

# Giant Cell Tumor of Bone Campanacci Grade II Treated by Curettage-Graft and Short Immobilisation by Pop.

## A Case Report and Literature Review.

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### SUMMARY

The authors present a case of extensive biopsy proven giant cell tumour of the distal femur in a 27 years-old man revealed by a trauma. He was treated by classic curettage-graft and additional simple cast immobilization instead of internal fixation to prevent the collapse of the fragile affected condyle after curettage. The functional outcome of the knee is satisfactory after one year of follow-up.

The POP cast could be an affordable and safe alternative to internal fixation in the treatment of GCT with high risk of fracture in limited conditions of practice in Africa.

**Key words:** Giant cell tumour-Curettage/Graft-POP cast-Africa.

### RÉSUMÉ

Les auteurs présentent un cas avéré d'une tumeur à cellules géantes de l'extrémité distale du fémur diagnostiqué chez un jeune homme de 27 ans, révélé par un traumatisme. Il a été traité par le curetage-greffe classique et une immobilisation complémentaire par plâtre au lieu d'une ostéosynthèse interne pour prévenir l'effondrement du condyle atteint ainsi fragilisé. Le résultat fonctionnel du genou opéré est satisfaisant après plus d'un an de recul.

L'immobilisation plâtrée peut être une alternative accessible et rassurante pour le traitement d'une tumeur à cellules géantes avec risque élevé de fracture pathologique dans les conditions de pratique à ressources limitées telles qu'on les observe en Afrique.

Mots clés : Tumeur à cellules géantes-Curetage/Greffe-Plâtre-Afrique.

### INTRODUCTION

Giant cell tumour (GCT) of bone is a benign locally aggressive bone tumour affecting mainly the long bones with rare pulmonary metastases. The treatment of this tumour is still controversial even in rich western countries where new, and sophisticated therapeutic adjuvant methods are tried every day. The best therapeutic method that combines avoiding local recurrence and preserving joint function is yet to be discovered.

The management of this tumour in our condition of practice in Africa marred by poverty, cultural behaviour and ignorance is much more difficult.

We report a case of a 27 year-old man who presented with GCT of distal femur revealed by a plain X-ray after mild trauma of the knee and later confirmed by biopsy. Because of threat of collapse of the thin distal femoral osteochondral rim after extensive curettage, we immobilize the knee with a POP cast for 3 weeks. .

We recently reviewed this patient after a year, the functional results, independently of a potential recurrence at short term, were encouraging.

### CLINICAL PRESENTATION.

He was Mr A.A., a 27 years-old man, admitted at the orthopaedic unit of the National Centre for the Rehabilitation of the Disabled, Cardinal Paul Emile Léger at Yaoundé, Cameroon. He presented with right knee pain that began 4 years ago. He had been playing regular football gymnastics and running. However a year prior to presentation patient had a motorbike accident with blunt trauma to the right knee. The X-ray done at that time showed no obvious fracture but an abnormal lesion for which an amputation was proposed and he refused. He then consulted a general surgeon in a higher hospital who referred him to us for advice and expert management.

In his past history he suffered from pulmonary tuberculosis and typhoid fever 3 and 2 years ago respectively. He was successfully treated for these diseases had been declared healed.

At physical examination he had a tender swelling located on the lateral condyle of the right femur.

The range of motion (ROM) of the affected knee is limited from 0° to 60°.

The plain X-ray revealed an extensive osteolytic and multilocular lesion situated in the lateral condyle with marked thinning of the cortex (Fig.1).



**Fig.1: A.A. 27 years-old man: a GCT grade II, according to Campanacci classification localized at lateral condyle of the right femur.**

The diagnosis of GCT was made as differential diagnosis of aneurysmal bone cyst and brown tumour of hyperparathyroidism. The assessment for metastasis of this tumour (chest X-ray) was negative. The preoperative biological exams were normal, patient was HIV negative. A biopsy revealed a GCT without signs of malignancy.

We reoperated this patient 25 days later and did extensive curettage and the cavity was packed with autologous iliac crest graft. Intraoperatively, we noticed that the subchondral rim was thin and fragile. Instead of internal fixation, we closed the incision and immediately put a long leg POP cast with the knee maintained at slight flexion at 20°-30° (Fig.2).



***Fig.2: Same patient: the affected knee was immobilized in POP cast with a slight functional flexion.***

The cast was then removed after 3 weeks and the patient underwent a graded passive and progressive active motion 6 weeks postoperatively. He was discharged from the service after 51 days of hospital stay.

He was then reviewed at day 153 and the ROM of the knee was from 0° to 100° with the knee pain free.

The plain X-ray showed a good incorporation of the graft in the cavity of the affected condyle (fig.3).



***Fig. 3: postoperative aspect of the GCT at day 153 with a beginning sclerosis of the curretted and grafted site.***

The pulmonary X-ray showed neither secondary localization of the GCT nor signs of tuberculosis. The biological exams showed no signs of deep infection. At the last follow-up at day 373 (more than 1 year), the patient reported no problems and

at physical examination the ROM of the knee was quite normal. The last X-ray of the right affected knee showed a nearly good filling of the cavity by the incorporated graft (Fig.4).



**Fig.4:** Last follow-up aspect with more marked sclerosis showing a good incorporation of the graft.

## DISCUSSION

GCT is a benign locally aggressive bone tumour characterized by high rate of local recurrence after curettage and rare pulmonary metastases. The diagnosis is made by illness history, physical and radiological examination but needs a histological confirmation.

The surgical management of this tumour is subject to many controversies in the literature. However, there is a known consensus on curettage and bone graft for non expansible lesions [1, 2, 3, 4]. This basic surgical method has been enhanced these last years by adjuvant medical and/or surgical therapies to stimulate the intralesional osteogenic, osteoinductive or osteoconductive properties of the tumor bed.

The medical methods include mainly cryotherapy [5, 6], cementation [5, 7] and other chemical products like mineral trioxide aggregate (MTA) [8]. The surgical methods consist of burring the tumour site [5], [9] and the use of variety of bone grafts: mixed autograft and allograft [10], morcelized or structural iliac crest bone graft.

For the extensive long bones end localized tumours, resection with or without reconstruction with vascularised or non vascularised fibula are proposed. Pho [11], Bajec and Gang [12]

experimented vascularised fibular for the reconstruction of the resection of distal radius GCT. George et al [13] and Bassiony [14], used successfully non vascularised proximal tibia for the reconstruction of the resected distal radius. Dhillon et al [15] advocated no reconstruction of the resection of the distal ulna for extensive GCT.

For more aggressive and extensive tumours, degenerative lesions, wide resection and arthrodesis are proposed [16] or amputation [1]. Lyall et al [17] performed a primary total knee arthroplasty (TKA) 20 years after treatment of GCT with satisfactory results, despite of the challenging technical difficulties.

To the best of our knowledge, there is no paper in the relevant literatures reporting an extensive GCT with high risk of fracture treated by curettage-grafting and as adjuvant method a simple short term long leg cast to prevent the breakdown of the thin osteochondral margin. However, Dudko et al [18] reported a nearly similar case with curettage plus bone cement and immobilization by a cast for 8 weeks with satisfactory functional outcome. Most of reports advocate internal fixation [5]. But the internal fixation in this case in our conditions of practice is more expensive, not always available everywhere, and could lead to additional morbidity (bleeding, deep infection, second operation to

remove the implant). This is why we opted for this short immobilization (3 weeks) and intensive rehabilitation of the knee which resulted in good functional outcome one year after surgery.

#### CONCLUSION

A short term POP cast in extensive GCT of the knee with risk of breakdown of the osteochondral rim could be a cheap and safe adjuvant alternative to internal fixation after extensive curettage and grafting in our limited resources countries with a good functional outcome.

We hope that this initial encouraging experience will be confirmed in larger series.

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