



# Avascular Necrosis Of Femoral Head - A Rare Case Of Core Decompression And Stem Cells Injection

**Sofia Moura de Carvalho, Liliana Domingues, Eduardo Silva, Gonçalo Lavareda, Filipe Machado, Francisco Gonçalves, Rita Ricardo**

Hospital Ortopédico Sant'Iago do Outão, Setúbal, Portugal

## INTRODUCTION

Avascular necrosis (AVN) of the femoral head affects young population and if not managed timely leads to the collapse of femoral head eventually requiring hip arthroplasty.

Treatment can be categorized into two types: precollapsed or early collapsed stage < 2mm and after advanced collapse or osteoarthritis. Treatment for precollapsed stage involves hip preserving procedures whereas prosthetic hip surgery is reserved for advanced-stage of collapse and arthritic hip.

## OBJECTIVES

CD is the most commonly performed surgical procedure for treatment of early stages. It decreases the intraosseous pressure in the femoral head and increases blood flow to the necrotic area. The injection of stem cells into the channels brought a significant improvement in the success of DC procedure.

It is an extremely rare procedure, considering the rarity of the pathology and restricted indications, so we find it interesting to present it.

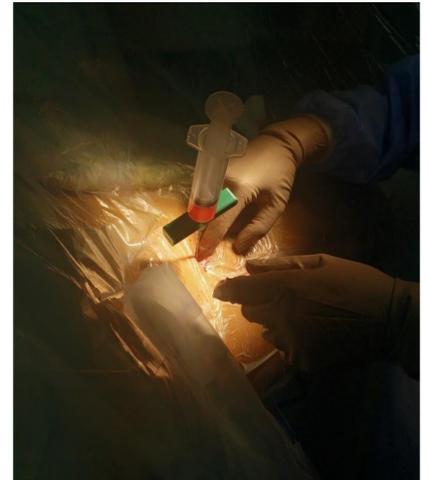
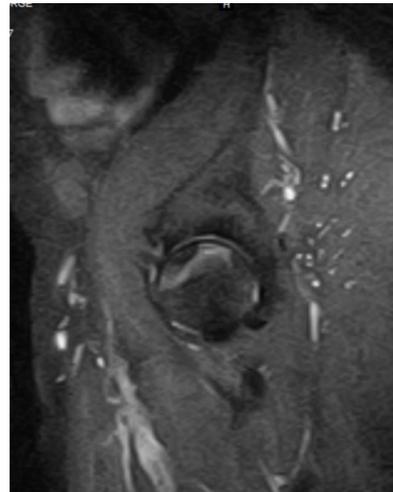
## METHODS

46-year-old male patient, heavy smoker, who presents with a pain on the right hip, with a sudden beginning (6 months evolution), without history of trauma, and the pain was progressing in the last months.

An MRI shown an AVN of the femoral head, in the antero-superior portion of the head, with 40x42mm of diameter, and without evidence of collapse.

Conservative measures failed, so we proposed to do a CD plus direct instillation of stem cells. First, we started using the bone marrow concentration system, collecting bone marrow from the iliac crest. Then, the concentrated bone marrow aspirate went through a process of preparation. After the biologics preparation, the next step was the core decompression using the percutaneous decompression system. The last step of the procedure, after the channels were made, was the direct injection of the biological components.

After the surgery, the pain started to fade away, and 4 weeks later he was able to start walking with partial weight bearing. He did a control MRI 2 months after the surgery, which shown the benefits of the procedure, with filling of the subcortical zone of the lesion with the biological components. The dimension of the lesion was similar and there was still no collapse.



## RESULTS

The clinical benefits of the CD together with a stem cells injection are significant reduction of pain (86%), a reduction of lesion size (82%), or even a complete resolution of the lesion (16%). CD is effective delaying the need for a total hip replacement.

It is difficult to identify optimal treatment protocols to manage patients with pre-collapse AVN of the femoral head, and early intervention prior to collapse is critical to successful outcomes in joint preserving procedures.

## CONCLUSIONS

Early diagnosis and intervention prior to collapse of the femoral head is the key to a successful outcome of joint preserving procedures. The use of growth and differentiation factors may alter the treatment outcomes. The additional use of bone marrow stem cells enhance the results of core decompression.

