VPL-102-SILVAKOLLAGEN GEL TRIAL

An 18-month-old Paint female was admitted on June 30, 2008 with traumatic injury to the left rear leg. The skin had been denuded from just distal to the tarsus to the fetlock in an area 12.8 x 20.5 cm. (=5x8"). The long digital extensor tendon was destroyed and the lateral digital extensor tendon was exposed though intact.

The owner elected that the filly be hospitalized and treated for a limited time to evaluate healing progress. The wound was protected by acemannan packs under bandage and changed weekly, resulting in 52% wound reduction by the time that the owner agreed for her to enter the VPL clinical research trial.

An established treatment and bandage protocol evolved specifically to evaluate the effects of silver collagen gel on the wound. The area around the wound was cleaned by cotton soaked with dilute chlorhexidene solution. The wound was debrided with sterile water flowing over sterile sponges and then dried by sterile sponges. According to product instructions, the use of sterile saline was not used. The silver collagen gel (as SilvaKollagen Gel product) was applied easily but slowly to the wound, with the thin gel placed on the vertical surface by fingers of a gloved hand (Fig 1). The gel was held in place by 2 sterile hydrogel pads which were secured by roll gauze. A sterile abdominal dressing pad (ABD) of appropriate size was applied and secured by elastic tape (Fig 2). The only deviation from the above protocol was in a single replacement of silver collagen gel with antibiotic-steroid ointment under bandage to reduce developing excessive granulation tissue.

Bandages were changed at 4-day (3-5 days) intervals. Measurements of wound size were made each time, with selected photographs obtained to illustrate important changes in the healing process.

Restraint of the filly was obtained by premedication with Xylazine (1.5ml, IV) followed by a 1.0 ml IV boost if needed.

Measurements (cm) of the wound were made of the length and width of the widest defect, with a numerical product resulting from the multiplication of these 2 measurements (Fig 3). All subsequent measurements were made of these same points. Wound size reduction was illustrated by reduction in the number over time (Figs 4,5).

At the initiation of the silver collagen gel treatment, the wound was 6.5 x 12.0 cm and appeared to be no longer responsive to the acemannan packs (Fig 6). The first treatment with silver collagen gel produced deep pink granulation with a thin white line of epithelium on edge. Controlled contraction continued at each bandage change with moderate granulation slightly above the skin level. The epithelial white line surrounded the reactive granulation bed by 18 days.

By 34 days wound size was 3.0 x 13.2 cm or 15% of the original injury, with silver collagen gel affecting reduction of 49.2% within its treatment period. By 34 days the contraction was obvious but the epithelial white line was reduced and the granulation bed was more prominent (Fig 7). The wound was treated once with an antibiotic-steroid ointment under bandage to reduce excessive granulation effecting controlled contraction noted at the next bandage change.

On day 44 examination, there was a noticeable division of granulation bed and new epithelium: the granulation bed was 1.7 x 8.0 cm with the surrounding epithelium as

2.5 x 13.2 cm. At this time began our initial consideration of the use of cyanoacrylates to stabilize the epithelium.

Wound contraction continued steadily under bandage. By 53 days the wound had changed into a spiral over the cannon area. By day 58 examination the granulation bed was above skin level and may require steroid control to permit continued epithelial closure. The proximal-and distal-third of the epithelial scar were stabilized by cyanoacrylate.

From day 62 to day 66 measurements were made only of the granulation bed as contraction continued with cyanoacrylate covering each end of the scar. Silver collagen gel was applied only to the granulation bed and covered.

Collagen functions as a substrate for hemostasis and is chemotactic to cellular elements as granulocytes, macrophages and fibroblasts. Exogenous collagen may provide a scaffold for more rapid-transition to mature collagen production and alignment. In this case, the contraction and epitheliazation had to be stimulated by the collagen.

Exuberant granulation tissue growth was generally associated with lower leg wounds. Bandaging can reduce wound edema and hemorrhage but may delay healing attributable to excessive granulation tissue.

In a previous study of collagen-supported wound healing, 10 cases that were examined from 0.5 to 8 months after release from treatment had healed satisfactorily 94%, (80-99%} based on measurements of the resulting scar. The wound of the filly had healed 97.1% from original injury.

Once the wound is stable and rapidly closing, cyanoacrylate treatment formed a barrier that protected the wound from environmental influences as well as allowing for uninterrupted wound granulation and epitheliazation.

There were seven 42 g tubes of SilvaKollagen gel and three vials of Tissumend II SC used in the treatment of #102 filly.

Beginning on day 69 to day 83, the wound was protected by cyanoacrylate only. An ABD pad was applied for physical protection. On day 83, cyanoacrylate was applied as the only protection (Fig 8).

Practical considerations in the use of SilvaKollagen gel are (1) a short technical learning curve regarding application, (2) appreciation of ready acceptance by the patient with a sensitive wound, (3) application of the gel to a vertical surface such as a horse leg does not permit the extensive build-up of product as described in the product instructions, (4) the black color of the product stains the white hair of a horse in contact under bandage, requires an informed owner, (5) the rapid stimulation of granulation tissue is a positive feature, but requires the veterinarian to maintain a control over this process

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FIGURE 1

FIGURE 2

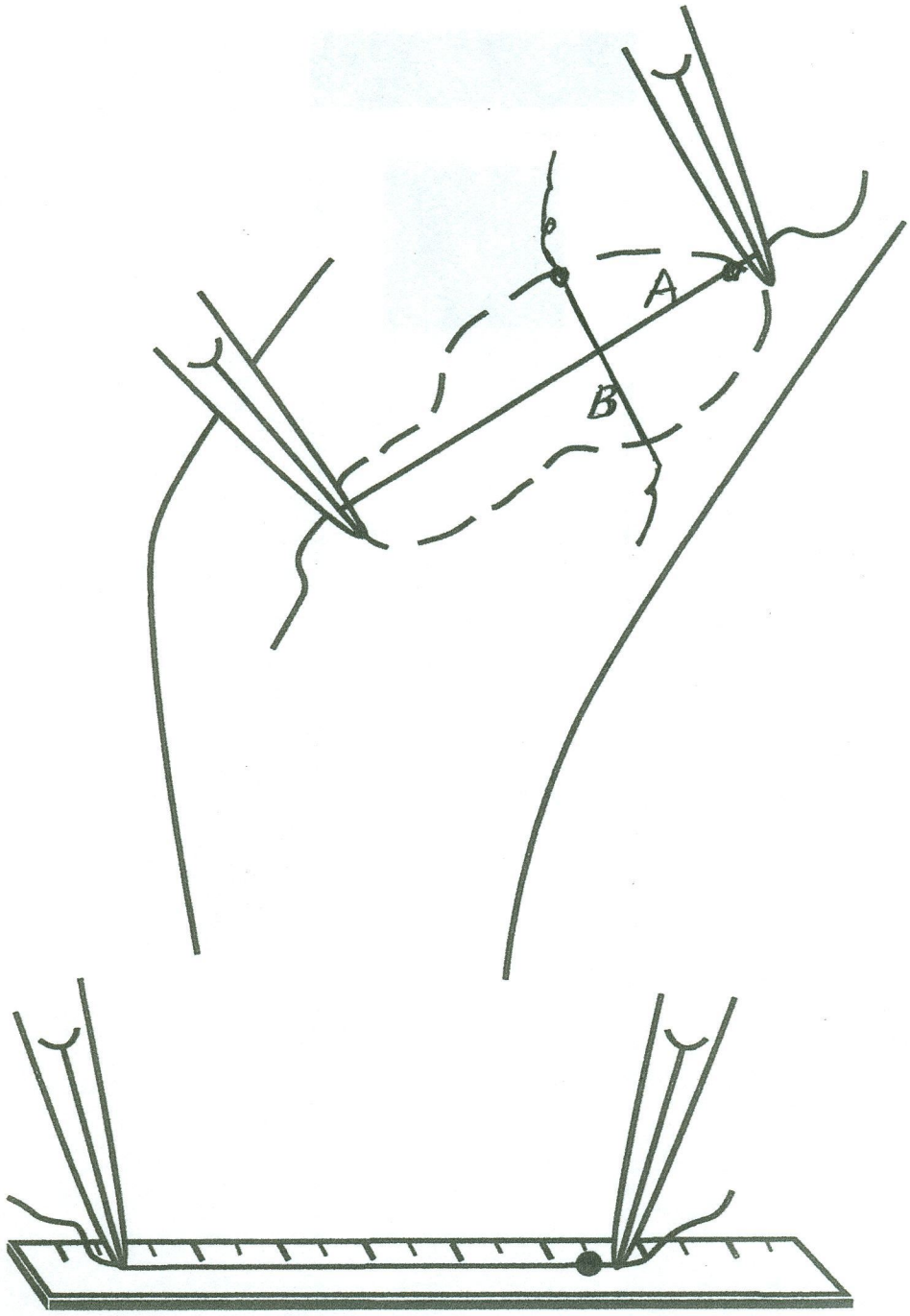

FIGURE 3

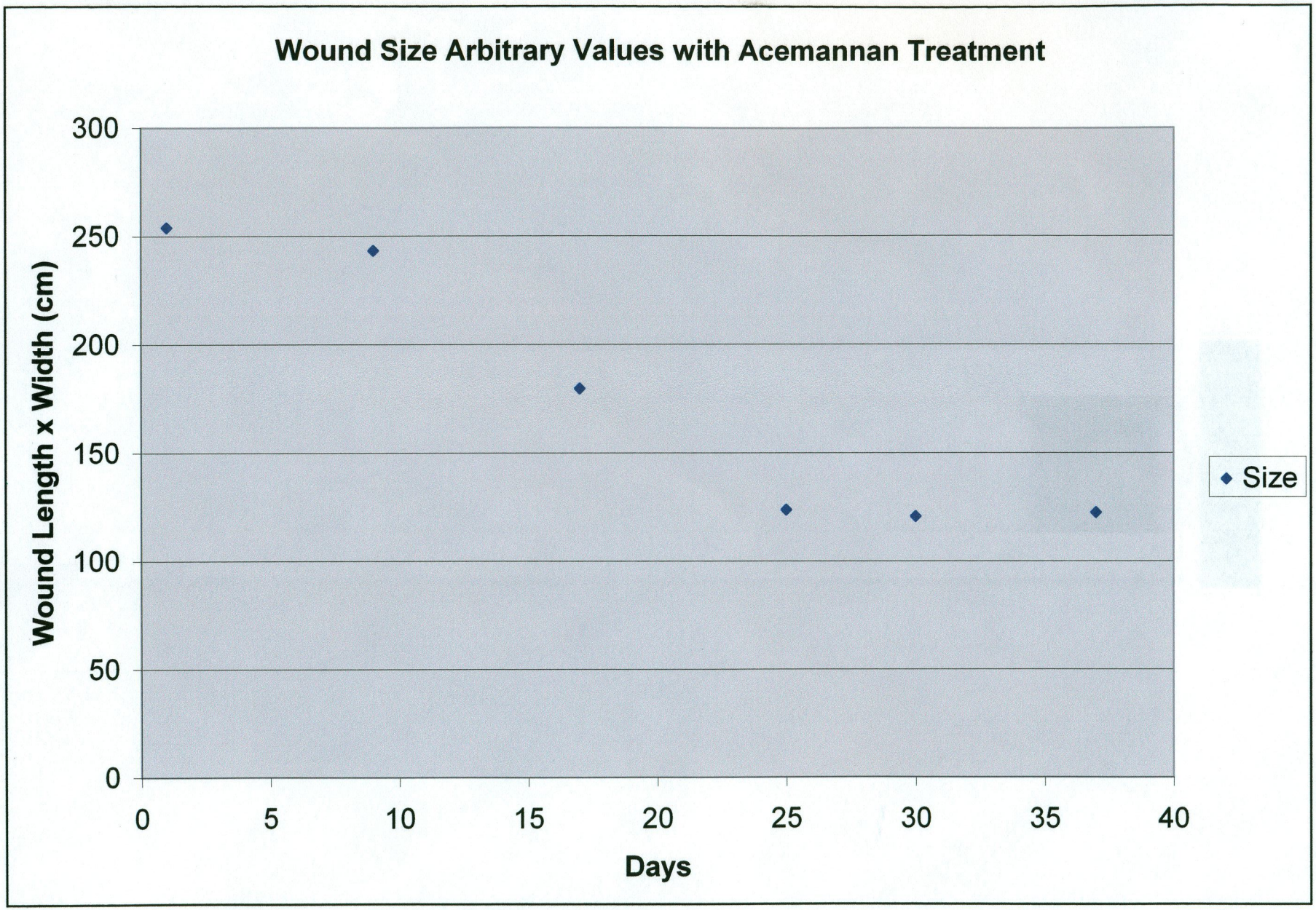
Wound Size Arbitrary Values with Acemannan Treatment
Wound Length x Width (cm)
300
250
200
150
100
50
0
0
5
10
15
20
25
30
35
40
Days
Size

FIGURE 4

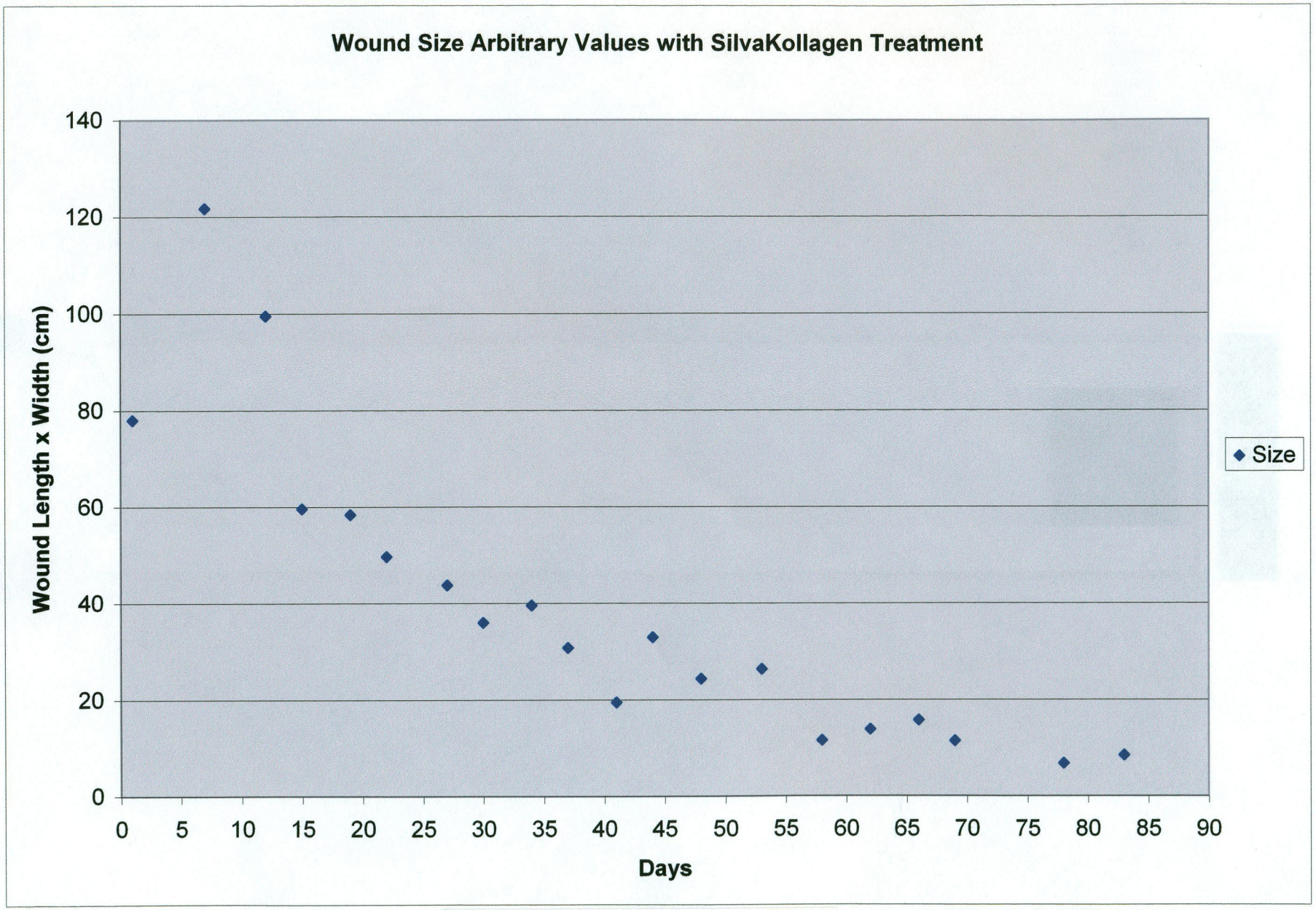
Wound Size Arbitrary Values with SilvaKollagen Treatment
Wound Length x Width (cm)
140
120
100
80
60
40
20
0
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
Days
Size

FIGURE 5

FIGURE 6

FIGURE 7

FIGURE 8