

SURGICAL CORNER

A Poliglecaprone 25—Only Approach to Wound Closure:
Cosmetic and Financial AdvantagesJesse M. Lewin MD,^a Jeremy A. Brauer MD,^b and Ariel Ostad MD^a^aRonald O. Perelman Department of Dermatology, New York University Langone Medical Center, New York, NY^bLaser & Skin Surgery Center of New York, New York, NY

ABSTRACT

The primary concerns when performing surgical excisions include adequate control of surgical margins and cosmetic outcome. The ideal repair combines perfect wound approximation, tensile strength, and minimal scarring. Various techniques and suture materials are utilized by dermatologic surgeons to achieve this goal. We describe a Monocryl-only bilayered repair, which can lead to excellent cosmetic results and may reduce the burden of return visits for patients. In this paper, we describe the technique used to place deep Monocryl sutures, as well as a running subcuticular suture, and illustrate this technique with photographs.

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BACKGROUND

In the field of procedural dermatology, the primary concerns when performing surgical excisions include adequate control of surgical margins and cosmetic outcome. The ideal repair combines perfect wound approximation, tensile strength, and minimal scarring. Various techniques and suture materials are utilized by dermatologic surgeons to achieve this goal, depending on wound size, location, surgeon preference, and surgeon comfort level.

A 2006 prospective survey of 101 members of the Association of Academic Dermatologic Surgeons (now known as the Procedural Dermatology Section) found that epidermal layers were closed most often, in descending order, by simple interrupted sutures (38%-50%), simple running sutures (37%-42%), and vertical mattress sutures (3%-8%), with subcuticular sutures used more often on the trunk and extremities (28%).¹ The most commonly used superficial sutures were nylon (51%) and polypropylene (44%), and the most common absorbable suture was polyglactin 910 (73%). Bilayered closures, undermining, and electrocoagulation were used in at least 90% of sutured repairs. With such an array of techniques, we would like to share our approach to achieving excellent and cost-effective results for wound closure on the trunk and extremities using a poliglecaprone 25 (Monocryl; Ethicon, Inc, San Angelo, TX) alone for layered closures.

Traditionally, nonabsorbable sutures, such as nylon or prolene, are used for superficial closure because of their high tensile strength, minimal tissue reactivity, and low capillary attraction.² Recent studies have challenged the superiority of nonabsorbable sutures for cutaneous wound closure. A prospective study compared simple running sutures using the absorbable suture 5-0 poliglecaprone 25 (Monocryl) with the nonabsorbable suture 6-0 polypropylene (prolene) in primary closures of 57 facial Mohs defects.³ The authors blindly evaluated the wounds at 1 week

and at 4 months postprocedure and found no statistically significant difference ($P=.03$) in cosmetic outcome. A bilayered closure with poliglecaprone (Monocryl) has many advantages for both patients and surgeons. Monocryl is a monofilament that elicits minimal inflammatory reaction and is absorbed by hydrolysis in vivo, retaining approximately 50% to 60% of its original strength 7 days postimplantation, 20% to 30% at 14 days, and absorption is essentially complete between 91 and 119 days.⁴

In the appropriate clinical setting, we favor using Monocryl for deep dermal approximation, followed by subcuticular running. A subcuticular running approach has several advantages: first, it leads to wound eversion not always achieved by superficial running sutures. Everted wound edges tend to heal with flatter scars, whereas an initially flat closure may become depressed following wound contracture.⁵ A running subcuticular suture also avoids track marks, which can accompany superficial running or interrupted epidermal suturing that can lead to patient dissatisfaction with cosmesis. A Monocryl-alone approach is most frequently implemented for closures below the neck, as sutures used on the face are typically removed in 1 week, resulting in minimal risk of track marks. Another advantage of using absorbable Monocryl for bilayer repairs on the trunk and extremities vs absorbable dermal sutures with nonabsorbable suture for the cutaneous layer is that once the superficial sutures are removed, stretching occurs and only the deep layer remains to keep the wound intact, whereas an intradermal Monocryl layer will retain 20% to 30% of its tensile strength at 14 days to combat stretching.

Using a Monocryl-only approach, patients are spared the financial costs and time of returning to the office for a follow-up visit for suture removal. A cost-analysis study using a single suture package of coated absorbable polyfilament suture (polyglactin 910) for deep and superficial layers saved approximately 50%

FIGURE 1. An elliptical excision with a length to width ratio of approximately 3:1 is performed with a No. 15 blade scalpel to the level of subcutaneous tissue.



FIGURE 2. After undermining and hemostasis, a 3-0 Monocryl suture is placed for buried dermal interrupted suturing to provide eversion and decrease wound tension.

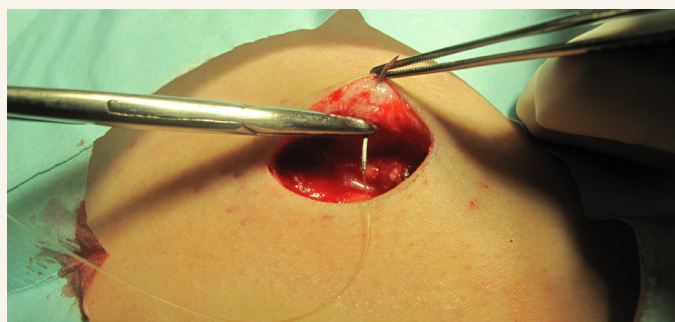


FIGURE 3. For epidermal closure, a 5-0 Monocryl suture is used in a running subcuticular fashion by taking small horizontal bites of the dermis from one side of the defect to the other until one nears the other end of the defect.



of the suture cost.⁶ For small repairs, often there is Monocryl suture remaining from the first package after deep approximation, which can be used for superficial closure. However, more often 2 packages of Monocryl are used to close excisions on the trunk; a 3-0 Monocryl for the deep layer and a 5-0 Monocryl for subcuticular running. Nonetheless, on a global scale, the cost of a second package of Monocryl pales in comparison to health care dollars spent on return visits for suture removal.

TECHNIQUE

First, an elliptical excision is performed to the level of subcutaneous tissue after careful planning and alignment with relaxed skin tension lines (Figure 1). Following undermining and hemo-

FIGURE 4. No knots are placed at the far end of the closure, but rather the suture is placed from the subcutaneous plane up vertically out of the skin, and the suture thread is cut flush against the skin, leaving a flat, well-approximated linear closure.



stasis, a 3-0 Monocryl suture is used to approximate the deep layer using subcutaneous interrupted sutures while obtaining eversion and minimizing dead space (Figure 2). This reduces the risk of hematoma and scar stretching. Once the deeper layer is placed, a 5-0 Monocryl running subcuticular suture is used to close the defect. Starting at one end of the ellipse, a subcutaneous suture is placed, a knot is tied, and only the short end of the thread is then cut right above the knot. Next, the long end of the suture is used to run the subcuticular suture, small horizontal bites of the dermis are taken and placed from one side of the defect to the other until one nears the other end of the defect (Figure 3). At that point, the suture is passed from under the skin in the subcutaneous plane and vertically removed farther away from the incision site, typically about a centimeter. No knots are placed, and the suture thread is cut flush against the skin, leaving a mostly flat, well-approximated linear closure (Figure 4). Steri-Strips (3M, St. Paul, MN) are placed on the wound, followed by a pressure bandage. The advantage of this method is that sutures do not require removal, and more importantly, the long absorption time for the running subcuticular suture allows the wound to be held together, reducing possibility of stretching of the apposed tissue.

DISCLOSURES

The authors have no relevant conflicts of interest to disclose.

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