

OSTEONECROSIS OF THE HIP TREATED WITH CORE DECOMPRESSION: A CASE REPORT

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ABSTRACT

Osteonecrosis is a disease of impaired blood flow affecting mainly young people in their third ,fourth or fifth decades. It leads to collapse of the femoral head necessitating Total hip replacement. A 44 year old female presented at Kenyatta National Hospital,Nairobi, Kenya. in 2006 where she was managed by the authors with acute right hip pain and thigh pain. Early osteonecrosis(FICAT stage II), was diagnosed with the aid of MRI and core decompression by three small diameter (3.2mm) drillings was performed. Follow-up at five years shows a radiological regression of the lesion.

INTRODUCTION

Osteonecrosis, also known as avascular necrosis or aseptic necrosis, is a disease of impaired osseous blood flow(1). Osteonecrosis is not a specific disease entity but the final common pathway of a number of conditions mostly leading to an impairment of the blood supply to the bone (2). Numerous and diverse aetiologies have been associated with osteonecrosis and in some the causal relationship is confirmed(2,3). Osteonecrosis of the femoral head is a debilitating disease that usually leads to destruction of the hip joint in patients who are in the third , fourth or fifth decades of life (1,4). Its prevalence is unknown but osteonecrosis has been estimated to develop in 10,000 to 20,000 new patients a year in the United states(4,5).

The principal clinical problem with osteonecrosis is the segmental collapse of the femoral head (6).The prognosis for the collapse of the femoral head can be determined by the extent and location of the original osteonecrotic lesion in the weight bearing area (6). The treatment of osteonecrosis of the femoral head is considerably more successful at early stages of the disease, therefore, the diagnosis of osteonecrosis at an early stage is critical for hip preservation(3). At least six different classification systems have been developed to evaluate patients with osteonecrosis(1,7).

Despite this, there is no unified classification system for determining the extent and location of the necrotic area in the femoral head and the involvement of the acetabulum. The system used here, the one of Ficat and Arlet(8), is settled on because of being widely quoted. Early osteonecrosis is considered to be stages I and II, whereas stages III and IV are considered to be late osteonecrosis. Various modalities are advocated for treating early osteonecrosis. These include core decompression(9,10). Free vascularized fibular grafts(1,2), osteotomies(1,2), nonvascularized bone grafting(1,2), as well as limited femoral resurfacing arthroplasty(1,2). Growth factor use ,as an enhancement of the surgical alternatives is still in the trial stages(11,12), as is the procedure of bone marrow cell implantation(11,12). Nevertheless, core decompression of the hip is currently the most common procedure used to treat early stage of osteonecrosis of the femoral head(1, 10,11).

Prognosis depends entirely on early diagnosis and effective treatment, with stage I reporting better clinical results than stage II (9). We present a case of early osteonecrosis of the hip(Ficat stage II) treated by core decompression and followed up for close to five years and showing radiological features of regression.

CASE REPORT

A 44 year old African female presented to the authors on 4th September 2006 with right hip pain and right thigh pain of 5 days duration. She also had low back pain associated for the same duration. The hip and thigh pain was so intense the patient could not carry on her routine duties. Her past medical history revealed a previous admission for treatment of pneumonia and several episodes of peptic ulcer disease. Clinical evaluation revealed an essentially normal back while the hip revealed minimal restriction of hip joint movement especially internal rotation. Plain radiographs of the pelvis were normal (Figure 1), whereas an MRI scan revealed a Ficat stage II osteonecrotic lesion in the right femoral head (Figures 2 and 3). A lumbosacral MRI carried out at the same time was essentially normal (Figure 4). patient was thereafter counselled and prepared

for surgery. Core decompression under general anaesthesia was undertaken with 3 small diameter (3.2mm) parallel drillings into the osteonecrotic portion of the femoral head. Immediate postoperative period was uneventful and the patient was mobilized non-weight bearing and was discharged on elbow crutches. Subsequent followup over the five years has been uneventful. Lately, 12th April 2011, she presented with hip pain and right thigh pain of five days duration. Repeat clinical evaluation showed minimal impaired hip function and X-rays were still normal (Figure 5). A repeat MRI scan showed a regressed osteonecrotic lesion in the femoral head(Figures 6 and 7). The patient was managed on bed rest and NSAIDS and was subsequently discharged on Meloxicam 7.5 mg once a day for two weeks and elbow crutches for a short duration. When she was last reviewed she was painfree and mobilizing without crutches.

Figure 1

X-ray of 5th September 2006



Figure 3

MRI of 12th September 2006: Coronal Cut

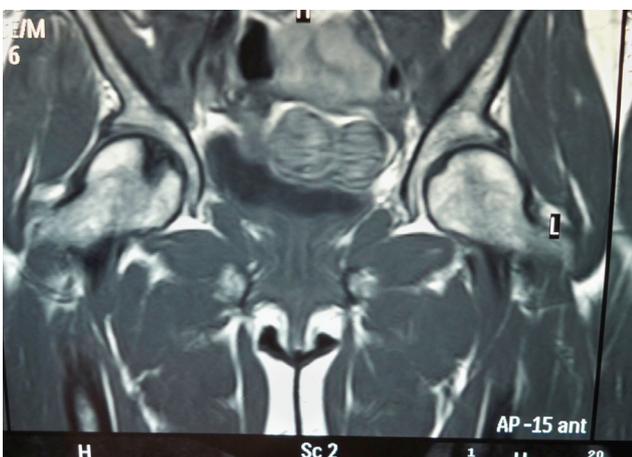


Figure 2

MRI of 12th September 2006. Transverse Cut

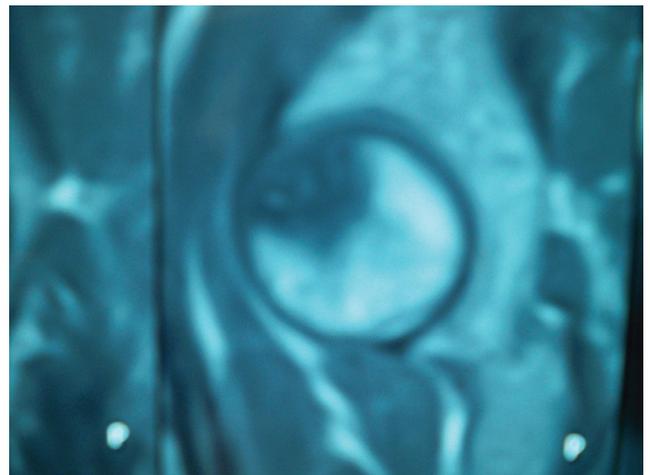


Figure 4

MRI of 12th September 2006: Normal lumbar spine

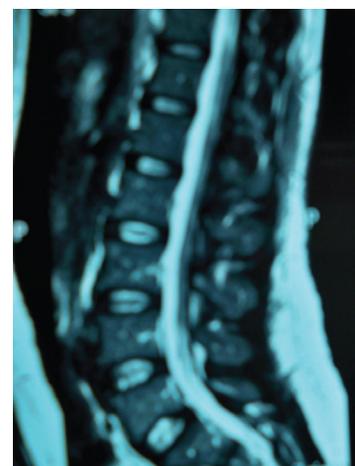


Figure 5
X-ray of 12th April 2011



Figure 6
MRI of 19th April 2011

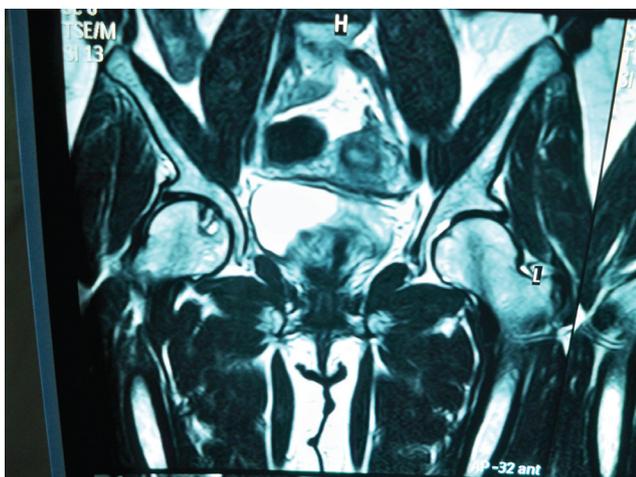
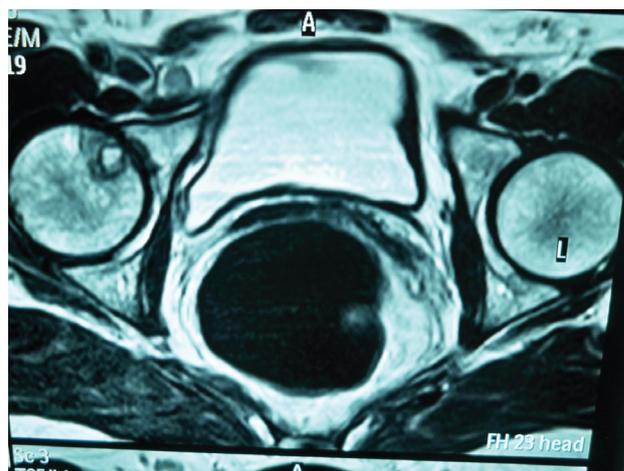


Figure 7
MRI of 19th April 2011



lesion size is a significant achievement in the treatment of this patient, as lesion size has been shown to be a diagnostic predictor of the success of treatment for osteonecrosis (15). Further, the decrease in the size of the lesion, even though it may not lead to a delay in the need for surgery, may indicate that a treatment has potential, and that further refinement of the dose and dosing schedule may be needed to optimize its effectiveness(15). At this juncture, consideration ought to be given to performing a repeat core decompression with wider drillings should the patient become symptomatic in the near future, with augmentation with growth and differentiation factors (14). The previously relied on techniques of Scintimetry and Functional Exploration of Bone (FEB) (9) were not utilized in this case and may not be required as MRI is available at the Kenyatta National Hospital where this patient has been treated and followed up. The ultimate objective is to delay as long as possible the collapse of the femoral head and thus the need for Total Hip Replacement in this patient.

DISCUSSION

Core decompression as treatment for osteonecrosis of the femoral head has been used since the days of Phemister(13). Though many variations to the technique of core decompression have been described (9,10,14), the patient presented here underwent core decompression with 3 small diameter (3.2mm) drillings. The outcome has been satisfactory both clinically and radiologically. With the latest review being at nearly five years since the surgical procedure, the core decompression may be deemed to be effective. The availability of MRI has greatly facilitated the early diagnosis and follow-up evaluation at five years. MRI is rated as the most accurate radiological modality in evaluating osteonecrosis(15). The realisation of a regressed

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