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V-to-T defect closure for lesions on the lower lip: a novel dermatosurgical approach for problematic mucocutaneous lesions

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The case

A 55-year-old male presented to the dermatology department with a primary complaint of a problematic tumor-like lesion located on the lower lip, persisting for approximately 5 months. Clinical and dermatoscopic evaluation established a diagnosis of keratoacanthoma, and surgical excision under local anesthesia was recommended.

Our choice

The surgical planning must carefully consider Langer's lines in order to minimize scarring and ensure tension-free defect closure. Circular defects in this area pose particular challenges due to the risk of postoperative scarring and functional impairment. Secondary intention healing was avoided to prevent delayed wound recovery and reduce the risk of vermilion border distortion, which could result in poor functional and cosmetic results. Skin grafting was also excluded due to its likelihood of producing visible color and texture mismatches.

We present a case involving a small-to-medium-sized primary defect following surgical excision of a lower lip lesion. The team initially planned for reconstruction using an advancement flap technique. Intraoperatively, it was observed that the patient had sufficient lip tissue, allowing for direct primary closure in a V-to-T pattern. Although the initial reconstructive approach would likely result in satisfactory aesthetic and functional results, the decision to proceed with primary closure ultimately produced a more refined and elegant postoperative outcome. With our V-to-T closure technique, we employed the initial principles of the V-to-Y flap design while eliminating the potential complications associated with flap advancement.

Procedure

Prior to excision, the vermilion border was carefully outlined. It was noted that the patient had sufficient lip tissue redundancy. To align the closure with the relaxed skin tension lines, the cutaneous component of the defect was designed in a standard V-to-T pattern.

A 1×1 cm tumor located on the right lateral third of the lower lip, involving both the vermilion body and the right oral commissure, was preoperatively marked (Figure 1a) and excised with appropriate surgical margins under local anesthesia with 2% lidocaine with two drops of adrenaline. The initial excision of the lesion was performed using an oval incision, which was subsequently extended inferiorly into a V-shaped configuration beneath the semicircular defect. The V-shaped incision was oriented vertically, with equal limb lengths to achieve a tension-free closure consistent with the natural contour of the lateral lip. The resulting primary defect was small-to-medium in size and irregular in shape (semicircle with an attached equilateral triangle).

In the second stage of the repair, two Burrow's triangles were excised at the horizontal edges on each side of the remaining defect. These triangles were completely removed within the mucosal lip, with their inferior edges positioned along the vermilion border. Consequently, the resulting T-shaped defect (Figure 1b) allowed for direct primary closure. This approach provided preservation of lip anatomy through maintenance of homogeneous lower lip tissue integrity and improved aesthetic outcome by reducing the number of inferior scar lines from two to one. The surrounding tissue was subsequently undermined in all directions to improve tissue mobility.

The repair was completed with proper alignment of the vermilion border and no displacement of the lip. The V-shaped portion of the defect was initially closed with two 5-0 polypropylene single interrupted sutures, providing minimal tissue trauma due to the fine suture caliber. The resulting defect had an elliptical configuration. The two additional triangles were approximated with the same 5-0 polypropylene single interrupted sutures, completing the V-to-T closure (Figure 1c). The final configuration of the closure resembled a "T". No functional deficit was noted postoperatively (Figure 1d).

Comment

The functional outcome in lip restoration is to preserve the integrity of the oral aperture while ensuring adequate restoration of the intraoral mucosal lining.[1] The lower lip serves as a dynamic functional and aesthetic unit in the lower third of the face, playing



Figure 1. a) Preoperative view: lesion located on the right lateral third of the lower lip, involving both the vermilion body and the right oral commissure. Design of the V-to-T closure: inferior to the lesion, a larger triangular flap (subsequently excised with the tumor) is outlined (arrow 1); the lateral resection lines are indicated by the filled triangles (arrows 2 and 3). **b**) Intraoperative view: a T-shaped defect resulting from i) initial tumor excision resulting in an irregular shape (semicircle with an attached equilateral triangle) (arrow 1) and ii) two Burrow's triangles (arrow 2 and 3) excised at the horizontal edges on each side of the initial defect. **c**) Intraoperative view: final configuration of the closure resembling a "T", sutured with 5-0 polypropylene single interrupted sutures. Mild swelling is noted. **d**) 18-day postoperative view: no signs of postoperative complications.

a crucial role in facial expression, forming of speech, and overall facial harmony.[1]

A reconstructive algorithm that prioritizes less invasive reconstructive techniques and incorporates innovative modifications could achieve a more refined balance between aesthetic and functional outcomes while maintaining surgical feasibility and minimizing complication rates.[2] The "V to flying Y" advancement reconstructive technique is an excellent option for small-to-medium-sized circular defect.[3]

Our V-to-T closure technique, in selected cases, may offer superior functional and aesthetic outcomes compared to traditional V-to-Y or the modified V-to-flying-Y flap reconstructions.[3] The final closure achieved three fine incision lines placed within the patient's natural anatomical boundaries, without distortion of the vermilion or lateral commissures. The remaining lip maintained its full thickness and was reconstructed using exclusively lower lip tissue, thereby avoiding the combination of both mucosal and cutaneous components that would have resulted from an advancement flap technique. By maintaining anatomical alignment along the vermilion border and utilizing careful undermining, this method allows for an elegant closure across multiple cosmetic subunits, while preserving the patient's unique anatomical features.

The outcome

Figure 1d illustrates the outcome at the 18-day follow-up.

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