

Intra-articular Pulsed Mode Radiofrequency for Hip Pain: Inoperable Coxarthrosis Case

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INTRODUCTION

Hip arthroplasty is one of the most common surgical procedures for pain relief due to coxarthrosis. However, the operation is contraindicated for some elderly patients because of multiple co-morbidities. On the other hand, conventional drugs either have too many side effects or are ineffective. Major symptoms of patients with hip pain include groin, thigh and trochanteric pain.

In recent years, pulsed mode radiofrequency has been used to manage a wide spectrum of chronic pain modalities, and in clinical models in treatment such as myofascial trigger points, phantom limb pain, occipital neuralgia, meralgia paraesthetica and premature ejaculation (1–5). Pulsed mode radiofrequency produces fewer histopathological changes than conventional radiofrequency and takes advantage of a significant reduction in complications or side effects (6).

Keywords: Chronic pain, osteoarthritis, radiofrequency ablation

CASE REPORT

A 48-year old female with chronic right and left hip pain, on and off for seven years, attended the pain clinic. She described the pain as a constant dull, achy discomfort in the groin and rated it at 7/10 on the visual analogue scale (VAS). The pain was exacerbated by walking and limited her ability to walk more than household distances. She previously had hip joint surgery for developmental dysplasia of the hip (DDH) in childhood. On orthopaedic consultation, she was not a surgical candidate and was diagnosed with bilateral coxarthrosis and given conventional drug medication. Her pain medication included tramadol 50 mg two or three times a day plus a non-steroidal anti-inflammatory drug (NSAID), depending on the severity of the pain. On physical examination, she had pain with passive and active range of the right hip without tenderness around it. X-ray of the right hip showed severe degenerative changes and loss of joint space (Fig. 1).

Anatomical landmarks for injection were below the inguinal ligament and lateral to the femoral artery. Subsequently, the coxofemoral joint was confirmed with radiopaque injection under fluoroscopy (Fig. 2); pulsed mode intra-articular radiofrequency was applied with a 10 cm

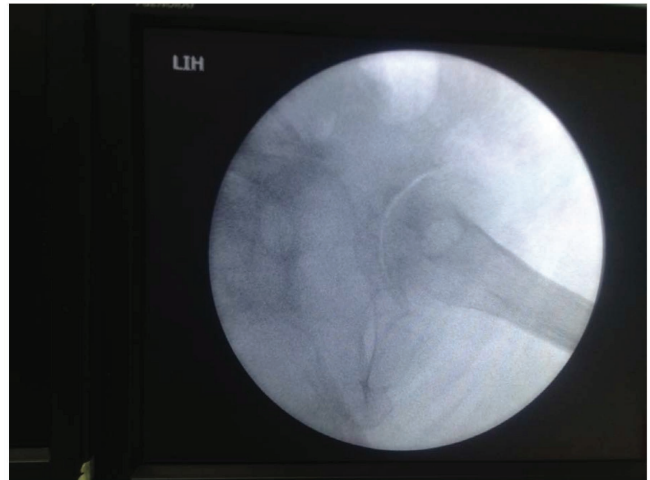


Fig. 1: Direct X-ray of the coxofemoral joint.

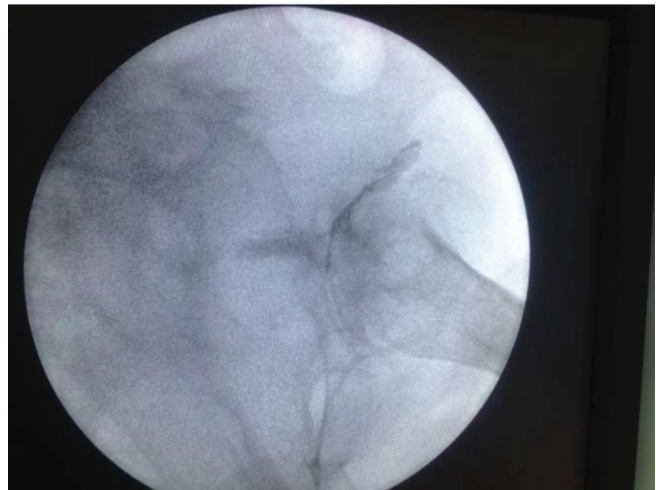


Fig. 2: Radiopaque injection into the coxofemoral joint.

neurotherm needle at 42 °C for 480 seconds to the right hip joint (Fig. 3). There were no complications or side effects of the procedure. Two weeks later, she reported pain at 4/10. At four and eight weeks, her pain was 2/10 and 4/10, respectively. She reported improvement in ability to perform activities of daily living after the procedure and was able to ambulate for longer distances outside the home. She now only uses tramadol 50 mg once a day and NSAID as needed. She had significant improvement in function and quality of life during the eight weeks after the procedure. The patient did not keep further follow-up appointments.

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Fig. 3: Pulsed mode radiofrequency application to the coxofemoral joint.

DISCUSSION

There have been case reports on the intra-articular application of pulsed mode radiofrequency. Halim *et al* applied intra-articular pulsed mode radiofrequency to the atlanto-axial joints of 86 patients with cervicogenic headache and reported almost 50% decrease in their pain scores (7). In a case series, Sluijter *et al* applied pulsed mode radiofrequency to the cervical facet, knee, shoulder, sacroiliac, atlanto-axial and radiocarpal joints of six different patients who suffered from arthrogenic pain (8). Consideration is that the current is actually deflected by the bony surfaces of the joint, forcing it to remain inside the joint space, and thus resulting in a more localized effect. Their proposition about this theory is that electric fields have demonstrated effects on immune modulation, as there are studies that show that pro-inflammatory cytokines, such as interleukin (IL)-1b, tumour necrosis factor-alpha (TNF- α) and IL-6 are attenuated by electric fields (8). Encouraging this theory, Fini *et al* suggested that pulsed electric field delivery combines an anabolic effect on chondrocytes, a catabolic cytokine

blockage, a stimulatory effect on anabolic cytokine production and a counteraction of the inflammatory process in osteoarthritis (9).

Although intra-articular pulsed mode radiofrequency in the hip joint resulted in a painless and comfortable period in this coxarthrosis patient, generally we do not have enough confirmation about the safety and effectiveness of intra-articular application and do not know the exact mechanism of action. More randomized, controlled human and experimental animal studies on intra-articular pulsed mode radiofrequency are mandatory to safely use this procedure on patients where surgery is not an option.

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