CHAPTER 1

SUTURING TECHNIQUES

One of the cornerstones of cutaneous surgery is suturing. Mastering the various suturing techniques is paramount to achieving both a good aesthetic and functional outcome.

In order to obtain this goal one must understand the principles behind suturing. Without proper suturing, even the best planned reconstructions may not yield the best results.

The best scars result from wounds that are closed under minimal tension with good eversion of the wound edges. This is best achieved through layered suturing – placement of buried sutures followed by superficial cutaneous sutures.

This chapter illustrates the various suturing techniques used to obtain these results.

References

It is essential to master the square knot, which is used to secure the sutures. The square knot can be performed easily with a needle holder.

A. The first throw of the square knot requires looping the long end of the suture twice around the needle holder.
B. Grasp the short end of the suture.
C. Pull the needle holder through to the side where the needle exited.
D. The second throw is made by looping the suture in the opposite direction once around the needle holder.
E. Grasp the short end of the suture and pull the needle holder in the opposite direction of first throw. This is an important step to achieve a more secure square knot versus a granny knot. Repeat the sequence looping and pulling in opposite directions with each throw. Three to four throws are needed.

Figure 1.1 Square Knot.
Figure 1.2 Simple Interrupted Suture. The simple interrupted stitch is the fundamental stitch used in dermatologic surgery.

A. Proper insertion of the needle point is a key component of achieving an optimal stitch. Begin with the needle point perpendicular to the skin surface or even pointing slightly outward, then allow the natural curved shape of the needle to follow through to the center and then to the other side of the wound edge in a flask-shaped
Figure 1.3 Correcting Uneven Wound Heights. The simple interrupted suture can also be used to adjust wounds of uneven heights by varying the depth of suture placement on either side of the wound.

A. The needle enters the low side more deeply and the high side more superficially. B. Level wound heights.
Figure 1.4 Vertical Mattress Suture. Vertical mattress suture aids in closing dead space and decreases tension while providing controlled wound eversion.

A. The first pass starts further from the wound edge, the starting point of which is determined by the amount of tension on the wound; the greater the tension, the deeper and wider the stitch, with both sides of the wound equidistant from the wound edges. B. The second pass starts in the opposite direction of the first pass and is a shorter and shallower stitch, but also of equal distance from the wound edges to provide even eversion. C, D. The suture is tied in the same technique as the simple interrupted suture.
Figure 1.5 Horizontal Mattress. Horizontal mattress stitch is used to reduce tension and evert the wound edges.

A. Initially, the needle is passed through the skin similar to the simple interrupted suture. The needle is then reversed and passed through on the same side a few millimeters down from the exit point of the first pass. B. The needle then exits on the opposite side where the suture originated. C. Tied off with a square knot.
Figure 1.6 Corner Stitch. A three-point corner (tip) and the four-point corner sutures are variations of the horizontal mattress suture. These sutures are used to secure the corners in flaps.

A. Make the initial pass through the non-flap side of the incision. Pass the needle horizontally through the dermis of the flap. Enter the opposite side of the incision at the same level of the dermis and then exiting the skin.

B. The tip is secured with a square knot.

C, D. Four-point variation.
Figure 1.7 Buried Interrupted Suture. Proper placement of the subcutaneous or dermal buried suture allows for maximal wound eversion and decreases tension across the wound.

A. Simple variation. Begin with the needle in the deep dermis or fat and exit more superficially in the dermis. Enter the opposite side of the wound at the same depth and exit the needle deep in the wound and bring the needle out of the skin through the center. B. Needle path entering the undersurface of the dermis and exiting out of the superficial dermis. C. Needle then passes from superficial dermis to the undersurface of the dermis. D, E. The suture is tied in a square knot after the initial double loop similar to the cutaneous simple interrupted. However, the needle holder is pulled parallel to the wound. F. A second single loop is thrown in the opposite direction and the tail end grasped.

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Figure 1.7 Buried Interrupted Suture (continued).

G. Needle holder is pulled in the opposite direction from the Figure 1.7D. H. The suture is cut on the knot usually after three ties and is buried deep in the tissue which results in less suture-spitting on the surface of the wound. I, J. Vertical Mattress Variation. For even greater wound eversion, the needle is pointed upward, toward the epidermis, in order to create a heart-shaped path. The dermis needs to be thick enough to allow for this.
Figure 1.8 Running Cutaneous Sutures. When wounds are under minimal tension, continuously running the cutaneous suture can save time.

**A.** Simple Running Suture Variation. Simple interrupted suture is tied but only the short end is cut. The longer needle end is continuously passed through the skin in series. **B.** At the end, a short loop is brought out from the final pass. **C, D.** The longer needle end of the suture is then tied off with the loop that serves as the tail end.

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