

Zipper Stitch: A Novel Aesthetic Subcutaneous Closure

Patients' perception of their scars influence their perception of the medical service they receive.¹ Therefore, the dermatologic surgeon is wise to emphasize ensuring excellent surgical outcomes when seeking patient satisfaction and retention. When closing surgical defects, the majority of dermatologists use a combination of individual buried stitches to appose wound edges and transepidermal stitches to complete the closure² but for optimal cosmesis, it may be best to avoid use of transepidermal stitches altogether.³ To complete closures without placement of transepidermal stitches, dermatologists usually use surgical glue containing cyanoacrylate or place running subcuticular stitches in a wave-like pattern, weaving side-to-side parallel to the skin's surface at the level of the upper papillary dermis.

The zipper stitch is a running buried vertical mattress stitch that essentially zips the apposing edges of a wound together securely. It is a rapid subcutaneous wound closure technique that allows for excellent wound edge eversion and cosmesis without the risk of leaving permanent, unsightly stitch marks.

Technique

Initially, to bring wound edges together in approximation, place one or more buried vertical mattress⁴ or subcutaneous inverted cross mattress (SICM)⁵ stitches along the defect edges as needed. These individual subcutaneous stitches, if used alone, would typically be insufficient to maintain effective wound edge approximation but are able to decrease tension and encourage wound edge eversion before initiating the zipper stitch.

The zipper stitch is a finishing stitch used in addition to the buried vertical mattress or SICM

stitches to enhance and strengthen wound edge approximation and diminish the risk of wound dehiscence. To begin the zipper stitch, place a buried vertical mattress stitch at one end of the initially approximated defect. Tie the stitch securely and trim only the tail end of the suture (Figure 1, Step 1). Next, reflect one side of the wound edge back to place the first half of a second buried vertical mattress stitch approximately 3–6 mm from the previous stitch. Then, in one continuous motion, place the second half of the second running buried vertical mattress stitch and the first half of the subsequent running buried vertical mattress stitch. Continue placing side-by-side buried vertical mattress sutures in this fashion along the entire length of the defect (Figure 1, Step 2), passing the suture beneath any individual buried vertical mattress or SICM stitch that is encountered along the suture line. When the

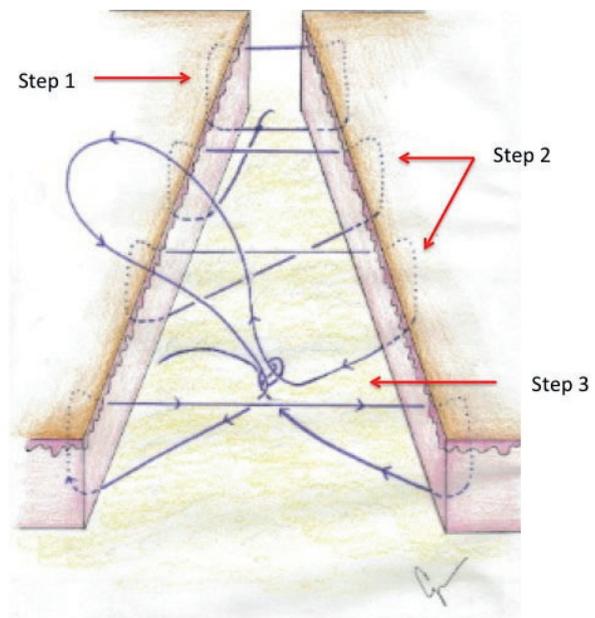


Figure 1. Diagram of steps 1 to 3 (red arrows) used to place the zipper stitch. See text for details.

successive running buried vertical mattress stitches are placed correctly, the skin dimples lateral to the line of apposition at points where the suture grasps a small amount of papillary and upper reticular dermal tissue. This dimpling encourages wound edge eversion.

To tie off the zipper stitch subcutaneously, complete the second half of the penultimate running buried vertical mattress stitch, pull the needle out between the defect edges to create a loop of suture above the level of the skin's surface, place the final running buried vertical mattress stitch, and pull the needle out between the defect edges in the space between the penultimate and last stitch (Figure 1, Step 3) to tie it securely to the loop, creating a knot that is drawn downward into the subcutaneous tissue after the suture is cut at the level of the knot (Figure 2).

The zipper stitch requires the use of absorbable suture material because all of the stitches remain

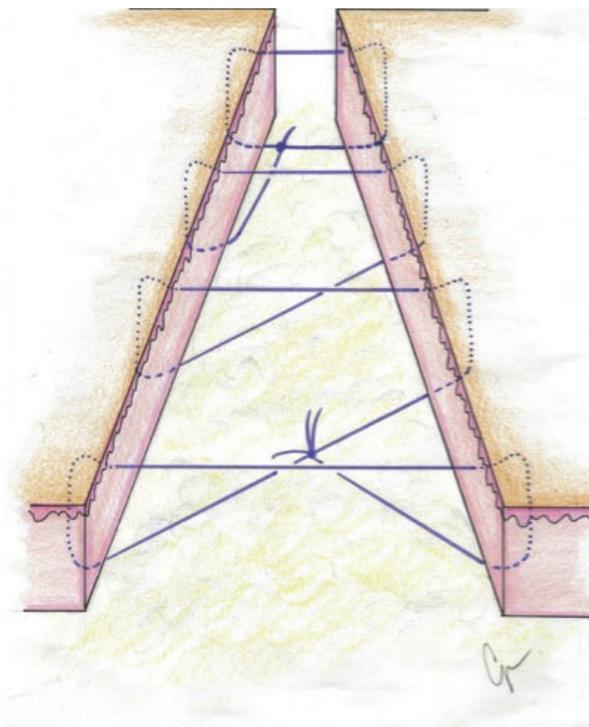


Figure 2. Diagram of the completed zipper stitch. Note the buried tie-off knot (blue arrow).

in place until the body's degradative processes naturally resorb them. The author chooses to use polylactacaprone-25 as her suture of choice

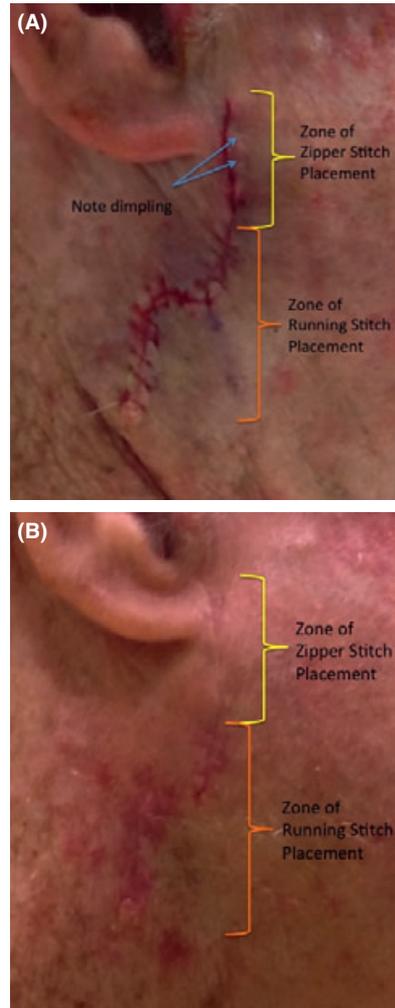


Figure 3. (A) Immediate postoperative photograph of completed surgical repair using the zipper stitch on the superior aspect of the closure and an oblique running stitch on the inferior aspect of the closure. Note the intermittent slight dimpling of the skin's surface (blue arrows) running parallel to the line of apposition where the zipper was placed. These dimples indicate proper placement of the zipper stitch's running buried vertical mattress sutures and resultant good wound edge eversion. The dimples will disappear as the absorbable suture material resorbs and the wound heals. (B) Two-week follow-up of surgical repair using the zipper stitch on the superior aspect of the closure and an oblique running stitch on the inferior aspect of the closure. Note the absence of suture marks and the better aesthetic outcome of the surgical repair on the superior aspect of the closure than on the inferior aspect of the closure.

when placing the zipper stitch because of its high tensile strength for prolonged wound security and its low coefficient of friction for ease of handling.

Discussion

The zipper stitch is an innovative technique that the author has used for longer than 2 years to complete closure in the vast majority of approximately 1,500 surgical cases per year. The zipper stitch technique re-creates the familiar movements of buried vertical mattress stitch placement except that the stitches are placed in running rather than interrupted fashion. There are many advantages to using the zipper stitch over other wound closure techniques. It uses absorbable suture for prolonged wound strength, diminishes risk of dehiscence, does not require suture removal, and provides excellent wound edge eversion without the use of transepidermal stitches for exceptional postoperative cosmetic results and, possibly, greater patient satisfaction and retention (Figure 3A, B).

References

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