

The Outcome of Scaphoid Fracture Nonunion Managed by 1,2 Intercompartmental Supraretinacular Artery (1,2 ICSRA) Vascularized Bone Graft

Abstract

Background: Scaphoid fracture is most often missed and mismanaged leading to scaphoid nonunion with or without avascular necrosis. When avascular necrosis of the proximal pole is confirmed with intraoperative evaluation, conventional bone graft is not enough. The treatment modalities are evolving day by day. The current trend is vascular bone grafting, which has shown good outcomes in terms of union and wrist function.

Methods: Fifty patients with nonunion fracture of the scaphoid were treated with vascularized pedicle bone graft from the dorsum of the distal radius using the 1st and 2nd intercompartmental supraretinacular artery, from 2014 to 2022. Preoperative and postoperative clinical evaluation included pain, range of motion, grip strength, and satisfaction. The average follow-up period was 12 months.

Results: In this study, we operated scaphoid fracture nonunion of 50 respondents. Of them, 45 were male, and most of them (38%) were between 40 and 49 years of age. The right hand was predominant (60%). The mean delay of surgery from the time of injury was 8.50 ± 9.37 (mean \pm SD) months, where the majority of the respondents were operated on in less than six months (40%) following injury. All of the respondents were treated with 1,2 ICSRA as primary vascularized bone graft and fixed with Herbert screw. The mean time of union was 6.74 ± 1.71 (mean \pm SD) weeks, where 40 (80%) were united in six weeks. Finally, the respondents were evaluated by the modified Mayo wrist score. According to these scores, 24 (48%) respondents had excellent results, 19 (38%) had good results, and four (8%) of them had poor results.

Conclusion: 1,2 intercompartmental supraretinacular artery (1,2 ICSRA) is superficial to the extensor retinaculum and is a proper pedicle of vascularized bone graft due to the ease of visibility and dissection. The functional results and union rates were satisfactory in our study.

Keywords: Vascularized bone graft, AVN, scaphoid non-union