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(CASE REPORT)

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Treatment of retractile scar after a hypetrophic scar (HSs) in the hand with ADM (Dermacell)

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Abstract

Hypertrophic scars can occur anywhere on skin after a skin injury or wound.

The reason is not fully understood, the result is the abnormal production of extra collagen and a decrease in elastin, which lead to these undesirable thick, raised stiff scars.

Sometimes surgery is performed to cut out the scar or redirect the lines of tension on the scar. Usually, surgery is considered when other treatment options have failed.

Dermacell is human acellular matrix (hADM) that is intended for supplemental support and covering for soft tissue repair. It acts as ECM. The expression and proliferation of extracellular matrix (ECM) molecules in the dermis, mediated by a range of growth factors and cytokines, is a fundamental element of wound repair.

Keywords: Skin tear; Hypertrophic scar; Skin substitutes; Skin dressings; Matrices; HADM; Trauma

1. Introduction

The most common treatment options for hypertrophic scars include corticosteroid injections, laser therapy, bleomycin or 5-FU (fluorouracil) injection, cryotherapy**.**

The ECM has the critical role in the scar formation [6][7].

As the ECM is involved in cellular and extracellular events that lead to pathological scarring, targeting its components mostly by regulating BMPs may throw up new therapeutic approach for reduction or prevention of pathological scarring or HSs with functionally and cosmetically acceptable outcome.

Current treatment strategies for skin wounds/tissue support mostly aim to replace lost tissue rather than support intrinsic self-healing mechanisms [4][5].

Decellularized (Dermacell) human skin has been used for a variety of medical procedures; primarily wound healing, soft tissue reconstruction, and sports medicine applications [1][2][3].

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2. Case

Boy, 13 year old

He was trying to climb a fence when he felt down and his hand jam and the whole body weight hanged by the hand. The first aid including the suture of the skin lesion is done in a different hospital. Also many of the wound medication are made in various trauma centers and hospitals. After 1-2 of weeks from the accident the wound is infected and the skin necrosis appears the subcutaneous tissues (pulley and tendons). In some how and after 6 weeks of medication again in various hospitals the wound close, but with huge suture scar and functional deficit of the 4th finger, especially with extension deficit (~25^{o}) and flexion deficit (~20^{o}). He done many physio therapies for 2 months without functional improvement. (Figure 1).

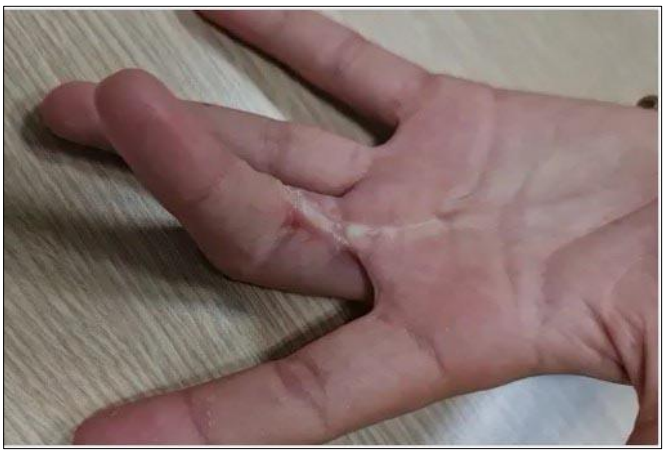

Figure 1 Retractile scar after a hypetrophic scar

3. Treatment

The hypertrophic scar was removed (A) FDP and FDS intact, and ADM (Dermacell) grafted (B) – Figure 2

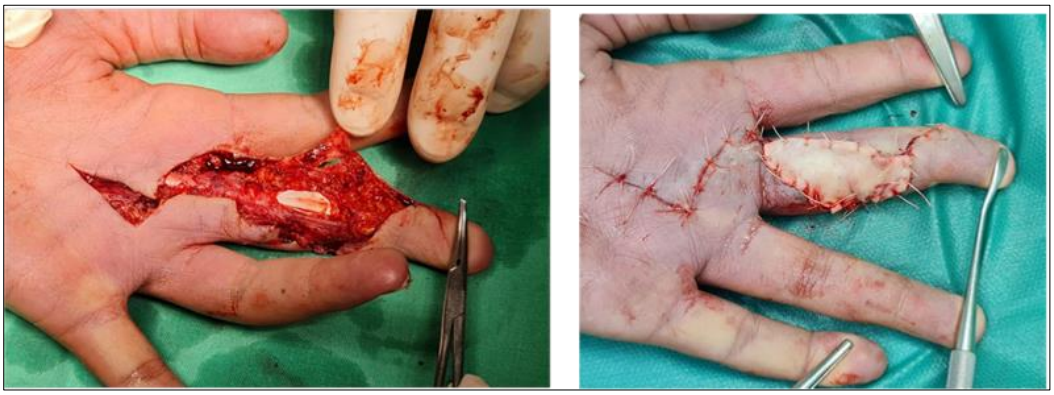

Figure 2

Scar removal and grafting with ADM (Dermacell)

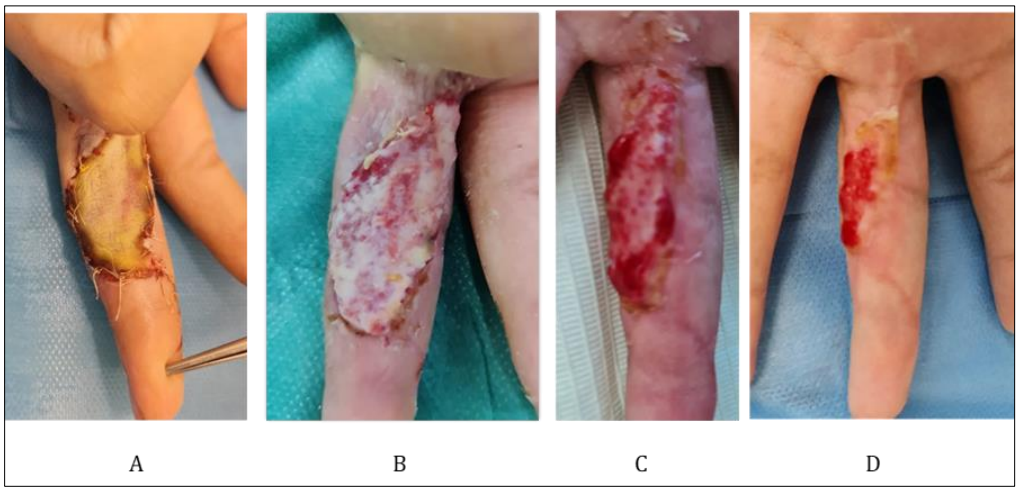

Figure 3 A: 1 week post-op; B: 3 weeks post-op; C: 4 weks post-op; D: 5 weeks post-op

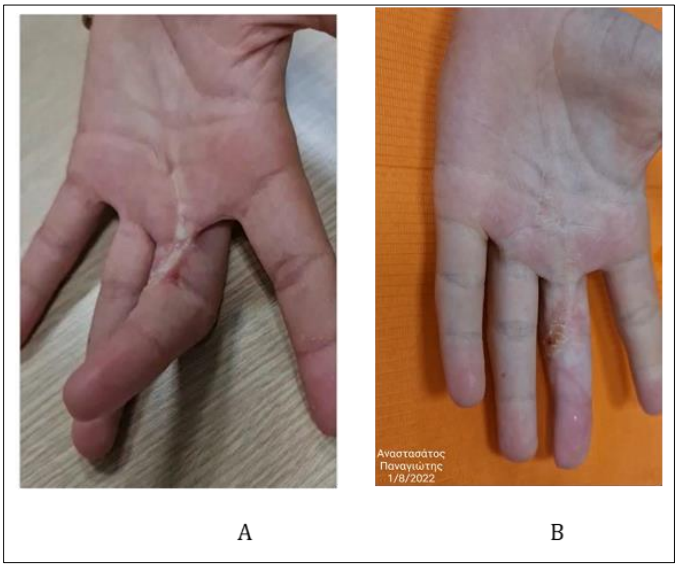

Figure 4 A: pre-op; B: 7 weeks post-op

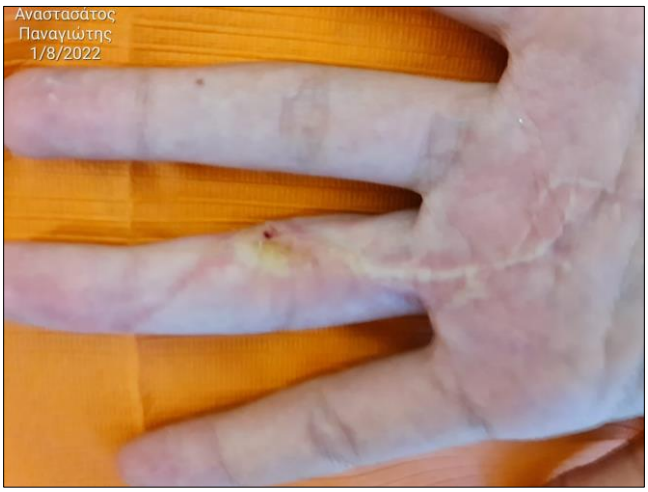

Figure 5 7 weeks post-op

4. Conclusion

At week 3: passive FKT. At week 7 full finger ROM.

Uneventful post-operative course and complete healing at 7 weeks post-op. (Fig. 4B and 5)).

Dermacell has shown efficacy as an adjunct in hand rectractile scar treatment and has been shown to improve the aesthetic properties of skin an function. [6][7].

Compliance with ethical standards

Acknowledgments

We thank LifeNet Health, Virginia Beach, Virginia, USA, for providing Decellularized Dermal Matrix (Dermacell).

**Dermacell is a technologically advanced Acellular Dermal Matrix that is used to treat diabetic foot ulcers, chronic non-healing wounds, and supplemental tissue support.*

Disclosure of conflict of interest

The Authors declare that there is no actual or potential conflict of interest in relation to this case study.

Statement of informed consent

Informed consent was obtained from the participant included in the study.

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