

Cervical Facet Joint Injection and Cervical Erector Spinae Hydrodissection in Combination. A Case Report

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Abstract

Background: Neck pain is common. Joint, neural and muscle source of neck pain is common. Hydrodissection is a minimally invasive technique involving injection of fluid to separate fascial layers and release entrapped nerves and tendons. Its use in cervical erector spinae hydrodissection in combination with cervical facet joint injection has not been reported. **Methods:** Case Presentation: We present the case of a 55-year-old male with refractory neck pain. Despite extensive conservative therapies, including analgesics and physical therapy, he continued to experience neck pain. **Intervention:** The patient underwent ultrasound-guided cervical facet joint injection and cervical erector spinae hydrodissection as a targeted approach to address joint pain, perineural inflammation and nerve entrapment. Triamcinolone 40mgs and 0.25% Levobupivacaine (8 mls) was used for cervical facet joint injection. A 5% dextrose solution (10 mls) was used to free neural and muscle from scar tissue and adhesions with a cervical erector spinae ultrasound guided hydrodissection on the same side as cervical facet joint injection. The procedure was performed in a theatre setting. **Results:** Following the hydrodissection procedure, the patient experienced improvement in pain (NRS 6/10 to 2/10) with sustained improvement at two months follow-up. Functional outcomes, including range of motion and daily activities improved. Analgesic requirement reduced. No complications were reported. **Conclusions:** This case supports the potential role cervical erector spinae hydrodissection as a safe, minimally invasive treatment option in combination with cervical facet joint injection for neck pain. Hydrodissection offers an alternative to more invasive interventions and warrants further investigation in the management of neck pain.

Keywords

Neck Pain, Facet Joint, Neck Myofascial Pain, Hydrodissection, Ultrasound

1. Introduction

Neck pain is one of the most common chronic pain conditions and a major problem in modern society. Neck pain can originate from diverse anatomical structures, including muscles, ligaments, intervertebral discs, and joints. Among the many potential sources of neck pain, the cervical facet joints are a well-recognised cause of pain [1] that is axial and non-radicular in nature [2]. The mechanism is thought to be multifactorial, encompassing traumatic injury, age-related degenerative change, and cumulative mechanical strain, any of which can sensitize the local nociceptive supply [3].

Cervical facet joint pain typically presents as axial neck pain often with referred pain to the occiput, shoulder or scapular region, depending on the cervical level involved [4] [5]. Although cervical facet joint pain may occur acutely following injury or mechanical stress, in some patients' symptoms persist, with the facet joints representing an important source of chronic axial neck pain. Clinical examination may demonstrate paraspinal tenderness and reproduction of pain with cervical extension and rotation. However, these findings lack sufficient specificity to establish the diagnosis. Diagnosing chronic cervical facet joint pain can therefore be challenging as there are no pathognomonic clinical features, and radiological evidence of facet joint degeneration correlates poorly with the presence and severity of pain [6]. Cervical facet joints receive nociceptive innervation from the medial branches of the cervical dorsal rami, providing forms the anatomical basis for diagnostic medial branch blocks. Selective anaesthetisation of these branches is considered the reference standard for identifying facetogenic pain, with temporary relief of the patient's typical pain supporting the diagnosis [6].

Initial management of chronic cervical facet joint pain is conservative and may include analgesic and anti-inflammatory medications, physical therapy, exercise and massage. In patients with persisting symptoms, interventional options should be considered. These include intra-articular facet joint injections and medial branch radiofrequency ablation with medial branch blocks principally used diagnostically and prognostically [6].

However, neck pain may arise from several anatomical structures [6] and facetogenic, neural and myofascial pain may coexist. Myofascial pain arising from the cervical musculature can produce referred pain patterns overlapping those of facetogenic pain [7]. Myofascial pain is commonly associated with trigger points and areas of increased muscular tenderness [8] and may also be associated with alterations in fascial mobility, including reduced fascial glide relating to densification, a proposed increase in the viscosity of the extracellular matrix between fascial layers [9]. In patients with overlapping articular and myofascial features, a

multimodal, anatomically targeted approach may therefore be appropriate.

Ultrasound-guided interfascial hydrodissection has emerged as a potential minimally invasive approach for myofascial pain [10]. The technique involves the injection of fluid, under ultrasound guidance, to separate adjacent fascial or fascial-muscular planes, with proposed mechanisms including improved tissue gliding and modulation of local nociceptive input [10] [11].

Given the potential coexistence of facetogenic and myofascial components of chronic neck pain, simultaneously targeting these anatomically distinct structures may represent a multimodal therapeutic approach in patients with refractory symptoms. We report a case of refractory chronic neck pain successfully treated with cervical facet joint injection combined with ultrasound-guided hydrodissection of the cervical erector spinae musculature.

2. Case Report

A 55-year-old male presented with severe, chronic neck pain. He reported a three-year history of right sided neck pain. There was right trapezius tenderness and reduced cervical spine range of movement. There was lower right cervical facet joint tenderness. Neurological examination was normal. Conservative therapies including medications and physical therapy failed to control his debilitating neck pain.

Intervention: The patient underwent ultrasound-guided cervical facet joint and cervical erector spinae hydrodissection as a targeted approach to address perineural inflammation and nerve entrapment. The patient was placed in the prone position. A curvilinear low frequency transducer was used. It was placed parallel and lateral to cervical spinous processes with a slight medial orientation for cervical facet joint injection and a lateral orientation for erector spinae hydrodissection. A 22 g spinal needle was used for injection (Figure 1). Triamcinalone 40 mgs and 0.25% Levobupivacaine (8 mls) was used for facet joint injection. A 5% dextrose solution (10 mls) was used to free the neural and muscle from surrounding



Figure 1. Cervical erector spinae hydrodissection. SP = spinous process. HD = hydrodissection.

scar tissue and adhesions in cervical erector spinae block. The procedure was performed in a theatre setting. Following the hydrodissection procedure, the patient experienced improvement in pain (NRS 6/10 to 2/10) with sustained improvement at two months follow-up. Functional outcomes, including range of motion (flexion, extension and lateral rotation) and daily activities improved substantially. The patient required regular NSAID's and weak opioids before procedure and none at two months follow-up. No complications were reported.

3. Discussion

This is the first reported case of cervical facet joint injection in combination with ultrasound-guided hydrodissection of the cervical erector spinae for the treatment of refractory chronic neck pain. The combined intervention was associated with a substantial improvement in pain, range of motion and increased functional independence measure by activities of daily living. These benefits were sustained at 8-week follow-up, with no immediate nor delayed complications identified. These findings suggest that simultaneously targeting suspected cervical facet joints and cervical neural and myofascial components may represent a potential therapeutic approach in selected patients with refractory neck pain.

The facet joint injection was directed at the suspected facetogenic component of the patient's symptoms, whilst hydrodissection of the cervical erector spinae targeted a potential coexisting neural and myofascial component. Given the potential overlap between joint, neural and myofascial pain, this approach allowed anatomically distinct but potentially coexisting contributors to the patient's symptoms be addressed during the same intervention time. This may be particularly relevant in patients with refractory neck pain in whom symptoms cannot be attributed to a single anatomical structure.

Our case had no immediate nor delayed complications. This is consistent with the favourable safety findings reported in previous studies of ultrasound-guided interfascial hydrodissection [11] [12], although the limited available evidence precludes definitive conclusions regarding safety. Ultrasound guidance permits real-time visualisation of the needle tip, relevant anatomical structures and injectate spread, which allows accurate administration whilst minimising inadvertent injury to surrounding structures.

The potential therapeutic effect of hydrodissection may relate to its mechanical action at fascial interfaces. It is postulated that hydrodissection may improve fascial mobility where normal gliding is impaired, potentially through mechanical separation of adjacent tissues. Fascial densification, characterised by increased viscosity of the hyaluronan-rich loose connective tissues between fascial layers, has been proposed as one mechanism contributing to impaired fascial gliding [13]. Additionally, fascial layers surrounding muscles are richly innervated by free nerve endings capable of nociceptive signalling [14]. It is therefore proposed that mechanical separation of these layers may alter fascial tension and modulate signalling through mechanosensitive nociceptors potentially contributing to the an-

algesic effect of hydrodissection [11]. In addition to the mechanical effects, 5% dextrose has been proposed to exert independent analgesic effects through modulation of nociceptive signalling, including potential effects in TRPV1-mediated pathways, although these mechanisms remain theoretical [15].

The principal limitations are those inherent to a case report. There was no control intervention or blinded assessment, and the contribution of concurrent medication, placebo response, regression to the mean, and natural fluctuation in chronic pain cannot be excluded.

Furthermore, as both the facet joint injection and the erector spinae hydrodissection were performed in quick succession, their individual contributions to the observed clinical response cannot be determined. Similarly, it is not possible to distinguish the mechanical effects of hydrodissection from the potential independent effects of 5% dextrose. Finally, the reliance on patient reported outcomes and the short duration of follow-up limit objective assessment of the treatment effects. Despite these limitations, the substantial and sustained clinical improvement observed in this case suggests that combined treatment of suspected facet, neural and myofascial components in selected patients with refractory chronic neck pain may warrant further investigation.

4. Conclusion

This case suggests that a combined approach of ultrasound-guided hydrodissection with 5% dextrose targeting the cervical erector spinae combined with cervical facet joint injection may be a feasible, minimally invasive treatment option for selected patients with refractory neck pain. Further prospective studies are required to establish its efficacy, optimal technique, safety and durability of benefit.

Availability of Data and Material/Data Transparency

This case report is an honest, accurate, and transparent account of the case being reported. No important aspects of the report have been omitted. Any queries should be directed to the corresponding author via email. Requests for reprints should also be addressed to the corresponding author.

Ethics Approval

This study is fully compliant with the ethical guidelines of the Research Ethics and Clinical Trials Committee of the University of Limerick Hospitals Group.

Consent to Participate

The patient consented to participation and publication of the report as described.

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We would like to extend our gratitude to the patient for his consent to publish this report.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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