Proximal Pole Scaphoid Fracture Nonunion Treated with Ipsilateral Hamate Transfer

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INTRODUCTION: The scaphoid's retrograde blood flow renders it vulnerable to fracture nonunion proximally. As proximal pole fragmentation occurs, reconstructive options become challenging, with little consensus regarding appropriate treatment. Proposed surgical techniques include vascularized or non-vascularized grafts and fragment excision with scapholunate ligament advancement. We hypothesized that ipsilateral proximal hamate with volar capitohamate ligament graft would provide a viable treatment option for proximal pole scaphoid nonunion in an active military population. METHODS:

11 skeletally-mature patients with fragmented proximal pole scaphoid nonunions underwent reconstructive surgery involving open reduction and internal fixation with ipsilateral proximal hamate transfer from 2019-2023 by a single surgeon at a tertiary-referral military hospital. Patient demographics, clinical parameters, return-to-duty rates, and QuickDASH scores were obtained. Radiographs and computed tomography (CT) scans were evaluated to determine preoperative lunate height and proximal pole fragmentation and postoperative scapholunate (SL) widening, carpal alignment, and bony healing. Descriptive statistics were utilized for analysis.

RESULTS:

All patients were active-duty male servicemembers in the United States Navy or Marine Corps, with average age of 23.7 years (range 18-29 years) and average follow-up time of 616 days. One case was a revision of prior surgery. The median time from injury to surgery was 382 days. The average preoperative lunate height was 7.1 mm, measured on coronal CT scan. The average final postoperative SL widening was 1.5 mm, a reduction of 23.3% from initial postoperative radiographs. One patient required reoperation for arthrofibrosis. At last follow up, all 11 patients demonstrated radiographic evidence of healing, and six returned to unrestricted active-duty military service. The average QuickDASH for ten patients was 15.7% at final follow up; one patient could not be reached.

DISCUSSION AND CONCLUSION:

Treating proximal pole scaphoid nonunion with ipsilateral proximal hamate autograft transfer results in reliable bony union, stable radiographic scapholunate alignment, and low levels of reported functional disability while avoiding risks and morbidity associated with other graft options. This technique can return servicemembers to full, unrestricted military service. Further clinical studies are required to compare results, functional outcomes, and complication rates with other described methods.