

Current Trends in Operative Techniques for Scaphoid Non-union: A Survey of Hand Surgeons

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INTRODUCTION

- Scaphoid fractures account for 60% of all carpal fractures.¹
- With the vast number of procedures available, surgical treatment of scaphoid non-union remains varied and controversial.
- We hypothesize that, despite the wide variety of methods available, there will be a trend favoring the simpler established operative techniques.

OBJECTIVE

The purpose of this study was to assess the current trends in operative techniques used for the treatment of scaphoid nonunion by the hand surgery community.

METHODS

- Active members of the American Society for Surgery of the Hand (ASSH) were surveyed via email.
- Set of 6 multiple choice questions regarding treatment preferences in scaphoid nonunion procedures.
- Questions: time in practice, surgical approach, methods of assessment of scaphoid vascularity, bone graft preferences, fixation methods, and additional modalities used.
- The initial email inviting society members to partake in the survey was followed by a reminder email 8 weeks later.
- Statistical analysis of surgical preferences was presented as frequency-adjusted mean \pm standard error with differences in surgical preferences between groups calculated using t-test and chi-square test.

RESULTS

- Of the 1681 active members of ASSH, 315 responses were received (18.7% response rate).
- Surgical approach: Open palmar was most common (58%), followed by open dorsal (34%), percutaneous (7%) and less than 1% arthroscopic.
- Vascularity assessment: MRI (78%), intraoperative bleeding (67%), radiographs (47%), CT (16%), histology (2%).
- Bone graft: Distal radius nonvascularized (50%), iliac crest nonvascularized (23%), 1,2-intercompartmental supraretinacular artery (18%), medial femoral condyle (<1%), other (volar carpal artery, capsular based, olecranon; 8%).
- Bone fixation method: Headless compression screws (78%), K wires in scaphoid only (10%), screw plus K wires (9%), and plate (1.3%).
- Additional modalities used to augment healing are electrical stimulation at 40% and ultrasound at 35%.

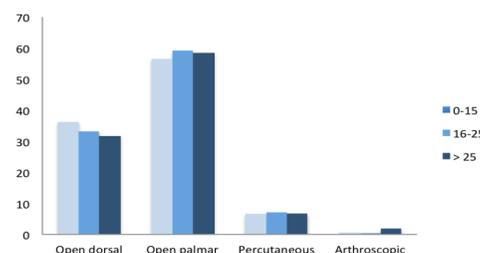


Figure 1. Surgical approach most frequently utilized by the participating surgeons.

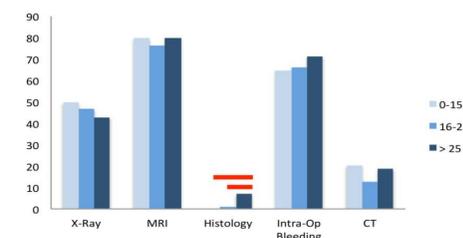


Figure 2. Scaphoid vascularity assessment technique most often utilized by the participating surgeons. Significance visualized as red bar with p<0.02.

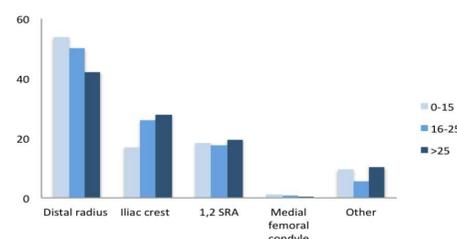


Figure 3. Grafting technique most often utilized by the participating surgeons. Significance visualized as red bar with p<0.02.

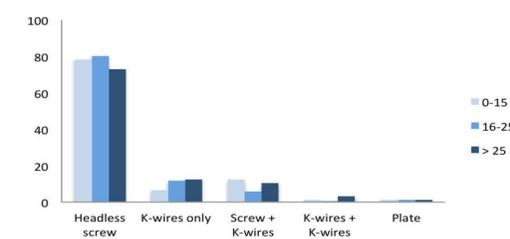


Figure 4. Scaphoid fixation technique most often utilized by the participating surgeons. Significance visualized as red bar with p<0.02.

CONCLUSIONS

- Our study demonstrated that a majority of surgeons (49.7% distal radius nonvascularized, 23.0% iliac crest nonvascularized) utilize the conventional nonvascularized bone grafting method.
- A majority (78.2%) of surgeons utilize the headless compression screw and only a minority (10%) of cases utilized K-wires.
- While many exciting surgical advances in the management of scaphoid nonunion are being described in the literature, there is still a paucity of high-level evidence supporting novel techniques.
- Novel techniques reported in the literature as well as evolution in surgical training may in part help explain the varying preferences for scaphoid non-union techniques.
- Future studies should aim to assess the effect of these differing preferences on outcomes.

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