

Fibrin sealant fixation of a skin graft in mandibular vestibuloplasty. Case report

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Abstract

Fibrin sealant fixation of a skin graft without the use of sutures or a stent in mandibular vestibuloplasty is presented in this case report. The advantages of the fibrin sealant in preprosthetic surgery are discussed.

Key words: Case report, fibrin sealant, mandible, vestibuloplasty.

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Introduction

In certain edentulous patients vestibuloplasty operations are required to improve the functional vestibular sulcus and to replace non-healthy mucosa under denture-bearing areas. Vestibuloplasty operations can be done either by submucosal dissection or by lowering the vestibular sulcus with or without grafting. Grafting vestibuloplasty has the advantages of covering the raw periosteal surface and accelerating wound healing and allegedly maintaining greater sulcus depth.¹ Although different kinds of autogenous grafts have been introduced, skin is the preferred material in mandibular vestibuloplasty mainly because of the limitation of available graft material and reduced morbidity of the donor site.²

Vestibuloplasty operations usually include the use of a prefabricated stent to carry and secure the graft in the desired position. The placement of a stent, however, is now considered as a complicating factor. For this reason numerous investigations had been carried out to develop an alternative tissue-fixing method in order to reduce the incidence of post-operative complications. Among these studies, a biologic two-component fibrin sealant system (FS) has proved to be effective in tissue adhesion as well as haemostasis.³

In this case report, FS fixation of a skin graft without the use of sutures and a stent in mandibular vestibuloplasty is presented.

Case report

A 52 year old man was referred from the Prosthodontics Department to the Clinic for preprosthetic evaluation and possible corrective surgery. The chief complaint of the patient was the instability of his lower denture during functions such as speech and chewing. The patient's past medical history revealed previous surgery for papillary adenocarcinoma of the thyroid glands which had been treated by means of a thyroidectomy ten years earlier. The patient had received regular thyroid suppression therapy with ¹³¹I since the initial surgery. Clinical intraoral examination showed high buccal frenum attachments on the edentulous mandible which bridged the lower lip to the superior border of the alveolar crest and only a small line of attached mucosa forming the crest of mandibular denture-bearing area was seen (Fig. 1). Radiographic evaluation revealed adequate residual alveolar bone which is a prerequisite for a vestibuloplasty. Consultation with the University Medical and Surgical Oncology Departments revealed that the physical and laboratory findings of the patient were within normal limits. These results indicated that there was no contra-indication for surgery under local anaesthesia. Therefore, an anterior skin grafting vestibuloplasty in the mandible was planned with prosthodontic colleagues.

The operation was performed under local anaesthesia with sedation and a full-thickness skin graft was harvested from the inner side of the upper arm in a routine manner. Immediately after beginning the operation the two-component FS† was prepared as recommended by the producer and it was stored at 37°C prior to use. Mandibular anterior labiobuccal and suprapariosteal dissections were accomplished and the vestibular sulcus was deepened according to a modified technique.‡ Then all the

†Tisseel, Immuno AG, Austria.

‡Yaman Z, Kisinisci RS, Ersoy E. Skin grafting vestibuloplasty. Presentation, 18th Annual Conference of the European Prosthodontic Association, Istanbul, September 1994. (Abstr 015.)

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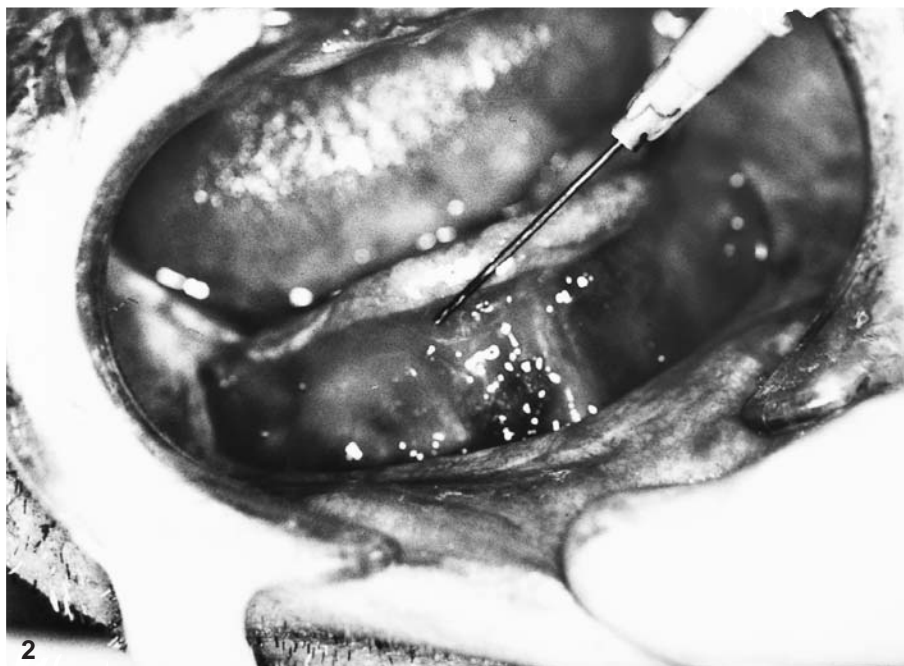


Fig. 1.-Clinical examination of the edentulous mandibular ridge. Note the high labial frenular attachments.

Fig. 2.-Application of the two-component fibrin sealant to the recipient area by a Duploject with needle.

exposed periosteal surfaces of the recipient area were coated with a thin layer of FS using a Duploject§ fitted with an application needle (Fig. 2). The skin graft was adapted to the FS-treated bed by maintaining uniform finger pressure for a four-minute period (Fig. 3). Neither sutures nor a stent were used to secure the graft in position. The operation lasted only 32 minutes and postoperatively an adhesive pressure bandage was applied over the chin region externally.

The patient was observed postoperatively daily until the graft was shown to have fully taken (Fig. 4). A new prosthesis was constructed at the end of the third week.

Discussion and conclusion

The FS system is a two-component system which is prepared from pooled human plasma and it serves a triple purpose in clinical use, namely, tissue fixation, haemostasis, and promotion of wound healing. As soon as the two components are mixed with the appropriate method, clotting begins and

§Duploject, Immuno AG, Austria.



Fig. 3.-Clinical appearance of the anterior mandible immediately after fixation of the skin graft using fibrin sealant.

Fig. 4.-Clinical appearance of the skin graft at the third postoperative week.

solidified fibrin is formed. As a result a clot of increasing strength develops and adheres firmly to the tissue. Since 1975 an increasing amount of experience with FS in oral and maxillofacial surgery as well as other surgical fields had been reported.⁴ The main indications of FS in maxillofacial surgery include neural and microvascular anastomoses, skin graft fixation, haemostasis of soft tissue defects, bone sealing, and dural closure. In skin graft fixation, FS is used both for its haemostatic and adhesive properties. Golden and Schaberg⁵ have demonstrated the feasibility of the use of FS in lieu of stents for experimental intraoral skin graft fixation in

mandibular vestibuloplasty. Their results reaffirmed those obtained by Gregory and Schaberg⁶ on a canine model. In the case presented in this report, haemostasis was observed immediately after FS application and at the follow-up period no instance of subgraft haemorrhage or haematoma formation was noted. The skin graft was firmly attached to the recipient bed and within 10 days it appeared to be healed clinically with little inflammation evident at the base of the vestibular sulcus.

Intraoral fixation of the skin graft can be accomplished either by conventional suture and stent or, alternatively, only by FS. The results

demonstrated by this example support other reported studies on the use of the FS, and are as follows.

1) FS fixation of the graft obviates the use of a stent. Thus, postoperative oral hygiene is enhanced, susceptibility to postoperative infection from circum-mandibular sutures is decreased, patient discomfort is decreased, and preoperative laboratory preparation is eliminated.

2) FS fixation allows direct visualization of the graft during healing.

3) FS fixation decreases surgical operating time.

These results suggest that FS can be used as an alternative to sutures or a stent in skin grafted vestibuloplasties, offering a number of advantages especially for medically compromised patients.

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