

Original Research Article

Outcome of transforaminal nerve root block using posterolateral approach in patients with low back ache due to PIVD in a tertiary care centre of North India

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ABSTRACT

Background: Back ache has become a common phenomenon in our society, reason being our sedentary and unhealthy lifestyle. Transforaminal administration of steroid and analgesia is an important modality in the conservative management of prolapsed lumbar disc. The aim of this study is to assess functional outcome of transforaminal epidural analgesic injection in cases of chronic back pain due to prolapsed intervertebral disc.

Methods: 152 patients who fulfilled the inclusion and exclusion criterias were given the block and were compared pre and post injection using ODI score.

Results: Most patients in study were in fourth or fifth decade and had complained of pain for more than a year. L4-L5 was found to be the most common level involved. Post injection 129 patients out of 152 reported minimal pain and most of the patients reported improvement in pain post block.

Conclusions: We concluded that tranforaminal block is an effective method of achieving pain relief in most patients for some duration and can help in delaying and in some cases avoiding the need for surgery.

Keywords: Back ache, PIVD, Transforaminal, Nerve root block, TFESI

INTRODUCTION

Low back pain is one of the most common reasons for absence from work and physical limitation worldwide and affects 80% of the general population at some point in their lifetime.^{1,2} Radicular pain occurs not just due to mechanical compression but due to the release of neurochemical and inflammatory mediators at the target site.¹ Back ache has become a common phenomenon in our societies reason being our sedentary and unhealthy lifestyle. Transforaminal administration of steroid and analgesia is an important modality in the conservative management of prolapsed lumbar disc and is being used for over 50 years. However, controversy still persists

regarding their effectiveness in reducing the pain and improving the function with literature both supporting and opposing them are available.¹ One of the most frequent complaints faced by orthopaedic surgeons these days is chronic pain due to prolapsed intervertebral disc (PIVD). Various non surgical modalities including conventional Physiotherapy, manual traction methods have been put forward but have not bore good results, this has in turn increased the work load on general practitioners and surgeons. Surgical interventions in form of excision has not proved to be helpful as cases of persistent back aches, infections, postoperative adhesions and mechanical instability were seen after these surgeries. Solberg et al in their study, reported a 4% risk of

worsening of symptoms after a lumbar disc discectomy.³ With the advent of epidural analgesia by Corning in 1885, from around 90 years epidural medication has been a modality for pain relief.⁵ Drugs like procaine, cocaine, normal saline were used. Steroid administration has a history of four decades in use for management of prolapsed intervertebral disc. Various routes of administration being interlaminar, caudal and transforaminal.

In current study we have used transforaminal route for analgesic administration. The aim of this study is to assess functional outcome of transforaminal epidural analgesic injection in cases of chronic back pain due to prolapsed intervertebral disc

METHODS

A total of 162 patients with back pain with or without radiculopathy with an intervertebral disc prolapse which was confirmed on MRI, were included in the study. We calculated their pre injection ODI score. Card picking method was used for study from patients of chronic back pain (simple randomization method). All selected patients were informed about the study and informed written consent was taken; they were included in the study. 10 patients didn't turn up for the treatment and hence were excluded from the study. Remaining 152 patients were treated and were included in the study. The study was conducted at GMC, Jammu starting from July, 2019 to August, 2020. The study was prospective observational type of study.

Inclusion criteria

Inclusion criteria for selection of patients were; single or multiple level disc prolapse diagnosed by MRI and X-ray, patient giving history of symptoms consistent with the nerve root irritation, not responding to conservative management for a minimum of more than 7 weeks, no surgical intervention in past.

Exclusion criteria

Criteria for excluding patients from current study were; patients who defy participation, motor deficit, syndromes like cauda equine, segmental instability, patient undergone surgical procedure like discectomy, medical illness that contraindicated the procedure, patient giving history of allergic reaction to local anaesthetic or corticosteroids, psychogenic disorders making evaluation difficult, tumours, malformation, deformities, post traumatic root compression or infectious aetiologies. At admission and subsequent follow-ups, X-ray was performed, MRI of lumbosacral (LS) spine done, blood test and biochemistry were performed.

Procedure

Patient was asked to lie in prone position. Whole of lumbosacral region was painted and draped under all aseptic procedures (Figure 1).



Figure 1: Positioning of the patient.



Figure 2: C-arm guided posterolateral approach with fluoroscopic image confirming position of needle. Needle was placed adjacent to the L5 nerve root. Contrast injection observed with an AP view confirms location of needle's tip with contrast tracing along the nerve as well as entering the epidural space locally.

The location was approached by the posterolateral extrapedicular approach; using 22 G spinal needle entry site was marked on the skin at a point between 5 to 8 cm from the midline. Before injecting spinal needle we confirm the site under C-arm, local anaesthetic lignocaine is taken in a 5 cc syringe, infiltrated locally around sacral hiatus and lumbar region and needle placement was confirmed by the C-arm (Figure 2). In current study, 80 mg (2 ml) methyl prednisolone, 1.5 ml of 0.5% bupivacaine and 6.5 ml of distilled water in a 10 ml syringe was used. Where ever patient complained pain we confirmed the site and level of spine under C-arm, we inserted spinal needle and confirmed the site of tip of our needle underneath the pedicle, in the superior part of the foramina using both anteroposterior and lateral views. One to two ml of isovist-300 to visualize the posterior annular boundary and the corresponding nerve root. After confirming an adequate flow of contrast medium to the target area and no blood or CSF was aspirated, the solution was injected. After infiltration of drug, patients

were asked to return to supine position. Patients were shifted to the wards and given a day full of bed rest in the hospital under observation. Before infiltration we calculate their ODI score. Patients were evaluated for pain subsequently at first weeks, third week, three months and six months and ODI scoring was done. All the observations were recorded and analysed. Mean or average of various data entry was calculated and ODI scores of all patients were compared.

RESULTS

Age of patients

In current study out of total 152 patients who received drugs mean age was found to be 50.5±16:6 years, with the youngest being 36 years and the oldest being 79 years. There was no sex predilection in the treated population with 51.4% being females (Table 1).

Table 1: Age distribution of patients.

Gender	Age in years				
	30-40	40-50	50-60	60-70	70-80
Male	09	24	28	10	03
Female	08	25	31	09	05

Duration of pain

Ten patients had history of pain for less than 6 months while 58 patients complained of pain for more than 6 months but less than 1 year. Most patients (84) had history of pain of more than number of years of duration.

Level of involvement

Total 65% of patients were having L4 root involvement due to L4-L5 level prolapsed, 20% had L5 involvement due to L5-S1 disc prolapsed and 16 patients had L3-L4 disc prolapse (Table 2). According to ODI (Oswestry disability index) baseline assessment prior to steroid infiltration is shown in (Table 3). ODI scoring post injection is exhibited in (Table 4). Subjective analysis of outcome after 6 months of procedure is shown in (Table 5).

Table 2: Different levels involved in patients.

Level	Number of patients
L1-L2	0
L2-L3	08
L3-L4	16
L4-L5	98
L5-S1	30

Table 3: ODI scoring pre-injection.

Grade	Minimal	Moderate	Severe	Crippling
Baseline	08	58	78	08

Table 4: Post infiltration of steroids.

Assessment period	Minimal	Moderate	Severe	Crippling
3 week	80	42	10	8
3 month	110	33	4	5
6 month	129	14	4	5

Table 5: Subjective analysis of the outcome at 6 month after the procedure.

Root blocked	Improvement by >50% at 3 months	
	Yes	No
L4	89	09
L5	14	16

DISCUSSION

Transforaminal epidural steroid injection (TFESI) is an effective form of minimally invasive treatment in patients with unilateral radicular pain due to herniated lumbar disc or spinal stenosis.⁶ Schaufele et al conducted a case control study comparing interlaminar and transforaminal approaches and concluded that the latter resulted in a better short-term pain improvement and fewer long-term surgical interventions.⁷ Ghai et al conducted a randomized, double-blind, active control trial comparing these two approaches and concluded that the parasagittal interlaminar approach was equally effective in achieving pain relief and functional improvement and that it had a better safety profile and technical ease.⁸

Posterolateral extrapedicular approach was used in current study. Leung et al have published their experience of TFESI in 232 patients. In their series, 14 patients (6%) had multiple level involvements; it was 5.7% in our series. The benefit lasted for 1 to <3 weeks in 15%, 3 to 12 weeks in 15.9% and >12 weeks in 39.7% of the patients.⁹ Our result deferred in this regard, as in 75.29% of our patients that received TFESI, there was >50% pain reduction at the end of 3 months, and these patients continued to be physically active. The rest nine patients did not have adequate response even at the end of the first week.

However our results were consensus with Ghahreman et al who conducted a study to assess the efficacy of lumbar TFESI for radicular pain secondary to disc herniation.¹⁰ There was ≥50% relief of pain in about 54% of patients after 1 month after treatment, and the results were significant as compared to other modalities of treatment. Similarly study done by Rosenberg et al observed that TFESIs could offer significant pain reduction up to one year after the initiation of treatment in patients with discogenic pain and possibly in patients with spinal stenosis and study by Parasuraman et al concluded a statistically significant reduction in pain scores post steroid injection.^{11,12}

Limitations

Limitation of current study is limited number of patients and variation in age and activity level of patients.

CONCLUSION

It was concluded from current investigation that tranforaminal block given via posterolateral approach is an effective method of achieving pain relief in most patient for some duration and can help in delaying and in some cases avoiding the need for surgery but the results are variable and each patient has to be assessed individually to establish the benefit of block.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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