RESECTION AND ENDOPROSTHETIC RECONSTRUCTION OF KNEE JOINT FOR OSTEOGENIC SARCOMA OF DISTAL FEMUR

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Introduction

Osteosarcomas are the most common solid primary bone tumours. Between 50% to 75% of osteosarcomas occur during the second decade of life [1]. Earlier most of these tumours were treated with radical amputation, radiotherapy, and chemotherapy. Now-a-days with advancement in imaging modalities, neoadjuvant chemotherapy and endoprosthetic techniques, more number of cases are being treated with wide resection of tumour and reconstruction of knee joint. This technique is useful in preserving the knee joint movement without affecting the long-term survival of the patient. The aim of this case report is to present a new method of treatment for osteogenic sarcoma of distal femur.

Case Report

An 18 year old male patient presented with complaints of pain and swelling around left knee joint since last 5 months. On examination, a swelling 15 X 12 cm was seen on the medial aspect of left knee. Knee movements were restricted and painful. X-ray of knee joint (Fig 1) and CT scan were suggestive of osteogenic sarcoma of femur. MRI showed soft tissue extension and intramedullary extension upto 15 cms. X-ray chest and CT scan of chest did not reveal any abnormality. Incision biopsy of the tumour was done, which confirmed the diagnosis of osteogenic sarcoma. Patient received three courses of chemotherapy (Ifosfamide+Cisplatinum+ Adriamycin) followed by resection and reconstruction of the knee joint. Enblock resection of distal femur and proximal tibia was carried out followed by reconstruction of knee joint using Howmedica hinged modular resection prosthesis (Fig-2). Skin and soft tissue gap was covered with gastrocnemius flap and split thickness skin graft.

Skin dehiscence occurred over the knee joint and was covered by extracorporeal left distally based radial artery forearm flap. Knee was mobilized after wound healing and partial weight bearing with crutches started after six weeks. Postoperatively three more courses of chemotherapy were administered. At review after one year condition of the patient was stable and he was ambulant without support. Range of knee flexion was 0°- 80°. X-ray and CT scan did not reveal any metastasis.

Discussion

Recent advancements in chemotherapy and radiotherapy techniques have increased the 5 year survival

rate from 40% to 70% [2]. This has generated the requirement of limb salvage surgery techniques so that patients can have a better quality of life. After wide en-bloc resection of distal end of femur the limb can be reconstructed with arthrodesis, osteoarticular allografts or an endoprosthesis. Arthrodesis provides a painless stable joint but results in loss of knee function and prolonged immobilization is required to achieve it. Joint allograft has potential for immunogenicity, high rate of non-union, fatigue fracture and requires prolonged immobilization [3]. Knee endoprosthesis over-

Fig. 1 : Preoperative X-ray photograph showing osteogenic sarcoma of distal femur

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Fig. 2 : Postoperative X-ray photograph showing Howmedica resection prosthesis

comes these problems by preserving the knee function and avoiding prolonged immobilization in plaster cast.

Various studies have revealed that rate of local recurrence after limb salvage is about 5% to 10%, which

is comparable to transmedullary amputation. Multiinstitutional studies reveal that there is no major difference in the rates of survival (40%-70% at 5 years) of patients who have limb salvage and those who have amputation for osteosarcoma in an extremity [2]. Psychological and quality of life benefits of limb salvage compared to amputation are also significant. Kawai et al (1998) evaluated the medium to long-term results of treatment with endoprosthetic reconstruction of knee joint after wide resection of a primary malignant tumour of the distal part of femur in 40 patients [4]. At median follow up of 8 years 35 (88%) of the 40 patients were free of disease and 5 were alive with metastatic disease.

Treatment of osteogenic sarcoma of distal femur with neoadjuvant chemotherapy, wide en-block resection and endoprosthetic reconstruction results in a small increase in rate of local recurrence but it does not have any adverse effect on the rate of long-term survival. After endoprosthetic reconstruction quality of life is markedly better than other modalities of treatment for osteosarcoma.

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