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ORIGINAL

Guitar-String Suture to Facilitate Closure of a Finger-like Flap for Reconstruction of the Nose[☆]

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PALABRAS CLAVE

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guitarra;
Reconstrucción nasal

Abstract

Introduction: The basic principle of a lobed or finger-like transposition flap is that, after covering the defect with the transposed tissue, the donor site is closed primarily. With large defects, a second lobe may be added to the flap if primary closure of the area left by the first lobe is not possible. The flap can often be made to adapt to the defect, but this maneuver, in combination with primary closure of the adjacent tissue, can sometimes produce excessive tension and compromise the blood supply.

Material and methods: We present a series of 4 patients with epithelial tumors of the lateral wall of the nose. The defects left by surgical excision were covered by finger-like transposition flaps. Subcutaneous sutures called *guitar-string sutures* were used to reduce the size of the defect and facilitate tension-free closure.

Conclusions: We propose use of the guitar-string subcutaneous suture in those cases in which the defect is larger than the area that can be covered by the flap. This will make it easier to adapt the flap to the defect and will reduce the risk of excessive tension causing necrosis of the transposed tissue.

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Suturas en «cuerda de guitarra» para facilitar el cierre del colgajo digitiforme en la reconstrucción nasal

Resumen

Introducción: El principio básico de un colgajo lobulado o digitiforme de trasposición es que una vez que el tejido desplazado cubra el defecto, la zona dadora cierre directamente. Cuando los defectos son grandes puede ser necesaria la realización de un segundo lóbulo, debido a que el área que deja el primer lóbulo con su movimiento no cumple el criterio anterior. Con frecuencia se puede forzar el colgajo y adaptarlo al nuevo lecho, aunque a veces esta maniobra, sumada al cierre directo del tejido adyacente, puede traccionar en exceso y comprometer la vascularización.

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Material y métodos: Se presenta una serie de 4 pacientes con tumores epiteliales en el lateral nasal. Tras la extirpación quirúrgica, los defectos resultantes se cubrieron mediante colgajos digitiformes de trasposición. En el diseño del cierre de los defectos se utilizaron unos puntos de sutura subcutáneos denominados en «cuerda de guitarra» para disminuir el tamaño del área cruenta y facilitar el ensamblaje del colgajo sin tensión.

Conclusiones: Proponemos la realización de la sutura subcutánea en «cuerda de guitarra» para aquellos casos en los que el defecto cutáneo es mayor que la cobertura que aporta el colgajo local, con el objetivo de facilitar su ensamblaje y disminuir el riesgo de necrosis del tejido desplazado por una excesiva tensión.

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Introduction

The finger-like or lobed transposition flap is a good therapeutic option for the reconstruction of defects of the lateral nasal wall in those cases which direct closure is not possible because of the lack of skin mobility or the risk of asymmetry due to traction. This flap is based on the design of a lobe of skin adjacent to the primary surgical defect and its transposition into the defect.^{1,2}

During design of the flap, it is essential to take into account that the size of the flap must cover the defect and, at the same time, it must be possible to close the donor region directly.³ With large defects in which there is slight discrepancy between the size of the primary defect and that of the flap, the lobe can be adapted to the surgical site. However, this maneuver risks viability of the displaced tissue, as the resulting tension can affect its blood supply, leading to tissue necrosis. To avoid this complication, a second lobe can be created, transforming the initial design into a bilobed flap that distributes the tension over a larger surface area. However, placement of an approximation suture can be used to reduce the surface area of the defect so that the flap will cover it without modification of its design and without increasing the risk of tissue ischemia.

Materials and Methods

We present a series of 4 patients (3 men and 1 woman) aged between 63 and 86 years (mean age, 75 years), with epithelial tumors of the lateral nasal wall (3 basal cell carcinomas and 1 squamous cell carcinoma) treated surgically between March 2014 and March 2016. After complete excision of the lesions, the mean size of the resulting defects was 374 mm² (range, 100-540 mm²). All reconstructions were performed using lobar transposition flaps of skin from the area of union of the lateral nasal wall with the ipsilateral cheek. Given the size of the defects, deep subcutaneous guitar-string approximation sutures were used to reduce the surface area to be covered, making it possible to suture the flap lobe in place without tension.

The guitar-string sutures enabled the surface area of the defects to be reduced by 15% to 45%. The clinical course was favorable in all 4 cases, with satisfactory healing and a good cosmetic result (Figs. 1-4).

Technique

The procedure consists first of identifying the most widely separated borders of the defect. After manually checking the range of skin mobility, one or more deep subcutaneous sutures are placed (preferably between the deep dermis and the hypodermis), crossing the defect across its longest axis. The needle is inserted in the deep region of one of the borders of the wound and exits more superficially. It is then inserted symmetrically in the dermis of the opposite border, to exit deeply. Finally, a traction maneuver is performed to approximate the borders, without apposition, and the suture is tied at one of the borders. The previously extensive surgical defect is thus reduced and adapted to the lobe designed with a smaller size. The tension in the borders is homogeneously distributed across the areas with greatest blood supply; this will increase flap survival.

An absorbable suture material is used, choosing 3/0 or 4/0 depending on the tension to be applied in the tissue; we use braided polyglactin 910 (Novosyn, Braun, Spain). This type of suture maintains its tensile strength for 4 weeks after the operation, giving the wound sufficient time to form the necessary fibrous tissue to withstand the tension intrinsically after reabsorption of the suture. The use of this suture material also reduces the risk of postoperative complications, such as rejection and extrusion of the suture material or the persistent presence of a palpable knot beneath the skin.

Discussion

The key to the correct use of the lobar flap for the reconstruction of defects of the external nose is that the lobe design must be of a sufficient size to cover the primary surgical defect, whilst allowing closure of the secondary defect by direct approximation. The orientation of the lobar flap is determined by the site of the defect, preferably on the lateral wall of the nose, where the skin is more lax and mobile, or at the union between the lateral wall of the nose and the cheek, in order to hide the resulting scar in the nasolabial or nasofacial sulcus.³

Sometimes, seeking a balance that will allow direct closure of the donor site, a narrow lobar flap is designed that does not completely cover the defect, and the impression that it will not wholly cover the defect can become accentuated as the flap is incised and lifted. In these cases, when the

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