



## Case Report: Metal-on-Metal Total Hip Arthroplasty Associated with Pseudotumor

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**DOI:** 10.31080/ASOR.2022.05.0641

**Received:** November 02, 2022

**Published:** November 16, 2022

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### Abstract

The development of pseudotumor associated with hip prostheses in metal-metal tribology is a rare complication that brings great morbidity, because it generates early loosening of these implants. The objective is to report a case that describes the treatment of pseudotumor alumour lesion and the release of the previous prosthesis, through the arthroplasty review procedure and discuss this unusual complication. It is related to the release of metallic debris and ions by corrosion of the prosthetic joint interface, especially in the metal-metal tribological pair. The patient underwent resection of the lesion, removal of the loose prosthesis and the hip revision arthroplasty procedure, with revision components in trabecular metal. The patient suffered two episodes of prosthetic dislocation in the postoperative period, being treated conservatively, through unscrupulous reduction. After such procedures there was a good evolution of the case, with no further recurrences.

**Keywords:** Replasty Revisão De Quadril; Rtroplasty Total of Quadril; Instability; M Etal-Metal Prosthesis; Pseudotumor

### Introduction

The Lancet described in 2007 that the surgical procedure total hip arthroplasty (THA) was considered “the surgery of the twentieth century”, being one of the most performed in the world, because it presents excellent results in the field of orthopedics [1].

The interface between prosthetic components can be formed by tribological pairs of different compositions. Currently, the most used pair consists of metal polyethylene. Pairutros are also often used, such as ceramic-polyethylene, ceramic-ceramics and metal-metal [2].

The process of repetitive friction between these interfaces can release fragments or chemical elements from tribological surfaces called debris. Debris is related to the process of mechanical loosening of prosthetic components, by an inflammatory reaction of the organism between the component interface and bone.<sup>2,3</sup> The pros-

thesis with metal-metal tribological pair, however, can also release ions such as chromium and cobalt, which are capable of causing other local adverse effects, such as the appearance of pseudotumor allocated lesions. The literature also indicates a greater propensity in implants with larger diameter heads [3-6].

Pandit., *et al.* state that the pseudotumor al lesion consists of the formation of voluminous, solid or cystic structures, close to the prosthetic components, with more than 2 cm of extension and without infectious or neoplastic characteristics. This injury can cause pain, limit joint mobility, and eventually compress nearby neurovascular structures [3].

The formation of pseudotumors in individuals submitted to total hip arthroplasty is a serious and uncommon complication that requires early diagnosis and resolution [4,6]. The report of this case consists of a patient submitted to the ATQ procedure in metal-

-metal tribology with a large diameter head, which complicated the formation of an inflammatory pseudotumor lesion, and the same one was submitted to surgical treatment for resection of the lesion and revision of arthroplastic components.

**Case Report**

This is a 64-year-old male adult patient with a history of surgery on his right hip for 23 years due to posttraumatic secondary coxarthrosis. The same was submitted to the surgical procedure of THA in metal-metal tribology, non-cemented, performed in another service.

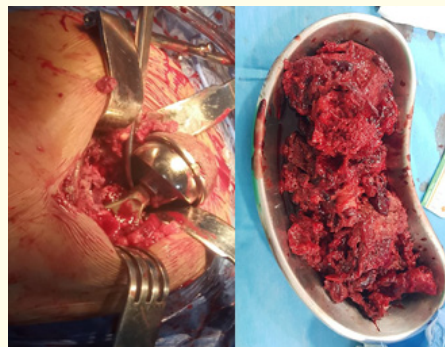
He complained of severe pain in his right hip, long-standing, and great functional limitation, remaining acamad o most of the time. The physical examination identified reduced ranges of motion, with 30° flexion, 0° adduction, 10° abduction, lateral and medial rotation 10°, in addition to the positive bearing test and limb shortening by 2.0 cm.

There was complete loosening of the acetabular and femoral components on radiography, with osteolysis around them and migration of the acetabular component, in addition to a large hypodense image that protruded over the affected hip (Figure 1).



**Figure 1:** Preoperative radiography with signs of loosening of prosthetic components.

During the arthroplasty review procedure, an extensive pseudotumor lesion was identified, with friable tissue in large quantity, with an approximate volume of 1,500 mL, in addition to local metallomy (Figure 2). It was redried and samples were sent for anatomopathological study and cultures. The loose prosthesis has been removed. The filling of the acetabulares defect s was treated



**Figure 2:** Intraoperative findings -pseudot umoral involvement in the periprosthetic region and resessete pseudotumor mass.



**Figure 3:** Postoperative radiography.

with two hemispheric increases in trabecular metal. The installed prosthesis presented a revision acetabular component coated in trabecular metal and femoral component of distal fixation monobloc, wagner type (Figure 3). Two units of cement with antibiotic g entamycin were also used at the interface of the increases.

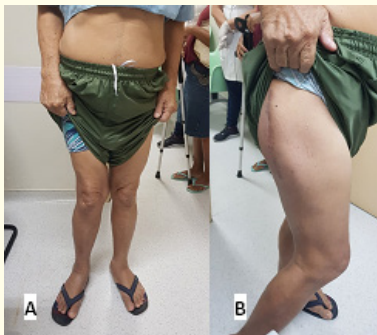
The germ of the coagulase-negative Staphylococcus (Scon) family was isolated in the removed components, and the antibiotic therapy protocol guided by the Hospital Infection Control Commission (CCIH) was adopted, based on the germ antibiogram.

During the postoperative period, the patient was readmitted at 8 and 40 weeks, due to simple prosthetic dislocation, without loosening of components (Figure 4). In both there was the same mechanism, with reports of sudden movement and inadvertent d the operated limb, contrary to the guidelines and restrictions imposed.

Fhi submitted to the procedure of unscrupulous reduction under anesthesia. After the last episode of dislocation there were no more complications over the years, with the patient in good general condition, asymptomatic and with reestablished joint function (Figure 5).



**Figure 4:** First episode of traumatic dislocation in the postoperative period.



**Figure 5:** Clinical outcome in the late postoperative period, after episodes of prosthetic dislocation. (A) previous view and (B) right side view.

### Discussion

Pandit, *et al.* estimate that 1% of arthroplasties in metal-metal tribology develop local complications, such as the appearance of pseudotumoral lesion [3]. Loures, *et al.* describe that the use of metal-metal tribological pair prostheses is associated with a greater propensity to tribo-corrosion and adverse tissue reactions caused by debris and metal ions, which increases the risk of developing this type of injury [4].

The development of pseudotumor may be related to the toxic effect caused by residues resulting from the wear of the joint interfaces of the prosthesis. These debris suffer phagocytosis by macrophages and inflammatory cells, generating a proliferative and inflammatory local reaction mediated by foreign bodies and local debris. The most common histological changes demonstrate extensive necrosis of dense connective tissue, cystic degeneration and metallic particles in the cells of the masses and lesional cysts [3]. This inflammatory and proliferative reaction, associated with tissue necrosis, would justify the early release of the prosthetic components affected by the lesion.

Filho, *et al.* report that SCoN contamination is frequent in cases of medical device infections [7]. The prevalence of this germ may reach 14.5% in cases of surgical site infection in arthroplasties. The prevalence of contamination by this microorganism can increase over time, reaching up to 25% of cases in the late postoperative period, even after years of the procedure performed [7,8]. The bacterium was isolated in the case reported, although there was no clinical and laboratory evidence of ongoing infectious condition, being adequately treated in the postoperative period of the procedure.

Hip revision arthroplasty procedures are known to be at increased risk of postoperative complications, such as prosthetic instability [8]. Currently we have specific components that are indicated for these situations, aiming at reducing this risk, such as acetabular components of double mobility [8,9]. However, at the time of surgery, this material was not available.

### Conclusion

The pseudotumor lesion was adequately removed and there were no local recurrences. The loose prosthetic components were replaced by revision components that, despite the episodes of prosthetic dislocation attributed to inadvertent movements performed by the patient, remained fixed and stable, ensuring symptomatic improvement and reestablishment of hip and gait joint function.

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