

# BILATERAL OSTEONECROSIS OF THE HUMERAL HEAD AND FEMORAL HEAD – A CASE REPORT

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**Abstract:** The patient referred to in this study is 42 years old. The disease started after about 1 year of treatment with Prednison in average doses reaching finally the application of a hybrid cemented stem prosthesis, 9 years ago, in our service. 8-9 months ago, we practiced an uncemented total hip replacement to the left side for a femoral head osteonecrosis stage IV (Ficat) with secondary osteoarthritis. On that occasion it was found the existence of a bilateral aseptic osteonecrosis of the humeral head, appropriate stage V on the left and on the right stage IV (Cruess classification). Analyses carried out recently show the existence of risk factors, such as hyperuricemia and elevated transaminases, amid a heavy drinking. The patient was recently diagnosed with ethanol chronic hepatitis.

## INTRODUCTION

Known as the avascular necrosis or aseptic necrosis, osteonecrosis of the humeral head represents the second localisation in terms of frequency after femoral head osteonecrosis. It is characterized by bone cell death due to the interruption of blood supply, resulting in necrosis of trabecular bone and finally collapse. It occurs often between 20 and 50 years of age and is two times more frequent in men. Except posttraumatic osteonecrosis, the most common causes are represented by cortisone therapy (6) (high dose), excess consumption of alcohol (4), often associated with excessive smoking, hemoglobinopathies (sickle cells anemia), dysbarism, Gaucher disease, Cushing syndrome, hyperlipidemia, hyperuricemia, hyper-coagulability etc. Other locations most common of avascular necrosis can be medial femoral condyle or talus. The disease can affect a single bone or, more rarely, several bones at the same time or at different times. The association appeared when analysed below, namely bilateral necrosis of the femoral head and humeral head is but an exceptional thing.

## CASE REPORT

The patient, B.N., included in this study is 42 years old and received treatment with Prednisone about 12 years ago for eczema. The duration of treatment was approximately 25 days and the dose was averaged, from 30 mg/day, with gradual decrease. The disease started after about 1 year and finally enough to implant a hybrid total prosthesis, with cemented stem to the right hip, about 9 years ago, in our department.

We performed 8-9 months ago a cementless total hip replacement to the left side, for a stage IV femoral head necrosis (Ficat), with secondary osteoarthritis. On that occasion is found and the presence of bilateral osteonecrosis of the humeral head.

The disease is manifested by pain in the shoulder, sometimes nightly, with radiation to the elbow and emphasized the mobilization with bone crepitation associated. Joint mobility is often preserved until a late stage when a limitation of

movements, affecting abduction and anteduction and discomfort in achieving or exceeding the limit of 90°.

The diagnosis is established by X-rays (x-rays usual anterior-posterior incidence and incidence in internal or external rotation). The most common radiological sign is “crescent sign”, located in the upper portion of the humeral head, which show subchondral collapse. The most sensitive imaging method is (10) magnetic resonance imaging (MRI), which may reveal even early changes such as edema given early subchondral sclerosis.

Figure no. 1. Hybrid total hip replacement



Figure no. 2. Cementless total hip replacement



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## CLINICAL ASPECTS

Cruess (5) is the most widely used classification, establishing the existence of five stages:

- Stage I - normal radiograph; changes on MRI.
- Stage II - bone sclerosis, osteopenia.
- Stage III - crescent sign indicating subchondral fracture.
- Stage IV - flattening of the humeral head and collapse.
- Stage V - glen extensive degenerative changes (arthritis).

Currently, the patient has been recovered after the last surgery and has two functional hip prostheses with good hip mobility, walking without pain. Still, the patients complained about a marked functional embarrassment to both shoulders, more pronounced on the left and has a relatively important limitation of movements bilaterally with maximum abduction of 70-80° and 80-90° anteduction. Radiographic images reveal advanced lesions of osteonecrosis of the humeral head, corresponding to stage V on the left (figure no. 3) and stage IV on the right (figure no. 4) according to Cruess classification which raises special therapeutic issues.

**Figure no. 3. Humeral head osteonecrosis stg. IV (R)**



**Figure no. 4. Humeral head osteonecrosis stg. V (L)**



Recent analyses show the existence of associated risk factors such as hyperuricemia and elevated transaminases, amid heavy drinking. Following a recent consultation in the gastroenterology setting, the patient was diagnosed with ethanol chronic hepatitis, demonstrating the close link between alcohol and osteonecrosis. Abuse of ethanol leads to alterations in blood vessels, affecting blood supply of bone extremities.

## DISCUSSIONS

Regarding the treatment of this serious disease, one can opt for the conservative treatment, namely the administration of pain medications, nonsteroidal anti-inflammatory drugs (NSAIDs), anticoagulants, bisphosphonates, (1) vasodilators, physical therapy and manual activities restriction. Surgical treatment included several types of interventions according to stage of the disease:

- Ø core decompression in early disease (8) (stage I-II Cruess);
- Ø arthroscopic debridement (2) (sometimes with first

intervention);

- Ø humeral head resurfacing (stage III when there is still a good bone stock in the epiphysis);
- Ø hemiarthroplasty (stages III-IV Cruess still moderate);
- Ø total shoulder arthroplasty (9) indicated in advanced stage (V).

As a result, the patient, B.N., required two surgeries, namely the shoulder hemiarthroplasty to the right and total arthroplasty to the left shoulder.

## CONCLUSIONS

1. As suggested by some studies, humeral head necrosis and avascular necrosis in special cases with multiple locations is not due only corticosteroid therapy or alcohol, having rather a multifactorial etiology as it happens in our patient.
2. The success of conservative treatment is determined by the preservation of the shoulder function, stopping the disease progression and symptoms relief. Nonoperative treatment is used first in stage I and II of osteonecrosis, in particular in the form of moderate symptoms.
3. Surgical treatment includes several procedures such as arthroscopic glenohumeral joint debridement, decompression by drilling humeral head or bone grafting, but the most effective and sustainable procedure remains shoulder arthroplasty.

Hemiprostheses as well as total prosthesis can be used for the advanced stages of the disease.

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