The Young’s procedure for severe epistaxis from hereditary hemorrhagic telangiectasia


ABSTRACT

Background: Surgical treatment of epistaxis in hereditary hemorrhagic telangiectasia (HHT) has historically been managed with the laser procedure or the septodermoplasty procedure. For transfusion-dependent patients with severe epistaxis we have been performing the Young’s procedure or surgical closure of the nostril. The objective of this study was to report treatment of severe epistaxis related to HHT with the Young’s procedure and assess patient outcome.

Methods: Patients with severe iron or blood transfusion–dependent epistaxis who underwent a Young’s procedure in three otolaryngology HHT centers were reviewed. Patients were evaluated for postoperative epistaxis and subjective outcome.

Results: Forty-three patients underwent a Young’s procedure for severe epistaxis and were observed for a mean of 34 months. The procedure was well tolerated by all patients and 30 of 36 patients (83%) experienced complete cessation of bleeding after the Young’s procedure. Patients had a mean increase in hemoglobin of 4.6 g/dL after the procedure. The average Glasgow Benefit Inventory score after surgery was 43.56. No patients requested a reversal of the procedure.

Conclusion: The Young’s procedure is a safe and efficacious procedure with complete cessation of epistaxis in most patients with severe epistaxis and HHT. (Am J Rhinol Allergy 26, 401–404, 2012; doi: 10.2500/ajrha.2012.26.3809)

Hereditary hemorrhagic telangiectasia (HHT) is a genetic disorder of the blood vessels affecting ~1 in 5000 people across all races and ethnicities. Epistaxis is the most frequent symptom ranging from mild to severe. Medical and surgical treatments of epistaxis in HHT are a temporizing measure. Historically, surgical treatment consists of laser coagulation of the telangiectasias or the septodermoplasty procedure as described by Saunders. Both of these surgical options can decrease the number and severity of the epistaxis episodes. However, the telangiectasias return after the laser procedure and the efficacy of the septodermoplasty decreases over time because of the revascularization and contraction of the graft.

The Young’s procedure, which is surgical closure of the nostril, is another surgical alternative. Originally described by Dr. Austen Young in 1967 for the management of atrophic rhinitis, it was first described in 1991 for the management of epistaxis. In 1994 the Young’s procedure was described for the management of epistaxis in patients with HHT. Early reports, although successful at improving epistaxis, reported a high rate of partial reopening or dehiscence. The Young’s procedure, described by Lund in 1997, described the use of three radial flaps for a tension-free closure to reduce this dehiscence rate. Since 2005 we have been using the Young’s procedure with the Lund modification at three international HHT centers for patients with severe epistaxis. The purpose of this study was to review our results of the Young’s procedure in patients with severe epistaxis and HHT and assess patient outcome. We present the largest series reported of patients who have undergone the Young’s procedure and use of an outcomes measure to show the effect the Young’s procedure has on quality of life.

MATERIALS AND METHODS

In the Young’s procedure, a circumferential incision is made at the mucocutaneous junction in the anterior nasal vestibule and divided into three equal flaps. The skin and mucosal flaps are then raised anteriorly to the alar rim. The flaps are sutured together using vertical mattress sutures with absorbable suture (Fig. 1). It is imperative to ensure a tension-free closure of the flaps. In one center, inner and outer flaps were raised and closure was achieved at two levels. Mupirocin ointment is placed over the suture line and the patients are instructed to avoid trauma to the area. Adhesive bandages can also be placed over the closed nostril and removed 10 days postoperatively. The procedure is performed under general anesthesia and can be performed on an outpatient basis.

We retrospectively reviewed our data on patients with severe epistaxis who underwent the Young’s procedure from 2005 to 2011. Institutional Review Board approval was obtained at the University of Utah. All patients gave informed consent. Patients were assessed postoperatively for complications, epistaxis, hemoglobin level, side effects of the procedure, and satisfaction with the operative outcome. Interviews were conducted by phone. The Glasgow Benefit Inventory (GBI), an 18-item postsurgical questionnaire, was used to quantitatively assess patient outcome. The GBI is a patient-oriented measure that has been used specifically to evaluate the outcomes of otorhinolaryngological surgery and therapy. The outcomes are related to a change in the patient’s health status, defined as the general perception of well-being as well as total psychological, social, and physical well-being. Total scoring is based on a scale ranging from −100 (maximal negative benefit) to 0 (no benefit) to +100 (maximal benefit; Fig. 2).

RESULTS

Forty-three patients from three international HHT centers underwent the Young’s procedure from 2005 to 2011. Twenty-eight men and 15 women ranging from 31 to 77 years old with an average age of 61 years underwent the procedure. Thirty-eight patients underwent bilateral nasal closure and five underwent...
patients reported they would rather have the side effects of the Young’s procedure rather than epistaxis. No patients requested a reversal of the procedure. The mean GBI calculated total score average was 44 with a range of 17-70. All of the GBI scores were positive, indicating that all patients reported benefit after the procedure.

**DISCUSSION**

Historically, epistaxis in HHT has been primarily treated with laser treatment. The Nd:YAG and KTP laser have been shown to decrease epistaxis and improve patient’s quality of life but the effects of all lasers are temporary. Bipolar electrocautery has been used alone or adjunctively with laser treatments as a temporizing measure. Endovascular ablation has also not been shown to provide a long-term cure of epistaxis. Recently, Bevacizumab has been reported to treat HHT-related epistaxis when delivered topically and by submucosal injection. Bevacizumab is an antibody against vascular endothelial growth factor and research is ongoing regarding its use in HHT, which is characterized by high levels of vascular endothelial growth factor. For patients who experience epistaxis that is not responsive to laser treatment and requires a dependence on transfusion, we have recommended the septodermoplasty or the Young’s procedure. Although the septodermoplasty shows a significant improvement in quality of life, up to 25% of those patients will require further procedures to control epistaxis.

The Young’s procedure has previously been reported to be a successful treatment of severe epistaxis in HHT. These reports have mostly consisted of case reports, with the largest reported series of 12 patients. In the largest series, it is noted that after the Young’s procedure patients are able to engage in more social activities and we sought to show the effect the Young’s procedure has on the quality of life. In this series, using the GBI, we were able to quantify a successful improvement in patient quality of life after the procedure.

After the Young’s procedure the cessation of airflow leads to a complete cessation of epistaxis in most patients. This is likely caused by the elimination of the drying effects of turbulent nasal airflow across friable, diseased vessels as suggested by Glickman in 1994. Additionally, unlike the septodermoplasty, which only lines the anterior nasal cavity, the Young’s procedure affects telangiectasias both anteriorly and posteriorly. The procedure also provides a physical barrier of the closed nostrils against digital injury.

Once the nostril has healed, there is no maintenance that is required. The septodermoplasty, as described by Saunders, requires daily cleaning of the nostrils because of skin desquamation. Without this cleaning, a substantial odor can be perceived. With the Young’s procedure, the nostril is free of any obligatory maintenance. The procedure is reversible and the nostril can be reopened. This can be reassuring to patients who are considering the procedure. For additional reassurance, we encourage patients considering the procedure to contact others who have undergone the procedure. The procedure is not disfiguring because the closure retracts slightly and is not unsightly. Although a hyponasal quality to the voice may be expected, with severe epistaxis, many of these patients have limited ability to breathe through the nose preoperatively and do not report changes in voice quality. Delivery of oxygen by nasal cannula is no longer an option available to these patients and should be taken into consideration if long-term oxygen therapy is anticipated.

After the nostrils are closed, the patient is an obligate mouth breather, which can lead to dry mouth. Additionally, anosmia accompanied by a loss of taste can be disturbing to patients. In previous publications, we cited these potential downsides of the Young’s procedure. We believed the inability to breathe through the nose and associated anosmia would adversely impact patients’ quality of life. However, in our more recent experience, the pa...
patients report that the benefits greatly outweigh these side effects. None of our patients felt the side effects of anosmia or oblique mouth breathing were significant enough to request a reversal of the procedure. Some of the patients reported these side effects did not bother them at all. We now feel that the benefits of the Young’s procedure in those with severe epistaxis outweigh these side effects and continue to recommend the procedure for severe epistaxis in HHT.

There is a risk of dehiscence of the nostril closure, which can be minimized by a meticulous tension-free closure. Although the risk remains substantial in our experience, these patients have a decrease in epistaxis that is so significant that they do not find the dehiscence to be a failure of the operation. A small amount of air entering the nostril corresponds to a small amount of epistaxis. If there is a small dehiscence postoperatively, the patient can undergo a revision of the procedure and the flaps can be reaproximated in a tension-free manner. In our experience, patients early in the series more frequently required revision. Once we began to adopt the closure with vertical mattress sutures rather than simple sutures and raised the flaps to the alar rim, the number of patients requiring a revision operation dropped dramatically.

The procedure is especially useful for patients with severe epistaxis due to special circumstances (e.g., anticoagulation and thrombocytopenia). In patients with HHT and the need for anticoagulation or antiplatelet therapy, the Young’s procedure is an important surgical tool allowing anticoagulation despite epistaxis in HHT. It can be also used as a temporary measure until the need for anticoagulation is decreased.

We recommend the Young’s procedure to those with severe, crippling epistaxis. Options for those with lesser epistaxis continue to include endoscopic laser of the telangiectasias and the septodermoplasty. The Young’s procedure has previously been reported to have an impact on the quality of life compared with the laser and septodermoplasty procedures. In our experience, it can make a great difference in the lives of those who have been limited by their epistaxis. The ability to attend social events, engage in sports, and avoid the fatigue of anemia and transfusion dependence can make a large impact in these patient’s lives.

CONCLUSION

In our experience, the Young’s procedure is a safe and efficacious procedure for patients with severe epistaxis. It is certainly an option for those who have epistaxis that is refractory to other medical and surgical management and can make a dramatic difference in the lives of those who undergo the procedure.

REFERENCES


