



Rehabilitation of Patients with Aseptic Necrosis of The Femoral Head After Coronavirus Infection

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Article History	Abstract
Received: 06 June 2023 Revised: 05 Sept 2023 Accepted: 12 Dec 2023	<p><i>Avascular necrosis of the femur is an irreversible and painful disorder in which the epiphyseal bone suffers from ischemia necrosis owing to an interruption in blood flow to the femoral head, resulting in bone destruction. Later, it leads to osteoarthritis of the hip joint. Here, we present the case of a 35-year-old male who came with a complaint of pain on the left side of the hip region for the past 15 days. Since the patient tested positive for COVID-19, he was quarantine.</i></p>
CC License CC-BY-NC-SA 4.0	<p>Keywords: Aseptic Necrosis of The Femoral Head, Treatment, Methods</p>

1. Introduction

An X-ray was carried out once the quarantine period was completed, which revealed avascular necrosis of the left femoral head. He was advised to have a total hip replacement and underwent the surgery. After one month, the patient started experiencing pain on the right side of the hip region. He visited the rural hospital, where an X-ray was carried out, which revealed avascular necrosis of the right femoral head. For reducing pain and improving functional independence and quality of life postoperatively, a well-planned physiotherapy protocol was incorporated, which included lower limb and pelvic floor strengthening exercises and a balance training program.

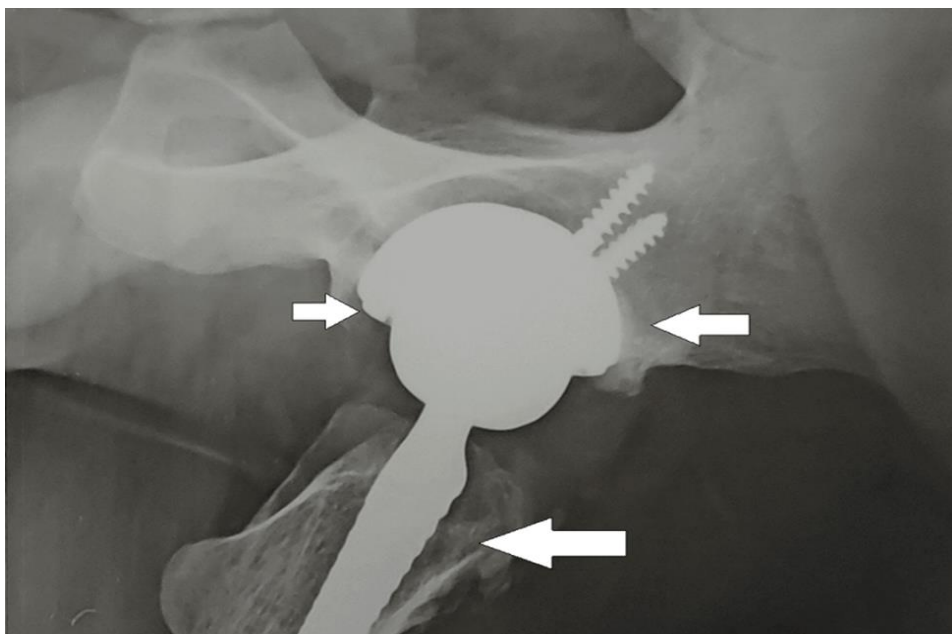
The Numerical Pain Rating Scale and Harris Hip Score have been used as outcome measures to demonstrate the efficacy of the treatment. Avascular necrosis of the femur is a painful condition marked by a disruption in the blood supply to the femoral head, which causes the femur bone to distort; characterized by pain and restriction of movements at the affected joint with a limp. The study aimed to provide a case of nontraumatic stage-4 avascular necrosis of the left femoral head with gross 40-degree adductor deformity. In this report, a 27-year-old female complained of pain in her left hip joint and difficulty in walking. She was a known case of pyogenic arthritis with 5 cm of true shortening on her left side and a gross 40-degree adduction deformity of her left leg. According to Ficat and Arlet's grading system, an X-ray showed stage-4 avascular necrosis of the left femoral head. For this, she was managed with adductor tenotomy, medications, and physiotherapy management with a one-month rehabilitation protocol. A physiotherapy intervention consists of a non-weight-bearing phase and a weight-bearing phase. At the time of her physiotherapy discharge, the patient experienced alleviation from symptoms and achieved functional mobility that she had previously been unable to tolerate owing to pain. As a result, physical therapy rehabilitation has been proved to be highly beneficial.

This case study concludes that multidisciplinary team including medical, surgical approach and physiotherapy rehabilitation played a vital role in reducing pain; enhance muscle strength, functional independence, and quality of life in patients with stage 4 avascular necrosis of the femur followed by pyogenic arthritis. Avascular necrosis of the femur is also known as osteonecrosis [1]. It is a painful disorder marked by disruption in the blood supply to the femoral head, which causes the femur bone to distort [2]. The head of the femur has a very limited blood supply, with only a few anastomoses leading to a wedge-shaped region of avascular necrosis (AVN) [3]. Thus, the head of the femur is the most often impacted site [4]. It usually leads to irreparable joint degeneration, resulting in considerable disability as a result of pain and movement restrictions. The prevalence rate of avascular

necrosis was found to be 8% with an age range of 27 years at the time of AVN diagnosis ranging from 18 to 54 years of age [5]. The aetiology of AVN may be posttraumatic, nontraumatic or idiopathic. It was characterized by pain, which is felt mostly in front of the joint and restriction of movements at the affected joint with a limp. Pathophysiology covers a number of things. Cell death follows a predictable pattern as a result of a compromised terminal artery supply to the bone and a complex process of bone resorption and formation [6]. During the necrosis phase, the joint cartilage that covers the femoral head is damaged, this accelerates the wearing. The joint gradually deforms the femoral head, its height decreases and causing the lower limb to shorten [7]. The Ficat and Arlet classification [8] combines a mix of radiography, magnetic resonance imaging, and clinical features to radiologically stage avascular necrosis [9, 10]. Avascular necrosis (AVN) medical management is primarily determined by the location and severity of the disease [11]. Medical management includes Pharmacological Therapy, core decompression, osteotomy and total hip arthroplasty. Physical therapy plays an important role in this condition by reducing the symptoms and enhancing the functional independence and quality of life. This report provides a case of a female complained of pain in her left hip joint and difficulty in walking due to adductor deformity of the left leg with a limb length discrepancy and diagnosed with stage-4 avascular necrosis of the left femoral head.

Avascular necrosis is an irreversible and painful disorder in which the epiphyseal bone suffers from ischemia necrosis owing to an interruption in blood flow to the femoral head, resulting in bone destruction [1]. It is also known as osteonecrosis [2]. In more than 75% of cases, avascular necrosis affects the femoral head, which often affects people under the age of 50 and frequently results in femoral head collapse and later hip arthritis [1]. Although the epidemiology of avascular femoral head necrosis is yet unknown, several risk factors must be investigated, including COVID-19 patients receiving corticosteroid therapy [3], hypercholesterolemia, sickle cell disease, alcohol misuse, and organ transplant management [1].

Medical treatment for this condition is based on the Ficat and Arlet classification of the disease stage. In stages I and II, the joint surface is typically intact; therefore, conservative treatment with pharmacological therapy is indicated, but stages III and IV, which are more advanced, necessitate core decompression [4], osteotomy, and complete hip arthroplasty [1,5]. However, more recent therapeutic approaches have been created to administer stem cells to the necrotic areas to prevent fracture and collapse with medical and surgical management, can prove effective in this condition. Physical therapy can help to alleviate symptoms and improve functional independence and quality of life in people with this condition [7]. After surgical care for avascular necrosis, physiotherapy interventions are essential in the patient's rehabilitation. Physiotherapy is useful in minimizing postoperative discomfort in this ailment [8].se by repairing the femoral head's structural integrity [6]. Physiotherapy, along A 35-year-old male, an automobile mechanic by occupation, came with the complaint of pain on the left side of the hip region for the past 15 days along with difficulty walking. The patient was apparently alright one month ago when he tested positive for COVID-19. While he was quarantined, he started experiencing pain on the left side of the hip region, which was gradual in onset and progressive in nature, aggravated by walking, squatting, and prolonged standing, and relieved by rest.



After his recovery from COVID-19, he visited the rural hospital, where an X-ray was done, which revealed avascular necrosis of the left femoral head. The patient was advised to have a total hip replacement and underwent the surgery. After one month, the patient started experiencing pain on the right side of the hip region. He visited the rural hospital, where an X-ray was carried out, which revealed destruction of the femoral head. He was diagnosed with avascular necrosis of the right femoral head (Figures 1). Physiotherapy rehabilitation was further started.

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