Original Article

Endoscopic management of superior and posterior refractory epistaxis by cauterization and ligation

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Objective: To show the effectiveness of the endoscopic cauterization of the sphenopalatine artery and anterior ethmoidal artery in a severe posterior and superior epistaxis.

Methodology: From May 2006 to June 2011, sixteen consecutive patients with posterior and superior epistaxis were treated by endoscopic cauterization of 8 sphenopalatine arteries, cauterization and ligation of 3 sphenopalatine arteries and cauterization of the five ethmoidal arteries. The age ranged from 22 to 75 years and they were 10 male and 6 female.

Results: Blood film was normal in all patients. All were discharged on 3rd postoperative day. In every case, no intra or post-operative complications or sequel were recorded in intracranial, intraorbital, and in nasal cavity. In thirteen patients, no rebleeding occurred after cauterization. In three cases, epistaxis started again and they needed sphenopalatine artery ligation too. No further epistaxis developed during an 18 month follow up.

Conclusion: Endoscopic cauterization of the sphenopalatine artery and anterior ethmoidal artery in a severe posterior and superior epistaxis patient was safe and effective. (Rawal Med J 2013;38:283-285).

Keyword: Epistaxis, endoscopic cauterization, sphenopalatine artery.

INTRODUCTION

Epistaxis is one of the most common otorhinolaryngologic emergencies, often requires urgent and intensive care. The root of the problem is multifunctional and results from a number of factors that affect the nasal mucosa and the blood vessels, including environmental, local and systemic factors. Sometimes, the posterior and superior epistaxis can be life threatening because of anemia, hypotension and associate problems.[1] Initially traditional posterior and superior epistaxis is managed by posterior nasal pack or balloon. But these techniques often cause considerable discomfort and may cause mucosal damage and necrosis.[2] The traditional surgical approaches such as ligation of internal maxillary artery via caldwell-luc, ligation of ethmoidal arteries thorough Lynch-Howarth incision and sometimes in refractory epistaxis, ligation of external carotid artery have been associated with a failure rate of 10-15%.[3]

Endoscopic cauterization or ligation of the sphenopalatine artery and anterior ethmoidal artery is the next and easiest way in managing intractable epistaxsis.[4] Treatment of superior epistaxis is based on the cauterization or ligation of the ethmoidal artery that needs uncinectomy and finding of artery. The purpose of this study was to determine the effectiveness of the endoscopic cauterization of the sphenopalatine artery and anterior ethmoidal artery in a severe posterior and superior epistaxsis.

METHODOLOGY

From May 2006 to June 2011, sixteen consecutive patients with posterior and superior epistaxis were treated by endoscopic cauterization of eight sphenopalatine arteries, endoscopic cauterization and ligation of three sphenopalatine arteries and cauterization of the five ethmoidal arteries. The age ranged from 22 to 75 years and they were 10 male and 6 female. The diagnosis of the bleeding artery was made in the intraoperativly through the localization of the site of the active bleeding.

All patients were initially managed with packing or placement of a balloon catheter in the posterior nasal space and packing of anteriorly. The third day, the packs were removed and if bleeding continues, then endoscopy performed to confirm the site of bleeding. Once a posterior or superior bleeding was confirmed, then under general anesthesia endoscopic examination by 0^{o} and 45^{o} endoscope was done. After localization of the site of the active bleeding, the landmarks were identified and

cauterization or ligation of the sphenopalatine artery was performed. In superior epistaxis, procedure started with uncinectomy, under endoscopic view with optics of 0º (Karl Storz 0º, 4mm). After identification of the ethmoidal bulla, the anterior ethmoidal artery cauterization was performed through bipolar cautery.

RESULTS

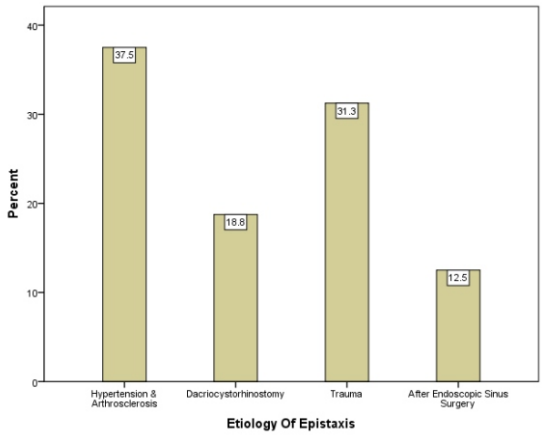
In all patients, their blood film was normal. All patients were discharged on 3rd postoperative day. In every case, no intra or post-operative complications were seen in particular intracranial or intraorbital region.

Table 1: Ages, gender, etiology, and bleeding artery.

	Age	Sex	Etiology of Epistaxis	Bleeding Artery	Management
1	57	F	Hypertension And	Sphenopalatine A	Endoscopic Cauterization
2	44	M	Arthrosclerosis	Anterior	Endoscopic Cauterization
3	72	M	Dacriocystorhinostomy	Ethmoidal A	Endoscopic Cauterization and
4	75	M	Hypertension And	Sphenopalatine A	(ligation)
5	61	M	Arthrosclerosis	Sphenopalatine A	Endoscopic Cauterization
6	55	F	Hypertension And	Sphenopalatine A	Endoscopic Cauterization
7	49	F	Arthrosclerosis	Anterior	Endoscopic Cauterization
8	65	M	Trauma	Ethmoidal A	Endoscopic Cauterization
9	53	M	After Endoscopic Sinus	Sphenopalatine A	Endoscopic Cauterization
10	67	M	Surgery	Anterior	Endoscopic Cauterization
11	52	M	Trauma	Ethmoidal A	Endoscopic Cauterization and
12	35	F	Dacriocystorhinostomy	Sphenopalatine A	(ligation)
13	46	M	Trauma	Sphenopalatine A	Endoscopic Cauterization
14	58	F	Trauma	Sphenopalatine A	Endoscopic Cauterization
15	22	M	Hypertension	Anterior	Endoscopic Cauterization
16	71	F	Arthrosclerosis	Ethmoidal A	Endoscopic Cauterization and
			Trauma	Sphenopalatine A	(ligation)

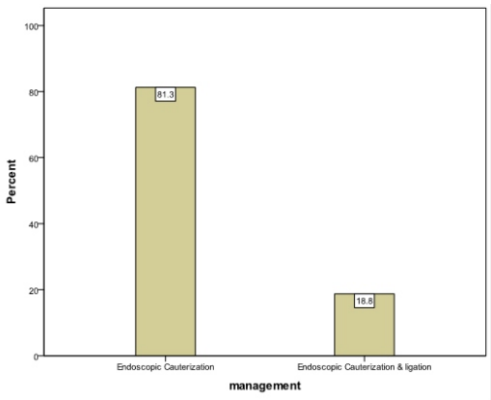
The etiology of epistaxis was varied (Table 1). Two (12.5%) patients experienced severe epistaxis from anterior ethmoidal artery after nasal polypectomy (Fig.1).

Fig 1: Etiology of epistaxsis.



Thirteen patients did not have rebleeding after cauterization, but in eleven cases of sphenopalatine artery cauterization, three cases started again epistaxis after cauterization and they needed sphenopalatine artery ligation too (Fig. 2).

Fig 2: Management of epistaxis.



All patients have subsequently been followed up on average of 18 months with no further episodes of epitasis.

DISCUSSION

Majority of epistaxis originates from the anterior septum and treatment option includes conservative measures like anterior nasal packing and chemical cautery. Anterior epistaxis is usually easily identified and managed, where as posterior and superior epistaxis can be problem for the surgeon and the patient. Posterior nasal packs including balloon tamponade will fail up to 50% of cases.[5,6] Patient with posterior nasal packing experience discomfort and the length of hospital stay is longer than that for surgery.[7]

The next management step include traditional surgical option like ligation or cauterization of one or more following arteries: External carotid, internal maxillary and anterior ethmoidal artery. The use of endoscopes to better visualize nasal compartment and control posteriorly based epistaxis has grown in practice.[4,8] More recently, endoscopic sphenopalatine artery cauterization or ligation has become a popular treatment option for posterior epistaxis.[9]

Two published studies have reported that surgical intervention was more cost effective than medical treatment or arterial embolization.[5] Efficacy of sphenopalatine artery occlusion surgery to treat epistaxis was found to be 92-100%.[8] In our study, 72% of patients did not rebleed after cauterization of sphenopalatine artery and only 27% needed ligation after cauterization. All cases with ethmoidal cauterization stoped bleeding.

No complication was seen in our study, thus confirming the low morbidity of this surgical technique, well covered in the literature.[5,9,10] The studies reporting on sphenopalatine ligation indicate that the duration of hospital stay was shorter compared to the surgical occlusion of the internal maxillary artery.[6] The choice between ligation and cauterization of sphenopalatine or anterior ethmoidal artery is based on the surgeon's familiarity with the procedure and the visualization of the branches to be occluded. There is no clear evidence in the literature to state that either is more effective.[10]

CONCLUSION

Endoscopic coagulation or ligation of sphenopalatine artery or ethmoidal artery is safe and effective method of controlling persistent posterior or superior epistaxis with minimal complications.

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REFERENCES

1 Maeda CAS, Ballin CR, Sava LC, Gomes AB, Bortolon L. Endoscopic Treatment of Epistaxis from the Anterior Ethmoidal Artery: ORL Service Experience at PUCPR. Arq Int Otorhinolaryngol 2009;13:151-4.
2. Harvinder S, Rosalind S, Gurdeep S. Endoscopic Cauterization of the Sphenopalatine Artery in Persistent Epistaxis. Med J Malaysia 2008;63:16-20.
3. McDonald T, Pearson BW. Follow up on maxillary artery ligation for epitasis. Arch Otolaryngol 1980;106:635-8.
4. AlokThakar, Shran CJ. Endoscopic sphenopalatine artery ligation for Refractory posterior Epistaxis. Ind J Otolaryngol Head Neck Surg 2005;57:215-8.
5. Klotz DA, Winkle MR, Richmon J, Hengerer AS. Surgical Management of Posterior Epistaxis: A Changing Paradigm. Laryngoscop. 2002;112:577-82.
6. Feusi B, Holzmann D, Steurer J. Posterior epitasis: systemic review on the effectiveness of surgical therapies. Rhinology 2005;44:300-4.
7. Miller TR, Stevens ES, Orlandi RR. Economic Analysis of the Treatment of Posterior Epistaxis. Am J Rhinol 2005;19:79-82.
8. Adhikari P, Pradhan B, Yadav D, Thapa N, Acharya K. Endoscopic sphenopalatine artery coagulation for posterior epitasis: A case report and review of literature. Internet J Emerg Med 2009;6. DOI:10.5580/6e8.
9. Wiorowski M, Schuitz P, Perrot JB, Gentine A, DebryC. Indications and results of cauterization by endoscopic approach of the sphenopalatine artery in severe posterior epitasis. Auris Nasus Larynx 2004;31:131-3.
10. Rabelo FAW, do Prado VB, Valera FCP. Surgical treatment of nasal packing refractory epitasis. Braz J Otorhinolaryngol 2009;75:335-7.