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ORIGINAL ARTICLE

A New Suture Technique for Septodermoplasty

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ABSTRACT

Objective: Hereditary hemorrhagic talengiectasia is a rare disorder characterized by vascular talengiectases in mucocutaneous tissues. Septodermoplasty is one of the treatment options for controlling recurrent and prolonged epistaxis. The principle of septodermoplasty is to replace the fragile nasal mucosa with split-thickness skin graft.
Materials and Methods: In this report we aimed to describe a new suture technique that can be applied for securing the graft. From September 2014 to March 2016, we performed 6 septodermoplasty operations by using a new suture technique.
Results: Securing the graft in septodermoplasty operation by suturing provides an efficient and safe fixation of graft in all of the patients.
Conclusion: We would recommend this cost effective technique as an alternative method for septodermoplasty operations.

Key words: Hereditary hemorrhagic talengiectasia, septodermoplasty, epistaxis

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INTRODUCTION

Hereditary hemorrhagic talengiectasia (HHT) or Osler-Weber-Rendu disease is a rare autosomal dominant disorder characterized by vascular talengiectases in mucocutaneous tissues and visceral organs. The underlying genetic abnormality leads to inappropriate maturation of blood vessels [1,2]. Recurrent and prolonged epistaxis due to fragile vessels that lack elastic fibers is the major manifestation of HHT.

Reducing the frequency and severity of bleeding is the mainstay of the management. Many options including hormonal therapy with estrogens, application of fibrin tissue sealants, coagulation with electrocautery or laser, and embolization of nasal arteries can be used as first line treatment for mild or moderate epistaxis8 [3]. But in patients with severe life threatening epistaxis and in patients with failed first line options, more aggressive treatments such as septodermoplasty (SD) and nasal closure are required [3-5]. Although none of these treatment modalities are absolutely efficacious in controlling bleeding, SD is considered to be one of the most effective options [6].

The principle of SD is to replace the fragile nasal mucosa with split-thickness skin graft [6]. Generally, split thickness skin graft is harvested from the lateral part of upper thigh. Although suturing is regarded as the most reliable way of securing the graft, suture techniques are not preferred in SD operations. Instead, anterior suturing of graft to rim incision, fibrin glue application to the edges of the graft, and special packing materials are frequently used for fixing dermal graft in SD [3,4,6-8]. It has been suggested that the difficulty of suturing under the threat of profuse bleeding and problems that may arise while manipulating the tiny piece of tissue in a very narrow surgical field may be main causes for the preference

of alternative methods for securing the graft.
The aim of this report is to describe a new suture technique that can be applied for securing the graft in SD and introduce a new donor site for harvesting skin grafts from without using a dermatome.

MATERIALS and METHODS

Patients

From September 2014 to December 2015, we performed 5 SD operations by using a new suture technique. All of the 5 patients were male with a mean age of 39.5 (ranging between 34 and 45). Four patients had one sided SD, while the remaining one patient was operated from both sides with a 6 month interval.

Surgical Technique

Under general anesthesia, the nasal cavity is prepared with topical 1:1000 epinephrine-soaked pledgets that are 2x1 cm in size. The anterior septum of the operation side is injected with %1 lidocaine with 1:100000 epinephrine.
Under the vision of a 0O endoscope, a monopolar electrocautery is used to define the limits of mucosal excision at the anterior septum. Excision is conducted by starting from posterior of the area to be excised at the level of middle turbinate and remaining mucosal strips of approximately 0.5 cm at superior and inferior edges of septum. Vestibular skin is targeted as anterior-most margin. The septal mucosa is removed with the help of an antrum curette. If necessary a standard 4 -mm straight microdebrider is used to remove the residual mucosal tissue (Figure 1,2).

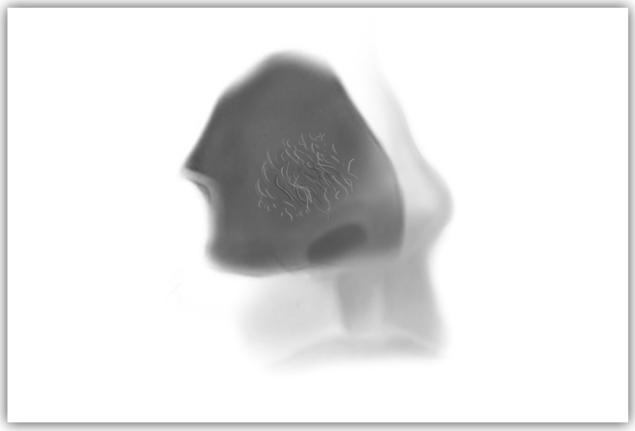

Figure 1. Talengiectasic vessels.

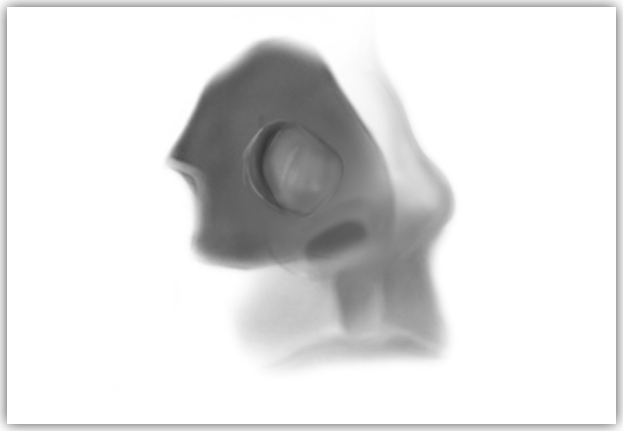

Figure 2. Removal of pathologic mucosa.

Utmost attention is devoted to preserve the mucuperichondrium, which is necessary for nourishing the new graft and the septal cartilage. After assuring of adequate removal of mucosa, the mucosal defect is measured and epinephrine soaked cotton pledgets are used for hemostasis.
In accordance with the measured mucosal defect, a skin graft is harvested from supra scapular region. After taken out, the skin graft is made as thin as possible. Before insertion, the skin graft is prepared using 4-0 vicryls. In this process, two separate sutures for each edges (posterior-superior and inferior) are passed from the exterior towards the interior side of the graft. The free ends of the sutures are knotted at exterior side of the skin graft (Figure 3).

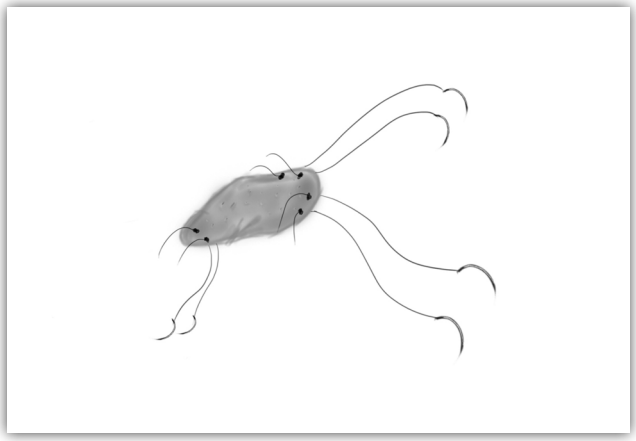

Figure 3. Preparation of skin graft. Two separate sutures for each edges (posterior-superior and inferior) with knotted free ends at exterior side of the graft.

Then, under endoscopic view, the sutures are passed from the posterior-inferior and superior edges of the preformed mucosal defect. By means of pulling the sutures, the graft is inserted and the denuded area is covered tightly (Figure 4).

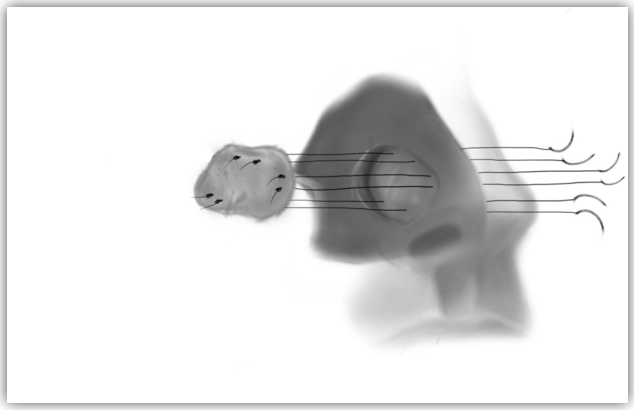

Figure 4. Insertion of skin graft by pulling the sutures.

For securing the graft, each couple of sutures are tied at the other side of the septum (Figure 5).

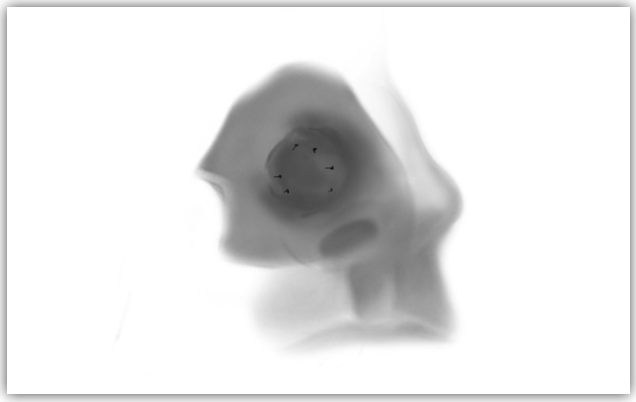

Figure 5. Fixation of graft.

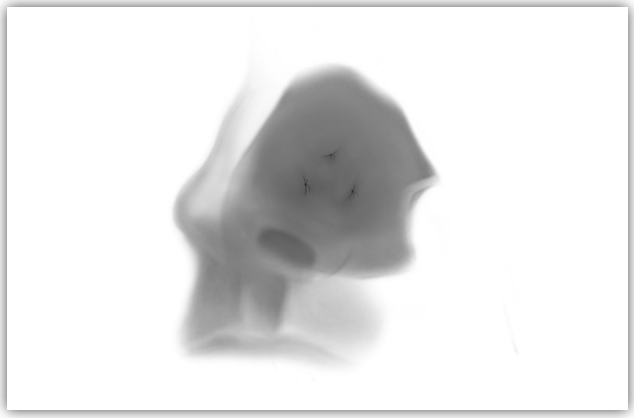

Figure 6. View after fixation from the other side.

Additional sutures can be applied for further fixation. After securing the skin graft a pair of "Doyle splints" are applied and left in nasal cavity for 1 week. Special packing materials or tissue sealants like fibrin glue are not required in this technique.

Patients were discharged at the second postoperative day with prescription of oral broad spectrum antibiotics for one week. The Doyle splint was removed one week later in the outpatient clinic.

RESULTS

Four patients who had a history of recurrent blood transfusions underwent 5 SD operations. For the patient who had bilateral operation, an interval of 3 months was left prior to contralateral SD. Ages of the patients ranged between 34 and 45 with an average of 39.5. Average length of follow-up after the operation was 19.2 weeks (ranging between 16 and24 weeks). SD was successful in all of the cases without any perforation. During the follow-up period, frequent crusting is observed in the surgical area for 4 weeks. All of the patients reported a reduction in the frequency and severity of the epistaxis. None of them needed a blood transfusion during the follow-up.

DISCUSSION

Although arteriovenous malformations in lungs, liver and central nervous system are the leading factors to cause severe mortality and morbidity in HHT, recurrent epistaxis is the main complaint in patients with HHT [9]. SD is a proven technique that provides excellent palliation for transfusion - dependent epistaxis.6 Since first described by Saunders in 1960 [10]. SD has been used frequently for HHT at times when other treatment options failed. It would not be wrong to say that the surgical technique was described similarly also in recent reports [1,4,6,7]. In these techniques, the skin graft used in SD is almost always harvested from upper thigh by dermatome and is only sutured to the anterior edge of the surgical field. Some of the authors uses a harder medium such as a paraffin gauze dressing mesh (JelonetTM) to insert the graft into the field easily. Fibrin glue or another sealent is also applied routinely to hold the graft in place. After the insertion of the graft, some special packing materials like KaltostatTM (sodium alginate) or BeschitinTM (a fibrous form of purified chitin) might be necessary for fixation and hemostasis in these methods.

The surgical technique that has been currently applied has some disadvantages; i) some special dressing materials such as Jelonet may be necessary for manipulating a split-thickness graft in a bloody nasal passage, ii) because there is a lack of fixation by suturing, usage of fibrin glue is a must for holding the graft in place, iii) using additional materials for insertion and fixation of the skin graft increases the cost of operation, and iv) there is a risk of displacement of the graft during postoperative care (during removal of packing materials or crusts).

In our technique, we fixed the dermal grafts by suturing. Suturing under endoscopic view made it possible to manage the posterior parts of the nasal cavity and by using the new suture technique described above, we overcame the difficulties concerning manipulating the free tissue graft in a narrow surgical field. Because dermal grafts were secured safely by suturing, it was unnecessary to use fibrin glue or some other special packing materials. We repaired the donor site for dermal graft by primary cutaneous sutures. So, scar tissue formation is not considered as an important problem after harvesting a graft from supraclavicular region. In our experience, the idea was that manipulating a full thickness graft was easier than manipulating a much thinner graft (a split-thickness graft) in nasal cavities. Also being independent from a dermatome was another advantage of our new donor site for dermal grafts. It is obvious that saving from fibrin glue and other special materials for insertion and fixation of graft increases the cost effectivity of SD. For all these benefits, limited access to only the anterior part of the septum may accepted as a disadvantage. SD is a palliative procedure and the aim of the operation is reducing the addiction to blood transfusions rather than complete cessation of bleeding. In our study group, four of the patients responded to the SD and they did not need transfusions during their follow-up.

CONCLUSION

Securing the graft in SD operation by suturing provides an efficient and safe fixation of graft in SD. We would recommend this cost effective technique as an alternative method for SD operations.

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