65 Years After a Shrapnel Injury in a Korean War Veteran

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Purpose

The purpose of this study is to demonstrate that a Delayed Foreign Body Granuloma (DFBG) can occur decades after initial injury and examine the use of Placental Connective Tissue Matrix Allograft (AmnioFill®) in a dehisced surgical wound with a sizeable defect after the excision of a DFBG secondary to shrapnel.

Background

Delayed Foreign Body Granulomas (DFBGs)

A foreign body granuloma is an inflammatory, histologic and macrophage reaction pattern that occurs in response to exogenous material that penetrates the dermis. Histologically, these lesions are characterized by a predominantly multinucleated giant cell infiltrate that also contains histiocytes, lymphocytes and other inflammatory cells. This acute inflammatory immune response is often self-resolving. However, a retained foreign body, can lay dormant for weeks, months, or years before a granulomatous reaction can occur and ultimately lead to the development of a DFBG.

With the prevalence of improvised explosive devices, shrapnel wounds are not unheard of in active duty military personnel. Even years after the initial diagnosis, shrapnel can result in DFBGs in veterans.

Plain radiographs are necessary to rule out most foreign bodies, but ultrasound can also be utilized. Common foreign bodies, especially in diabetic and other neuropathic patients, include metallic materials, thorns, glass, and ceramics. The treatment of a foreign body granuloma is most often by way of surgical excision.1,2

Placental Connective Tissue Matrix Allograft (AmnioFill®)

AmnioFill® is composed of human placental connective tissue matrix. As a minimally manipulated, non-viable cellular tissue matrix allograft, AmnioFill® contains growth factors, cytokines, and extracellular matrix proteins to enhance wound healing.3 These growth factors also decrease inflammation and potential scarring of the wound. Due to its multipurpose form, it can be used in acute and chronic wounds.4

Case History

An 85 year old White Male, with a history of shrapnel injury 65 years ago during the Korean War, Type 2 diabetes mellitus, B-12 deficiency, peripheral neuropathy, active chronic kidney disease stage 3a, and dementia, presented to the Podiatry Clinic complaining of left foot erythema (Figure 1).

The patient and family denied recent trauma. Prior to referral to Podiatry, his PCP prescribed 2 weeks of oral antibiotics.

It was clinically evident that the patient had a soft tissue mass. X-rays revealed a large piece of shrapnel in the left dorsolateral foot wound that appeared to be centrally localized within the soft tissue mass (Figure 2).

The patient and family consented for surgical excision. The soft tissue mass, which measured 3.0cm x 2.5cm x 1.5cm and weighed 4.2 grams, was excised (Figure 3), leaving a sizeable defect, but immediate closure with 0-40 Nylon suture was able to be performed.

Immediate post-op x-rays were repeated (Figure 4). The pathology report confirmed an “extensive foreign body giant cell reaction.”

One week s/p the excision of the DFBG, the surgical site dehisced.

AmnioFill®, a new biologic, was selected for this patient’s dehisced wound. Following debridement, the wound was packed with AmnioFill mixed with normal saline (Figure 5) every 1 to 2 weeks. After each AmnioFill application, the wound was covered with Mepilex®, Steri-Strips®, and 4x4 gauze and wrapped with Kerlix.

Results

The initial dehisced wound measured 2.0cm x 1.9cm x 2.0cm (Figure 6).

The patient underwent 5 AmnioFill® applications over the course of 7 weeks (Figures 7-10).

The wound was superficial at 9 weeks post-operative and wound care was changed to daily applications of antibiotic ointment with a Band-Aid®.

The patient’s wound closed prior to his 3 month follow-up (Figure 11).

Conclusions

Pathology confirmed our diagnosis of a DFBG.

Although rare, a DFBG can occur decades after the initial injury. This 65 year DFBG would be the oldest ever to be documented.

AmnioFill® is an excellent biologic to have in the podiatric wound care arsenal.

References


3. Tissue Engineering & Regeneration, 2018; 4(4), 115-123.


Case Photos

Figure 1: Initial evaluation

Figure 2: Lateral plain film radiograph

Figure 3: Lateral film post excision

Figure 4: Post-op x-rays

Figure 5: AmnioFill® biologic

Figure 6: 3 weeks post op

Figure 7: 1 week post AmnioFill

Figure 8: 4 weeks post op AmnioFill

Figure 9: 6 weeks post op w/Amp

Figure 10: 12 weeks post op w/Amp

Figure 11: 3 months post op w/Amp

Affiliations

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