

BRIEF ARTICLES

Clinical Experience with a Novel Topical Adhesive for Dermatologic Excisional Wound Closure: A Case-Series

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ABSTRACT

Background. The topical adhesive, 2-octyl cyanoacrylate, has been used as an alternative to sutures for closure of skin in a variety of surgical procedures. While potential benefits exist, reports of allergic contact dermatitis and exothermic reactions have been a barrier to widespread adoption by dermatologic surgeons.

Objective. To describe our experience using a novel formulation of 2-octyl cyanoacrylate for skin closure after surgical excision of cutaneous lesions.

Methods. We describe the results of 9 office-based dermatologic excisions in 8 patients utilizing a novel formulation of 2-octyl cyanoacrylate for skin closure. At two weeks of follow-up, all incisions were examined for cosmetic result and signs of infection as per the office's standard of care.

Results. At follow-up, there were no signs of infection. One wound demonstrated mild tissue hypertrophy, while another showed very minimal skin separation (< 1mm) that did not require reintervention. No incidences of contact dermatitis, application discomfort, or burns were noted. Patient satisfaction was high.

Conclusion. A novel formulation of 2-octyl cyanoacrylate topical adhesive demonstrates feasibility as a potential alternative to the use of sutures for skin closure following dermatologic excisions. Larger studies are imperative to fully describe the outcomes associated with use of this new preparation.

INTRODUCTION

In recent years, there has been increased interest in the use of topical tissue adhesives—particularly 2-octyl

cyanoacrylate—as an alternative to suture or staple closure of the skin following surgical procedures.¹ While there have been

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benefits in terms of ease of application, adverse reactions such as allergic contact dermatitis and exothermic burns have presented a barrier to use.² In this case series, we describe our experience using a novel formulation of 2-octyl cyanoacrylate (Actabond-Bergan Medical Products, Inc., Morris Plains, NJ) for skin closure following surgical excision of cutaneous lesions in a dermatologic office environment.

CASE DESCRIPTIONS

The results of office-based cutaneous surgical excisions using a novel formulation of 2-octyl cyanoacrylate for wound closure following dermatologic excision procedures at a single practice in New York City were retrospectively examined. Nine procedures (9 excisions in 8 patients) utilizing the adhesive were included. The decision to

utilize the adhesive for closure (as opposed to sutures or staples) was made at the discretion of the surgeon. All wounds were closed in two layers: a single layer of interrupted 4-0 vicryl deep dermal sutures was used to approximate the subcutaneous tissues (as per standard practice in our office) and 2-octyl cyanoacrylate was applied for closure of the skin. Patients were seen in follow-up two weeks following excision—in accordance with the standard post-surgical protocol of the office-based practice. At follow-up, all incisions were assessed for cosmetic result and signs of infection.

The 9 lesions excised included 3 dysplastic nevi, 3 lipomas, 2 epidermoid cysts, and 1 squamous cell carcinoma (Table 1). All lesions were located on the trunk or extremities. Patients ranged from 27 to 68 years of age.

Table 1. Clinical characteristics of included lesions

Lesion Number	Age	Gender	Pathology	Location
1	41	Male	Dysplastic Nevus	Chest
2	32	Male	Epidermoid Cyst	Shoulder
3	53	Female	Squamous Cell Carcinoma	Forearm
4	54	Female	Epidermoid Cyst	Shoulder
5	68	Male	Lipoma	Forearm
6	25	Male	Dysplastic Nevus	Back
7	27	Male	Dysplastic Nevus	Back
8	68	Male	Lipoma	Forearm
9	47	Female	Lipoma	Thigh

At two weeks, none of the incisions displayed erythema or signs of infection (Figure 1). Of the 8 lesions, 7 healed without

any significant issues, although there was mild tissue hypertrophy along the closure

line of one of the incisions. One closure exhibited very mild skin edge separation in the midpoint of the wound (< 1 mm), which was treated conservatively with observation and eventually healed. As skin-level sutures were not utilized, no suture tracts were visible along any of the lines of closure. None of the patients in this series

experienced allergic contact dermatitis or discomfort/burning from exothermic reactions related to application of the adhesive. Patient satisfaction with wound closure was, on average, 7.9 on a scale of 1-10. Of the patients with a history of suture closure of a surgical wound, 88% preferred the adhesive to sutures.



Figure 1. Representative photographs of surgical excision utilizing a novel formulation of 2-octyl cyanoacrylate for skin closure following excision of squamous cell carcinoma from the forearm.

DISCUSSION

The first use of a cyanoacrylate as a topical adhesive was described as early as the 1950s³. The concept of an alternative to suture closure of wounds remains attractive for multiple reasons, including decreased risk of occupational needle-stick injury, increased ease of application, and simplified wound care for patients without the need for suture removal. However, issues with dehiscence and local skin reactions have led to slow adoption by the surgical community, despite continuous efforts over time to improve adhesive formulation and limit these adverse events.^{2,4}

A recent randomized trial of 71 patients undergoing excision of cutaneous malignancies demonstrated that two such formulations (one of which was a cyanoacrylate) produced cosmetic outcomes on par with traditional suture closure, potentially opening the door for more widespread adoption by dermatologic surgeons.⁵ Our experience echoes the findings of this trial in terms of cosmetic result and patient satisfaction, but importantly, it introduces a newer formulation/delivery vehicle for 2-octyl cyanoacrylate that has not been extensively studied in a real-world setting. In addition to excellent results, we anecdotally noted improved ease of application in comparison to prior adhesive formulations. Further, none of the patients undergoing wound closure with the adhesive experienced application-related adverse events such as contact dermatitis or development of pain or burns resulting from exothermic reaction. These reactions have been a major deterrent to routine use of cyanoacrylates in the past; development of a formulation with a lower risk of these events has the potential to lead to increased adoption.²

The present study carries several limitations. The case series nature of this work and the small number of included patients limit the conclusions which can be drawn. Specifically, the lack of a comparison group makes attributing the good outcomes of this series definitively to the use of adhesive difficult, as other factors such as surgeon skill and patient characteristics could have played a role.

CONCLUSION

A novel formulation of 2-octyl cyanoacrylate topical adhesive demonstrates feasibility as a potential alternative to the use of sutures for skin closure following dermatologic excision. In this small case series, the incidence of wound complications was low and patient satisfaction was high. Further, there were no local complications of application. Research studies need to be performed to further determine advantages that may exist using this closure method compared to standard techniques.

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