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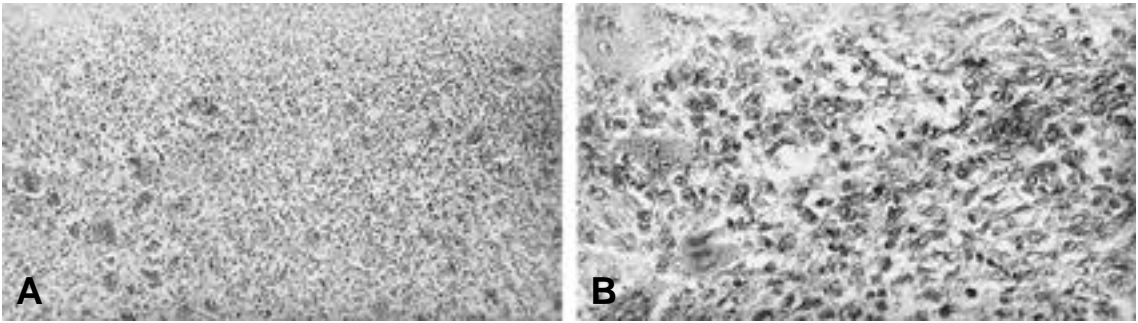


Fig. 1. Initial (A) AP and (B) lateral radiographs showed the osteolytic lesion in the proximal tibia.

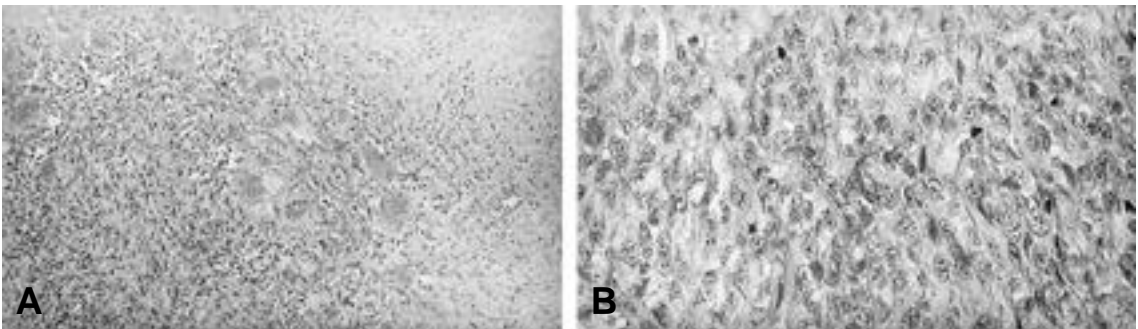


**Fig. 2.** Radiographs of the malignant transformed lesion. (A) Anteroposterior and lateral radiographs showed the pathologic fracture with a large osteolytic lesion. (B) MRI showed the discrete cortical destruction and the soft tissue extension, which was well enhanced.

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**Fig. 3.** (A) Initial biopsy material demonstrated tumor cells containing numerous benign osteoclast-like giant cells(H&E, × 40). (B) High-power examination shows a bland stroma interspersed between benign giant cells characteristic of conventional GCT(H&E, × 200).



**Fig. 4.** Sections demonstrated a storiform spindle cell proliferation with cellular atypia and increased mitotic activity juxtaposed to zones of typical benign GCT(malignant transformation of GCT to MFH). (A) Low-power view(H&E, × 40). (B) High-power view(H&E, × 200).

가 15 가 12 가 13 (Table 1).  
 가 2 가 5 Goldenberg<sup>12)</sup> 7%, Mnaymneh<sup>18)</sup> 12.5%,  
 Sanerkiñ<sup>22)</sup> 15%, Dahlin<sup>8)</sup> 19%, Johnson  
 Riley<sup>6)</sup> 25%  
 가 20)

Hutter<sup>15)</sup> 76  
 3 , Dahlin<sup>8)</sup> 195  
 1 , Boriani<sup>2)</sup> 327  
 1  
 , Rock<sup>20)</sup> 19  
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 Hutter Dahlin

**Table 1.** Case analysis.

Case	Sex	Age(Yrs.) at malig*.	Location	Time(Yrs.) to malig.	Pathology	Treatment	Local recur.	Pul. mets <sup>†</sup> .	F/U(Yrs.)
1	F	33.6	Rt. proximal upper arm	2.2	OSA <sup>§</sup>	Marginal excision, forequarter amputation + postop. chemo  .	+	+	4.0
2	M	35.5	Lt. proximal femur	13.5	OSA	Wide excision and tumor prosthesis + postop. chemo.	-	+	1.7
3	M	26.6	Lt. distal femur	2.3	OSA	Preop. chemo + wide excision and tumor prosthesis + postop. chemo.	-	+	2.5
4	M	25.8	Rt. proximal tibia	9.7	MFH <sup>¶</sup>	Above-the-knee amputation	-	-	1.3

\* malignancy

† pulmonary

‡ metastasis

§ osteosarcoma

|| chemotherapy

¶ malignant fibrous histiocytoma

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(sampling error)

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### REFERENCES

5 Goldenberg<sup>12)</sup> Mnaymneh  
<sup>18)</sup> 0%, Sanerkin<sup>22)</sup> 12.5%, Dahlin<sup>8)</sup>  
 26%, Hutter<sup>15)</sup> 30%, Rock<sup>20)</sup> 32%  
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**Abstract****Malignant Transformation of Giant Cell Tumor  
Not Associated with Radiotherapy**

**Sang Hoon Lee, M.D., Joo Han Oh, M.D., Kwang Hyun Yoo, M.D.,  
Sung Wook Suh, M.D., Jun Hwan Ahn, M.D., Han Soo Kim, M.D., and Soo Taek Lim, M.D.**

*Department of Orthopaedic Surgery, Seoul National University College of Medicine, Seoul, Korea*

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**Purpose** : Giant cell tumors(GCT) sometimes undergo malignant transformation after the radiotherapy, but very rarely do without radiotherapy. We reviewed the clinical experiences of the malignant transformation of GCT to suggest the guidelines for diagnosis and treatment of them.

**Materials and Methods** : We examined four patients of pathologically proven malignant transformation of GCT, which occurred after the operative treatment alone without radiation, from September 1985 to January 2001. The mean follow-up period after the malignant transformation was 2.4 years(range, 1.3~4 years).

**Results** : The mean time-interval from the initial diagnosis to the malignant transformation was 6.9 years(range, 2.2~13.5 years). The locations of tumors were soft tissues of proximal upper arm, proximal femur, distal femur and proximal tibia. The histology of malignant GCT was osteosarcoma in 3 cases and malignant fibrous histiocytoma in 1 case. Local recurrence developed in 1 patient and the pulmonary metastasis developed in 3 patients which transformed to osteosarcoma.

**Conclusion** : Thorough sampling of the surgical specimen appears to be a very important factor for diagnosing the malignant transformation of GCT. In case of suspicion of malignancy in radiographs, the incisional biopsy should be followed by definite treatment rather than the improper resection.

**Key Words** : Giant cell tumors, Malignant transformation

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**Address reprint requests to**

Joo Han Oh, M.D.

Department of Orthopaedic Surgery, Seoul National University College of Medicine,  
#28 Yongon-dong, Chongno-gu, Seoul 110-744, Korea

Tel : 82-2-760-2368, Fax : 82-2-764-2718, E-mail : ojhsy@zaigen.co.kr