ORIGINAL ARTICLE

GANGLION IMPAR BLOCK FOR CHRONIC COCCYDYNIA

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Background: Coccydynia is also known as coccygodynia or coccygeal neuralgia. Coccyx is a triangular bone located within the vertebral column. The cause of coccydynia is unknown in the literature; however, it is found to be common among obese individuals, particularly females. The probability of women having coccydynia is five times higher than among men, which may result from larger pressure during pregnancy and child delivery. It is treated well with ganglion impar block. The aim of our study was to assess pain relief after Ganglion Impair Block with subsequent improvement in quality of life. **Methods:** A single-arm study was done in the department of Pain Medicine, Fauji Foundation Hospital, Rawalpindi from July 2021 to June 2022. A total of 50 patients with ≥3 months' coccygeal pain of either gender aged between 20–60 years unresponsive to analgesics & anti-inflammatory medications with no laboratory abnormalities were included. Fluoroscopic guided trans-sacro-coccygeal ganglion impair block was done with alcohol neurolysis. The patients were observed for 1 hour in the recovery room to record post-intervention complications that may occur like hypotension, bradycardia, signs, and symptoms of cardiotoxicity or neurotoxicity etc. and evaluated for pain scores on the basis of the numeric rating scale (NRS). Data collected was analyzed using the statistical package for social scientists (SPSS) version 21. The quantitative data, i.e., age and NRS score were analyzed using mean and standard deviation and compared between pre and post-intervention periods. **Results:** The data from 50 patients who completed the follow-up period were used for analysis. The average age of the patients was 42.9±8.39 years, with a range of 38–60 years. Based on the data obtained, 30% of the patients experienced trauma (that is falling on the coccyx region). The mean score from NRS before intervention was 7.80±0.16 which decreased to 0.96±0.35, respectively, and this difference was statistically significant (*p*-value, <0.001). **Conclusions:** Ganglion Impar neurolysis is highly effective in the treatment of chronic coccydynia.

Keywords: Coccydynia; Ganglion impar block; Pain scores

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INTRODUCTION

Coccydynia also referred to as Coccygodynia or coccygeal neuralgia is a situation that is related to pain within the coccyx.[1] The prevalence of Coccygodynia is 1–3% of all back pain conditions. It is more prevalent in women than men, most probably due to the prominence in women than men.[2]

The causes of coccydynia are unknown in the literature; however, it is found to be common among obese individuals, as well as females. The probability of women having the disease is five times higher than among men, which may be as a result of larger pressure during pregnancy and child delivery.[3,4] Adults and adolescents are more likely to experience coccydynia than others.[4] It could be traumatic and non-traumatic, however, trauma is the most common occurrence.

Coccydynia may occur through fractional dislocation of the sacrococcygeal synchondrosis, which could likely lead to an abnormal movement of the coccyx, which is caused by excessive sitting. This could bring about continuous pains around the ligaments and muscles, which could further lead to an inflammation of the tissues and persistent pain.[5] Non-traumatic coccydynia occurs owing to several situations. This includes hypo mobility or hypermobility of the sacrococcygeal region, disc disease or degenerative joint, variants of coccygeal morphology, and infectious aetiology.[6]

Coccydynia is diagnosed using medical history as well as physical examination. While these two practices are sufficient to detect coccydynia, other approaches are used such as injection and scanning.[7] Radiography may also be carried out to properly evaluate if there are changes or masses within the sacrococcygeal region.[7]

There are several treatment strategies; however, conservative treatment has proven most effective, with a success rate of 90%. Heat and cold packs could be applied as well as manual massage can help.[8] Another treatment option for Coccydynia is Ganglion impar block which can be applied using fluoroscopy. Fluoroscopy, can be applied using a Plancarte or transsacrococcygeal technique, or using an ultrasound guidance.[9] However, there is no

evidence that which fluoroscopy technique is most effective and mainly depends on physician's preference. This study was carried out to contribute to existing literature to demonstrate the effectiveness of using fluoroscopy-guided transsacrococcygeal ganglion impar block to treat coccydynia.

MATERIAL AND METHODS

A prospective single-arm interventional study was carried out in the department of Pain Medicine at Fauji Foundation Hospital, Rawalpindi from 1st July 2021 till 30th June 2022 after gaining approval from the institutional ethical committee. Informed written consent was taken. The criteria for including participants for the study were those with ≥3 months of coccygeal pain of either gender aged between 20–60 years unresponsive to analgesics & anti-inflammatory medications with no experiences of abnormalities from laboratory findings that indicated the presence of the pain. However, those who had local skin infection of the injection site and systemic infection, allergy to any anaesthetic and contrast dye, sacrococcygeal joint fusion due to any pathology, patients who underwent coccygectomy, those with deranged coagulation profile, and pregnant females were excluded from the study. Patients were selected for the empirical analysis for fluoroscopic guided trans- sacrococcygeal ganglion impar block. In addition, the study performed radiographs of the coccyx in lateral view and anteroposterior (AP) for all participants of the study. This is to ensure there are no abnormalities. The ganglion impar blocks were administered as a day-care procedure. The patients were thereafter discharged the same day after being observed for 1 hour in the recovery room to record post-intervention complications that may occur like hypotension, bradycardia, signs, and symptoms of cardiotoxicity or neurotoxicity, etc.

Before starting the procedure an IV line of 20G is maintained and a minimum of 500 ml fluid is given. Vitals are recorded before the procedure as well as during the procedure. The procedure is performed on patients in a prone position with susceptible posture aided with a pillow glided underneath their abdomen to mitigate lumbar lordosis. The inter gluteal area was supported using aseptic procedures. The study made use of an aseptic metallic pointer to locate the sacrococcygeal space, while lateral fluoroscopic projection was recorded, and the targeted area was marked. The subcutaneous tissue was injected with 2% lidocaine as a local anaesthetic to anaesthetise the area followed by insertion of a 22G needle over the sacrococcygeal disc, within the superior aspect of the inter gluteal crease just below the sacral hiatus. A 22G spinal needle was inserted at the marked site through the sacrococcygeal disc. This served as the needle guide under fluoroscopy. The needle placement was confirmed by the "comma sign" in the retroperitoneal space on lateral fluoroscopic projection. Once the needle is in place, i.e., along the borderline of the sacro coccygeal disc radio opaque dye is given and confirmed on taking a fluoroscopic shot. 1% lidocaine is given followed by 5 ml of 99% absolute alcohol to reduce the burning sensation caused by absolute alcohol. Vitals of the patients are documented throughout the procedure and post-intervention in the recovery room as well. After 1 hour, the patient is discharged with stable vitals and home treatment is advised.

The data of patients who completed the follow-up period were used for analysis. Patients who were not able to visit the clinic were contacted via telephone, and their responses were collected and recorded. The data was compiled from patient's records, and the patients were examined using pretested questionnaires based on numeric rating scale (NRS) scores. Patients were follow-up for 6 months, first after a week and then on monthly basis. The primary outcome was NRS score pre and post-intervention with ganglion impar block.

Data were analyzed using the statistical package for social scientists (SPSS) version 21. The quantitative data, i.e., age and NRS score were analyzed as mean and standard deviation. Frequency and percentage were measured from categorical variables, i.e., gender, causes of coccydynia, and complications. The mean NRS score was compared between pre and post-intervention periods using a student's *t*-test.

RESULTS

Out of the total 50 cases, there were more male 28 (56.0%) than females 22 (44.0%) participants. The average age of the patients was 42.9±8.39 years, with a range of 38–60 years. Based on the data obtained, 30.0% of the patients experienced trauma (that is falling on the coccyx region). Over 50% of the patients have experienced long traveling hours in public transport. No patient experienced post-procedural complications. (Table-1)

The mean NRS score was 7.80±0.46 which decreased to 0.96±0.35 after the block. The NRS score immediately after the procedure decreased drastically showing statistically significant pain relief in study patients (*p*-value, <0.001). The pain intensity was much lower post-block when compared to baseline pre-procedure value throughout the 6-month-follow-up period. (Table-2)

Table-1: Baseline characteristics (n=50)

Gender	No of patients	%age
Male	28	56.0%
Female	22	44.0%
Age (years)		
Mean±SD	42.9±8.39	
Causes of coccydynia		
Long traveling	25	50.0%
Trauma	15	30.0%
Others	10	20.0%

Table-2: Comparison of pre and post-intervention NRS score

NRS score	Pre-intervention	Post-intervention	*p*-value
Mean±SD	7.80±0.46	0.96±0.45	<0.001

DISCUSSION

This study highlights significant effect of Ganglion impar block in terms of pain in patients with coccydynia. Many previous studies identify the effectiveness of the Ganglion Impar block to treat chronic pain. Gupta and Das made use of the ganglion impar block (GIB) and neurolysis to manage chronic pain and found that this intervention reduced pain and improved quality of life.[10] Likewise, Savas *et al* examined the effectiveness of ganglion Impar block on reducing neuropathic pain. Their study revealed that ganglion impar helps in decreasing the neuropathic component of chronic coccydynia; which improves painless sitting in patients.[11] Yet, its reflections on quality of life is ambiguous. However, Savas *et al* conducted another comparative analysis on the treatment outcomes in using ganglion impar blockade and caudal epidural steroid injection to treat chronic coccygodynia among patients.[12] Patients were randomly divided into the ganglion impar blockade group and the caudal epidural steroid injection. It was found out that ganglion impar blockade may provide more pain relief in the short term, however, both methods of treating chronic coccygodynia are more effective that using conservative methods. Moreover, Sandrasegaram *et al* investigated the pain scores after impar ganglion block among patients with coccydynia and showed that impar ganglion block offers effective analgesia without complications among the patients. Based on the results obtained, it was revealed that coccydynia is a clinical condition that has varying aetiology and no definitive diagnostic criteria exist till date. The ganglion impar is a retroperitoneal structure at the level of the sacrococcygeal junction, which marks the termination of the paravertebral sympathetic chain.[13]

To confirm the efficacy of the block, a diagnostic ganglion impar block with local anaesthetic can be given. The pain relief is achieved by the blockade of nociceptive as well as sympathetic fibers. The success of the ganglion impar block may prove the transdiscal "needle inside needle" technique, as seen in our patients. The technique is considered to be a relatively safe approach.[14] The techniques for blocking ganglion impar in the past used bent and curved needles, which are associated with significant discomfort, tissue damage, and high risk of rectal perforation.[9] The study made use of a straight spinal "needle inside needle" approach to avoid above mentioned problems and to mitigate the risk of discitis and incidence of needle breakage. 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 possible means 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.[15] All the patients required only one attempt without any difficulty. The pain intensity was much lower post-block when compared to baseline pre-procedure value throughout the 6-month-follow-up period. The results also show that obesity is an important contributing factor of coccydynia, and hence, a healthy lifestyle was promoted among patients and an appropriate method of reducing weight was offered.

In this study ganglion impar block was administered to the patients, which was carried out once and was successful with no difficulty experienced. However, only one of the patients experienced calcification of the sacrococcygeal ligament. For this patient, a 1.5-inch 20G needle was used to penetrate the dorsal sacrococcygeal ligament, while a 25G needle was passed through it as per "needle inside needle" technique.

The advantages of the study are numerous. Firstly, the study shows the long-term effectiveness of ganglion impar block for patients with coccydynia in providing pain relief by the trans-sacro-coccygeal "needle inside needle" technique. The integration of ganglion impar block with other rehabilitative measures including ergonomic modification may be needed for prolonging pain free period. The limitation of the study was the absence of a control group for comparison. The follow-up period was only 6 months considering the resources; however, further information could have been obtained if the follow-up period was longer to note the lasting effect of ganglion impar block.

CONCLUSION

Based on current study findings, it can be concluded that ganglion impar block is highly effective in the management of Coccydynia pain. This study found significant decrease in NRS score after six months of the ganglion impar block.

AUTHORS' CONTRIBUTION

SHM: Conception, design, drafting, data collection, Acquisition, write-up and analysis of data. KA: Literature search, analysis and interpretation of data. LA: Supervised the study and proof read the manuscript.

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