Transforaminal Epidural Injection Of Local Anaesthetic And Dorsal Root Ganglion Pulsed Radiofrequency Treatment In Lumbosacral Radicular Pain: A Randomized, Triple-blind, Active-control Trial

Virender Kumar Mohan*, Manish Dey**, Bhavuk Garg# Praveen Talavar**, Debesh Bhoi*** et al.

Professor *, Junior Resident**, Assistant Professor***Department of Anaesthesiology Pain Medicine and Critical Care, # Associate Professor Department of Orthopaedics

All India Institute of Medical Sciences, New Delhi

Introduction

- Lumbar radicular pain (LRP)
- Inflammation and irritation of lumbar spinal nerves and dorsal root ganglion (DRG).
- Medications &physiotherapy.
- Epidural steroids injection (ESI
  - Interlaminar / Transforaminal (TF)
- Radiofrequency (RF) lesioning
  - Conventional RF(CRF)
  - Pulse RF (PRF)
- Surgical intervention
- Both PRF and PRF in combination with CRF for the management of chronic LRP.

Aims and Objectives

- Comparison of TFLA and DRG-PRF
- Primary objectives
  - Pain relief according to Visual Analogue Scale (VAS)
    - 2 weeks,1,2,3 & 6 months.
- Secondary objectives:
  - Improvement in Oswestry Disability Index (ODI)
    - 2 weeks, 1,2,3 & 6 months

Materials And Methods

Study Design

- Prospective, triple-blind, parallel group, randomized active-control trial.
- Patients were randomized into two groups of 25 each using computer generated random number tables.
- Randomization and Allocation
- Fifty patients were recruited

Inclusion Criteria

- Age 18-70 yr
- Lumbar radicular pain > 3 months
- VAS > 5
- Positive SNRB

Exclusion Criteria

- Patient refusal
- Coagulation disorders/anti coagulant medications
- Permanent neurological deficit
- DM, Pregnancy, MS, Pacemaker

Procedure preparation

- Intravenous access
- Pulse, NIBP, HR Monitoring
- Aseptic precautions
- Randomization and Allocation
- Pre procedure VAS and Oswestry Index

Interventional procedure

Prone position
Pillow under abdomen-lordosis
Aseptic precautions No sedation

↓ Preparation

A curtain separated the area of intervention from the radiofrequency (RF) machine keeping the physician blind to the procedure
Music to mask sound of RF Machine

↓ Blinding procedure

Identification of target vertebra
Squaring of disc (SEP)
Oblique view so the tip of SAP lies at 6 o'clock of pedicle
After LA needle inserted just below the 6 o'clock of pedicle
Inserted in Tunnel view
DDD

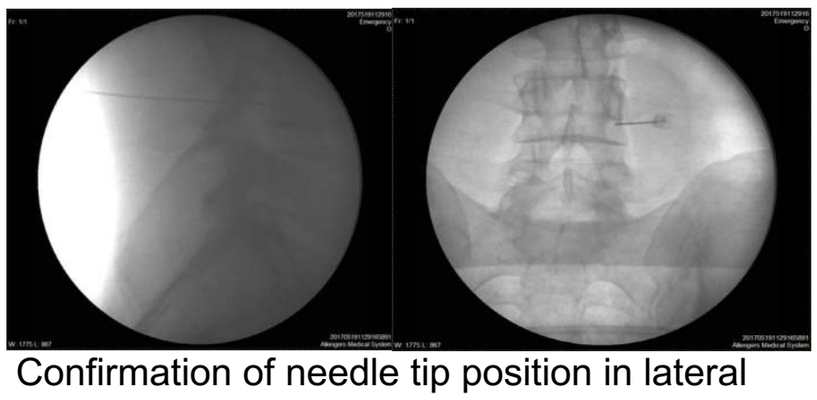
↓ Final Needle Position

Fluoroscopic view (Oblique and PA view)----- Dye injected

↓ Fluroscopic technique

After stimulation- sensory and motor Received LA or Pulse RF (180 s)

↓ Stim / Intervetnion

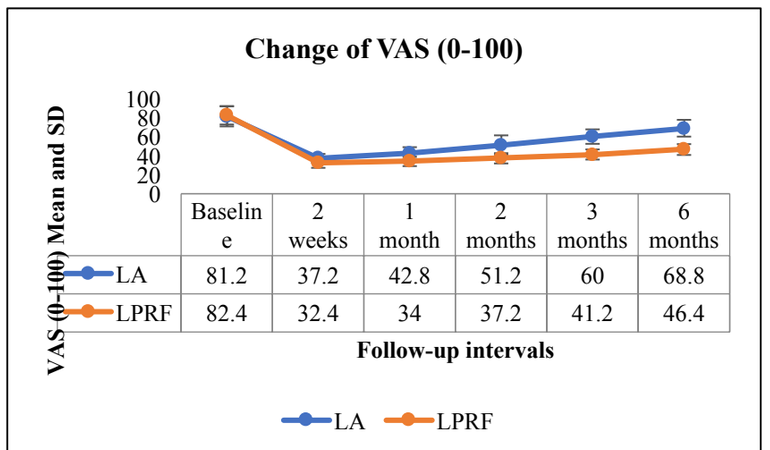


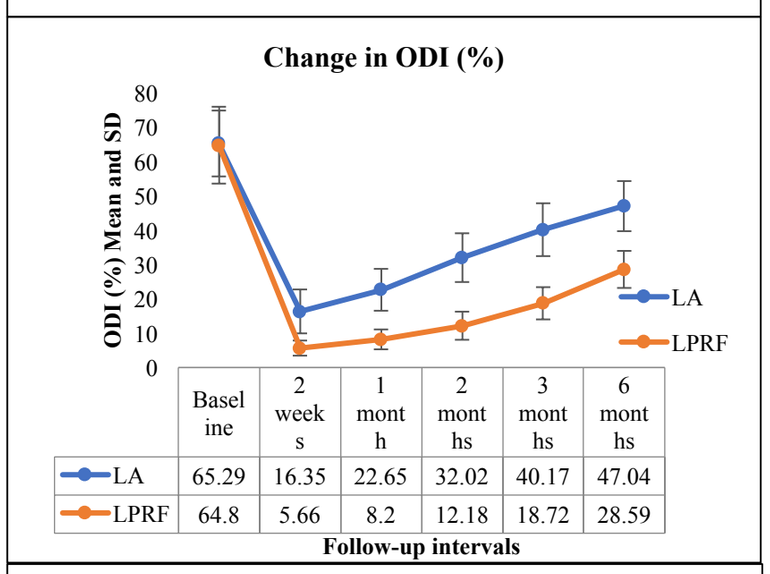
Confirmation of needle tip position in lateral and anteroposterior view of C-arm

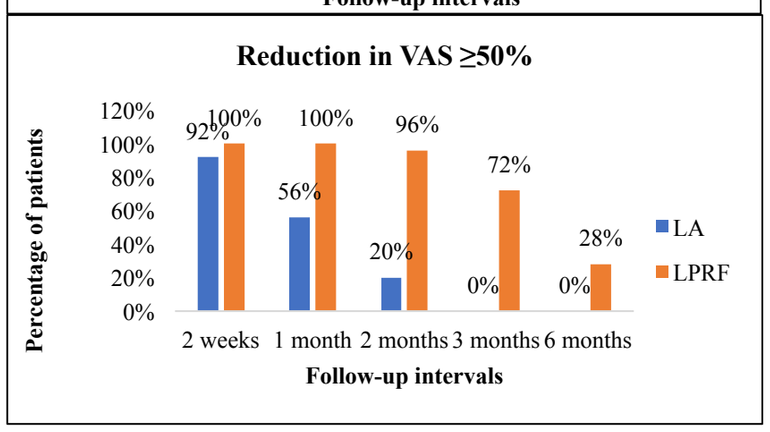
Results

Patient Characteristics

Characteristics	LA group (n=25) Mean ± SD	LPRF group (n=25) Mean ± SD
Age (years)	41.4 ± 10.64	41.92 ± 14.53
Sex, n (%). M	9 (36%)	13 (52%)
F	16 (64%)	12 (48%)
Weight (kg)	57.72 ± 8.92	60.34 ± 7.34
Duration of pain (m)	38 ± 23.15	35.8 ± 22.4
VAS(0-100) Baseline	81.2 ± 10.53	82.4 ± 9.69
ODI (%) Baseline	65.29 ± 9.58	64.8 ± 11.23







Discussion

- PRF treatment showed significant reduction of pain (>50% decrease in VAS scores) at 2 weeks, 1 months, 2 months, 3 months and 6 months compared to TF epidural local anaesthetic group at different time-intervals
- Significant reduction in ODI percentage in LPRF group compared to LA group
- Four retrospective observational studies have reported satisfactory improvement in pain in patients receiving PRF
- The first RCT comparing PRF with placebo in chronic pain[14] showed ≥20 point decrease in VAS in 82% and 64% patients with cervical radicular pain receiving PRF at cervical DRG at 3 and 6 months respectively

Conclusions

- PRF of DRG applied for a longer duration results in long-term pain relief and improvement in functional quality of life in patients with chronic lumbosacral radicular pain.