

# Use of Acellular Dermal Matrix Following Fasciectomy for the Treatment of Dupuytren's Contracture



Don Hoang, MD<sup>1</sup>, Steven Patrick, BS<sup>1</sup>, Myles Cohen, MD<sup>2</sup>, David A. Kulber, MD<sup>2</sup>

## HYPOTHESIS

Various surgical treatment modalities exist for the treatment of Dupuytren disease, but recurrence rates remain high (range from 12 to 39%) following surgical treatment. Recurrence rates as low as 12.2% have been demonstrated with use of a full-thickness skin graft and <5% with use of acellular dermal matrix (ADM) as reported by a single study. We propose that the use of ADM may reduce recurrence rates based on the postulate that ADM has an inhibitory effect on underlying myofibroblasts.

## METHODS

A retrospective cohort study was performed (68 cases, open fasciectomy, Dupuytren disease, 2007 to 2017). Standard McCash technique fasciectomies were performed. Experimental group had a sheet of ADM sutured into the surgical bed with absorbable sutures. Control group not closed with ADM. Patients evaluated at follow-up for disease recurrence. Patient demographic, peri-operative pain, range of motion, complications were examined (Table 1).

**Figure 1: Intraop View of Fasciectomy and closing with ADM.**



A. Intraoperative view of fasciectomy B. ADM inset into fasciectomy wound

## RESULTS

Patient median age was 67.0 years (range 34 – 86). No statistical difference existed between each group regarding age, comorbidities, and distribution of fingers affected. Mean preoperative IP joint flexion contracture in the ADM group of  $68.5^\circ \pm 28.8^\circ$  was corrected to  $8.8^\circ \pm 11.7^\circ$  while the mean MCP joint preoperative flexion contracture of  $48.3^\circ \pm 24.3^\circ$  was corrected to  $6.9^\circ \pm 14.5^\circ$  at postoperative examination (p-value <0.05). The median follow-up was 2.2 years, during which recurrence of contracture was observed in 1 of 21 patients in the group receiving ADM, compared to 10 of 47 in the control group (p-value 0.15). There was a trend in lower recurrence rates in the ADM group, and there were no differences in the incidence of minor wound complications observed.

**Figure 2. Pre & Post-Op of Palm and 5<sup>th</sup> digit closed with ADM.**



**Figure 3: Post-Op View of Patient showing improved ROM.**



## CONCLUSION

We believe the adjunct placement of acellular dermal matrix into the wound bed following fasciectomy for Dupuytren disease may be an important surgical strategy to reduce recurrence rates as well as augment coverage of exposed vital structures in cases of severe flexion contracture.

<sup>1</sup> Plastic and Reconstructive Surgery, Keck School of Medicine, University of Southern California, Los Angeles, CA

<sup>2</sup> Hand Surgery, Cedars Sinai Medical Center, Los Angeles, CA

References: Dravarij KP, MRCS Ed; Chakrabarti I, FRCS Ed (Orth). Functional Outcome After Surgery for Dupuytren's Contracture: A Prospective Study. *J Hand Surg*. 2004. 804-808. DOI: 10.1016/j.jhsa.2004.05.005.

Pratt AL, Ball C. What are we measuring? A critique of range of motion methods currently in use for Dupuytren's disease and recommendations for practice. *BMC Musculoskeletal Disorders*. 2016. 17(20). DOI 10.1186/s12891-016-0884-3

Terry MJ, MD; Sue GR, MA; Goldberg C, MD; Narayan D, MD. Hueston Revisited: Use of Acellular Dermal Matrix Following Fasciectomy for the Treatment of Dupuytren's Disease. *Ann Plast Surg*, December 2014. 73: S178-S180. DOI: 10.1097/SAP.0000000000000133

Ullah AS, Dias JJ, Bhowal B. Does a 'firebreak' full-thickness skin graft prevent recurrence after surgery for Dupuytren's contracture? A Prospective Randomised Trial. *J Bone Joint Surg [Br]*. 2009. 91-B:374-378. DOI:10.1302/0301-620X.91B3.21054