

Evaluation of CellerateRX® Utility in Reducing Groin Complications after Femoral Exposure

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Introduction

- Vascular procedures involving groin incisions for femoral exposure often have complications (e.g., seromas, hematomas, or infection) that delay wound healing.
- These complications require reintervention, leading to increased length of stay, readmissions, and increased morbidity & mortality, including limb loss.
- An internal single-center retrospective review revealed a groin complication rate of 45.5%, suggesting an area for improvement.
- One of most important components of physiological wound healing is collagen, which facilitates inflammatory, proliferative, and remodeling phases.¹
- Hydrolyzed (or activated) collagen has shown to improve wound healing and decrease the rate of surgical site infections in clean elective surgeries.¹⁻³



Figure 1. Hydrolyzed collagen commercially available as CellerateRX® powder (Figure from Sanara MedTech).

Objectives

- Evaluate the utility of CellerateRX® powder (i.e., hydrolyzed collagen peptides) in preventing groin complications after femoral exposure.

Methods

- Patients between 2020-2021 were enrolled into the control group. Patients between 2021-2022 were enrolled into the experimental group.
- Bilateral groin incisions account for two cases.
- Patients were followed for 3-6 months for surveillance.

Results

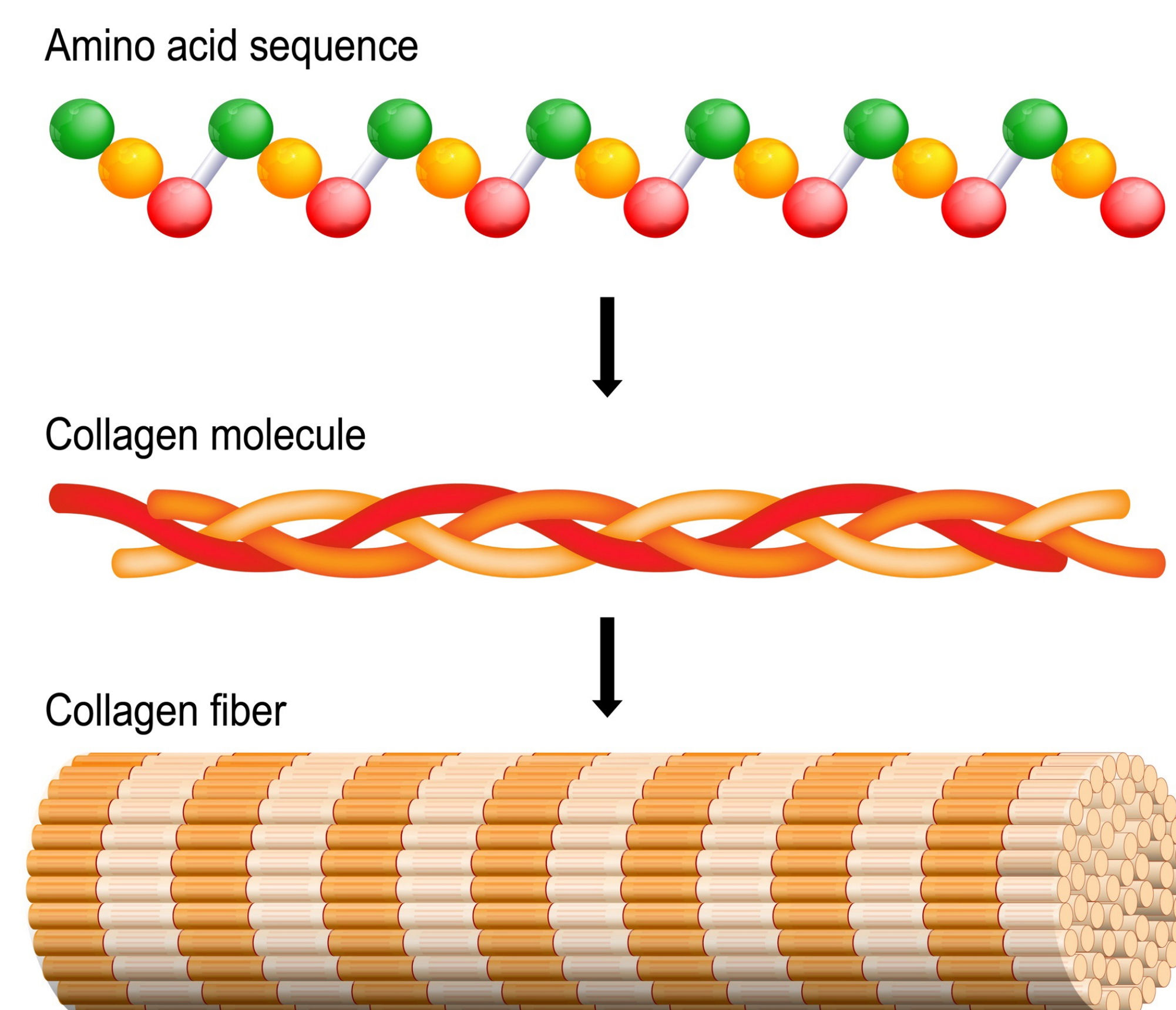


Figure 2. The structure of collagen (Figure from Sanara MedTech).

Hydrolyzed Collagen

Is fragmented into amino acid peptides ⁴
Is already broken down into soluble fragments or peptides ^{3,5}
Has low viscosity, which allows formation of soluble gel on contact with wound exudate ⁶
Presents as smaller (3–6 kDa) peptides, which simplifies the body's work to incorporate ^{6,7}
Supports adhesion, chemotaxis, and cellular proliferation ⁶

Table 1. Properties of hydrolyzed collagen that contribute to its ability to reduce surgical site infections.

Perioperative protocol

Control group:

- 1-hour preoperative vancomycin
- (15 mg/kg IV)/ceftriaxone (2 g IV)
- Double skin preparation with 4% chlorhexidine
- Hair removal with surgical clippers
- Ioban™ placement
- Postoperative doxycycline (100 mg PO/IV BID)
- Negative pressure wound therapy/muscle flap/wound products in high-risk patients.

Experimental group:

The same perioperative protocol was followed with only the addition of CellerateRX® powder to the surgical wound before closure.

	Control group	Experimental group
Seromas	10 (8.6%)	2 (10%)
Hematomas	4 (3.4%)	0 (0%)
Soft tissue infection	2 (1.7%)	1 (5%)
Skin necrosis	3 (2.6%)	0 (0%)
Total complications	19 (16.4%)	3 (15%)
Total cases	116	20

Table 2. Comparison of outcomes between control and treatment groups. A two-tailed Fisher's exact test demonstrated no statistically significant association between the presence of complications and the perioperative protocols evaluated (p-value = 0.67, α = 0.05).

Conclusions

- Because there was no statistically significant association between the presence of groin complications and the perioperative protocols evaluated in this study, we cannot conclude that packing wounds with CellerateRX® powder alters the risk of developing postoperative groin complications after vascular procedures compared to standard wound care.
- Cases of hematomas and skin necrosis were not observed in the treatment group; however, the observed difference may be due to the small sample size.
- In theory, however, hydrolyzed collagen is an ideal substrate for wound packing, as it provides a scaffold for wound healing and its wettability, solubility, and dispersibility⁷ helps prevent empty space that could otherwise lead to seromas and hematomas.

Future Directions

- We are enrolling more patients in the experimental group in order to gain a larger sample size and increase the power of this study.

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