ORIGNAL ARTICLE

Epistaxis: Patterns of Presentation and Management – A Retrospective Study from A Tertiary Institution

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ABSTRACT

Introduction: Epistaxis is a common ENT emergency, with varied presentations ranging from minor nasal bleeding to life-threatening hemorrhage. The aim of the study was to evaluate the varying presentations, etiologies, and management outcomes of epistaxis in a tertiary care center in Northeast India.

Methods: Retrospective review of the details of the patients admitted with epistaxis from April 2024–April 2025 at a tertiary hospital in Northeast India. Data from 114 patients presenting with epistaxis were analyzed for demographics, bleeding site, etiology, comorbidities, and treatment methods.

Results: Of 114 patients, 62.2% were male, with mean age of 41.3 +17.2 years. Anterior epistaxis accounted for 95.5% of cases. The leading causes were hypertension (35.8%) and nasal trauma (20.9%). Most cases were managed conservatively with nasal compression, topical agents, and cautery. Anterior nasal packing was done in 35.8% of patients, while 6 patients required surgical or radiological intervention.

Conclusion: Anterior epistaxis was the most frequent presentation, primarily due to hypertension and trauma. Conservative measures were effective in most cases. Surgical or interventional procedures were reserved for refractory cases, supporting a stepwise management approach.

INTRODUCTION

Epistaxis is a commonly encountered emergency in otorhinolaryngology. Around 60% of the population may experience epistaxis at least once in their lifetime.[1] The presentations can vary from a minor and self-limiting episode or a catastrophic life-threatening emergency. 6–10% of patients require interventions and hospitalization due to hemodynamic instability or failed conservative measures.[2,3]

The etiology can be local causes like trauma to nasal mucosa, structural abnormalities of the nasal septum or sinonasal neoplasms; while systemic factors such as hypertension, coagulopathies, and anticoagulant therapy contribute as well.[4,5] Environmental conditions, particularly dry and cold climates, have been associated with increased incidence.[6] Anatomically, it can be divided to anterior or posterior epistaxis with relation to the pyriform aperture.[6] Anterior epistaxis, typically arising from the Kiesselbach plexus situated on the anteroinferior nasal septum, is more common and usually subsides with conservative management. In contrast, posterior epistaxis, often involving Woodruff's plexus, tends to occur in older adults requiring admission and interventions in most cases.[3,7]

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Management varies according to the etiology, location, and severity of bleeding. Initial treatment may include pinching the nasal ala, known as the Hippocratic technique, which itself stops trivial bleedings, topical vasoconstrictor or hemocoagulase drops, and chemical or electrical cautery. Persistent or severe bleeding may require anterior or posterior nasal packing, endoscopic sphenopalatine artery ligation, or transarterial embolization.[8,9] Nasal endoscopy plays a major

role in localizing the bleeding source and deciding definitive treatment options and recurrence.

MATERIALS AND METHODS

Study Design and Setting

A retrospective observational study was conducted in the Department of ENT, Head and Neck Surgery at a tertiary care hospital in Northeast India for a period of 1 year, from April 2024 to April 2025.

Inclusion and Exclusion Criteria

All patients presenting with epistaxis to the OPD or emergency during the study period were included. Postoperative epistaxis cases (within 2 weeks of surgery) and patients with incomplete medical records were excluded.

Data were obtained from hospital records and included patient demographics (age, sex), site of bleeding (anterior/posterior), and etiology (local or systemic). Comorbidities like hypertension, coagulopathies, hepatic or renal disorders, use of anticoagulants or antiplatelets, initial vitals and hemodynamic status, mode of presentation (OPD or emergency), and the management approach along with clinical outcomes. Management strategies included conservative measures such as nasal compression, topical vasoconstrictors, and local cautery; minimally invasive approaches like anterior or posterior nasal packing; and advanced interventions such as arterial ligation or embolization for uncontrolled bleeding. Supportive care involved fluid resuscitation, tranexamic acid, and correction of systemic conditions. Admission was done when necessary for monitoring or further intervention. Demographic and clinical data were summarized using descriptive statistics, with categorical variables presented as frequencies and percentages.

RESULTS

114 patients visited the ENT OPD and emergency department during the study period due to epistaxis. Their ages ranged from 6 to 72 years, with a mean age of 41.3 ± 17.2 years. 71 patients were males (62.2%) and 43 females (37.7%), with a male-female ratio of 1.6:1. Baseline characteristics & distribution of study population according to age and gender is mentioned in Table 1. The age wise distribution of cases in the study is shown in Figure 1.

Anterior epistaxis was the most common presentation, occurring in 109 patients (95.5%), whereas posterior epistaxis was noted in only 4 cases (4.5%). Hypertension was the most common etiology in 41 patients (35.8%), followed by trauma related to road traffic accidents in 24 patients. Other causes were deviated nasal septum with spur, nose picking or forceful nose blowing, dry nasal mucosa, tumors like juvenile nasopharyngeal angiofibrma or inverted papilloma, coagulopathies and idiopathic.[7] (Table 2, Figure 2, Figure 3)

Table 1: Baseline characteristics & distribution of study population according to age and gender

Category		Frequency (n=114)	Percentage (%)
Age Group (years)	0–10	12	10.5%
	11–20	13	11.4%
	21–30	22	19.3%
	31–40	13	11.4%
	41–50	17	14.9%
	51–60	14	12.3%
	61–72	23	20.2%
Mean Age ± SD	41.3 ± 17.2		
Sex	Male	71	M : F= 1.6:1
	Female	43	

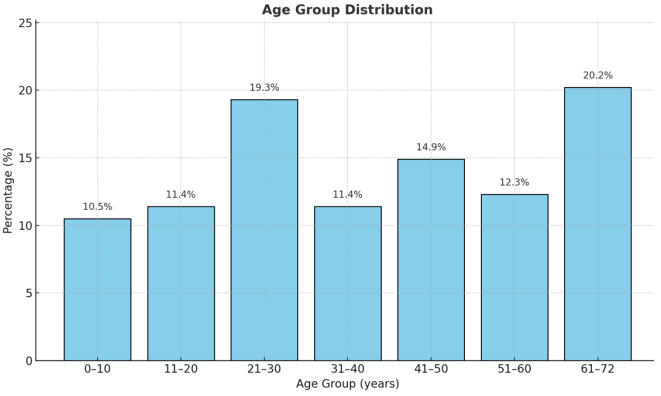

Figure 1: Age-wise distribution of cases in the study population.

The majority of patients were effectively managed using conservative approaches. Systemic contributors were concurrently addressed, including control of hypertension and correction of underlying coagulopathies or chronic liver disease. Observation, topical vasoconstrictors, hemocoagulase drops, and cauterization of the bleeding point by silver nitrate or bipolar cautery were sufficient in 39.4% of cases. Anterior nasal packing was required in 35.8%, while posterior nasal packing was necessary in only one patient (0.7%) with hypertensive posterior epistaxis. 6 patients were having recurrent and refractory bleeding. Sphenopalatine artery ligation was done in two patients, and three patients underwent Digital Subtraction Angiography (DSA) followed by embolization of the sphenopalatine artery or its branches. DSA with vascular coiling was performed in a patient with a post-traumatic carotid-cavernous fistula. Tumor-related epistaxis was managed by endoscopic excision in two cases of juvenile nasopharyngeal angiofibroma and 3 cases of inverted papilloma. Sixteen patients who had deviated nasal septum with spur were managed by septoplasty.

Table 2: Etiologies of epistaxis

	Frequency (n=114)	Percentage (%)
Hypertension	41	35.96%
Trauma (Road Traffic Accidents)	24	21.05%
Deviated Nasal Septum (with spur)	16	14.04%
Nose picking / Forceful blowing	10	8.77%
Dry nasal mucosa / weather-related	8	7.02%
Tumor-related bleeding	5	4.39%
Coagulopathy	3	2.63%
Idiopathic / Unidentified	7	6.14%

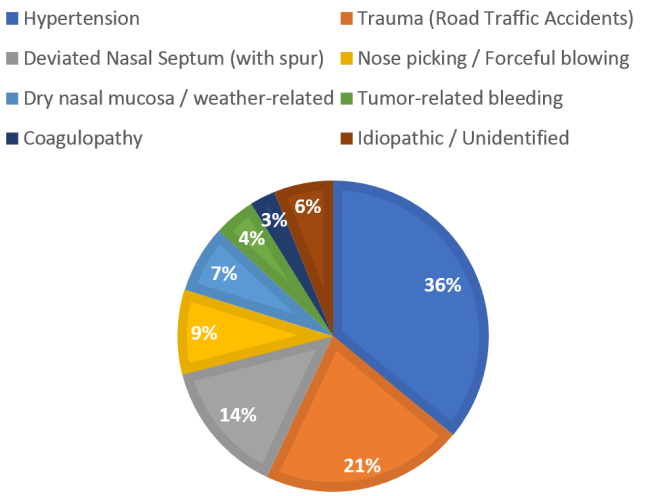

Figure 2: Pie diagram showing the etiologies of epistaxis

Table 3:

Percentage (%)	Number of Patients (n=114)	Percentage (%)
Conservative Measures		
• Observation, topical vasoconstrictors, hemocoagulase, cauterization (silver nitrate/bipolar)	45	39.47
Anterior Nasal Packing	41	35.96
Posterior Nasal Packing	1	0.87
Surgical / Interventional Procedures		
• Sphenopalatine artery ligation	2	1.75
• Endovascular embolization (DSA-guided)	3	2.63
• Coiling for carotid-cavernous fistula	1	0.87
• Tumor excision (JNA / inverted papilloma)	5	4.38
• Septoplasty	16	14.03

Figure 3: (3a) Endoscopic image showing deviated nasal septum with spur to right impinging on inferior turbinate. (3b) Excised specimen of juvenile nasopharyngeal angiofibroma. (3c) NCCT nose and PNS axial section with carotid-cavernous fistula and proptosis on right side post trauma. (3d) NCCT nose and PNS showing left nasal mass and sphenopalatine foramen widening suggestive of juvenile nasopharyngeal angiofibroma.

DISCUSSION

Epistaxis is a frequently encountered clinical scenario in otorhinolaryngology. The presentation may vary from mild, self-limiting bleeding to severe hemorrhage. In our study of 114 patients over a period of one year, majority (62.3%) presented in the emergency department. Epistaxis can occur in any age group; however, trauma is more commonly seen in children and young adults, while hypertension is a predominant cause in individuals in more than 4o years. This aligns with earlier studies indicating that epistaxis in children is frequently due to local trauma, such as nose picking, while in older adults, systemic causes like hypertension are more relevant.[1,4]

Though anterior epistaxis was common (95.5%), as compared to posterior epistaxis (4.5%) the latter often required nasal packing and inpatient hospital care. Anterior bleeds typically originate from Kiesselbach's plexus and are often self-limiting or managed conservatively. Posterior bleeds, frequently arising from the sphenopalatine artery, tend to be more severe and often necessitate surgical or interventional procedures.[3,7] These observations are consistent with the preexisting literature.[5,6]

Hypertension was the most frequently associated systemic cause, noted in 35.8% of cases. Elevated blood pressure

increases vascular fragility and prolongs bleeding. In such individuals, arterial wall changes such as muscle degeneration impair vasoconstriction, leading to persistent bleeding.[7,10]

Trauma was the second most common cause, comprising road traffic accidents (20.9%) and digital trauma (9.0%). Trauma included injury due to accidents, assault, falls, or nose picking, reflecting the vulnerability of the nose in craniofacial trauma. Young males, being more involved in sports and outdoor activities, are at higher risk. This also explains the male predominance observed in our study.[5,6]

Deviated nasal septum (DNS) with a spur contributed to 13.4% of cases. The nasal spur causes turbulent airflow and mucosal drying, leading to crusting, erosion, and spontaneous bleeding, that can be often recurrent. Additionally, frequent nose blowing, minor trauma, or habitual nose picking in patients with DNS may result in rupture of the fragile vessels of Kiesselbach's plexus.[9] Less common causes included mucosal dryness (6.0%), which was more prevalent during winter due to increased wind velocity and low humidity.[6,10] In adolescent males with recurrent epistaxis, juvenile nasopharyngeal angiofibroma (JNA) should always be considered. Epistaxis is the second most common presenting symptom of JNA, after nasal obstruction, and occurs in approximately 63% of cases.[11] In our study two adolescent boys with juvenile nasopharyngeal angiofibroma, the presenting symptoms were nasal obstruction and epistaxis. They were later managed by endoscopic excision and removal of the tumor.

Management depends on the severity and underlying cause. For active bleeding, immediate resuscitation measures including airway, breathing, and circulation (ABC) are essentially done. Patients who are conscious and oriented are encouraged to sit, lean forward, and remove any clots from the pharynx. Simultaneously, the extent of bleeding should be assessed, and systemic factors like hypertension or coagulopathy must be corrected. Medications such as tranexamic acid or vitamin K may help in controlling bleeding.

Table 3 demonstrates different management options in patients. Conservative treatment was effective in many patients. Topical vasoconstrictors or hemocoagulase drops were used in 45 patients, while anterior nasal packing was needed in 41. Nasal packing with ribbon gauze or Merocele provides tamponade; in the case of Merocele, the oxidized methyl cellulose component adds a haemostatic effect.[12] In cases of identifiable structural abnormalities like DNS, septoplasty was performed. For neoplastic causes, surgical excision remains the definitive treatment. Surgical methods, such as endoscopic sphenopalatine artery ligation or cauterization, are reserved for posterior epistaxis unresponsive to nasal packing. When surgical intervention is contraindicated or fails, endovascular embolization may be considered.[13,14] In our study, two patients underwent transnasal endoscopic sphenopalatine artery ligation (1.5%), and three patients underwent endovascular embolization (2.2%). These findings support the stepwise approach to epistaxis management—starting with conservative measures and escalating to invasive techniques including radiological interventions whenever necessary.[5,6,15] Notably, there were no cases of mortality or significant morbidity, which highlights the effectiveness of timely and appropriate intervention.

CONCLUSION

Epistaxis is a common otolaryngologic emergency with diverse severity of presentations, ranging from self-limiting anterior bleeds to life-threatening posterior nasal bleeds. In our study, anterior epistaxis was more prevalent, with hypertension and nasal trauma identified as the common etiologies. While conservative measures were adopted in the majority of the cases; surgical procedures and radiological interventions were reserved for recurrent or refractory cases.

REFERENCES

1. Varshney S, Saxena RK. Epistaxis: a retrospective clinical study. Indian J Otolaryngol Head Neck Surg. 2005;57(2):125–9.
2. Wormald PJ. Epistaxis. In: Cummings CW, Flint PW, editors. Cummings Otolaryngology: Head and Neck Surgery. 4th ed. Philadelphia: Mosby Elsevier; 2005. p. 505–14.
3. Klossek JM, Dufour X, Serrano E, Fontanel JP, Coriat P, Gilain L, et al. Epistaxis and its management: an observational pilot study carried out in 23 hospital centres in France. Rhinology. 2006;44(2):151–5.
4. Iseh KR, Muhammad Z. Pattern of epistaxis in Sokoto, Nigeria: a review of 72 cases. Ann Afr Med. 2008;7(3):107–11.
5. Hussain G, Iqbal M, Shah SA, Mohammad S. Evaluation of aetiology and efficacy of management protocol of epistaxis. J Ayub Med Coll Abbottabad. 2006;18(4):62–5.
6. Adhikari P, Pradhananga RB, Thapa NM, Sinha BK. Aetiology and management of epistaxis at TU Teaching Hospital. Kathmandu Univ Med J (KUMJ). 2008;6(4):456–9.
7. Pope LE, Hobbs CG. Epistaxis: an update on current management. Postgrad Med J. 2005;81(955):309–14.
8. Shaweta, Sharma R, Sharma N. Epistaxis: a retrospective clinical study. Int J Otorhinolaryngol Head Neck Surg. 2021;7(7):1158–63.
9. Wormald PJ. Epistaxis. In: Gleeson M, editor. Scott-Brown's Otorhinolaryngology, Head and Neck Surgery. 7th ed. London: Hodder Arnold; 2008. p. 1614–25.
10. Beck R, Sorge M, Schneider A, Dietz A. Current approaches to epistaxis treatment in primary and secondary care. Dtsch Arztebl Int. 2018;115(1–2):12–22.
11. Blount A, Riley KO, Woodworth BA. Juvenile nasopharyngeal angiofibroma. Otolaryngol Clin North Am. 2011;44(5):989–1004.
12. Pallin DJ, Chng Y-M, McKay MP, Emond JA, Pelletier AJ, Camargo CA Jr. Epidemiology of epistaxis in US emergency departments, 1992 to 2001. Ann Emerg Med. 2005;46(1):77–81.

13. Schlosser RJ. Clinical practice. Epistaxis. N Engl J Med. 2009;360(8):784–9.

14. Pollice PA, Yoder MG. Epistaxis: a retrospective review of hospitalized patients. Otolaryngol Head Neck Surg. 1997;117(1):49–53.

15. Gilyoma JM, Chalya PL. Etiological profile and treatment outcome of epistaxis at a tertiary hospital in Tanzania: a prospective review of 104 cases. BMC Ear Nose Throat Disord. 2016;16:1.

16. McGarry GW. Epistaxis. In: Gleeson M, editor. Scott-Brown's Otorhinolaryngology, Head and Neck Surgery. 7th ed. London: Edward Arnold; 2008. p. 1596–608.

17. Rudmik L, Smith TL. Management of intractable epistaxis. Am J Rhinol Allergy. 2012;26(1):55–60.

18. Kilty SJ, Al-Shehri M, Afzali P, Bonaparte JP. Management of epistaxis. Otolaryngol Clin North Am. 2013;46(5):751–60.

19. Sigdel B, Panta R, Ghimire A, Shrestha I. Etiological profile and management of epistaxis in tertiary care hospital. J Nobel Med Coll. 2014;3(1):40–5.

20. Shrestha I, Sinha BK, Rijal A. Evaluation of etiology of epistaxis and its management in Dhulikhel Hospital. Nepal Med Coll J. 2008;10(2):86–9.