

Free Vascularized Fibular Bone Graft for Treatment of Difficult Cases of Infected Nonunion of Both Forearm Bones

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Abstract

Objective: The treatment of infected non-union both bone forearm is considered as challenge orthopaedic procedure. Infection should be eradicated, non-union should be treated meticulously with debridement, removal of necrotic bridging tissue. Vascularized fibula bone graft is considered as the best solution to bridge the defect and eradicate the infection. **Methods:** Twenty-four patients (16 men and 8 women), who formed the basis of the study, underwent surgery in the Hand and Microsurgery Unit, Sohag University, from January 2008 to January 2015. The right side was involved in 11 cases and the left side in 13 cases. Average age was 35.2 years. The causes of bone defects were infected nonunion of both bone forearms in 10 cases, infected nonunion of the middle part of radius in 7 cases, post-traumatic bone loss of distal radius in 4 cases (aneurysmal bone cyst in 1 and osteosarcoma in 2 patients). The principle of treatment was debridement and excision of either infected unhealthy bone or tumor tissues with wide safety margin. The average bone defect was 8 cm (range, 6-14 cm). The defect was bridged by osteoseptocutaneous vascularized fibular bone graft. The donor bone was the right fibula in 10 cases and the left fibula in 14 cases. Two grafts were used in 1 patient because of soft tissue injuries, which included the peroneal vessels during osteotomy. The vascularized fibula was fixed by small dynamic compression plate. The operative time ranged between 7 and 11 hours. Blood transfusion was indicated in all the cases and its average transfusion was 1000 mL. **Results:** The average follow-up

was 84 months. Bone union was ultimately obtained in 22 patients except 2 who had failure of the graft. Arthrodesis of the distal ulna with the wrist joint was done during the follow-up. Arthrodesis of the wrist joint was also performed for 1 patient who had loss of carpal bones, distal radius, and wrist and finger extensors. The average time for union was 3.5 months. The hand function was normal in all cases. Stress fracture and fibular donor-site morbidity did not occur in this series. Neither shoulders nor elbows were affected postoperatively. There was no recurrence for either infection or tumor. **Conclusion:** We recommend free vascularized fibula bone graft for treatment of difficult cases of infected non-union both bone forearm not only to restore the anatomy but also to obtain nearly normal hand function.