Surgical Adhesives in Facial Plastic Surgery

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KEYWORDS

• Hemostasis • Fibrin tissue adhesive • Fibrin glue • Facial plastic surgery
• Rhytidectomy • Skin grafts • Forehead lift

KEY LEARNING POINTS

At the end of this article, the reader will:

- Know when surgical adhesives are useful in facial plastic procedures.
- Be able to identify which step in the coagulation cascade fibrin tissue adhesives replicate.
- Know the potential risks of homologous fibrin tissue adhesives.
- Know which factors influence the efficacy of fibrin tissue adhesives.
- Be able to identify the indications for fibrin tissue adhesives in facial plastic surgery.
- Know the advantages and disadvantages of the different methods of application.
- Know the key steps for application of fibrin tissue adhesives in facial plastic procedures.

INTRODUCTION

Why is bleeding a problem in facial plastic surgery?
• Skin flap injury from cautery
• Extended operating time
• Delayed wound healing
• Poor aesthetic outcome
• Return to operating room

Surgical bleeding should be anticipated and controlled in facial plastic surgery. Excessive bleeding and accumulation of blood can inhibit optimal healing, resulting in poor outcomes. Aesthetic surgery patients are concerned with prolonged downtime secondary to postoperative edema and ecchymosis. Surgeons typically limit

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Otolaryngol Clin N Am 49 (2016) 585–599
http://dx.doi.org/10.1016/j.otc.2016.02.012 **oto.theclinics.com**
0030-6665/16/$ – see front matter

electrocautery of superficial tissues, as it might injure the skin flap. Gaining hemostasis without electrocautery may extend operating time. Accumulation of postoperative bleeding may necessitate an emergent return to the operating room. In facial plastic surgery, surgical adhesives can be used to improve hemostasis and outcomes.

SURGICAL TISSUE ADHESIVES

Categories of surgical tissue adhesives

- Cyanoacrylates
- Fibrin tissue adhesives

When discussing surgical adhesives, both categories, cyanoacrylates and fibrin tissue adhesives, are frequently grouped together and considered the same product; however, the inherent properties of each provide important distinctions for their appropriate use. It should be clear that they have separate indications that do not overlap in application.

Cyanoacrylates

- Superficial wound closure
- No hemostatic property, only a tissue adhesive
- Elicit foreign body reaction when placed subdermally
- Longer-chain derivatives have decreased toxicity
- For example, Dermabond (Ethicon, Somerville, NJ)

During the development of cyanoacrylates, it was recognized that although they bonded and sealed tissue well, early cyanoacrylates generated a long-lasting inflammatory reaction within the body. By increasing the chain length of the molecule, the tissue reactivity decreased. These longer chain lengths can now be tolerated on the epidermis, but foreign body reactions still occur when cyanoacrylates are deposited below the dermis. Furthermore, this category of surgical adhesive has no hemostatic properties, limiting its application to superficial wound closure in facial plastic surgery (**Fig. 1**).[1]

Fibrin tissue adhesives

- Mechanism of action occurs on the coagulation cascade, replicating the body's natural hemostasis pathway
- Conversion of fibrinogen to fibrin initiates clot formation
- Fibrin tissue adhesives are composed of 2 components that activate when mixed together