SYMPOSIUM ON ADVANCES IN THE MANAGEMENT OF SCAPHOID PROBLEMS

Vascularised bone graft in the management of scaphoid nonunion

Choi KY, Chan PT, Lau SC

Departments of Orthopaedics and Traumatology, Tuen Mun Hospital; and North District Hospital, Hong Kong.

ABSTRACT

Most scaphoid nonunions can be treated successfully with nonvascularised bone graft. Avascular necrosis of the proximal pole is one of the most important risk factors for persistent nonunion, for which the use of vascularised bone graft becomes a logical solution. Various kinds of vascularised bone grafts are illustrated in this paper with emphasis on the indications and the rationale for choosing a particular graft. Preoperative diagnosis of avascular necrosis in scaphoid nonunion with magnetic resonance imaging is discussed. The authors recommend graft from distal radius based on the 1,2 intercompartmental supraretinacular artery because of the ease of dissection and consistency in anatomy. A brief review of local experience is presented.

Key Words: Scaphoid nonunion; vascularised bone graft

INTRODUCTION

The treatment of scaphoid fractures has been advancing in recent years. Acute fractures are now treated more aggressively, yet nonunions still occur, either from delayed diagnosis or failure of treatment.

Nonvascularised bone grafting has been the mainstay of treatment for scaphoid nonunion. Proximal fractures, avascular necrosis (AVN) of the proximal pole, long-standing nonunion, and older age group are well-known risk factors. Poor circulation to the proximal fragment is considered to be the major culprit. Employment of vascularised bone graft becomes a logical solution.

CHOICE OF VASCULARISED GRAFT

Direct arterial implantation

The use of vascularised bone graft in scaphoid nonunion can be dated back to the late 70s. Hori et al reported the use of direct blood vessel implantation into bone. A further report from Fernandez and Eggli also listed promising results. Tamai et al have shown that such vascular implantation into bone will stimulate capillary proliferation. Drawbacks of this method include the use of weaker, nonstructural cancellous chip grafts and the uncertainty of revascularisation.

Graft from volar distal radius

Kawai and Yamamoto first reported a series of patients...