



PROSPECTIVE OBSERVATIONAL STUDY OF THE EFFECT OF PHYSIOLOGICAL PAIN PORTAL BLOCKERS IN ACUTE AND CHRONIC SHOULDER GIRDLE PAIN: CLINICAL AND FUNCTIONAL OUTCOMES IN ADULTS

Orthopaedics

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ABSTRACT

Background: Shoulder girdle pain is one of the most common musculoskeletal complaints. Physiological Pain Portal Blockers (PPPB) provide a selective sodium channel–based distal analgesic approach with minimal complications. Evidence for its role in shoulder pain is limited. **Aim:** To evaluate the analgesic and functional outcomes of PPPB in non-traumatic acute and chronic shoulder girdle pain. **Materials And Methods:** A prospective observational study on 50 adults receiving PPPB in the first webspace using 2% preservative-free lignocaine diluted with sterile water. VAS and ROM were assessed immediately, 1 week, 1 month, and 2 months post-injection. **Results:** 84% achieved near-complete pain relief (VAS = 1) by 2 months. ROM improved significantly: abduction (74%), adduction (86%), flexion (78%), extension (80%), internal/external rotation (82%). 90% required a single injection while 10% needed two. Failure rate was 12%. **Conclusion:** PPPB is a rapid-acting, safe, and cost-effective outpatient-based pain management technique producing sustained relief and improved function.

KEYWORDS

Physiological Pain Portal Blockers, Shoulder Pain, Sodium Channel Block, Distal nerve block

INTRODUCTION

Shoulder pain ranks as the third most common musculoskeletal complaint worldwide. Management typically includes NSAIDs, steroids, physiotherapy, and in some cases surgery. Physiological Pain Portal Blockers (PPPB) are a novel distal sodium channel blocking technique acting on pseudo-unipolar nociceptors responsible for mechanosensitization. Their role in shoulder pain management has not been extensively explored. This study evaluates the clinical and functional outcomes of PPPB in non-traumatic shoulder girdle pain.

MATERIALS AND METHODS

A prospective observational study was conducted at New Civil Hospital, Surat, involving 50 adults aged >18 years with acute or chronic non-traumatic shoulder pain. PPPB was administered in the first webspace ($\alpha 1$ portal) using 2 ml 2% preservative-free lignocaine mixed with 3 ml sterile water. Patients were assessed using VAS and ROM before injection, immediately after, and at 1 week, 1 month, and 2 months.

Exclusion criteria included trauma, infection, pregnancy, uncontrolled DM/HTN, and unwillingness. Outcome measures included pain reduction (VAS) and functional improvement (ROM).

RESULTS

The study included 50 patients: 34 males (68%) and 16 females (32%). VAS scores reduced dramatically with 84% achieving VAS = 1 by 2 months. ROM improvements were significant across all parameters: abduction (74%), adduction (86%), flexion (78%), extension (80%), and internal/external rotation (82%). 90% improved with a single injection while 10% required a repeat dose. 12% showed inadequate response.

DISCUSSION

PPPB works by blocking TTX-insensitive sodium channels responsible for peripheral mechanosensitization in pseudo-unipolar nociceptors. Literature on distal nerve blocks demonstrates long-lasting analgesic effects exceeding pharmacologic duration, supporting our findings.

Compared to corticosteroids and NSAIDs, PPPB avoids systemic complications and does not inhibit motor function—allowing immediate physiotherapy. It is cost-effective, safe, minimally invasive, and suitable for low-resource outpatient settings including PHCs.

The improvements in VAS and ROM in our study align with prior observations in sciatica, cervical brachialgia, and periarthritis, demonstrating PPPB's wide clinical applicability.

CONCLUSION

PPPB is a simple, inexpensive, and highly effective outpatient-based treatment modality for non-traumatic shoulder girdle pain. It provides fast, sustained analgesia and significant functional improvement. It is suitable even in peripheral centres due to its safety, minimal equipment requirements, and ease of administration.

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