CASE REPORT

A posterior approach for curettage in giant cell tumor of bone in the proximal fibula

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Abstract

Giant cell tumor of bone (GCTB) is a locally aggressive tumor. En bloc resection to reduce the recurrence rate has a high risk of peroneal nerve paralysis and knee instability associated with collateral ligament resection. In the current report, the posterior approach to curettage is introduced in a 55-year-old male with GCTB in the proximal fibula. The approach makes a wide operative field for curettage of GCTB in the proximal fibula without dissecting the peroneal nerve. The approach would prevent postoperative peroneal nerve palsy and knee instability and possibly reduce recurrences.

INTRODUCTION

Giant cell tumor of bone (GCTB) is a locally aggressive, benign tumor, occurring in patients aged 20–45 years. The tumors occur in the metaphysis to the epiphysis [1]. The most common location is around the knee joint, and the proximal fibula is a rare location for GCTB. In cases with GCTB in the proximal fibula, a high recurrence rate after curettage and bone grafting has been reported. Therefore, en bloc excision of the tumor is the treatment of choice for GCTB in the proximal fibula [2–4].

Peroneal nerve palsy is a serious postoperative complication associated with resection of the tumors at the fibular head. The incidence rate of peroneal nerve palsy ranges from 7 to 57% and is higher after en bloc resection than curettage [2, 5, 6]. When an en bloc resection of the fibular head is accompanied by a lateral collateral ligament resection, reconstruction is necessary [5], though the need for reconstruction is controversial [7].

In order to reduce the concerns about nerve palsy and knee instability, curettage would be preferable to en bloc resection. In the current case, a safe posterior approach for the proximal fibula is introduced to allow for sufficient exposure of the operative field for curettage, possibly leading to a low recurrence rate.

CASE PRESENTATION

The patient was a 55-year-old male. He had noticed a pain in the left proximal lower leg 3 months earlier, after jumping from a 50 cm height. The patient was referred to our institute on the diagnosis of bone tumor. The pain had disappeared 1 month after the injury. Physical examination revealed no swelling and slight tenderness at the fibular head. Laboratory studies showed no remarkable findings. A plain radiograph and computed tomography showed an expansive and osteolytic lesion, involving the proximal fibular head (Figs. 1A and B). Magnetic resonance imaging of the lesion showed homogenous intermediate signal intensity on a T1-weighted image and heterogeneous low-to-intermediate signal intensity on a T2-weighted image (Fig. 1C). Based on the results of a needle biopsy, the diagnosis of GCTB was confirmed.

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Retraction of the nerve seemed to make it susceptible to palsy in en bloc resection of GCTB. The current posterior approach is characterized in GCTB in the proximal fibula. This approach makes a wide operative field for curettage without the necessity of dissecting the nerve from the fibular head.

Because of the anatomic complications, the following are concerns after en bloc resection of GCTB located in the proximal fibula: peroneal nerve palsies, knee stability and local recurrence. This report describes the posterior approach for curettage in GCTB in the proximal fibula. This approach makes a wide operative field for curettage without the necessity of dissecting the nerve from the fibular head. The approach may possibly reduce recurrences and prevent two main adverse outcomes: postoperative peroneal nerve palsy and knee instability.

**CONFLICT OF INTEREST STATEMENT**
None declared.

**REFERENCES**
1. Szendroi M. Giant-cell tumour of bone. *J Bone Joint Surg (Br)* 2004;86-B:5–12.
2. Abdel MP, Papagelopoulos PJ, Morrey ME, Wenger DE, Rose PS, Sim FH. Surgical management of 121 benign proximal fibula tumors. *Clin Orthop Relat Res* 2010;468:3056–62.
3. Farooque M, Biyani A, Adhikari A. Giant cell tumours of the proximal fibula. *J Bone Joint Surg (Br)* 1990;72:723–4.
4. Gitelis S, Mallin BA, Piasecki P, Turner F. Intralesional excision compared with en bloc resection for giant-cell tumors of bone. *J Bone Joint Surg Am* 1993;75:1648–55.
5. Erler K, Demiralp B, Ozdemir MT, Basbozkurt M. Treatment of proximal fibular tumors with en bloc resection. *Knee* 2004;11:489–96.
6. Faeyzpour H, Davis AM, Griffin AM, Bell RS. Giant cell tumor of the proximal fibula: surgical management. *J Surg Oncol* 1996;61:34–7.
7. Inatani H, Yamamoto N, Hayashi K, Kimura H, Takeuchi A, Miwa S, et al. Surgical management of proximal fibular tumors: a report of 12 cases. J Bone Oncol 2016;5:163–6.

8. Oh JH, Yoon FW, Lee SH, Cho HS, Kim WS, Kim HS. Surgical treatment of giant cell tumour of long bone with anhydrous alcohol adjuvant. Int Orthop 2006;30:490–4.

9. Ryan W, Mahony N, Delaney M, O’Brien M, Murray P. Relationship of the common peroneal nerve and its branches to the head and neck of the fibula. Clin Anat 2003;16:501–5.

10. Draganich LF, Nicholas RW, Shuster JK, Sathy MR, Chang AF, Simon MA. The effects of resection of the proximal part of the fibula on stability of the knee and on gait. J Bone Joint Surg Am 1991;73:575–83.