10. Postacchini F, Massobrio M. Idiopathic coccygodynia. Analysis of fifty-one operative cases and a radiographic study of the normal coccyx. J Bone Joint Surg Am 1983;65:1116-24.
11. Reig E, Abejón D, del Pozo C, Insausti J, Contreras R. Thermocoagulation of the ganglion impar or ganglion of walther: description of a modified approach. Preliminary results in chronic, nononcological pain. Pain Pract 2005;5:103-10.
12. Toshniwal GR, Dureja GP, Prashanth SM. Transsacrococcygeal approach to ganglion impar block for management of chronic perineal pain: A prospective observational study. Pain Physician 2007;10:661-6.
13. Wemm K Jr, Saberski L. Modified approach to block the ganglion impar (ganglion of Walther). Reg Anesth 1995;20:544-5.