

Case Reports

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Purse string-suture combined with second intention healing for temporal region repair

Sutura purse-string combinada com cicatrização por segunda intenção para reparo de defeito cirúrgico temporal

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ABSTRACT

The purse-string suture is one of the several repair options in dermatologic surgery. Its main indications are round or oval wounds on the trunk and limbs.

The authors describe the combination of purse string suture and second intention healing for a surgical defect after removal of a basal cell carcinoma on the temple.

The purse-string suture is an important closure method that may yield good results in selected cases. Although it is more often indicated on the trunk and limbs, it may be performed on the temple to avoid more complex repair.

Keywords: Suture techniques; Wound closure techniques; Wounds and injuries

RESUMO

A sutura purse-string é uma das várias técnicas de reparo em cirurgia dermatológica. Suas principais indicações são feridas com formato oval ou redondo localizadas em tronco e membros.

Os autores descrevem a combinação da sutura purse-string com cicatrização por segunda intenção para reparo de defeito cirúrgico em região temporal, após remoção de carcinoma basocelular.

A sutura purse-string é capaz de produzir resultados estéticos favoráveis em casos selecionados. Apesar de mais indicada no tronco e nos membros, pode ser indicada na região temporal quando se deseja evitar métodos de reparo mais complexos.

Palavras-chave: Ferimentos e lesões; Técnicas de fechamento de ferimentos; Técnicas de sutura

INTRODUCTION

The *purse-string* suture is one of several surgical defect repair techniques used in dermatologic surgery. It is considered a primary closure method, which can be used for complete or partial closure of round or oval wounds.^{1,2} Since it was described roughly 60 years ago, the technique has gone through variations over time, and can be combined with other methods of reconstruction.¹⁻⁴ The authors report the use of the *purse-string* suture associated with second intention healing for repairing surgical defects in the temporal region.

CASE REPORT

A 72-year-old male patient presented with a well-defined nodular basal cell carcinoma in the right temporal region measuring 2 x 1.5 cm (Figure 1). The patient underwent excision with 5mm margins, which lead to an operative wound of 2.7 x 2.5cm, above the superficial temporal fascia (Figures 2 and 3). Other repair options, such as a flap, a graft and partial linear closure were considered; the authors, however, decided for par-



FIGURE 1: Nodular basal cell carcinoma (dotted lines) with 5mm surgical margins



FIGURE 2: A and B - Operative wound measuring 2.7 x 2.5cm

tial closure with intradermal *purse-string* aimed at preventing and minimizing the possibility of injury to the temporal nerve and optimizing the healing time (as compared to isolated healing by secondary intention). The suture was performed with the insertion of the needle horizontally in the dermal plane, advancing 5-10mm with each pass, and with needle exiting towards the center of the wound. The needle was then consecutively reinserted at a point approximately 2-5mm distant from the exit site, up until the entire circumference of the wound was covered by the suture (Figure 4). Finally, the thread was tractionned and tied, with the knot remaining buried inside the dermis (Figure 5). The suture used was 4-0 polyglecaprone 25, and after the *purse-string* was carried out, the defect size was reduced to 1.4 x 1.1 cm (78% reduction) (Figure 6). No detachment of the borders was performed, and the remaining surgical defect was left to heal by

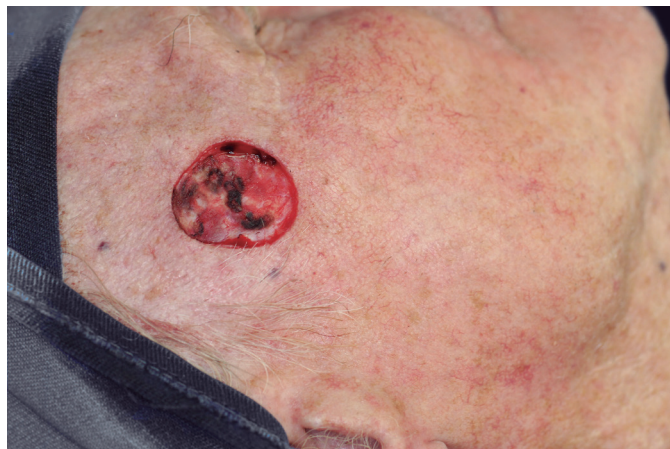


FIGURE 3: Surgical defect created on the path of the temporal branch of the facial nerve

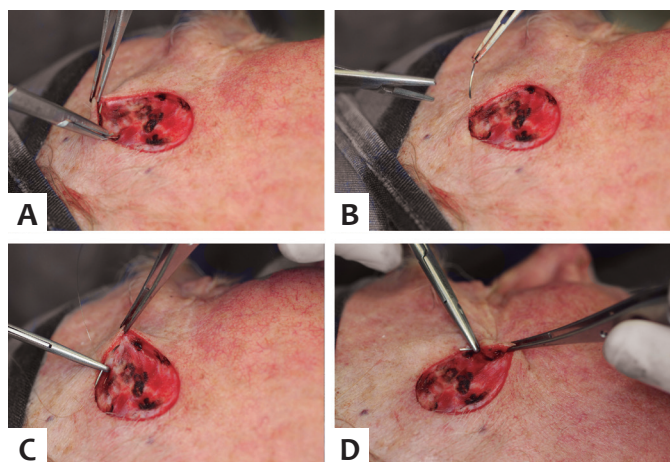


FIGURE 4: A - D: Detail of the suture performed in the intradermal plane

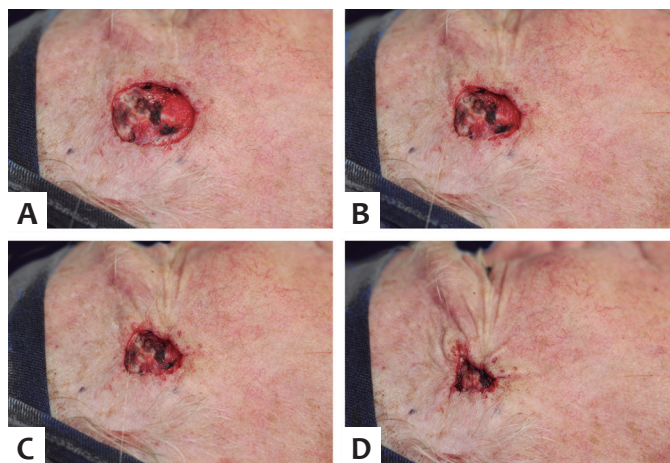


FIGURE 5: A - D: Tractionned suture and knot buried intradermally

second intention (Figure 7), with complete closure having been achieved after 4 weeks. Figure 8 shows the 8th week follow-up, with resolution of the induced wrinkling, without damage to the temporal nerve.

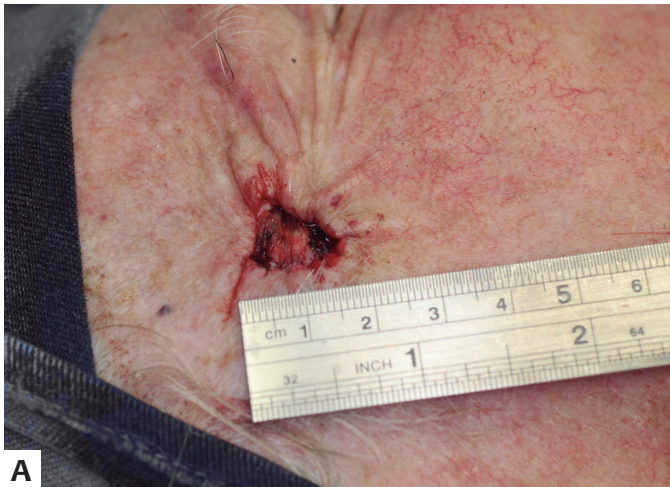


FIGURE 6: A AND B - Final defect with 1.4 x 1.1cm



FIGURE 7: Initial appearance of the partially closed defect and left to heal by second intention

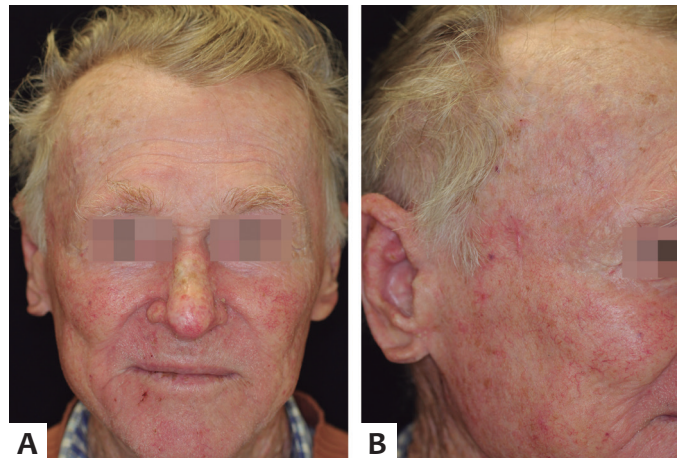


FIGURE 8: A AND B - Complete healing after 8 weeks

DISCUSSION

The *purse-string* suture consists of a uniform movement of the entire edge of the cutaneous wound towards the center (centripetal direction). It can be performed by introducing the thread horizontally into the dermis (*intra-dermal purse-string*) or vertically, crossing all skin layers (*cuticular purse-string*).¹ The main indications for the technique are oval or round shaped wounds located on the trunk and limbs; nevertheless, it may be used in selected cases of surgical defects located on the face, especially in areas with potential for good healing by second intention, such as the temporal region.¹⁻⁶ The *purse-string* suture can be performed isolatedly for the complete closure of small or medium-sized wounds, as well as for partial closure of larger wounds, leaving the remaining defect to heal by second intention. In addition, it can be performed in association with other repair techniques, such as grafts or linear closures.¹⁻⁷ It is a quick and straight forward procedure that optimizes healing time by significantly reducing the wound's size.⁴ In addition, it aids in hemostasis and spares adjacent viable tissue (*dog ears*).

Ideal patients are the elderly, with loose skin, photodamage or when it is convenient to avoid complex reconstructions due to greater surgical risk or better cancer follow-up. The main disadvantage is the initial rough appearance of the scar, as well as the patient's concern about dealing with an open wound.⁸ In this manner, patient orientation is key. Studies have shown that long-term aesthetic and functional outcomes of *purse-string* suture are similar or even better than other repairing methods for trunk and limb wounds, which tend to widen even when linear suture is performed in planes.^{1,2}

The choice of undermining or not the edges of the wound before the *purse-string* suture is controversial. Some authors do not recommend the detachment, justifying that this minimizes the procedure's morbidity. Others recommend performing it in order to increase tissue mobility by decreasing the tension of the edges.¹⁻³ Most of the times, however, adequate tissue movement can be obtained with little or no undermining.³ The authors believe that the decision should be individualized

according to the defect, adjacent skin sagging and proximity of nearby structures, which may be damaged or distorted (e.g. free margins, motor nerves). Different suture threads can be used in the purse-string technique, the most frequently used being absorbable monofilaments (3-0 or greater).¹⁻³

CONCLUSION

The *purse-string* suture is a skin repair technique with acceptable – and in selected cases, surprising – aesthetic outcomes. Although more appropriate for the trunk and limbs, it may be indicated for application in the temporal region when avoiding more complex repair methods is desirable. ●

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