

Dermal suture height differential: The secret to simplifying and optimizing wound edge eversion

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Key words: deep dermal sutures; dermatologic surgery; eversion; height differential; inversion.

CHALLENGE

Optimal cosmetic outcomes in surgery are often predicated on achieving appropriate eversion of, and decreasing tension across, wound edges.¹ Although there are many nuances to eversion and approximation, including both patient (anatomic location, dermal thickness, and tissue laxity) and procedural considerations (bite size and needle characteristics), one critical determinant is the dermal suture technique. Several techniques have been described to accomplish eversion/approximation, including the simple buried, buried vertical mattress, set-back dermal, and subcutaneous inverted vertical mattress stitches.^{1,2} When choosing a technique that targets eversion, nomenclature restrictions often lead to a relatively categorical selection (eg, “for this situation, I will choose the set-back suture”). Such an approach could produce poor understanding of the mechanisms that generate eversion and leave clinicians with an inability to pinpoint issues that produce suboptimal outcomes. Thus, a simple systematic understanding of the geometry underlying eversion would be of great utility to surgeons. Herein, we provide such an understanding in the form of a novel concept, “dermal suture height differential.”

SOLUTION

“Dermal suture height differential” refers to the vertical distance between the peak of the suture’s path through the dermis at the point furthest from the incision (the “bite width”) (*A* in Fig 1) and the exit point of the dermal suture (*B* in Fig 1) on one side of the wound. This distance positively correlates with wound edge eversion, negatively correlates with inversion, and is the basis of the named suturing techniques described above (Fig 2). To effectively take advantage of this concept, meticulous attention must be paid to the angle of needle entry in the deep-to-superficial pass starting with the needle pointing 90° or perpendicular to the surface of the skin on entry. One can then titrate the degree of eversion by using forceps to reflect the wound edge while, with the other hand, advancing and using the curvature of the needle using wrist rotation to produce a desired height differential in the dermis. Although this concept does not comprehensively address all factors that interplay to effectively achieve eversion, the dermal suture height differential model allows dermatologic surgeons an understanding that can be used to seamlessly simplify, manipulate, and optimize wound edge eversion or inversion in the proper clinical situation through effective dermal suture placement, regardless the nomenclature of the technique.

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Funding sources: None.

IRB approval status: Not applicable.

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J Am Acad Dermatol 2023;■■■:e■-■.

0190-9622

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<https://doi.org/10.1016/j.jaad.2023.12.013>

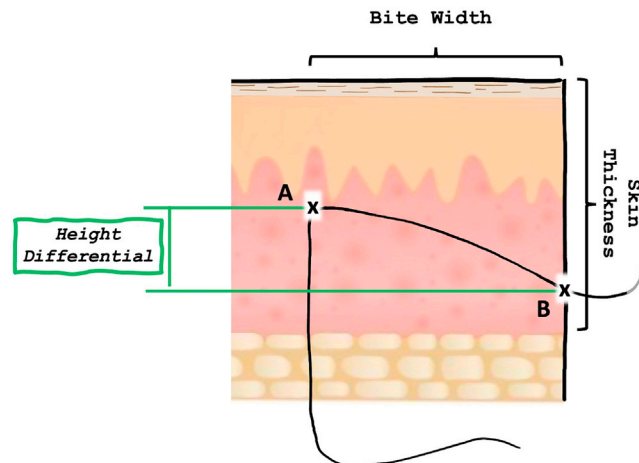


Fig 1. Dermal suture height differential is the vertical distance between the peak of suture path through the dermis at the point the furthest distance from the incision (the “bite width”) and the exit point of the needle at the incision. This distance positively correlates with the degree of wound edge eversion and negatively correlates with inversion.

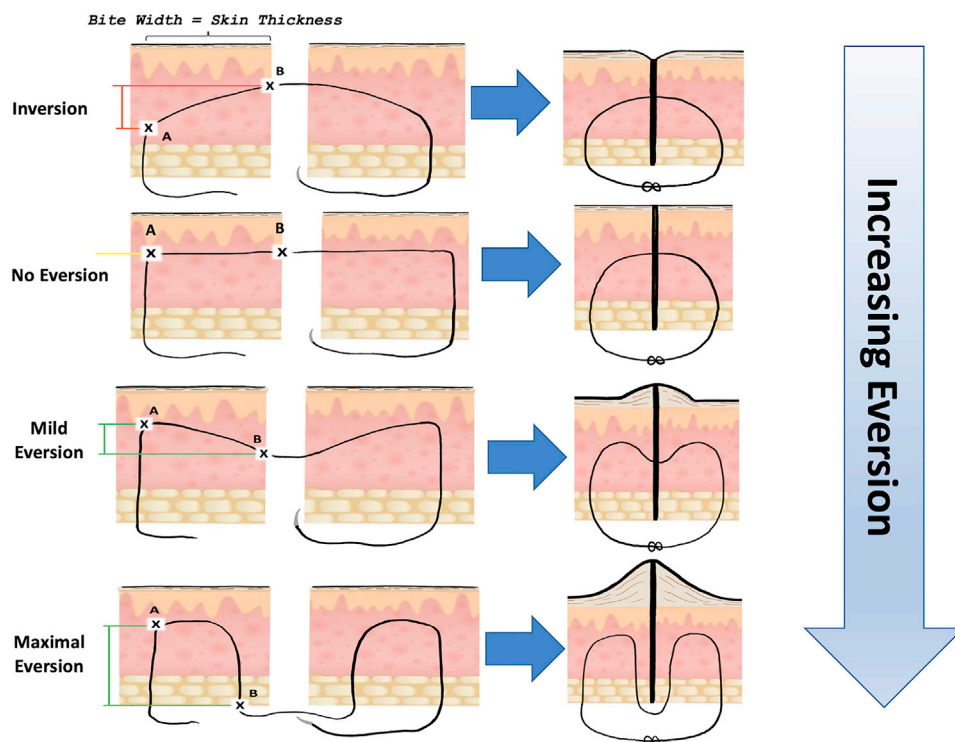


Fig 2. Demonstration of the practical value of dermal suture height differential and how it translates to wound edge eversion/inversion.

Conflicts of interest

None disclosed.

REFERENCES

1. Kantor J. Suturing techniques. In: Kantor J. ed. *Dermatologic Surgery*. McGraw Hill; 2018:chap 15. Accessed April 4, 2023. <https://accessmedicine.mhmedical.com/content.aspx?bookid=2811§ionid=245218227>
2. Yag-Howard C. Novel surgical approach to subcutaneous closure: the subcutaneous inverted cross mattress stitch (SICM stitch). *Dermatol Surg*. 2011;37(10):1503-1505. <https://doi.org/10.1111/j.1524-4725.2011.02089.x>