Use of Non-medical-grade Ethyl Cyanoacrylate for Temporary Skin Closure in a Bleeding Upper Eyelid Arteriovenous Malformation: A Case Report

Mary Rose Pe Yan, MD, Yasser E. Alhasan, MD and Gerald Jan M. Lumba, MD

Department of Ophthalmology and Visual Sciences, Philippine General Hospital, University of the Philippines Manila

ABSTRACT

Cutaneous arteriovenous malformations (AVMs) of the eyelid and orbit are rare vascular anomalies that can present with recurrent or spontaneous bleeding, particularly when the overlying skin is thinned. While definitive management involves embolization and surgical excision, achieving rapid hemostasis can be challenging in resource-limited or outpatient settings. This case report aims to describe the emergency use of non-medical-grade ethyl cyanoacrylate (CA) to achieve temporary hemostasis in an upper eyelid AVM when standard medical materials were unavailable, and to discuss its safety, limitations, and ethical considerations in resource-constrained circumstances.

A 23-year-old male with a known right upper eyelid and orbital AVM, scheduled for preoperative embolization, presented with a one-week history of recurrent, profuse bleeding from a superficial skin defect overlying the lesion. Each prior bleeding episode had been controlled with approximately five minutes of firm pressure. On the day of emergency consultation, however, the patient experienced continuous bleeding that persisted despite several hours of pressure dressing. As an immediate hemostatic measure, a thin layer of non-medical-grade ethyl CA was applied to the bleeding surface, resulting in prompt cessation of hemorrhage with only minimal oozing afterward. The wound subsequently healed without secondary infection, tissue necrosis, or other complications.

This case demonstrates that non-medical-grade ethyl CA may serve as a temporary hemostatic adjunct for superficial bleeding in select, resource-constrained situations involving eyelid AVMs. While potentially useful in emergencies, its application must remain cautious, limited, and followed by definitive nidus-directed management. Further reports are needed to clarify safety and standardized guidance for its emergency use.

Keywords: arteriovenous malformation, eyelid, cyanoacrylate, hemostasis, wound closure, case report

INTRODUCTION

Arteriovenous malformations (AVMs) are high-flow vascular anomalies characterized by direct communication between arteries and veins through a nidus, without intervening capillary beds.[1] Although most AVMs occur in the trunk or extremities, periocular and eyelid AVMs are rare and may present with pulsation, discoloration, progressive enlargement, or spontaneous bleeding due to fragile vessel walls.[2] When the overlying skin becomes thinned, even minor trauma can result in significant hemorrhage.

Bleeding from cutaneous AVMs can be difficult to control in outpatient or resource-limited environments. Definitive treatment often requires a multidisciplinary approach, combining endovascular embolization and surgical excision.[3] However, managing acute hemorrhage in such highly vascular and anatomically delicate areas remains a significant clinical challenge.

CC BY NC ND

eISSN 2094-9278 (Online)
Published: July 31, 2026
https://doi.org/10.47895/amp.v60i14.14248
Copyright: The Author(s) 2026

Corresponding author: Mary Rose Pe Yan, MD
Department of Ophthalmology and Visual Sciences
Philippine General Hospital
University of the Philippines Manila
Taft Avenue, Ermita, Manila 1000, Philippines
Email: mlpeyan1@up.edu.ph
ORCiD: https://orcid.org/0000-0002-0109-8818

Standard hemostatic measures include direct pressure, compression dressings, and topical hemostatic agents. Medical-grade tissue adhesives such as n-butyl or 2-octyl cyanoacrylate are sometimes used for superficial wound closure; however, they are not always immediately accessible.[4]

In emergency or remote scenarios, anecdotal reports describe the use of non-medical-grade ethyl cyanoacrylate, such as Mighty Bond® and Super Glue®, for temporary closure of superficial skin breaks to control bleeding.[5] The rapid polymerization of ethyl cyanoacrylate, upon contact with moisture, forms a strong adhesive barrier that seals bleeding surfaces.[6] However, evidence remains sparse and largely limited to wilderness medicine observations and isolated case descriptions.

This case highlights the successful use of non-medical-grade ethyl cyanoacrylate for temporary skin closure and acute hemostasis in a bleeding upper eyelid AVM when standard medical materials were unavailable. The objective of this report is to document its emergency application as a stabilizing, non-definitive measure and to discuss its safety, limitations, and ethical justification in resource-constrained settings. To our knowledge, no prior case in Philippine literature has described this specific use of ethyl cyanoacrylate in the management of an eyelid AVM.

CASE PRESENTATION

A 23-year-old male with a known right upper eyelid and orbital AVM consulted the emergency room. His diagnosis was confirmed on previous computed tomography and cerebral angiography, showing a nonhomogeneous enhancing mass with blood supply from the terminal branches of the ophthalmic artery (Figure 1A). The patient had a 9-year history of a gradually enlarging right upper lid mass with visible pulsations and progressive ptosis. Over the years, he experienced recurrent episodes of spontaneous bleeding from the upper eyelid lesion, managed conservatively with application of ice and a pressure pack on the upper eyelid. He was scheduled for preoperative embolization followed by surgical excision of the AVM. The rest of his past medical, family, and psychosocial history was non-contributory.

One week prior to his consult at the emergency room, while awaiting his embolization schedule, he noted more frequent profuse squirting bleeding from a superficial skin defect overlying the upper eyelid lesion. No recent trauma or manipulation was reported. Each bleeding episode was controlled with approximately five minutes of firm pressure but was associated with dizziness and transient blurring of vision in the right eye. On the day of emergency consultation, however, the patient experienced continuous bleeding that persisted despite several hours of pressure dressing.

On examination, the dressing over the right upper eyelid was soaked with blood, and active bleeding through a skin defect was noted (Figure 2A). Visual acuity in the right eye was 20/50, improving to near 20/20 with pinhole. The pupils were equal and reactive, and extraocular movements were full.

In the emergency room, a complete blood count (CBC) was obtained, revealing hemoglobin of 109 g/L, hematocrit of 0.31, and a red blood cell count of $3.6 \times 10^6/\mu L$, indicating mild anemia, likely related to recurrent blood loss,

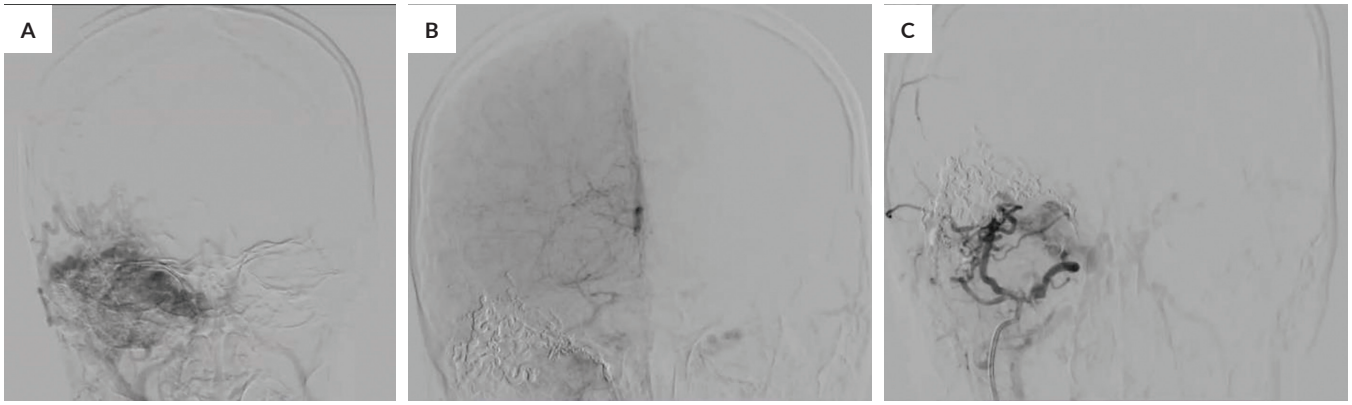

Figure 1. Cerebral digital subtraction angiography in frontal projection demonstrating a high-flow arteriovenous malformation in the right orbit with extension into the eyelid. **(A)** A compact but irregular nidus with prominent arterial supply from branches of the ophthalmic artery and contributory external carotid artery feeders is seen. Early venous filling is evident, consistent with arteriovenous shunting, with drainage predominantly toward the superior ophthalmic venous system. The dense vascular blush is characteristic of orbital AVMs and their complex angioarchitecture. **(B)** After embolization, the orbital vascular nidus is markedly diminished. Embolic material is visible as a dense cast in the treated portion of the nidus, consistent with successful devascularization of the malformation. **(C)** A residual tangle of abnormal vessels shows continued but reduced arteriovenous shunting even after embolization, supplied predominantly by persistent branches of the ophthalmic artery. A portion of the nidus remains opacified, indicating partial or incomplete devascularization of the lesion.

hemodilution, or anemia of inflammation. The white blood cell count was 6.8 × 10^3/μL, within normal limits and not suggestive of acute infection or systemic inflammation. The platelet count was 217 × 10^3/μL, also within the normal range, indicating preserved platelet production and no evidence of thrombocytopenia. Overall, the CBC results were unremarkable aside from mild anemia, with no laboratory findings pointing to acute infection, coagulopathy, or hematologic instability at presentation.

Being in a resource-limited tertiary government hospital predominantly serving low-income and indigent patients, medical-grade cyanoacrylate adhesive was not readily available. As an immediate hemostatic measure, a thin layer of a commercially available non-medical-grade ethyl cyanoacrylate (CA) adhesive (Mighty Bond®, Republic Chemical Industries, Philippines) was applied to the bleeding surface of the right upper eyelid. Prior to application, the wound edges were carefully approximated manually. Moist gauze was applied with gentle pressure over the upper eyelid to achieve temporary hemostasis, while simultaneously confining the bleeding site and limiting the surrounding skin area exposed to CA. An explanation of the use of non-medical-grade CA was provided, and signed consents were obtained prior to treatment. Polymerization of the CA was immediate, resulting in prompt cessation of hemorrhage (Figure 2B). Only minimal oozing was noted afterwards.

The patient was started on topical erythromycin ointment and oral tranexamic acid thrice daily. He was observed for recurrence of bleeding. Only one mild episode of rebleeding occurred, which resolved spontaneously. The wound subsequently healed without secondary infection, tissue necrosis, or other complications (Figures 2C and 2D).

Three weeks after the initial hemostatic intervention, the patient underwent endovascular embolization of the right upper eyelid and orbital AVM under the Interventional Radiology Service. Post-embolization cerebral digital subtraction angiography demonstrated marked devascularization of the lesion, with embolic material occupying the treated nidus (Figure 1B). A small residual nidus supplied predominantly by persistent branches of the ophthalmic artery remained, with reduced but persistent arteriovenous shunting (Figure 1C).

Three days later, partial surgical excision of the right upper eyelid component of the malformation was performed under general anesthesia. The procedure was uneventful, with minimal intraoperative bleeding and satisfactory hemostasis. Postoperatively, a residual upper eyelid mass corresponding to the deeper orbital component of the AVM remained (Figures 3A and 3B). A staged excision of the remaining lesion is planned to optimize cosmetic and functional outcomes while minimizing the risk of recurrence and excessive tissue loss.

DISCUSSION

Arteriovenous malformations (AVM) of the orbit and eyelid present a therapeutic dilemma because of their complex vascular anatomy and risk of hemorrhage. Conservative management remains appropriate for minimally symptomatic or stable AVMs, but regular monitoring is essential to detect progression or complications.[7] Traditional hemostatic measures such as direct pressure, suturing, or electrocautery can be difficult or ineffective, particularly in friable vascular tissues.

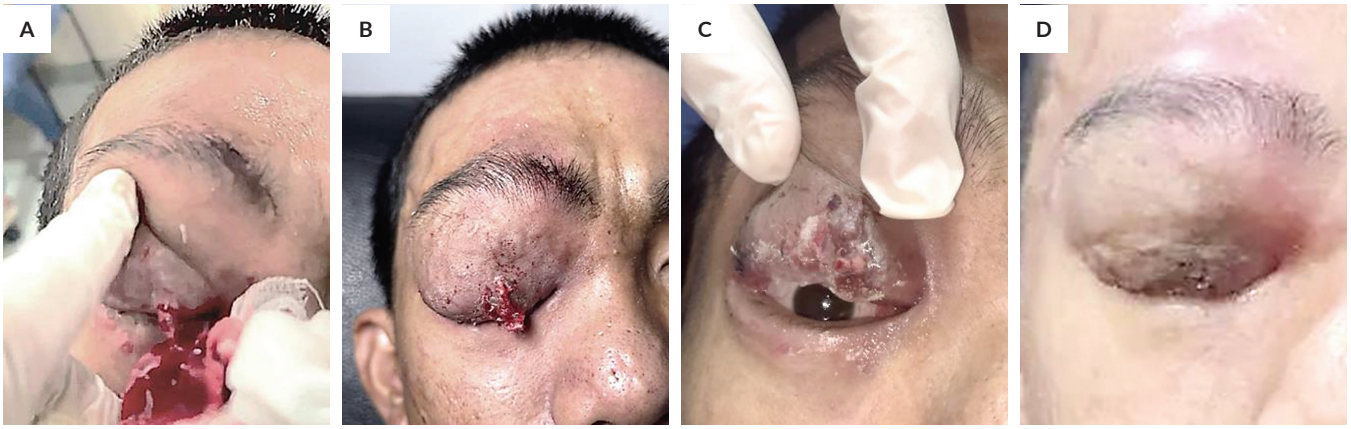

Figure 2. Clinical course of emergency hemostasis using non-medical-grade cyanoacrylate (CA) glue in a right upper eyelid arteriovenous malformation (AVM). **(A)** Active pulsatile bleeding from a superficial skin defect overlying the AVM at presentation in the emergency room. **(B)** Immediate cessation of hemorrhage following application and polymerization of a thin layer of ethyl cyanoacrylate adhesive. Only minimal oozing remained after CA hardening. **(C)** Two weeks after CA application, the polymerized adhesive remains intact over the defect, with no signs of infection, necrosis, or recurrent bleeding. **(D)** Three weeks after the emergency consultation, the CA layer has spontaneously sloughed off, and the wound has healed without rebleeding or other complications.

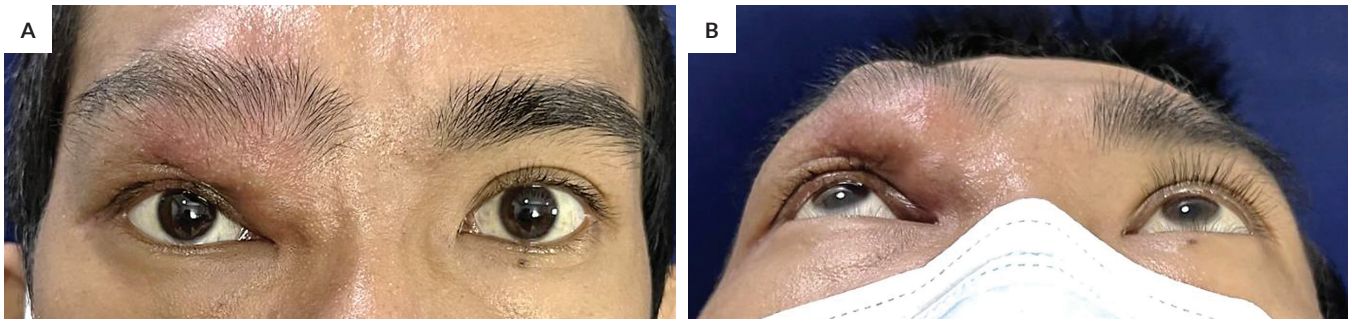

Figure 3. Four (4) months postoperative appearance showing the residual deeper orbital component of the right upper eyelid arteriovenous malformation (AVM). **(A)** Frontal view demonstrating a remaining subcutaneous mass along the superior eyelid crease following partial surgical excision. **(B)** Worm's eye view showing the contour deformity and superior eyelid fullness caused by the deeper orbital portion of the AVM. A staged excision is planned to optimize both cosmetic symmetry and functional eyelid outcomes while reducing the risk of recurrence or excessive tissue loss.

Properties and Clinical Use of Cyanoacrylate Glues

Cyanoacrylate (CA) adhesives are fast-acting monomers synthesized by the condensation of cyanoacetate and formaldehyde in the presence of a catalyst, forming alkyl-2-cyanoacrylate compounds that polymerize rapidly upon contact with moisture or tissue surfaces.[8,9] The polymerization is initiated by hydroxyl or amine groups on biological substrates, producing an exothermic reaction that yields a thin, rigid polymer film with strong adhesive properties.[10]

Different alkyl chain lengths produce variations in polymerization speed, flexibility, and biocompatibility. Short-chain monomers such as methyl and ethyl cyanoacrylate polymerize quickly but are brittle and may release cytotoxic degradation products such as formaldehyde.[11] Longer-chain homologs such as n-butyl and 2-octyl cyanoacrylate polymerize more slowly, generating less heat and exhibiting superior flexibility and biocompatibility, making them suitable for medical use.[12]

Medical-grade cyanoacrylates (e.g., Histoacryl®, Dermabond®) are sterilized, purified, and formulated for tissue compatibility, while non-medical (hardware-grade) forms such as ethyl cyanoacrylate (e.g., Mighty Bond®) contain impurities and stabilizers that can cause tissue inflammation and necrosis.[9] Despite these risks, both types share the same basic monomeric structure, and their hemostatic capability derives from the same rapid polymerization and surface-sealing properties.[9]

In ophthalmologic practice, CA has been used for corneal perforations, wound closure, and cutaneous lacerations.[13,14] Benefits include rapid hemostasis, ease of application, and avoidance of tissue distortion, which are crucial in the periocular region.[15] In wound closure, CA adhesives act as both a mechanical barrier and a hemostatic agent, producing immediate sealing of bleeding surfaces and providing protection from microbial contamination.[16]

In the beauty industry, non-medical-grade cyanoacrylate (CA) adhesives are widely used in cosmetic applications, particularly in the attachment of acrylic nails, where ethyl and methyl-cyanoacrylate formulations serve as fast-acting bonding agents.[17] Despite the rapid exothermic polymerization upon contact with moisture that can lead to unintended tissue injury under certain conditions, non-medical-grade CA is generally considered safe for superficial and controlled use.[17-20] In Brazil, Souza and Briglia reported satisfactory outcomes using commercial ethyl cyanoacrylate for closure of superficial cutaneous excisions, with no cases of tissue necrosis, allergic reactions, or infection and high patient satisfaction.[21] Similarly, Aquino et al. described the emergency use of ethyl cyanoacrylate (SuperBonder™) to achieve immediate hemostasis and closure of a traumatic forehead laceration, resulting in uncomplicated wound healing and an excellent cosmetic outcome.[22] Although rapid exothermic polymerization may cause tissue injury under certain circumstances, these reports suggest that carefully selected, superficial applications of non-medical-grade ethyl cyanoacrylate can be safe and effective as temporary wound closure in resource-limited settings.[21,22]

The prompt cessation of bleeding observed in this case following application of non-medical grade CA adhesive to the eyelid AVM is due to the property of CA to rapidly polymerize upon contact with anionic substances, such as blood. Polymerized CA forms a solid adhesive film that bridges wound edges and provides immediate mechanical hemostasis. The polymerized film typically sloughs off spontaneously within 5 to 10 days as epithelial regeneration occurs, eliminating the need for removal.[23]

In this case, ethyl cyanoacrylate successfully arrested active bleeding from an AVM-related skin defect, serving as a noninvasive, temporizing measure prior to definitive embolization. Importantly, no adverse local tissue reactions were observed, supporting its safety in limited periocular skin application. While CA did not address the underlying vascular pathology, it prevented excessive blood loss and allowed stabilization prior to interventional therapy and surgical excision.

Although all CAs degrade into formaldehyde and cyanoacetate, clinically significant toxicity is minimal in topical applications, as degradation typically occurs after the adhesive has sloughed off the skin.[23] These characteristics support the role of ethyl cyanoacrylate as a temporary, surface-level hemostatic adjunct, while also underscoring the need for cautious use and definitive management in high-flow vascular lesions such as AVMs.[23]

Ethical Considerations in the Emergency Use of Cyanoacrylate Adhesive

The successful use of non-medical-grade ethyl cyanoacrylate (CA) in this case highlights its potential value as a temporary hemostatic measure in emergency situations where standard medical supplies are not immediately available. However, it is equally important to emphasize that this case report does not promote routine, reckless, or uncontrolled use of hardware-grade CA adhesive for wound management. Instead, the clinical reasoning behind its use follows principles similar to those described in wilderness and remote-care medicine, where improvised strategies may be required for immediate stabilization.[5]

Medical-grade CAs are specifically engineered for tissue compatibility, incorporating longer carbon chains and plasticizers to minimize heat generation, brittleness, and local toxicity.[12,23] In contrast, commercial ethyl cyanoacrylate polymerizes rapidly, generates more heat, and carries a higher theoretical risk of irritation or tissue damage.[23] These distinctions underscore why medical-grade products remain the preferred option for wound closure whenever available. In our patient, ethyl cyanoacrylate was applied only after the failure of prolonged direct pressure, and only as a surface-level, temporary seal to control hemorrhage until definitive AVM management could be performed.

This cautious approach reflects a harm-reduction framework, consistent with the ethical principles recognized in wilderness medicine.[5] In many emergency or resource-limited settings, professional medical supplies may not be immediately accessible, and immediate bleeding control may be lifesaving. In such circumstances, clinicians may need to imple-ment controlled, improvised measures using materials at hand.[5] The alternative management of continued uncontrolled bleeding in an eyelid AVM, while awaiting ideal materials, may pose greater risk to the patient. Temporary CA sealing, applied judiciously and with full disclosure of its limitations, fits within this ethical reasoning.

Existing reviews of cyanoacrylate use in remote settings consistently avoid promoting commercial products or endorsing their indiscriminate application.[5] This case report similarly aims to present a factual description of the clinical decision-making process, without misrepresentation, commercial bias, or suggestion that hardware-grade adhesives should replace proper medical products.

CONCLUSION

This case demonstrates that non-medical-grade ethyl CA can be used as an effective temporary hemostatic adjunct for controlling acute cutaneous bleeding in a high-flow eyelid AVM, particularly in resource-constrained emergency settings where standard medical-grade adhesives are unavailable. Its rapid polymerization and strong adhesive properties allowed prompt cessation of hemorrhage, stabilization of the patient, and safe transition to definitive management through embolization and surgical excision. The ethical rationale for improvised use of cyanoacrylate in emergencies is grounded in harm-reduction principles, acknowledging that temporary stabilization may be safer than uncontrolled bleeding or delayed access to care.

However, this intervention should be regarded strictly as a bridging measure rather than definitive therapy, as it does not address the underlying vascular pathology and carries potential risks related to tissue irritation, brittleness, and non-sterile formulation. Careful technique, minimal application, appropriate patient counseling with clear communication of potential risks, and informed consent are essential when considering the use of CA. Clinicians must emphasize that the use of non-medical- or hardware-grade cyanoacrylate glue does not constitute a routine or recommended practice, but should be reserved for exceptional circumstances, and must be accompanied by careful documentation of the technique, risks, and follow-up care. There must be immediate arrangements for definitive vascular management, such as embolization or surgical excision.

This report highlights a pragmatic, harm-reduction–based approach to emergency care and contributes to the limited literature on improvised hemostatic strategies in periocular vascular lesions. Further studies are needed to better define the safety profile, indications, and clinical guidelines for the use of non-medical-grade cyanoacrylate in similar settings.

Patient Perspective

During his post-embolization follow-up, the patient shared that the recurrent episodes of sudden bleeding from his upper eyelid caused significant anxiety and interfered with his daily activities, particularly because the bleeding became more frequent while he was awaiting definitive treatment. He expressed relief that the application of the cyanoacrylate adhesive immediately stopped the bleeding, after prolonged pressure dressings had failed. He did not experience significant discomfort from the adhesive and was reassured that it served only as a temporary measure until embolization and surgery could be performed.

Following embolization and partial surgical excision, the patient was satisfied that no further episodes of significant bleeding occurred. Although he understood that a residual orbital component remained and that additional surgery may still be necessary, he felt that the emergency intervention

and subsequent definitive treatment improved his sense of safety and confidence.

Ethical Considerations

The author certifies that patient consent has been obtained. The patient has given his consent for images and other clinical information to be reported in the journal and understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

All authors declared no conflicts of interest.

Funding Source

None.

REFERENCES

1. Warrier S, Prabhakaran VC, Valenzuela A, Sullivan TJ, Davis G, Selva D. Orbital arteriovenous malformations. Arch Ophthalmol. 2008;126:1669-75. doi: 10.1001/archophthalmol.2008.501. PMID: 19064847.
2. Tawfik HA, Dutton JJ. Orbital vascular anomalies: a nomenclatorial, etiological, and nosologic conundrum. Ophthalmic Plast Reconstr Surg. 2022;38:108-21. doi: 10.1097/IOP.0000000000002029. PMID: 34238823.
3. Sulaiman II, Hashim MA, Ismail M, Hashim M. The complexities of orbital arteriovenous malformations: A systematic review of clinical features and treatment approaches. Cureus. 2024 Oct 12;16(10). doi: 10.7759/cureus.71323. PMID: 39529779; PMCID: PMC11554339.
4. Singer AJ, Thode Jr HC. A review of the literature on octylcyanoacrylate tissue adhesive. Am J Surg. 2004 Feb 1;187(2):238-48. doi: 10.1016/j.amjsurg.2003.11.017.
5. Davis KP, Derlet RW. Cyanoacrylate glues for wilderness and remote travel medical care. Wilderness Environ Med. 2013 Mar;24(1):67-74. doi: 10.1016/j.wem.2012.08.004. PMID: 23131754.
6. Priyadarshini Y. Clinical evaluation of efficacy of cyanoacrylate glue and conventional polypropylene suturing in cutaneous wounds - A Comparative Study. Master's thesis, Rajiv Gandhi University of Health Sciences,India. doi: 10.33552/OJOR.2021.04.000595.
7. Decock C, Reynders S, Vandenbroecke C, Claerhout I, Defreyne L. Diagnosis and treatment of a superficial upper eyelid arteriovenous malformation. Orbit. 2008 Jan 1;27(4):301-3. doi: 10.1080/01676830802225186. PMID: 18716969.
8. Ardis AE. Preparation of Monomeric Alkyl Alpha-Cyano-Acrylates. US Patent 2,467,926. [Internet]. 1949 [cited 2026 June]. Available from: https://patents.google.com/patent/US2467926A/en.
9. Leggat PA, Smith DR, Kedjarune U. Surgical applications of cyanoacrylate adhesives: a review of toxicity. ANZ J Surg. 2007 Apr;77(4):209-13. doi: 10.1111/j.1445-2197.2007.04020.x. PMID: 17388821.
10. Matsumoto T, Pani KC, Hardaway RM, Leonard F. N-alkyl-a-cyanoacrylate monomers in surgery: speed of polymerization and method of their application. Arch Surg. 1967 Jan 1;94(1):153-6. doi: 10.1001/archsurg.1967.01330070155031. PMID: 6017455.
11. Toriumi DM, Raslan WF, Friedman M, Tardy ME. Histotoxicity of cyanoacrylate tissue adhesives: a comparative study. Arch Otolaryngol Head Neck Surg. 1990 May 1;116(5):546-50. doi: 10.1001/archotol.1990.01870050046004. PMID: 2183824.
12. Quinn J, Wells G, Sutcliffe T, Jarmuske M, Maw J, Stiell I, et al. A randomized trial comparing octylcyanoacrylate tissue adhesive and sutures in the management of lacerations. JAMA. 1997 May 21;277(19):1527-30. doi: 10.1001/jama.1997.03540430039030. PMID: 9153366.
13. Sharma A, Kaur R, Kumar S, Gupta P, Pandav S, Patnaik B, et al. Fibrin glue versus N-butyl-2-cyanoacrylate in corneal perforations. Ophthalmology. 2003 Feb 1;110(2):291-8. doi: 10.1016/S0161-6420(02)01558-0. PMID: 12578769.
14. Webster RG Jr, Slansky HH, Refojo MF, Boruchoff SA, Dohlman CH. The use of adhesive for the closure of corneal perforations. Report of two cases. Arch Ophthalmol. 1968 Dec;80(6):705-9. doi: 10.1001/archopht.1968.00980050707004.
15. Jackson CM, Nguyen M, Mancini R. Use of cyanoacrylate glue casting for stabilization of periocular skin grafts and flaps. Ophthalmic Plast Reconstr Surg. 2017 May 1;33(3):218-20. doi: 10.1097/IOP.0000000000000827. PMID: 27841829.
16. Bouten PJ, Zonjee M, Bender J, Yauw ST, van Goor H, van Hest JC, et al. The chemistry of tissue adhesive materials. Prog Polym Sci. 2014 Jul 1;39(7):1375-405 doi: 10.1016/j.progpolymsci.2014.02.001.
17. Kelemen N, Karagergou E, Jones SL, Morritt AN. Full thickness burns caused by cyanoacrylate nail glue: a case series. Burns. 2016 Jun 1;42(4):e51-4. doi: 10.1016/j.burns.2015.11.009. PMID: 26777605.
18. Tang CL, Larkin G, Kumiponjera D, Rao GS. Vanity burns: an unusual case of chemical burn caused by nail glue. Burns. 2006 Sep 1;32(6):776-7. doi: 10.1016/j.burns.2005.12.008. PMID: 16890363
19. Shelley ED, Shelley WB. Chronic dermatitis simulating small-plaque parapsoriasis due to cyanoacrylate adhesive used on fingernails. JAMA. 1984 Nov 2;252(17):2455-6. doi: 10.1001/jama.1984.03350170057021. PMID: 6481935.
20. Clarke TF. Cyanoacrylate glue burn in a child–lessons to be learned. J Plast Reconstr Aesthet Surg. 2011 Jul 1;64(7):e170-3. doi: 10.1016/j.bjps.2011.03.009.
21. Souza SC, Briglia CH. Comparative study of the use of ethyl cyanoacrylate adhesive and intracutaneous suture for cutaneous excision closure. Rev. Bras. Cir. Plást. 2011;26:566-72. doi: 10.1590/S1983-51752011000400005.
22. Aquino TAS, Castro TD, Pedron I, Pedron TG, Shitsuka C, Pedron IG. Use of cyanoacrylate-based domestic glue in emergency treatment of cutaneous laceration due to trauma to the forehead: case report. Sci Arch Dent Sci. 2021 Dec;4(12):26-30.
23. Singer AJ, Quinn JV, Hollander JE. The cyanoacrylate topical skin adhesives. Am J Emerg Med. 2008 May;26(4):490-6. doi: 10.1016/j.ajem.2007.05.015. PMID: 18410821.