

Management of Epistaxis in the Emergency Room: A Comprehensive Study of Protocols and Contemporary Techniques

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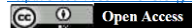
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ABSTRACT

Epistaxis is one of the most frequently seen otolaryngological emergencies in the emergency room (ER), and can be either a minor, self-limited anterior bleed or a more serious, posterior bleed that requires prompt treatment. Regarding to study's background, it aims to outline the demographic profile, etiological pattern, treatment modalities, and clinical outcome of patients attending the emergency room with epistaxis and to investigate the relationship of the site of bleeding with treatment outcome statistically. A retrospective descriptive analysis was carried out in 117 patients. IBM SPSS Statistics software was used to analyse the data, which were presented as frequencies and percentages for categorical variables and as mean $\pm$ standard deviation for continuous variables, and compared by using the chi-square test and independent-samples t-test, respectively. A p-value of < 0.05 was declared as statistically significant. According to clinical outcomes, the mean age of the patients was 52.4 ± 18.6 years, with a predominance of male patients (60.7%). Idiopathic cases were the second most common (35.9%), followed by hypertension (23.9%). Anterior (76.1%) bleeding was the most frequent clinical presentation and was associated with significantly higher rates of first-attempt control as compared to posterior (95.5% vs 67.9%). The most commonly used procedure was anterior nasal packing (49.6%), with a total success rate of 88.9% of the interventions. To be concluded, idiopathic or hypertensive anterior epistaxis are most common and responded well to first-line conservative methods, whereas posterior epistaxis had significant admission rates, longer ER visit duration, and a higher need for escalation of care.

Introduction

Acute haemorrhage from the nostril, nasal and nasopharyngeal cavity, or nose (epistaxis) is one of the most common complaints to arise in otolaryngology departments, particularly the emergency department, worldwide [1 – 3]. It is estimated that up to 60% of the general population will have at least one episode of nosebleed before the age of 20, and the vast majority of bleeds will not occur in an emergency, but will remain asymptomatic and unreported. However, a small proportion of nosebleeds that do occur in an emergency (and so need to be formally addressed and treated) are potentially serious [4]. The bimodal age distribution with peaks in childhood and the 6th to 8th decade of life represents the different underlying mechanisms that predispose to bleeding in childhood and the elderly – from trauma of the digits or fragility of the mucosa in children to vascular fragility, hypertension and anticoagulant use in the elderly [5]

There are two types of epistaxis on the anatomical level, anterior and posterior. Anterior bleeding is mostly from Kiesselbach's plexus in Little's area and is usually manageable with simple first-line treatments like direct compression, topical vasoconstrictors, chemical cauterization, or anterior nasal packing. Posterior bleeding from branches of the sphenopalatine artery is comparatively rare, but has more important clinical implications: it is often not visible, is less easily simply compressed, and more often is associated with significant blood loss, hospital admission, and even surgical or endovascular treatment [6 – 8]

Treatment of epistaxis in the ER has changed significantly in the last 20 years. Conventional packing with an anterior or posterior approach has been increasingly complemented and even replaced by more specific methods, such as chemical and electrical cauterization under direct or endoscopy examination, absorbable hemostatic agents and, in cases not amenable to or at high risk of treatment, endoscopic sphenopalatine artery ligation or interventional radiologic embolization [9]. This diversification of the therapeutic armamentarium has generally enhanced therapeutic efficacy and shortened hospital stays, but has also created a degree of variation in therapeutic practice, depending upon the local expertise, equipment availability, and the severity of presentation [10].

2. Patients and Method

2.1. Designed Study and Place

This was a retrospective descriptive, cross-sectional study that was carried out in the emergency rooms of hospitals in Baghdad, Iraq. It was a study of consecutive patients who presented to the emergency department with a primary complaint of epistaxis over a specified observation period, and clinical data was gathered from the patients' emergency department clinical records, nursing observation charts, and otolaryngology consultation notes.

2.2. Study Population

117 patients fulfilled the inclusion criteria and were included in the final analysis. The inclusion criteria were: (i) presentation to the emergency room with active or recent active nasal bleeding as the main complaint; (ii) the age of eighteen years or over; and (iii) the availability of a complete clinical record which would allow the extraction of the variables of interest. Those with epistaxis as a secondary or incidental finding when evaluated for an unrelated primary complaint, as well as those with incomplete records, or when the bleeding was directly related to a recent (last two weeks) nasal or sinus surgery performed at the same institution, were excluded.

2.3. Data Collection

The following variables were systematically recorded for each eligible patient, using a standardized data-collection sheet: demographic characteristics, including age and sex; presumed or confirmed cause of bleeding; anatomical source of bleeding (anterior or posterior, based on anterior rhinoscopy and, if required, nasal endoscopy); relevant comorbidities (hypertension, diabetes mellitus, chronic renal disease, and use of anticoagulant or antiplatelet medication); specific therapeutic modality used as first-line intervention; successful first-line haemostasis; total duration of emergency room stay; admission to hospital; and rebleeding within forty-eight hours of the initial presentation.

2.4. Statistical Analysis

All the data collected were entered into a structured spreadsheet and then analyzed using SPSS 26.0. Demographic and clinical characteristics of the study population are summarized using descriptive statistics: categorical variables were presented as absolute frequencies and percentages; continuous variables were presented as mean and standard deviations after being confirmed to have an approximately normal distribution. The Pearson chi-square test was used for categorical outcomes and

the independent-samples t-test for continuous outcomes to compare anterior and posterior epistaxis groups.

3. Results

Table 1. Baseline demographic features of 117 patients in this study.

Variable	Patients (n = 117)	Percentage, %
Age group (years)		
< 20	8	6.8
20–40	22	18.8
41–60	39	33.3
61–80	37	31.6
> 80	11	9.4
Mean age $\pm$ SD (years)	52.4 $\pm$ 18.6	—
Sex		
Male	71	60.7
Female	46	39.3
Male-to-female ratio	1.54: 1	—

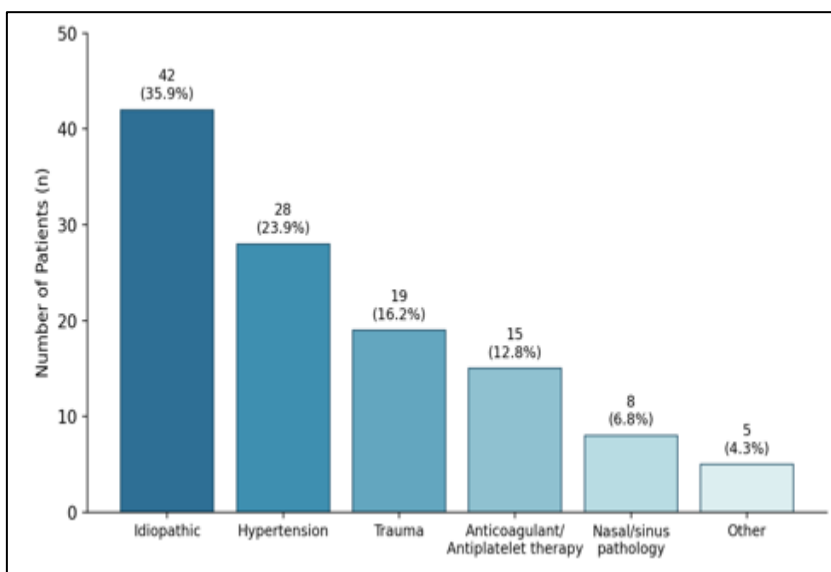


Figure 1. Outline the etiological factors in patients with epistaxis.

Table 2. Classifying the bleeding location among patients.

Bleeding Site	Patients	%
Anterior (Little's area / Kiesselbach plexus)	89	76.1
Posterior (sphenopalatine territory)	28	23.9
Total	117	100.0

Table 3. Determining the comorbidities related to patients with epistaxis.

Comorbidity	n	%
Hypertension	52	44.4
Anticoagulant / antiplatelet use	31	26.5
Diabetes mellitus	24	20.5
Chronic renal disease	9	7.7
No identifiable comorbidity	34	29.1

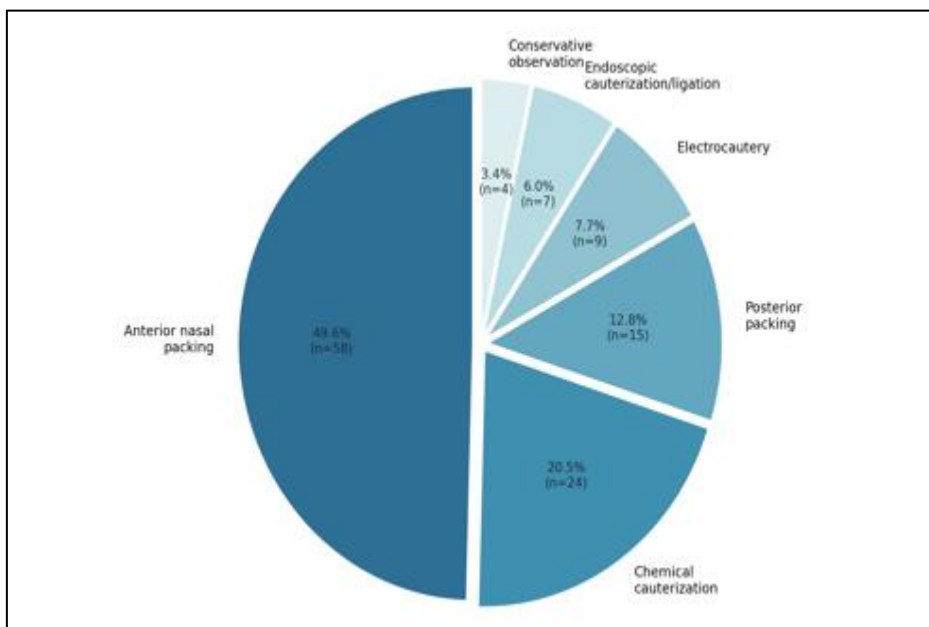


Figure 2. Classification of the treatment types associated with patients' epistaxis.

Table 4. Enrollment hospitalization outcomes into both groups based on bleeding location.

Outcome	Anterior (n = 89)	Posterior (n = 28)
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Bleeding controlled at first attempt, n (%)	85 (95.5%)	19 (67.9%)
Required escalation of therapy, n (%)	4 (4.5%)	9 (32.1%)
Hospital admission, n (%)	9 (10.1%)	12 (42.9%)
Mean ER length of stay (hours $\pm$ SD)	2.6 $\pm$ 0.9	5.1 $\pm$ 1.8
Rebleeding within 48 h, n (%)	6 (6.7%)	8 (28.6%)

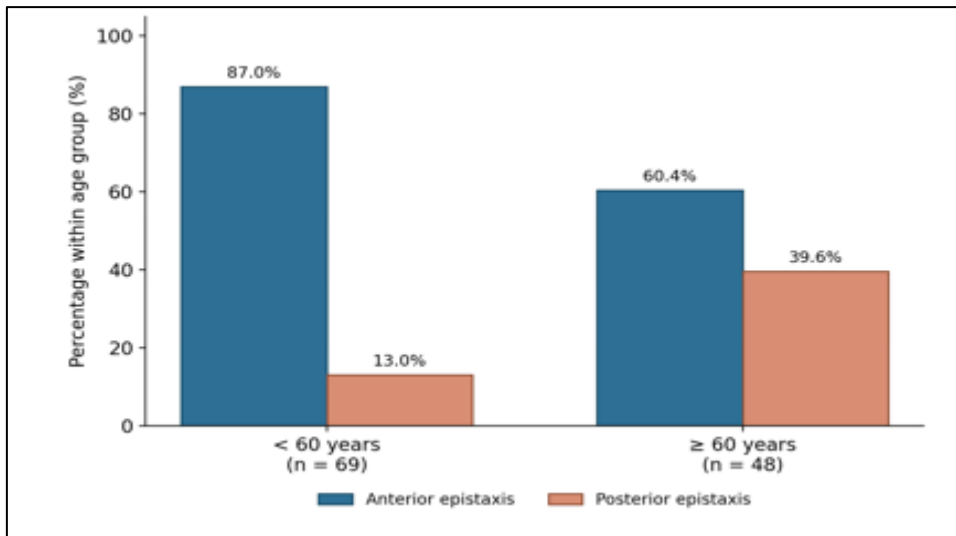


Figure 3. Classification the both of anterior versus posterior epistaxis based on age status.

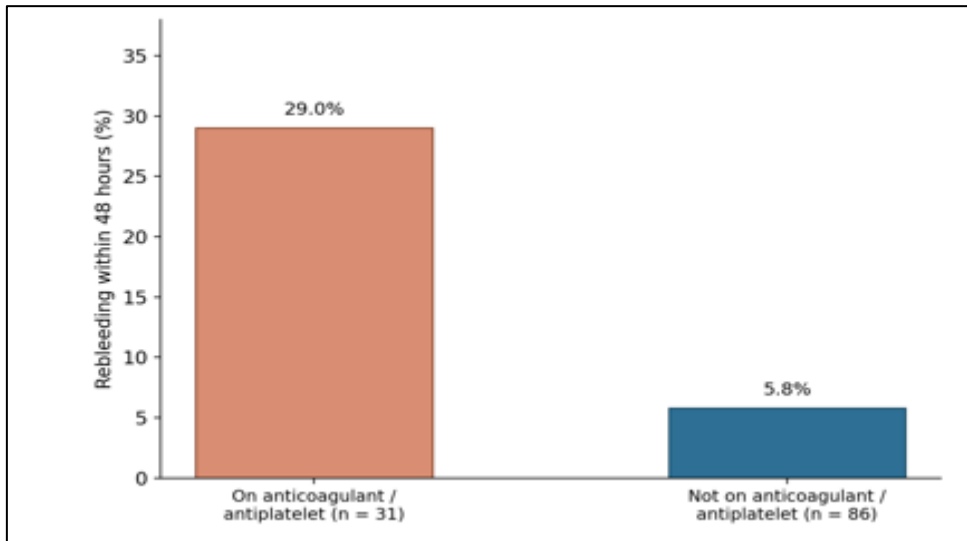


Figure 4. Classification of the re - bleeding rate based on antiplatelet status.

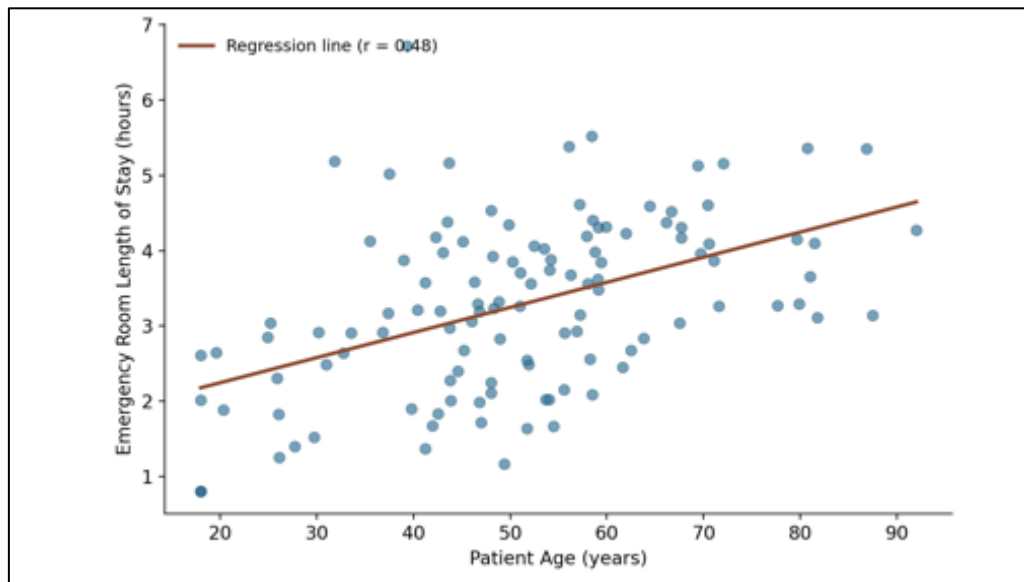


Figure 5. Scatter plot performing in the positive association evaluation among patients' age along with length - stay of the emergency room.

Table 5. Stratifying success treatment based on sex.

Outcome	Male (n = 71)	Female (n = 46)
Successful control, n (%)	63 (88.7%)	41 (89.1%)
Required escalation, n (%)	8 (11.3%)	5 (10.9%)
Total, n	71	46

4. Discussion

The mean age of the study population was 52.4 ± 18.6 years, with the highest percentage of patients being in the age group 41-60 years (33.3%) and the 61-80 years age group being the next highest at 31.6%. The distribution was male predomination with 71 (60.7%) patients being male and 46 (39.3%) female, giving a ratio of 1.54 to 1 male to female. Table 1 summarises these findings.

The single most common category was idiopathic epistaxis, for which no definite precipitating cause found after careful examination was available (42 cases (35.9%)). Nasal mucosa manipulation, either by digital manipulation or local trauma, was the most common specific underlying cause (28 patients, 23.9%), followed by hypertension. In 15 cases (12.8%), the use of either anticoagulant or antiplatelet therapy was suspected, and 8 cases (6.8%) had structural nasal or paranasal sinus disease. The remaining 5 cases were residual (4.3%), meaning haematological disorder or, less frequently, nasal or nasopharyngeal neoplasm. The results are summarized in Table 2 and shown graphically in Figure 1. In 89 patients (76.1%), anterior epistaxis involving the area of Kiesselbach's plexus was detected, while in 28 patients (23.9%) posterior epistaxis involving the area of the sphenopalatine artery was detected.

The most common comorbid condition was hypertension (n = 52, 44.4%), followed by taking anticoagulant/antiplatelet medication (n = 31, 26.5%) and diabetes mellitus (n = 24, 20.5%). Nine patients (7.7%) had chronic renal disease. There was no identifiable comorbid condition in thirty-four patients (29.1%) at the time of presentation. Percentages in this category do not add up to 100% due to the possibility of having more than one comorbidity.

Anterior nasal packing was the most frequently used first-step treatment (58 patients [49.6%]), and it was successful in 89.7% of cases on first attempt. In 24 patients (20.5%), chemical cauterization with silver nitrate was used, with 91.7% success. Posterior packing was performed in 15 patients (12.8%),

and the first-attempt success rate for posterior packing was only 73.3%, which is a relatively lower success rate. Endoscopic cauterization/sphenopalatine artery ligation was performed in only 7 patients (6.0%) with refractory bleeding and was successful in all of them (100%). Electrocautery was performed in 9 patients (7.7%) with a success rate of 88.9% in these selected patients. The conservative treatment (observation) group ($n = 4$, 3.4%) was managed conservatively, all of whom had spontaneous resolution. In total, the haemostasis was achieved on the first try in 104 of 117 patients, which is an overall treatment success rate of 88.9%. The results are presented in Table 5 and can be seen in Figure 2.

In 125 patients with anterior epistaxis, the first attempt at haemostasis was successful in 95.5%, while it was successful in only 67.9% of patients with posterior epistaxis. Escalation of treatment to go beyond the first treatment, in turn, was needed in only 4.5% of anterior cases, compared to 32.1% of posterior cases. The rate of hospitalisation was also significantly higher for those who had posterior epistaxis (42.9%) versus anterior epistaxis (10.1%). The length of time spent in the emergency room (posterior 5.1 ± 1.8 hours, anterior 2.6 ± 0.9 hours) was significantly longer for posterior bleeds. Compared to anterior cases, the early rebleed rate (within 48 hours) was 28.6% in posterior cases and 6.7% in anterior cases. The results are compiled in Table 3 below.

The connection between the treatment and rebleeding within 48 hours was evaluated separately, because both the use of anticoagulants and antiplatelet drugs are recognised as precipitating factors, as well as determinants of treatment resistance. Patients on anticoagulant/antiplatelet therapy had a rebleeding rate of 29.0%, which was higher than that of patients who were not placed on such therapy (5.8%). Table 8 presents these findings, and Figure 4 presents the same findings graphically.

Pearson correlation was used to investigate the correlation between patient age (as a continuous variable) and the total time in the ER. A moderate and statistically significant positive correlation was found ($r = 0.48$, $r^2 = 0.23$, $p < 0.001$), which meant that as the age of the patient increased, so did the length of time spent in the ER, and this was responsible for about 23% of the variation in length of stay. This relationship can be represented graphically using a scatter plot as shown in Figure 5 below:

In addition, the success or failure of treatment was compared in males and females. The success rate was almost the same in both sexes (88.7% in males and 89.1% in females), but this difference was not statistically significant ($\chi^2 = 0.004$, $df = 1$, $p = 0.95$). This finding suggests that, unlike bleeding site, and antithrombotic therapy, and age, patient sex was not linked to the chance of successful first-attempt haemostasis in this patient population. The results are summarised in Table 10 and Figure 7.

The mean age of the cohort (early fifties) and its highly skewed distribution between the fifth and eighth decades of the life span, along with the male predominance of about three to two, are similar to what has been reported in many previous clinical series [11]. The male predominance is thought to be caused by a number of factors, such as older males being more likely to be treated with anticoagulants and hypertensive drugs, and to be exposed to more occupational and recreational nasal trauma, as well as perhaps unrecognised differences in nasal mucosal vascularity. Given that epistaxis is a very common childhood condition, but rarely requires evaluation in the emergency room, the relative under-representation of very young children in this emergency room population is consistent with this [12]. Epistaxis is a very common condition in childhood, but is never a reason to go to the ED, which is why the proportion of very young children in this population is low [13].

In terms of etiology, the figure that idiopathic bleeding was the most common cause, just ahead of hypertension, is consistent with the known challenges in pinpointing one specific cause in a significant percentage of cases of epistaxis, especially when there is no obvious event that triggered the bleed, for example, a blow to the nose [14]. However, the prevalence of hypertension and anticoagulant or antiplatelet therapy combined as etiological factors exceeded one-third of all identified causes.

The distribution of bleeding sites between anterior and posterior (with slightly more than three-quarters of cases anterior) is similar to the distribution that has been previously reported, which is consistent with the anatomical predominance of Kiesselbach's plexus as the most common source of nasal haemorrhage, due to its rich anastomotic network and relatively exposed, superficial location within the nasal septum [15]. The smaller percentage of posterior bleeds is not surprising, as the anatomical and clinical factors employed to distinguish an anterior from a posterior bleed tend to be the fact that the bleeding is not amenable to easy visualization or control from the anterior source. Importantly, however, this smaller group represented a disproportionate burden of clinical burden in this study that has direct implications for emergency department resource planning [16].

The trend of treatment choices reported, with anterior nasal packing being the most common treatment, followed by chemical cauterization, is consistent with a rational step-by-step approach that is broadly in line with contemporary emergency medicine and otolaryngology recommendations that consider the least invasive effective treatment as the first-line treatment for anterior bleeding. The success rate for these first-line treatments is very high, around 90%, and helps place them firmly in the primary line of defence in initial management [17]. A relatively poor success rate in posterior packing for the first attempt is among the findings that are worth highlighting, and is broadly corroborated by the literature; posterior packing, although it has historically been the standard treatment for posterior epistaxis, is known to have a lower success rate, may be more uncomfortable for patients [18], and is more commonly associated with a requirement for subsequent escalation to endoscopic and interventional treatments. This study's success in endoscopic cauterization or sphenopalatine artery ligation (100% success rate in a very select, small population) is congruent with some studies that indicated that use of earlier endoscopic techniques rather than waiting for multiple failed attempts at packing for posterior bleeding and refractory bleeding.

The differences between the anterior and posterior epistaxis groups that were found and were statistically significant for the first attempt success, need for escalation, hospital admission, length of emergency room stay, and early rebleeding all encourage the significance of correct anatomical localization of the bleeding source as early as possible in the assessment. The results indicate that structured, early nasal endoscopy should be included in the management of ER epistaxis, when possible, to aid in determining the site of bleeding and to allow direct and specific treatment rather than blind packing, especially when there is clinical suspicion that bleeding is coming from the back of the nose.

As posterior epistaxis is associated with a significantly increased number of ER visits and admission rates, it is important for ERs to make sure this subgroup of patients is seen quickly and can be seen with an otolaryngology specialist (if available) so as to ensure timely management, and not leave prolonged packing to the last minute. The success of conservative and minimally invasive first-line therapies for anterior bleeding also underlines the importance of maintaining a focus on these treatment strategies over the need to escalate care and cause patient suffering, cost, and use of resources for the majority of cases [19, 20].

The strong correlation between increasing age and bleeding from the posterior nares is consistent with the known age-related changes in the nasal vascular architecture, as well as with the increased risk of hypertension and atherosclerotic vascular disease in older patients seen in the emergency room, and supports the practical recommendation that epistaxis from the posterior nares should be treated with greater suspicion in elderly patients. Likewise, a recent study [21] identified a strong correlation between early rebleeding (within 48 hours) and use of anticoagulant or antiplatelet drugs, which strongly points to this therapeutic group as a unique and modifiable risk factor.

The moderate positive correlation between patient age and overall emergency room (ER) length of stay further confirms that older patients are a sub-group that uses emergency department resources

and time inappropriately large for their number of presentations, because of the factors they bring to the ER, including posterior bleeding, comorbid vascular disease, and anticoagulant use [22, 23]. On the other hand, there was no significant difference between the success of treatment in men and women after the anatomical site and the risk factors were excluded, indicating that the effect of sex on the success of the first haemostasis is not independent.

5. Conclusion

Male-predominant, with a middle-aged to elderly population where the most common identified causes are idiopathic diseases and hypertension, and the most common anatomical pattern is anterior bleeding. First-line treatments for epistaxis (anterior nasal packing, chemical cauterization) are very effective in the majority of patients, while posterior epistaxis, although less frequently encountered, is less likely to be controlled on the first attempt, requires more escalation, is associated with longer emergency room length of stay, higher risk of admission, and higher short-term rebleeding rates.

6. References

1. Chaaban MR, Zhang D, Resto V, Goodwin JS. Demographic, seasonal, and geographic differences in emergency department visits for epistaxis. *Otolaryngol Head Neck Surg.* 2017; 156: 81–86.
2. Cohen O, Shoffel-Havakuk H, Warman M, et al. Early and late recurrent epistaxis admissions: patterns of incidence and risk factors. *Otolaryngol Head Neck Surg.* 2017; 157: 424–431.
3. Verillaud B, Robard L, Michel J, et al. Guidelines of the French Society of Otorhinolaryngology (SFORL): second-line treatment of epistaxis in adults. *Eur Ann Otorhinolaryngol Head Neck Dis.* 2017; 134: 191–193.
4. Williams A, Biffen A, Pilkington N, et al. Haematological factors in the management of adult epistaxis: systematic review. *J Laryngol Otol.* 2017; 131: 1093–1107.
5. Kitamura T, Takenaka Y, Takeda K, et al. Sphenopalatine artery surgery for refractory idiopathic epistaxis: systematic review and meta-analysis. *Laryngoscope.* 2019; 129: 1731–1736.
6. Runyon MS. Topical tranexamic acid for epistaxis in patients on antiplatelet drugs: a new use for an old drug. *Acad Emerg Med.* 2018; 25: 360–361.
7. Arikan C and Akyol Py, “Appropriate Dose of Tranexamic Acid in the Topical Treatment of Anterior Epistaxis, 500 Mg vs 1000 Mg: A Double-Blind Randomized Controlled Trial,” *Science Progress* 107, no. 4 (2024): 368504241264993.
8. Kristen Whitworth et al., “Comparative Effectiveness of Topically Administered Tranexamic Acid Versus Topical Oxymetazoline Spray for Achieving Hemostasis in Epistaxis,” *The Journal of Emergency Medicine* 58, no. 2 (2020): 211–16.
9. Paolo Farneti et al., “Comparison of Local Sclerotherapy With Lauromacrogol Versus Nasal Packing in the Treatment of Anterior Epistaxis,” *Clinical and Experimental Otorhinolaryngology* 9, no. 2 (2016): 131 – 35.
10. Zhengcai Lou et al., “Comparison of Mupirocin Ointment and Basic Fibroblast Growth Factor Gel in the Treatment of Pediatric Recurrent Anterior Epistaxis: Randomized, Controlled, Single Blind Study”, *Auris, Nasus, Larynx* 52, no. 4 (2025): 516–21.
11. Yang H, Ruan X, Li W, Xiong J, Zheng Y. Global, regional, and national burden of tuberculosis and attributable risk factors for 204 countries and territories, 1990–2021: A systematic analysis for the Global Burden of Diseases 2021 study. *BMC Public Health.* 2024;24:3111.
12. Virk BS, Kumar R, Gupta N, Chakrabarti S, Garg P, Mishra R, et al. Profile of patients presenting with hemoptysis at a tertiary care center in India. *J Adv Lung Health.* 2024;4:16–20.

13. Mondoni M, Carlucci P, Job S, Parazzini EM, Cipolla G, Pagani M, et al. Observational, multicentre study on the epidemiology of haemoptysis. *Eur Respir J*. 2018;51:1701813.
14. Singhal M, Lal A, Prabhakar N, Yadav MK, Vijayvergiya R, Behra D, et al. Non-bronchial causes of haemoptysis: Imaging and interventions. *Pol J Radiol*. 2020;85:e328–39.
15. Chatterjee K, Colaco B, Colaco C, Hellman M, Meena N. Rasmussen's aneurysm: A forgotten scourge. *Respir Med Case Rep*. 2015;16:74–6.
16. Kathuria H, Hollingsworth HM, Vilvendhan R, Reardon C. Management of life-threatening hemoptysis. *J Intensive Care*. 2020;8:23.
17. Bernhard M, Becker TK, Gries A, Knapp J, Wenzel V. The first shot is often the best shot: First-pass intubation success in emergency airway management. *Anesth Analg*. 2015;121:1389–93.
18. Shah K, Weingart S. Suction tubing reversal as a dormant failure during airway management. *Am J Emerg Med*. 2018;36:2336.e3–4.
19. Gagnon S, Quigley N, Dutau H, Delage A, Fortin M. Approach to hemoptysis in the modern era. *Can Respir J*. 2017;2017:1565030.
20. Fan E, Del Sorbo L, Goligher EC, Hodgson CL, Munshi L, Walkey AJ, et al. An Official American Thoracic Society/European Society of Intensive Care Medicine/Society of Critical Care Medicine clinical practice guideline: Mechanical ventilation in adult patients with acute respiratory distress syndrome. *Am J Respir Crit Care Med*. 2017;195:1253–63.
21. Mas A, Masip J. Noninvasive ventilation in acute respiratory failure. *Int J Chron Obstruct Pulmon Dis*. 2014;9:837–52.
22. Lewis SR, Pritchard MW, Evans DJ, Butler AR, Alderson P, Smith AF, et al. Colloids versus crystalloids for fluid resuscitation in critically ill people. *Cochrane Database Syst Rev*. 2018;8:CD000567.
23. Tomaselli GF, Mahaffey KW, Cuker A, Dobesh PP, Doherty JU, Eikelboom JW, et al. 2020 ACC expert consensus decision pathway on management of bleeding in patients on oral anticoagulants. *J Am Coll Cardiol*. 2020;76:594–622. Erratum in: *J Am Coll Cardiol*. 2021;77:2760.