



13 Year Experience with a 3 Stage Dermal Regeneration Matrix Approach to the Acute Management of Hand Burns

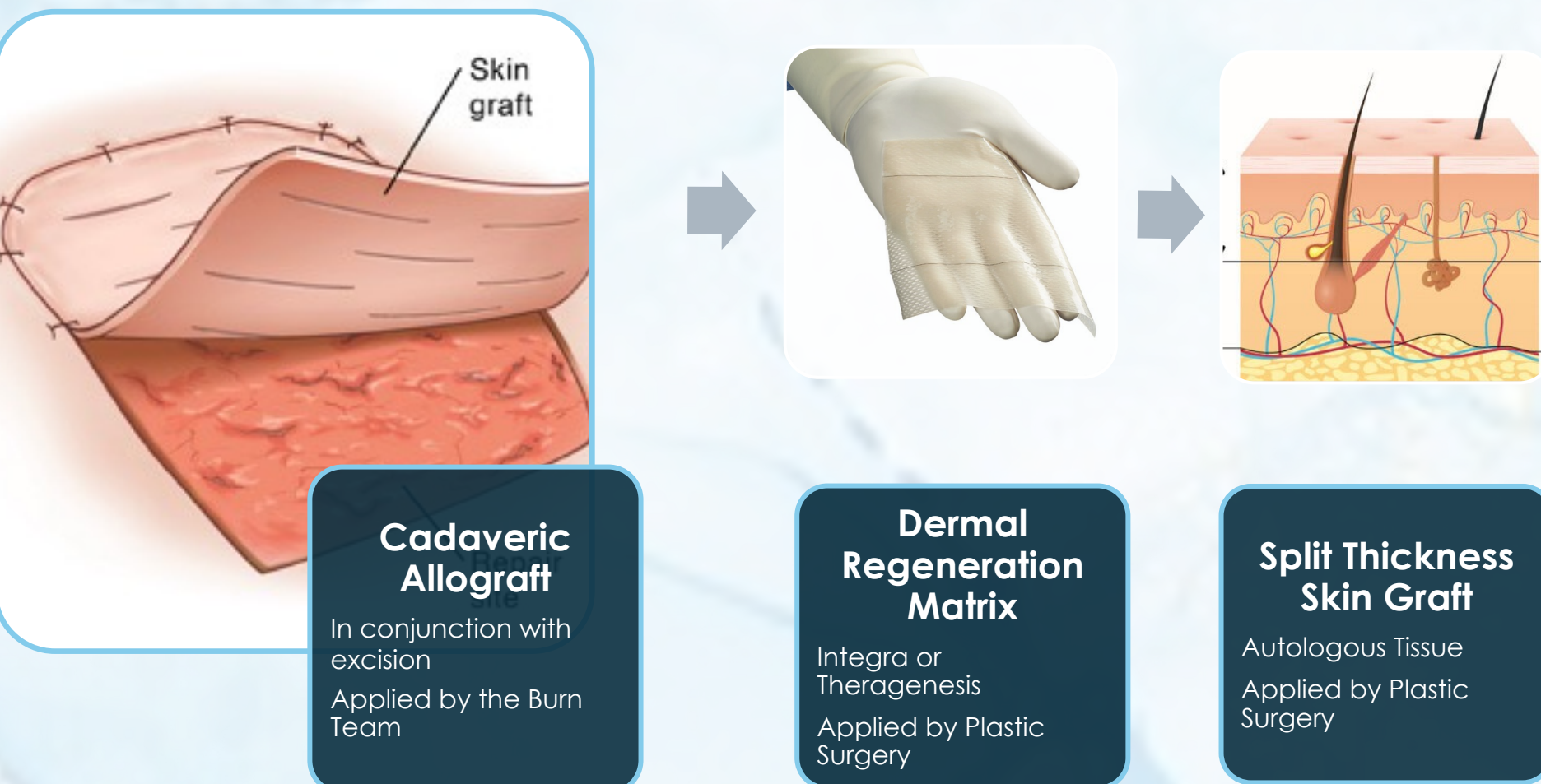


Tiffany Jeong, BA ; José Antonio Arellano, MD; Mario Alessandri Bonetti, MD; Hilary Y. Liu, BS; Sumaarg Pandya, BS; Guy M. Stofman, MD; Francesco M. Egro, MD, MSc, MRCS
Department of Plastic Surgery, University of Pittsburgh Medical Center

INTRODUCTION

- Hands are among the most affected areas in burn trauma with important functional outcomes
- Dermal Regeneration Matrix (DRM) is well established in burn care to enhance wound healing
- Most burn centers use a 2 stage DRM protocol for the acute management of hang burns

AIM



Compare the **functional** and **surgical outcomes** for patients treated for hand burns using a **3-stage vs 2-stage** dermal regeneration matrix approach.

METHODS

- Single center retrospective chart review from 2009-2023 for patients who received occupational therapy (OT)
- Analysis was performed in R with significance set at $p\text{-value} < 0.05$

**Burn Injury:**
Total Body Surface Area (TBSA), Defect Size, Burn Severity, Injury Mechanism,

**Functional Outcomes:**
DASH Scores, Occupational Therapy Notes, Joint Mobility, Contracture

**Surgical Outcomes:**
Need for Reoperation, Patient Disposition, Graft Loss, Infection

RESULTS

Table 1. Patient Demographics

Demographics	N(%)
Gender, n (%)	
Male	34 (77.3)
Female	10(22.7)
Thermal Injury	41 (93.2)
Electrical Injury	3 (6.8)
Age (year), mean±SD	39.3±16.1
%TBSA, mean±SD	15.3±16.7
BMI	27.1±6.4
Follow-Up (months), mean±SD	13.7±17.1

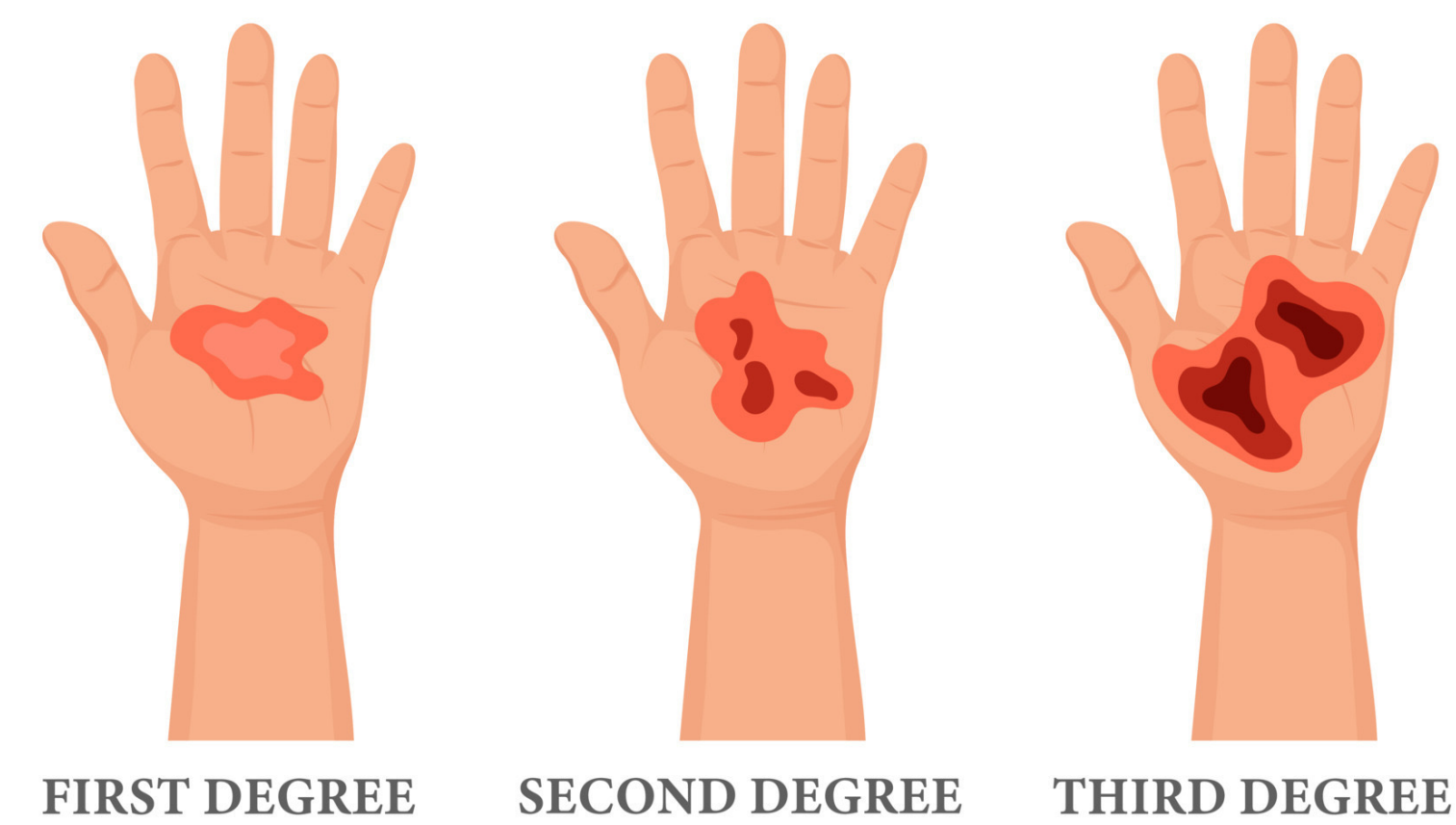


Table 2. Acute Hand Burn Management

Management	N (%)
3-Stage DRM	27
2-Stage DRM	10
Skin Graft	3
Amputation	3

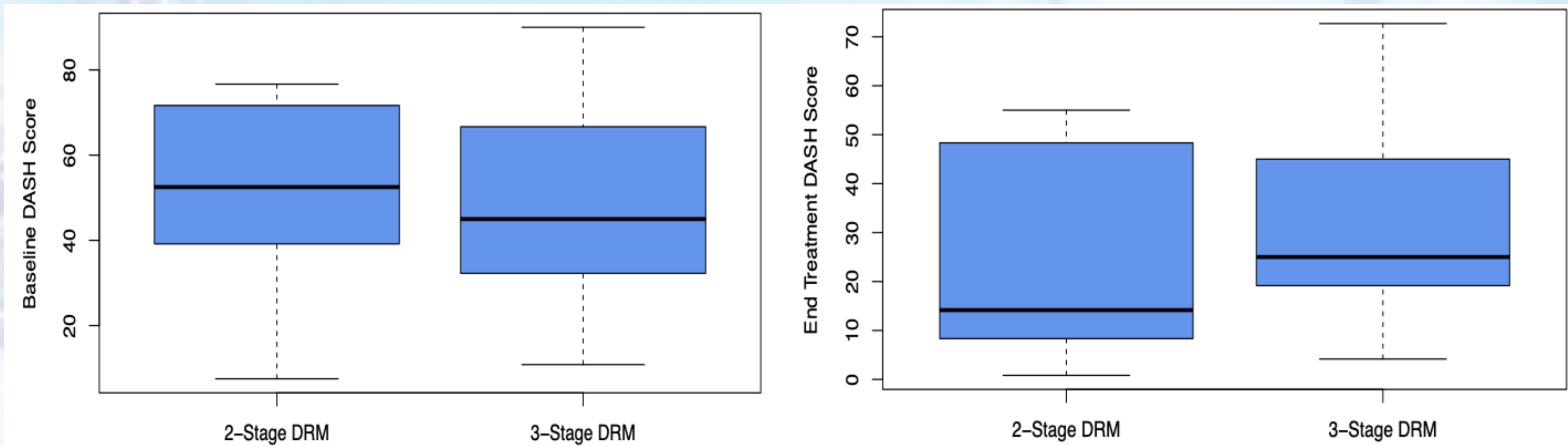


Figure 1. Baseline and End of Treatment DASH Scores

Table 3. DASH Score Comparison

	2 Stage (n=10)	3 Stage (n=27)	p-value
Baseline DASH Score	48.7±22.5%	46.5±22.3%	p=0.803
Final DASH Score	26.2±23.4%	30.17±20.3%	p=0.702

There was **no significant difference in functional outcomes**, according to baseline and end of treatment DASH score.

Table 4. Surgical Outcomes

	2 Stage N(%)	3 Stage N(%)	Odds Ratio	p-value
Repeat Graft in Acute Management	4(40)	0(0)	-----	p<0.01
Surgical Reconstruction	6(60)	5(18.5)	6.19	p=0.038

Patients who received the 3 Stage DRM, **required less repeat skin grafting and surgical reconstruction.**

CONCLUSION

- Few ABA Certified Burn Centers implement a 3-Stage approach to acute hand burns
- However, these data suggest that a 2-Stage approach requires more repeat skin grafting and surgical reconstruction
- DASH scores at baseline and final OT were similar between 2-Stage and 3-Stage patients
- We propose that a 3-stage approach may be preferable in patients with limited autologous tissue