

External Tissue Extender Technique for Closure of Skin Defect

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INTRODUCTION

Surgical closure of large skin defects on the face and neck always leads to tension on the closure margins, which poses a difficult situation for surgeons. Tissue expansion is a well-known way of repairing soft tissue defects.

However, the need of repeated outpatient visits for the filling of expander and longer time span required to achieve the final result are some of the disadvantages of traditional tissue expanders³.

Skin extender developed by Blomqvist and Steenfos³ is a simple method of secondary wound closure by secondary sutures. ETE consists of silicone

strings and plastic stoppers pulling the corresponding surgical sites together and evenly distributing tension¹. It is useful in tissue extension, pre-operatively to excision of skin defects and closure of large wounds. A customized ETE was used in this reported case.

CASE REPORT

A 58 year old female patient presented with a chief complaint of swelling on the right side of the face since last 1 month (fig. 1-3). Increased tissue tension resulted in large soft tissue defect in the zygomatic region, measuring 4cm*2cm in size.



Fig. 1-3: Pre-Operative Photographs



Fig. 4: Incision and Drainage Done

OPERATIVE PROCEDURE

The procedure was performed under local anesthesia. The custom made tissue extender was placed circumferentially 5-6 mm away from the wound edges and it was tightened. After 3 days the tissue edges had come closer and as the extender had become loose it was again tightened on the subsequent visits. After 15 days as the defect closed, the extender was removed and the proxy strips were placed.



Fig. 5: Gross Soft Tissue Defect Seen

DISCUSSION

There has been documentation throughout medical history of the ability of our tissues to stretch and expand gradually over time under constant stress.



Fig. 6,7: ETE Placed And Tightened On Subsequent Visit



Fig. 8: Defect Closed



Fig. 9: Proxy Strips Placed

The expansion is seen both in physiological and pathological situations. This natural principle of human skin helps the silastic tissue expanders in increasing the amount of skin available, along with increased vascularity in the expanded skin⁴.

Implantation and handling of ETE is very easy, economical and fast. ETE comprises of silicone string and plastic stoppers. The string pulls the corresponding surgical sites together by evenly distributing tension¹ at the margins and consistently causing flap delay phenomenon.

In our case the customized extender was used circumferentially, along the margins of the defect. This released the tension in the skin along its margins which was tightened later. The functional and cosmetic results were found to be good.

The principle behind tissue extender is use of a delayed flap. Delayed flap means that a flap with full

thickness is raised for the equivalent of defect i.e. 1:2 (random), 1:3 (axial). Once flap is raised there is low oxygen supply and low oxygen tension. Later, multiple dormant lying vessels open up which vascularize the flap and after 7 days the same flap is used to cover the defect. The survival rate of a delayed flap is higher than conventional flap due to increase in vascularity.

As ETE is always under delay, therefore a bigger defect can be covered. More invasive surgical procedures can be avoided by using this method. The use of grafts can be eliminated in such cases, as with the grafts colour change and contracture are various disadvantages.

A major disadvantage associated with this technique is possibility of developing necrosis under the plastic stoppers¹. In order to avoid post-surgical tissue contractures (scars) external tissue extender technique plays a great role.



Fig. 10: Post-Operative Photograph

CONCLUSION

We achieved good aesthetic results and the patient had no signs of discomfort. According to our experience, the ETE is a useful alternative indicated for closure of gross facial defects.

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