

# Textbook Outcomes for Operative Management of Distal Radius Fractures with Volar Plating

John Dennen BS<sup>1</sup>, Robert G. DeVito MD<sup>1</sup>, Ishaan Rischie BA<sup>1</sup>, First Hand Study Group, Ava G. Chappell MD<sup>1,2</sup>, Brent R. DeGeorge MD PhD<sup>1,2</sup>

1- Department of Plastic Surgery, Maxillofacial, and Oral Health, University of Virginia Health System, Charlottesville, VA, USA.

2- Department of Orthopaedic Surgery, University of Virginia Health System, Charlottesville, VA, USA.

## Introduction:

Textbook outcomes represent a new approach in plastic surgery to identify a composite metric of multiple variables that indicate baseline success in a specific procedure<sup>1</sup>. These outcomes can be compared across surgeons and institutions. This study aimed to define a textbook outcome for the operative repair of distal radius fractures (DRFs) with volar plating and identify the rate of textbook outcomes at our center.

## Methods:

A panel of 24 hand surgeons were surveyed utilizing a Delphi process to determine consensus on TO criteria. This method relies on rounds of anonymous surveys, allowing participants to modify responses based on group feedback until consensus (≥80%) is achieved.

An IRB-approved retrospective review of all DRFs managed with volar plating cases at our center from July 2022 to December 2024 was performed. Inclusion criteria were age >18 and <65, ASA Class <III, no poly-trauma, and no open DRFs.

**Table 1: Baseline Characteristics**

Characteristic	Value (n=98)
<b>DEMOGRAPHICS</b>	
Age (Average)	45.0 years
Female Sex	79.6%
<b>COMORBIDITIES</b>	
BMI (Average)	25.6
Hypertension	19.4%
Type 2 Diabetes	3.1%
Congestive Heart Failure	0.0%
Coronary Artery Disease	0.0%
Autoimmune Disease	9.2%
<b>PSYCHOSOCIAL HISTORY</b>	
Opioid Use	18.4%
Depression	21.4%
Anxiety	21.4%
<b>Total Patients Included in Review</b>	<b>n = 98</b>

**Table 2: Textbook Outcome Criteria and Results at a Single Center**

#	Criteria	# Meeting Criteria (n=98)	% Meeting Criteria
1	No intra-operative complications	98	100.0%
2	No unplanned reoperation	94	95.9%
3	No surgical site infection requiring IV antibiotics	98	100.0%
4	No systemic complications	98	100.0%
5	No mortality	98	100.0%
6	No readmission	98	100.0%
7	Documented fracture union by 12 weeks postoperatively	97	99.0%
8	Change in volar tilt <10 degrees	94	95.9%
9	Coronal plane translation <2 mm	95	96.9%
10	Intra-articular step-off <2 mm	96	98.0%
11	No symptomatic DRUJ instability	98	100.0%
12	No hardware complications	93	94.9%
13	No nerve injury requiring reoperation	98	100.0%
14	Digital ROM permits full composite fist or returns to preoperative baseline	98	99.0%
15	Wrist ROM >60° flexion/extension or within 75% of contralateral side	82	83.7%
16	DRUJ ROM >60° pronation/supination or within 75% of contralateral side	98	100.0%
✓	<b>Meets ALL criteria for a Textbook Outcome</b>	<b>72</b>	<b>72.4%</b>

## Results:

At our center, 98 patients met inclusion criteria for review with baseline characteristics indicated in Table 1. After 3 rounds of surveying, consensus was met and a TO was defined as meeting 16 criteria shown in Table 2. 71 of the patients (72.4%) met all criteria for a TO. The most commonly missed criteria were limited wrist range of motion and hardware complications (Table 2). Only 9.2% of patients missed >1 criteria.

## Discussion and

## Conclusion:

Textbook outcomes are useful quality metrics for evaluating surgical success. By utilizing 16 criteria for operative management of DRFs with volar plating, cases can be assessed and compared using a single metric. Statistical analysis can help identify predictors of textbook outcomes, offering future opportunities to improve patient outcomes.

## References:

1- Shamma, R.L., Sisk, G.C., Coroneos, C.J. et al. Textbook outcomes in DIEP flap breast reconstruction: a Delphi study to establish consensus. *Breast Cancer Res Treat* 197, 559–568 (2023). <https://doi.org/10.1007/s10549-022-06820-z>