

A NEW SUTURE TECHNIQUE FOR WOUNDS WITH LARGE TISSUE DEFECTS (ORIGINAL TECHNIQUE)

BÜYÜK DOKU DEFİKTİ OLAN YARALARDA YENİ BİR SÜTÜR TEKNİĞİ (ORJİNAL TEKNİK)

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Abstract

To overcome long hospital stay and increased cost of a complicated wound, a new suture technique is presented. The suture is supported by the intact skin and the fascia and is applied after debridement of necrotic tissue and eradication of the infection. After being tied, the suture approximates the subcutaneous tissues of both edges of the wound and obliterates subcutaneous dead space without causing an extra stress on defective tissue. This promotes healing, suppresses the contraction process, and delays scar formation, thus decreasing hospitalization time.

Keywords: Wound Care, Tissue Loss, Suture.

Özet

Bu yazıda, komplike yaraların hastanede kalış süresinin uzaması ve maliyet artışı nedeniyle yeni bir suture tekniği tanımlanmıştır. Nekrotik dokuların debridmanı ve enfeksiyonun ortadan kaldırılmasından sonra, bu suture tekniği ile sağlam cilt ve fascia desteklenir. Dikişler geçildikten sonra defekt olan bölgede ekstra bir stress yaratmaksızın yaranın her iki ucu subkutan dokuya yaklaştırılır ve subkutan ölü boşluk oblitere edilmiş olur. Bu iyileşmeyi sağlar, kontraksiyonu baskılar ve skar oluşumunu geciktirir. Böylece hastanede kalış süresi azalır.

Anahtar Kelimeler: Yara Bakımı, Doku Kaybı, Suture

Introduction

In the wounds with a subcutaneous tissue loss resulted from destructive processes like wound infection and fat necrosis, healing process slows down (1). So, morbidity and mortality related to wound complications in conjunction with the hospitalization time increase.

In general, a wound with a large subcutaneous tissue defect is either left to secondary healing or sutured after the formation of granulation tissue both necessitating long hospital stay. In latter, contraction of the wound takes time and since the collagen formation is continuous, scarring occurs (1).

To decrease the complications and hospitalization time, a new suture technique is designed and details of technique are presented. Main item of this technique is to approximate the subcutaneous tissue without causing an extra stress on fat, and granulation tissues. This new suture technique can be applied as soon as the necrotic debris is removed, and infection is controlled.

Technique

This suture technique takes the support from two strong tissues; the healthy skin and the fascia. Figure 1 illustrates

the cross section of a wound with subcutaneous tissue loss and the path of the suture.

An inert (polypropylene or nylon) or delayed absorbable (polydioxanone) atraumatic, monofilamentous suture material at least 70 cm length must be used. The needle must be round bodied, sharp pointed, and at least 50 mm length. To minimize the trauma to the fat tissue, ideally, the curve of the needle must be the least (1/4 or 3/8) but because it is difficult to get this kind of material, the curve of the needle may be 1/2 (Ethicon®, W749). As illustrated in the figures, to close the subcutaneous dead space, suture is passed through the fascia. The passing points from the fascia (C and D in figure 1, C, D, I, J in figure 2) were shown at the original fasciae closure line but, these points may be placed on any point which the pathologic anatomy and the mechanics of the defective region necessitate. In this suture technique, the distance between the entry and the final exit points (Points A, and F in Figure 1, A and F, points A,F,G,L in Figure 2) from the edge of the skin is chosen as two thirds of the subcutaneous tissue thickness. It is observed that this distance gave rise to optimum closure.

The “B” point which is the exit point of the suture in the subcutaneous tissue is not a specially chosen point. It is the randomized exit point of the needle which enters from the point “A” and directs towards the point “C” on the fascia. Point “E” is also a random point through which the needle passes after coming out of the point of “D” on the fascia and directing to the point of “F” in the skin. After piercing the skin, the suture is passed down through the skin through point G from a distance L5 (Figure 2). The L5 distance is chosen depending on the length of the wound and the number of the sutures, but must not be less than 2 centimeters. In Figure 2, the entry and exit point of the suture is illustrated from above. The entry line of the suture is A→B→C→D→E→F, and the exit line is G→H→I→J→K→L. The knot is tied between the points of “A” and “L”.

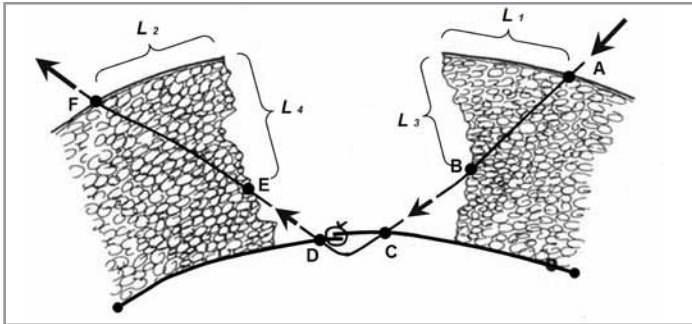


Figure 1: A wound with large tissue loss and the path of the suture on cross section.

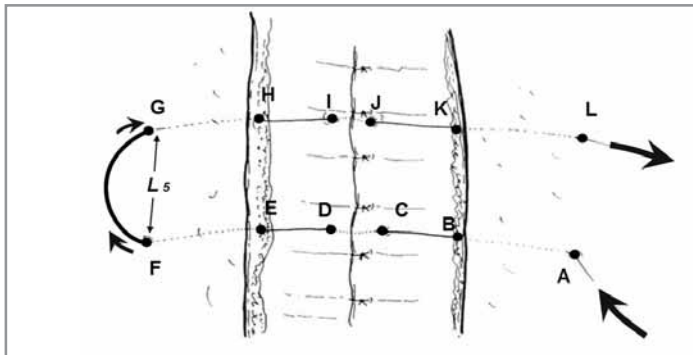


Figure 2: The entry and exit points of the suture from the top (the dotted lines illustrate the ports of the suture which stay in the tissue).

In figure 3, the displacement of the tissues while tying the suture is illustrated. Due to tissue mechanics, suture moves away its original line slightly tearing the fat tissue. This is the weak point of the suture but as very well known, the fat tissue loss in problematic wounds is extensive and such an additional loss is usually negligible. Cross-section of the wound after the tightening of the suture is illustrated in Figure 4. The subcutaneous dead space is completely obliterated but as seen in the figure, the skin edges and subcutaneous tissue are still not separate, and additional mattress sutures can be used for closure (Figure 4).

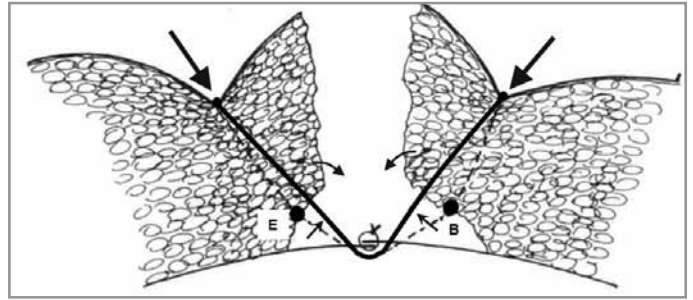


Figure 3: The displacement of the tissues while tying the suture, illustrated on cross section.

Final view after all sutures are tied is illustrated in Figure 5. In follow-up, closed wound care is applied and the suture (s) is removed between postoperative 10th and 14th days.

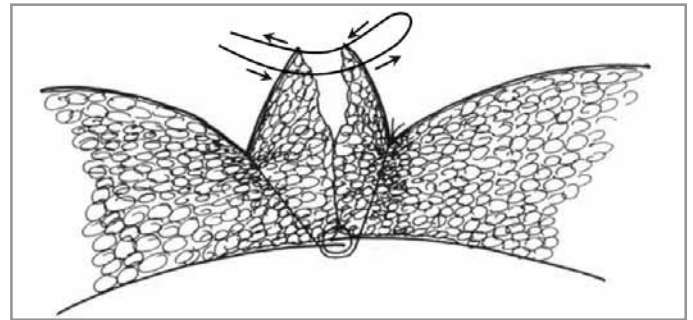


Figure 4: Cross – section of the wound after tightening the suture. An additional skin suture is being prepared.

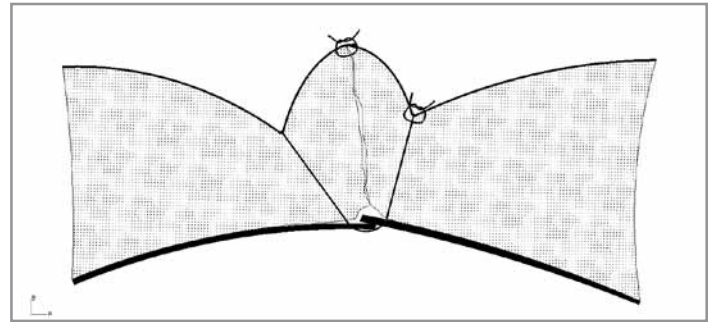


Figure 5: Final view after all sutures are tied, on cross-section

Conclusion

A surgeon sometimes needs a new technique to overcome a difficult problem. This suture can serve his goal for problematic wounds with large tissue defects.

References

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