

Hydrolyzed Collagen Augmentation is Associated with Reduced Wound Complications Following Resection of Preoperatively Irradiated Extremity Soft Tissue Sarcomas

Andrew J Hancock, BS.¹, Sarah C Tepper, MD.², David M Joyce, MD.², Odion Binitie, MD.² and Alexander Lazarides, MD.²

1. Morsani College of Medicine, University of South Florida Health, Tampa, FL 33602, USA
2. Department of Sarcoma, Moffitt Cancer Center, Tampa, FL 33612, USA

Significance:

Wound complications remain a major source of morbidity following resection of preoperatively irradiated extremity soft tissue sarcomas. Strategies to mitigate this risk while maintaining oncologic and reconstructive principles are needed.

Innovation:

Hydrolyzed collagen has been proposed as a biologic adjunct to support wound healing, but clinical data in sarcoma surgery are limited. This review provides a cohort of 97 patients toward this question.

Approach:

We performed a retrospective review of a consecutive series of patients undergoing resection of preoperatively irradiated extremity soft tissue sarcomas with primary wound closure between August 2024 and February 2026. Patients were divided into two cohorts based on whether hydrolyzed collagen was placed at the time of closure. All other aspects of oncologic treatment, surgical technique, and postoperative care were consistent between groups. Patients undergoing re-resection, requiring advanced soft tissue reconstruction and those who died or were lost to follow-up prior to wound assessment were excluded. Most patients received a standard 50 Gy regimen with average EQD (equivalent dose) of 59.93 Gy. No significant difference between the hydrolyzed collagen group and the control group. The primary outcome was postoperative wound complication at 120 days, defined as wound dehiscence, infection, readmission, or need for reoperation. Secondary outcomes that were evaluated included prolonged wound care (defined as prolonged drainage therapy, secondary wound vac placement, graft failure or other delays in healing), superficial infection, and deep infection. A priori power analysis performed prior to study identified that 30 patients would be necessary to achieve statistical significance

Results:

After exclusions, 97 patients met inclusion criteria. Among patients who did not receive hydrolyzed collagen, wound complications occurred in 23 of 67 cases (34.3%). In contrast, wound complications occurred in 4 of 30 patients (13.3%) who received hydrolyzed collagen at closure (OR: .294 w/ 95% CI: .092-.946, P=.0486). This represents an absolute risk reduction of 21% associated with collagen use. Risk reduction for patients in the hydrolyzed collagen group was .39, and number needed to treat was 5. Prolonged wound care was also less common in the hydrolyzed collagen group with an incidence of 4/30 (13.3%) compared to 26/67 (38.8%) in control (OR: .243 w/ 95% CI: .076-.775, P=.017, ARR: 25.5%, RR: .34, NNT: 4) No significant differences were seen in rates of superficial or deep infections. No differences were observed between groups with respect to preoperative radiation protocol, chemotherapy protocol, tumor location, or method of closure.

Discussion & Impact:

The use of hydrolyzed collagen at the time of primary closure was associated with a substantially lower rate of wound complications following resection of preoperatively irradiated extremity soft tissue sarcomas. These findings suggest that collagen augmentation may represent a simple, low-risk adjunct to improve wound outcomes in a high-risk population. Further prospective validation is warranted.