



# Vascularized Bone Grafting in Scaphoid Nonunion: A Review of Patient-Centered Outcomes

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## Objectives

- The purpose of this study was to determine the effect of VBG for scaphoid nonunion on patient-centered outcomes.

## Methods

- The MEDLINE and PubMed databases were queried for the use of VBG in scaphoid nonunion.
- We included studies which reported on patient-centered outcomes.
- We excluded studies with less than 10 patients or six months follow-up.
- The primary outcomes assessed included functionality, percent and time to return to preinjury activity, postoperative pain, and patient satisfaction.
- Data analysis was completed with weighted means based on sample size. Statistical significance was defined as  $P < 0.05$ .

## Results

- Twenty-six articles described the outcomes of 520 subjects with an average of 19.3 subjects per study.

## Study Demographics

Number of Studies	26
Number of Subjects	520
Average Number of Subjects Per Study	19.3
Average Age (years)	29.3 years
% Male	91.5%
Duration of Nonunion	31.4 months
Length of Follow-Up	35.1 months

## Assessment Tools Utilized

Assessment Tool	Validated	Studies
Customized Scale or Questionnaire	No	21
Modified Mayo Wrist Score	Yes	8
Visual Analog Scale	Yes	6
Disabilities of the Arm, Shoulder, and Hand	Yes	4
Bach's Criteria for Pain and Activity	Yes	2
Bach's Criteria for Pain and Activity Limitation	Yes	2
Green and O'Brien Score	Yes	2
Patient-Rated Wrist Evaluation Score	Yes	1
Short Form-36	Yes	1

- The most common complications were superficial infections (1.56%), nerve irritation (1.56%), and complex regional pain syndrome (1.25%).

## Patient-centered outcomes

	Outcome	Improvement	P-value
DASH	11.5 ± 6.78	81.8% ± 4.60%	P = 0.026
MAYO	85.6 ± 4.93	53.1% ± 17.4%	P = 0.008
Time to Return to Activity (months)	3.65 ± 0.85	-----	-----
% Return to Activity	90.2% ± 11.8	-----	P < 0.001
Postoperative Pain (0-10 scale)	0.956 ± 0.498	79.2% ± 12.0	P < 0.001
% Satisfaction	92.2% ± 11.5	-----	P < 0.001

## Conclusions

- VBG for scaphoid nonunion results in significant improvement of patient-centered outcomes.
- VBG results in excellent rates of return to preinjury activity level and patient satisfaction.
- Multiple metrics of patient-centered outcomes were utilized by the studies in our review.
- There is not a clear consensus as to which patient-centered outcome metric is most responsive and accurate.