

The fine points of taping

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INTRODUCTION

The rural physician has several choices available for wound closure: sutures, staples, tissue tape and tissue adhesive (“glue”).¹ Patient, wound and physician factors must all be considered when deciding on the method for closure of any given wound (Box 1).² Each closure method has its own advantages and disadvantages, wounds to which it is well suited and wounds to which it is less well suited.^{3,4}

In this article, I discuss tissue tape, of which there are a large variety available, the most popular likely being Steri-Strips (3M).

Each brand of tape differs slightly in such factors as adhesiveness, breathability, breaking strength and stretchiness. An early comparative study showed Steri-Strips to have “better overall performance” than a competing brand,³ and, in another study, Steri-Strips were among the top 3 brands of tape tested.³ However, the true degree to which differences among the various brands are clinically important is not known.

ADVANTAGES

Tissue tape is inexpensive and quick to apply and can be applied by nonphysician personnel. It works best for superficial linear lacerations under minimal tension, where there is little risk of further bleeding and when the deep tissues do not have to be approximated.^{3,5} Taping offers:⁵

- Fast and painless application, without the need for local anesthesia or suture removal.

- Creation of even distribution of wound tension across the entire length of the wound.
- Avoidance of the risk of “railroad track” suture scars.
- Breathability that creates a favourable environment for wound healing, which lowers the risk of infection compared to sutures or tissue adhesive: 3.8% with tape versus 14% for sutured wounds in 1 study,⁴ and 1.4% with tape compared to “a historical rate” of 4.57% in another.⁶

Tape can be used as an adjunct after staples or sutures have been removed or in addition to deep dermal sutures.^{3,5} Although many physicians apply tape in conjunction with subcuticular sutures, Kolt⁷ argued that there was “no evidence in the scientific literature to justify or support the practice of closing a surgical wound with both subcuticular suture and adhesive surgical tape.”

Box 1: Factors that can influence the choice of wound-closure method

Patient factors

- Age
- Immune status
- Obesity
- Ability to provide postrepair care and to return for suture removal
- Vascular supply to wound area

Wound factors

- Site
- Type (e.g., bite, puncture, cut, stellate)
- Wound tension present
- Presence of ongoing bleeding or discharge

Physician factors

- Experience
- Preference
- Availability of material

Wounds that are well suited for tape and wounds less well suited are described in Box 2 and Box 3, respectively.^{3,4,8}

DISADVANTAGES

Proper wound taping is highly operator-dependent, more so, in my experience, than the application of tissue adhesive. Other disadvantages of tape^{4,5} include the following:

- If the wound edges are irregular, proper tissue approximation and edge eversion may be difficult to achieve with taping.⁴
- The skin must be dry before the tape is applied, and there must be complete hemostasis afterward.
- The tape may lose its adhesiveness over time and wound dehiscence may occur, especially if there is poor operator technique, or continuing bleeding or exudate.
- Unlike with tissue adhesive, the patient must keep the area dry until the tape is removed.
- The tape may injure the epidermis on application or removal.
- Young children may pull the tape off.

COSMETIC RESULTS

Assuming proper wound selection, tissue taping produces equivalent cosmetic results to adhesive³ and subcutaneous sutures.^{9,10} In a randomized study among children aged 1–18 years presenting with “simple low tension lacerations of the face,” Zempsky and colleagues¹¹ found that Steri-Strips

Box 2: Wounds and cases for which tissue tape is well suited

- Superficial straight lacerations with little skin tension, such as wounds to the forehead, malar area, chin, thorax and nonjoint areas of the extremities
- Flap lacerations
- Lacerations at high risk for infection
- The thinned skin of older or steroid-dependent patients
- As support for lacerations after staple or suture repair, or in conjunction with deep dermal sutures

Box 3: Wounds for which tissue tape is less well suited

- Gaping wounds under tension, or when there is extreme tissue laxity
- Wounds in hairy, intertriginous or moist areas (e.g., axilla)
- Wounds on the scalp or convex areas, or joint-surface wounds
- Wounds where there is liable to be ongoing bleeding or discharge
- Wounds in young children

and Dermabond produced similar cosmetic outcomes. There was 1 wound complication in the Steri-Strips group and 8 wound complications in the Dermabond group. Similarly, in children with “suitable lacerations,” Mattick and colleagues¹² found that “both tissue adhesives and adhesive strips are excellent ‘no needle’ alternatives for the closure of suitable pediatric lacerations” and felt that the choice as to which is used “may come down to economics and operator preference.”

CONTRAINDICATIONS

Again, assuming proper wound selection, tape is contraindicated in patients with tape sensitivity in general or a known sensitivity to any of the components of that particular tape.

Tape should not be applied circumferentially around a limb or digit, as swelling may lead to a tourniquet effect.

TECHNIQUE

Important factors for successful wound closure include accurate apposition of the edge, hemostasis, dry skin and use of a tissue adhesive adjunct.^{3–5} Assuring skin dryness may include application of a drying agent (tincture of benzoin) or one of several sprays marketed for such, although tincture of benzoin is superior.⁴

Generally, the 6-mm tape size is adequate for wounds 4–5 cm in length; the 12-mm size may be used for longer wounds.

APPLICATION^{3–5}

1. Clean the wound as you would otherwise, and ensure hemostasis.
2. Dry the skin and apply a drying agent.⁴
3. Cut the tape to the desired length while it is still attached to the backing sheet, leaving an overlap of 2–3 cm for either side of the wound.
4. Gently remove one of the end tabs, being careful not to twist or deform the tape.
5. Remove the tape from the backing with forceps by carefully pulling away.
6. Apply the tape in the centre of the wound: place one-half of the length of the tape on one side of the wound and use a finger of the other hand to appose the opposite wound edge, then secure the tape. Do not pull or stretch the tape to close the wound, as this may cause unequal distribution of wound tension or skin blisters (Fig. 1).

7. In a similar way, apply further pieces of tape adjacent to the original piece, at sufficient intervals to keep the edges apposed (Fig. 2). Allow at least 2–3 mm between the individual pieces of tape to allow any exudate to escape, thus helping to prevent premature loss of adhesion.
8. Place “cross-stays” to prevent premature elevation of the tape ends and skin blistering caused by tape tension (Fig. 3).

POSTOPERATIVE CARE

A dressing may be applied over the tape if additional protection is desired. The patient should be cautioned to keep the area as dry as possible and to avoid applying ointment over the tape, as this may cause loss of adhesiveness. The patient may shower but not bathe.

Tape that loses its adhesiveness may be replaced. The tape should be left in place for the same length of time as sutures would be left in. If the distance to return to a health care facility is long, patients may be instructed to remove the tape themselves at the appropriate time.

Proper technique is important when removing the tape as well, to avoid further skin injury.¹⁵

1. Free a corner of the tape.
2. Stabilize the skin with a finger.
3. Remove the tape by gently pulling it off over itself. Do not remove it at an angle, as this may cause further skin injury.



Fig. 1. Tape is applied in centre of wound.



Fig. 2. Further pieces of tape are applied adjacent to original piece, at sufficient intervals to keep edges apposed.

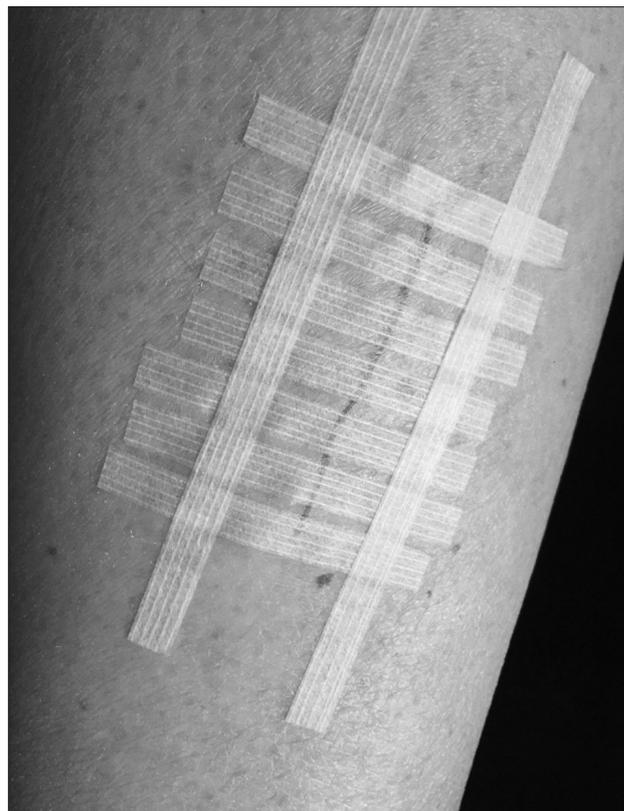


Fig. 3. “Cross-stays” are placed to prevent premature elevation of tape ends and skin blistering caused by tape tension.

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