

# Ultrasound-Guided Iliotibial Band Hydro-Dissection Using 5% Dextrose: A Novel Treatment Approach

Marium Javed, Harry McGrath, Dominic Harmon

Department of Anaesthesia and Pain Medicine, University Hospital Limerick, Limerick, Ireland

Email: maryamjaved7600@gmail.com

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## Abstract

**Background:** Iliotibial band syndrome (ITBS) is a common cause of lateral thigh and knee pain, particularly in physically active individuals. Conservative management including physiotherapy, rest, and oral analgesia may fail to adequately control symptoms in a subset of patients. Ultrasound-guided hydro-dissection is a minimally invasive technique involving injection of fluid to separate fascial planes and release adhesions surrounding nerves, tendons, and soft tissue structures. While hydro dissection has been increasingly described in peripheral nerve entrapment syndromes, its application in iliotibial band syndrome has not previously been well reported. **Case Presentation:** We present the case of a 48-year-old male with chronic refractory left lateral thigh pain secondary to iliotibial band syndrome. Conservative management including physiotherapy and analgesic medications had failed to provide sustained symptom relief. Ultrasound examination demonstrated pathological changes along the iliotibial band with associated soft tissue adhesions. **Intervention:** Ultrasound-guided hydro-dissection of the iliotibial band was performed using 5% dextrose solution (10 mls) under direct ultrasound visualization. The procedure aimed to mechanically separate fascial adhesions and improve tissue gliding within the affected region. **Results:** The patient reported significant improvement in pain and functional mobility following the procedure, with sustained benefit at two-month follow-up. No immediate or delayed complications were observed. **Conclusion:** This case demonstrates the potential role of ultrasound-guided dextrose hydro dissection as a minimally invasive treatment option for refractory iliotibial band syndrome. Further studies are required to evaluate its efficacy and long-term outcomes.

## Keywords

Iliotibial Band Syndrome, Hydro Dissection, Ultrasound-Guided

## 1. Introduction

Iliotibial band syndrome (ITBS) is a common overuse injury affecting the lateral aspect of the thigh and knee, particularly among athletes and physically active individuals [1] [2]. It is frequently associated with repetitive knee flexion and extension movements, resulting in irritation, inflammation, and mechanical friction involving the iliotibial band and adjacent soft tissues [3] [4]. Patients typically present with lateral thigh or lateral knee pain exacerbated by activity, particularly running, cycling, or prolonged ambulation [1] [2].

The iliotibial band is a dense fibrous fascial structure extending from the iliac crest to Gerdy's tubercle on the proximal tibia [1]. Pathophysiological mechanisms proposed in ITBS include repetitive friction, compression, localized inflammation, fascial thickening, and soft tissue adhesions leading to impaired tissue gliding and chronic pain [4] [5].

Conservative management remains the cornerstone of treatment and commonly includes physiotherapy, stretching exercises, activity modification, non-steroidal anti-inflammatory medications, and corticosteroid injections [1] [2]. However, a proportion of patients continue to experience persistent symptoms despite these interventions [3] [4].

Ultrasound-guided hydro dissection is an emerging minimally invasive technique involving targeted injection of fluid to mechanically separate fascial layers, release adhesions, and reduce soft tissue entrapment [3]. Hydro dissection has demonstrated promising outcomes in peripheral nerve entrapment syndromes including carpal tunnel syndrome, ulnar neuropathy and occipital neuralgia. Dextrose-based injectates, particularly 5% dextrose, have gained increasing attention because of their analgesic, anti-inflammatory, and potential regenerative properties [4].

The application of ultrasound-guided hydro dissection for iliotibial band syndrome has not been widely described in the literature. In this report, we describe a novel application of ultrasound-guided iliotibial band hydro dissection using 5% dextrose in a patient with chronic refractory lateral thigh pain [3] [4].

## 2. Case Report

A 48-year-old male presented to the chronic pain clinic with a five-year history of persistent left lateral thigh pain consistent with iliotibial band syndrome. The pain was described as aching and sharp in nature, localized predominantly along the lateral aspect of the distal thigh and knee, and exacerbated by prolonged walking, stair climbing, and physical activity. The pain score was 9/10 with activity. The patient reported progressive limitation in daily activities and reduced exercise tolerance due to pain severity.

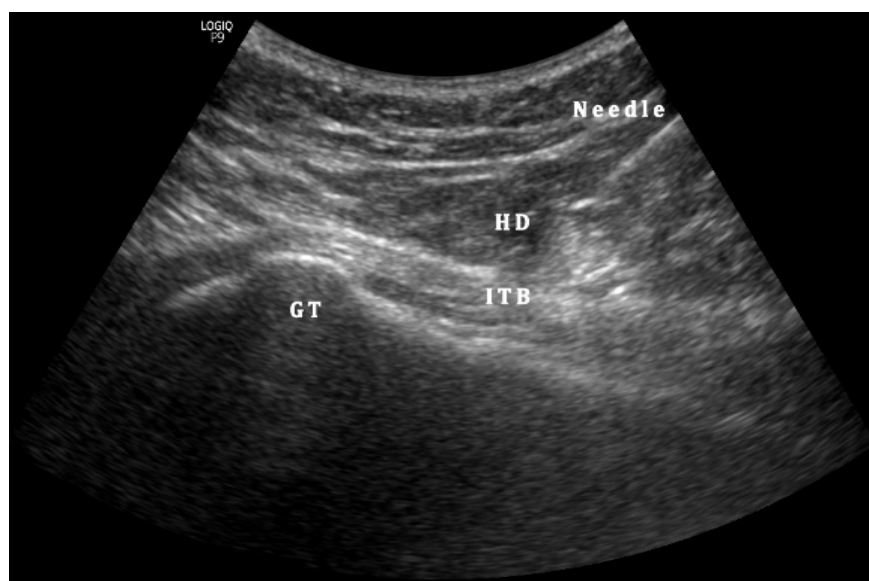
Previous conservative management strategies included physiotherapy, stretching exercises, activity modification, oral non-steroidal anti-inflammatory medications, all of which provided only transient or minimal symptomatic relief. The patient denied any history of acute trauma, constitutional symptoms, or neurological deficit.

On physical examination, focal tenderness was elicited along the iliotibial band, particularly over the lateral femoral condyle region. Tightness of the iliotibial band was noted, with pain reproduced during provocative manoeuvres including resisted knee flexion and palpation over the affected region. Ultrasound assessment demonstrated localized thickening of the iliotibial band with evidence of fascial adherence and reduced tissue glide along the lateral thigh compartment. No significant joint effusion or alternative soft tissue pathology was identified. The diagnosis of iliotibial band syndrome was made based on the characteristic clinical presentation and imaging findings. Alternative causes of lateral thigh and knee pain, including lateral meniscal injury, ligamentous pathology, tendinopathy, greater trochanteric pain syndrome, and lumbar radiculopathy, were excluded.

Given the chronic refractory nature of symptoms and failure of conservative therapies, a decision was made to proceed with ultrasound-guided hydro dissection of the iliotibial band using 5% dextrose solution.

The procedure was performed under sterile conditions. The patient was positioned supine, and the skin was prepared with chloroprep solution. The iliotibial band was identified around the left lateral thigh in transverse and longitudinal planes over the region of maximal tenderness by using a low-frequency curvilinear ultrasound transducer. The skin was infiltrated with 2 mL of 1% lignocaine using a 24-gauge needle to achieve local anaesthesia. Under direct ultrasound guidance, a 22 gauge, 2-inch needle was advanced in-plane toward the fascial plane deep to the iliotibial band. Incremental injection of 10 mL of 5% dextrose solution was performed to mechanically separate fascial adhesions and restore tissue glide. A 5% dextrose solution was selected because it has been increasingly used as a safe hydro dissection injectate for peripheral nerve and soft-tissue entrapment syndromes, while a total volume of 10 mL was chosen to facilitate adequate separation of the iliotibial band from the underlying tissues. Adequate hydro dissection was confirmed with ultrasound by visible fluid spread along the fascial plane (**Figure 1**). The patient tolerated the procedure well without immediate complications.

The patient reported significant improvement in pain, with a pain score of 2/10 during activity, and improved functional mobility with exercise following the procedure. The patient reported significant improvement in pain, with a pain score of 2/10 during activity, and improved functional mobility with exercise following the procedure. The patient was also able to perform routine physical activities with minimal discomfort. These benefits were sustained at the two-month follow-up, and no delayed adverse effects were reported. No additional treatments, including analgesics, physiotherapy, or other interventions, were initiated during the follow-up period.



**Figure 1.** Proximal to distal scan of lateral thigh. The Greater trochanter (GT) and iliotibial band (ITB) are identified. Under continuous ultrasound guidance, a needle was advanced in-plane toward the fascial interface surrounding the iliotibial band. Incremental injection of 10 ml of 5% dextrose solution was performed to mechanically separate fascial adhesions and restore tissue glide. Adequate hydro dissection was confirmed with ultrasound by visible fluid spread along the fascial plane (HD).

### 3. Discussion

The favourable clinical outcome observed in this patient provides an opportunity to consider the potential role of ultrasound-guided hydrodissection with 5% dextrose in the management of refractory iliotibial band syndrome. Although evidence remains limited, the technique has shown encouraging results in other chronic musculoskeletal and peripheral nerve conditions.

Iliotibial band syndrome remains a challenging pain condition in patients who fail conservative therapy. Although physiotherapy, stretching, activity modification, and anti-inflammatory medications are considered first-line treatment modalities, a subset of patients continue to experience persistent pain and functional limitation despite prolonged management [1]. Chronicity of symptoms may reflect ongoing fascial restriction, soft tissue adherence, and impaired biomechanical gliding of the iliotibial band over adjacent structures [6].

Hydro dissection is an emerging ultrasound-guided intervention increasingly utilized in pain medicine and musculoskeletal practice [3]. The technique involves targeted injection of fluid under pressure to mechanically separate fascial planes, release adhesions, and restore normal tissue mobility [7]. Previous reports have demonstrated the utility of hydro dissection in a range of peripheral nerve entrapment and chronic pain syndromes including carpal tunnel syndrome, occipital neuralgia, cervicogenic headache, deep gluteal syndrome, pudendal neuralgia, and intersection syndrome [4] [5].

The mechanism of benefit is likely multifactorial. Mechanical separation of fascial adhesions may reduce local compression, friction, and tissue irritation while

improving tissue excursion and gliding [4]. Ultrasound guidance permits precise localization of pathological tissue planes and minimizes procedural risk [6]. In addition to its mechanical effects, 5% dextrose may possess intrinsic analgesic and anti-inflammatory properties. Proposed mechanisms include modulation of neurogenic inflammation, reduction in peripheral sensitization, and improvement in neural microenvironment function.

The present case demonstrates clinically meaningful improvement in pain and functional mobility following ultrasound-guided iliotibial band hydro dissection with 5% dextrose. The absence of complications and the sustained symptomatic improvement at follow-up suggest that this technique may represent a safe and minimally invasive therapeutic option for carefully selected patients with refractory iliotibial band syndrome [7].

Current literature regarding hydro dissection for iliotibial band pathology remains limited. Most published evidence has focused on peripheral nerve entrapment syndromes rather than fascial overuse conditions. However, recent reports describing hydro dissection in intersection syndrome and other musculoskeletal pain conditions support the broader concept that restoration of fascial plane mobility may contribute significantly to symptom improvement [8].

Further prospective studies and larger case series are required to better define procedural technique, optimal injectate composition, duration of therapeutic benefit, and long-term outcomes [7]. Comparative studies evaluating hydro dissection against corticosteroid injection or physiotherapy-based interventions may further clarify its role in the management algorithm of iliotibial band syndrome [5].

#### 4. Conclusions

This case report suggests the potential utility of ultrasound-guided iliotibial band hydro dissection using 5% dextrose as a minimally invasive treatment option for refractory iliotibial band syndrome [9]. In this patient, the procedure was associated with significant improvement in pain and functional mobility without procedural complications [3].

Hydro dissection may offer therapeutic benefit through mechanical release of fascial adhesions, restoration of tissue glide, and the potential analgesic effects of dextrose-based injectates [4]. Although evidence supporting hydro dissection in peripheral nerve entrapment syndromes continues to expand, its application in iliotibial band pathology remains limited in the current literature [3] [10].

This report highlights a novel interventional approach for patients who fail conservative management. However, the findings should be interpreted with caution given the single-patient design and relatively short two-month follow-up period. Further prospective studies are needed to evaluate efficacy, optimal technique, long-term outcomes, and comparative effectiveness in the management of iliotibial band syndrome [11].

#### Consent

Written informed consent was obtained from the patient for publication of this

case report and any accompanying images.

## Ethics Statement

Ethical approval was not required for this single-patient case report in accordance with institutional policy and local regulations.

## Conflicts of Interest

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

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