



Case Report

Chondrosarcoma following free fibula transfer for non-union of the tibia

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SUMMARY. A case is described where a chondrosarcoma of the tibia developed as a late recipient site complication of a free vascularised fibula transfer for a traumatic non-union of the tibia.

Case report

A 33-year-old Caucasian male presented in May 1991 with an 18-month history of a discharging sinus on his left leg. In 1980, he had been knocked down by a car and had sustained bilateral closed tibia/fibula fractures. The right tibia united uneventfully. He developed non-union of the left tibia which was initially treated with conventional cancellous bone grafting. The non-union persisted and this was corrected in 1983 by excision of the united tibial segment and a free vascularised fibula transfer from the contralateral leg. No articular cartilage was transferred with the fibula segment. Healing was uneventful and the leg was protected by a caliper for several years. He remained well healed and was able to weight bear fully with a heel raise. In 1990, he developed a discharging sinus in the scar over the left proximal tibia. He sought treatment after 18 months. On examination, there was a small discharging sinus in the cephalad end of the scar. The leg was clinically solidly united with 3 cm of shortening below the knee. Radiological examination showed incorporation and hypertrophy of the free fibula transfer with a circumscribed radiolucent area in the tibia at the cephalad osteotomy site (Fig. 3).

A wound swab taken from the sinus grew *Staph. aureus*. At operation, the sinus was circumscribed and followed down to the tibia where a single cloaca was found. The cloaca was deroofed and the cavity entered in the tibia, which contained an amorphous tissue. This was curetted and the material sent for histological examination. The defect was left open to heal by secondary intention.

Microscopic examination of the biopsy material, which consisted of several fragments of tissue, showed well differentiated cartilaginous tissue with a nodular growth pattern in parts. There was some nuclear pleomorphism of cartilage cells including binucleate forms (Figs 1 and 2). Mitoses were rare. Foci of necrosis, fine stromal calcification (Fig. 2) and occasional myxomatous areas (Fig. 1) were present in the tumour.

The histological features in conjunction with the radiological features were consistent with a diagnosis of a low grade chondrosarcoma.

The patient was subsequently referred to the Musculo-skeletal Tumour Unit where he underwent extended curettage and cryotherapy of the cavity with cancellous bone grafting. No sepsis followed, the bone graft incorporated and the patient remains free of recurrence at present (Fig. 4).

Discussion

Free vascularised fibula transfer is an established method of bone reconstruction for a wide variety of indications and its superiority over conventional bone grafting in difficult cases is beyond doubt (Brunelli *et al.*, 1991). Donor site morbidity is well described (Goodacre *et al.*, 1990). Recipient site complications include flap loss, stress fractures and non-union (Taylor, 1983; Brunelli *et al.*, 1991).

As far as we were able to determine, malignant transformation at the junction of the osteotomy site and vascularised bone graft has not been previously reported and we report this case to alert surgeons of this possible late complication. We recommend that tissue be sent for histological examination should complications develop late after successful incorporation and hypertrophy of a vascularised bone graft.

References

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Paper received 8 June 1992.
Accepted 14 July 1992.

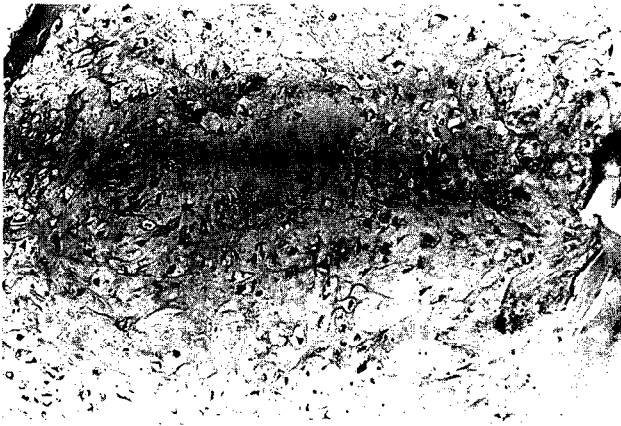


Fig. 1



Fig. 2



Fig. 3



Fig. 4

Figure 1—Cartilaginous tumour; showing pleomorphism of cartilage cells and myxomatous areas. (Mag. 100 ×). **Figure 2**—Cartilaginous tumour showing nuclear pleomorphism; hyperchromasia; binucleate forms; necrosis and fine stromal calcification. (Mag. 200 ×). **Figure 3**—Preoperative radiograph showing the lytic lesion in the tibia cephalad to the vascularised bone graft. (AP and Lat views). **Figure 4**—AP views of both proximal tibiae following extended curettage, cryotherapy and cancellous bone grafting of the chondrosarcoma of the left tibia.