

# Alternatives for the Treatment of Giant Cell Tumor in the Peripheral Tumor Service of the CCOI Frank País

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## ABSTRACT

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## Mini Review

GCT is a rare aggressive tumor (9% of all bone tumors) considered to be of low grade of malignancy that requires a good relationship between clinical, radiological and histopathological diagnosis due to the fact that there are numerous diseases with giant cells of which it is necessary to perform a good differential diagnosis to avoid diagnostic errors [1-4]. The lesion is solitary and becomes symptomatic when it has destroyed enough bone tissue. In this paper, we present a casuistry of 122 cases treated at the Frank País International Orthopedic Scientific Complex, in the tumor service between 2000 and 2018, with the aim of correlating them with the treatments described in the literature [5-7].

## Alternatives for Treatment

The treatment of GCT is controversial and controversial and includes various options such as:

- 1) Curettage and graft of autologous or homologous bone.
- 2) Curettage and polymethylmethacrylate (PMMA) insert
- 3) Cryotherapy after curettage.

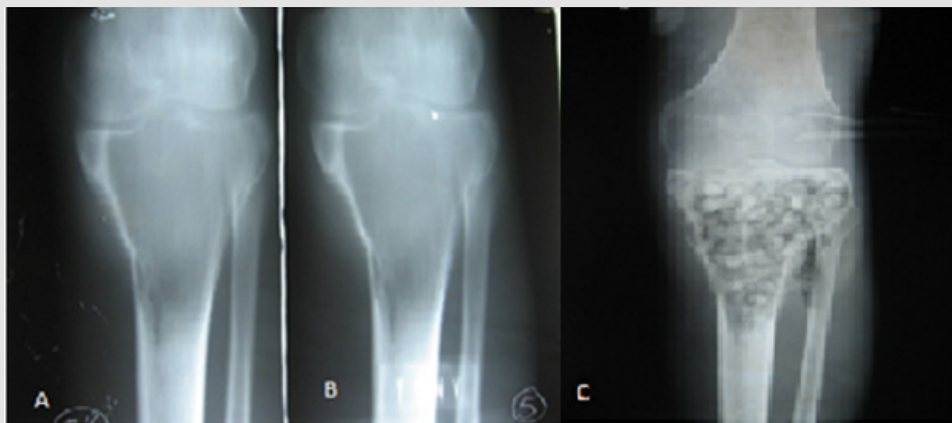
4) Curetting and washing of the cavity with phenol, alcohol, Zinc chloride and hydrogen peroxide, milling of the cavity and insertion of PMMA or bone graft.

5) En bloc resection and bone transport with external fixator or tumor prosthesis.

6) Radiation therapy

7) Embolization of the vessels that feed it.

We usually use curettage, washing of the cavity with hydrogen peroxide and insertion of PMMA, which controls recurrences between 80 and 90% of cases with much better results than bone graft insertion and also facilitates early ambulation, rehabilitation, immediate and social incorporation of the patient in a shorter period of time [8-15]. We have used amputation in those cases of malignant GCT with soft tissue infiltration or those located in short bones that have not been feasible for another surgery and due to the high risk of metastasizing (Figures 1-7).



**Figure 1:**

- A. A and B shows the osteolytic epiphysometaphyseal lesion with thinning of the cortices.
- B. C Image showing the filling of the lesion with cancellous bone after curettage in the proximal 1/3 of the tibia.



**Figure 2:**

- A. Lesion at the calcaneus level showing osteolysis.
- B. Filling of the lesion after curettage with incorporation of the bone graft.



**Figure 3:**

- A. Osteolytic lesion at the level of the talus.
- B. filling the lesion with cement (PMMA) and immediate rehabilitation of the patient.



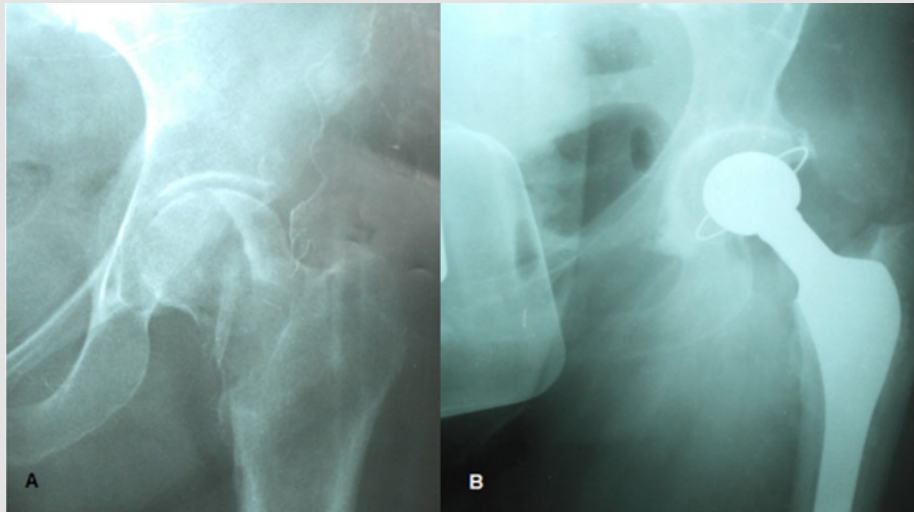
**Figure 4:** Giant cell tumor located at the level of the proximal epiphysis of the first phalanx of the 3rd finger. B Beam amputation for diagnosis of malignancy.



**Figure 5:**  
 A. Distal epiphyseal lesion of the femur compatible with diagnosis of GCT.  
 B. Filling of the lesion with cement (PMMA)



**Figure 6:** Same previous case where the functionality of the filling with PMMA is shown. A weight bearing support B and C bending.



**Figure 7:**

- A. Giant Cell Tumor at the epiphyseal level of the left hip.
- B. Total prosthetic hip replacement.

## Discussion

GCT represents around 5% of all primary bone tumors (4 to 10%) The presence of giant cells is common in some benign tumors, but GCT is considered to be one in which only these cells are found without a specific stroma [16-20]. It has been known since the 19<sup>th</sup> century, described by Asley and Cooper in 1818 and redefined by Jaffe et al. In 1940. It was defined as an “aggressive tumor”, characterized by the presence of highly vascularized tissue with spindle or ovoid cells and multiple multinucleated giant cells or osteoclasts, may have frequent recurrences and a limited ability to metastatize (5 to 10% of cases). It mostly affects women between 20 and 40 years of age after epiphyseal closure or mature skeleton. It is most frequently located around the knee (50%). In the epiphyses or articular ends (distal to the femur and proximal to the tibia), it is followed in frequency by the distal radius and the proximal humerus [21-24]. It rarely appears in the spine and skull. In a very low percentage (1%) multiple lesions can appear and in this case affect the short bones of the hands and feet. When they appear metaphyseal, they are infrequent and appear in patients who have not reached skeletal maturity. There is a radiological classification established by Enneking that divides them into three stages:

**Stage 1:** It is a latent and benign GCT with slow growth, only locally aggressive.

**Stage 2:** GCT has well-defined margins with the cortical only thinned or insufflated.

**Stage 3:** It is aggressive with rapid growth with pathological fracture, destruction of the medullary and cortical bone with its rupture and invasion of soft tissues.

This classification has prognostic value since it is in stage 3 where metastases appear.

Currently the TCG, according to its biological behavior, is classified as:

- a. Benign.
- b. Evil one.

## Conclusion

The Giant Cell Tumor is more frequent in females between 20 and 40 years old, it is located mainly in the distal epiphysis of the femur, proximal of the tibia and distal of the radius. The management of these patients was mostly by curettage and filling with PMMA. Amputation is reserved for cases that present soft tissue infiltration.

The functional evolution in most of the cases in which an adequate diagnosis and treatment is carried out is good, presenting recurrences less frequently.

## Conflict of Interests

The authors of this work certify that there are no conflicts of interest in the performance of this work.

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