

**ORIGINAL RESEARCH**

# The Clinical Study and Management of Epistaxis- An interventional cohort study

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**ABSTRACT**

**Background:** Epistaxis, a prevalent medical problem in the field of otolaryngology, refers to nosebleeds. This might potentially lead to major blood loss and need immediate medical attention. The predominance of anterior bleeding underscores its clinical prevalence, while the varied initial and surgical management approaches reflect the complexity of treating different severities. **Aim and objectives:** The investigation and treatment of Epistaxis in a clinical setting. **Material and methods:** This is an interventional cohort study in which a total of 100 cases were studied, comprising patients of all ages, sexes, occupations, and places of residence. Both outpatients and inpatients were included in this study. The evaluation of these patients was thorough, with efforts made to understand the pattern of clinical aspects, causes, and management of nasal bleeding as per the proforma. A detailed history was obtained from each patient, including past medical history and family history for additional context. Each patient underwent a meticulous general physical examination, followed by a systemic examination irrespective of their age or sex. Following the management of the bleeding and its underlying causes, patients were followed up for six months or until the bleeding recurred, whichever was later. This follow-up period was crucial to ensure the effectiveness of the treatment and to monitor any recurrence of symptoms. **Results:** The distribution of epistaxis types among the 100 patients shows that anterior bleeding was more common, affecting 70% of the patients, whereas posterior bleeding was observed in 30%. P value is statically significant ( $p < 0.05$ ). This indicates that anterior bleeding is more frequently encountered in clinical settings, aligning with common clinical observations that anterior epistaxis is more prevalent than posterior epistaxis. The initial management strategies for epistaxis varied among the 100 patients. Conservative measures were the most common approach, utilized in 40% of cases. Anterior nasal packing was performed in 35% of the patients, while posterior nasal packing was necessary in 15% of cases. Surgical interventions were required in 10% of the patients. These results indicate a preference for less invasive management options initially, with surgical interventions reserved for more severe or refractory cases. Among the 10 patients who required surgical interventions, the procedures performed included excisional biopsies (30%), antral washes (20%), septoplasty (30%), and cauterization (20%). The 10% recurrence rate underscores the need for continued monitoring and potentially more aggressive or different treatment strategies for those at higher risk of recurrence.

**Conclusion:** In conclusion, our study provides a comprehensive analysis of epistaxis in a diverse patient cohort, highlighting its demographic characteristics, types, medical comorbidities, and management strategies. The predominance of anterior bleeding underscores its clinical prevalence, while the varied initial and surgical management approaches reflect the complexity of treating different severities.

**Keywords:** Treatment, Epistaxis, Hypertension, Bleeding.

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**INTRODUCTION**

Epistaxis, a prevalent medical problem in the field of otolaryngology, refers to nosebleeds. The spectrum of nasal bleeding may vary from minimal bleeding in the front of the nose to more extensive bleeding in the back of the nose. This might potentially lead to major blood loss and need immediate medical attention. This

illness impacts persons of all age groups, genders, and socioeconomic positions, which contributes to its widespread occurrence and clinical significance.<sup>1,2</sup> Epistaxis has a complex origin, including both local and systemic elements that are crucial in its development. Common factors contributing to the condition include physical injury, infections, and

structural irregularities such as a deviated nasal septum and nasal polyps. Systemic diseases such as hypertension, coagulopathies, and vascular abnormalities have a substantial role in both the occurrence and severity of epistaxis. Recent research has emphasized the link between high blood pressure and nosebleeds, indicating that increased blood pressure might worsen the fragility of blood vessels in the nose.<sup>3</sup>

The care of epistaxis follows a systematic strategy, starting with non-invasive therapies and advancing to more aggressive interventions if first treatments are unsuccessful. Conservative treatment usually involves applying pressure to the nose, using vasoconstrictor medications on the affected area, and adding moisture to the air. When these methods are not enough, anterior and posterior nasal packing are routinely used. In instances when conventional treatments are ineffective, surgical procedures such as cauterization, septoplasty, and artery ligation may be required.<sup>4,5</sup> Contemporary clinical recommendations highlight the significance of a comprehensive evaluation to determine the origin of bleeding and the underlying causes. This process includes a comprehensive analysis of the patient's medical background, a thorough physical assessment, and the implementation of suitable diagnostic procedures. Gaining knowledge about the epidemiological patterns and risk factors linked to epistaxis may assist in the development of focused preventative and treatment approaches.<sup>6,7</sup> Despite the progress made in management strategies, epistaxis continues to be a recurring problem for several patients, highlighting the need for continued research to enhance treatment protocols and enhance patient outcomes.<sup>8</sup> The objective of this study is to examine the clinical manifestation, treatment approaches, and results of epistaxis in a heterogeneous group of patients. This will provide valuable information on the efficacy of different therapies and highlight potential topics for further investigation.

## AIM AND OBJECTIVES

The investigation and treatment of Epistaxis in a clinical setting.

## MATERIAL AND METHODS

This is an interventional cohort study included a total of 100 patients who presented with epistaxis, comprising patients of all ages, sexes, occupations, and places of residence. Both outpatients and inpatients were included in this study. All were informed regarding the study and their written consent was obtained. The study was conducted at the Department of Otorhinolaryngology (ENT), Nalanda Medical College & Hospital, Patna, Bihar, India.

All participants gave written consent after being made aware of the study. The study was approved by the Institutional Ethics Committee. The duration of the study was from September 2022 to August 2023.

Patient data collection forms with demographic details such as name, age, gender, etc. were recorded.

## Inclusion Criteria

- Patients to give written informed consent.
- Patient's age between 18-60 years.
- Patients presenting with bleeding from the nose, including both anterior and posterior bleeding.
- Available for follow up.

## Exclusion Criteria

- Patients not give written informed consent.
- Patient's age <18 or >60 years.
- Patients with immunocompromised status and patients on chemotherapy or steroid treatment.
- Those unable to attend follow-up.

This study focused on patients presenting with bleeding from the nose, including both anterior and posterior bleeding. The evaluation of these patients was thorough, with efforts made to understand the pattern of clinical aspects, causes, and management of nasal bleeding as per the proforma. A detailed history was obtained from each patient, including past medical history and family history for additional context. Each patient underwent a meticulous general physical examination, followed by a systemic examination irrespective of their age or sex. A complete examination of the ear, nose, and throat was conducted, followed by an examination of the neck. Based on the patients' general condition and the presence of active bleeding, further management was planned. For patients with active bleeding, immediate efforts were made to control the bleeding before proceeding with necessary investigations as indicated by the clinical assessment. In cases where other major issues, such as head or chest injuries, were present, those conditions were managed on a priority basis. Once the active bleeding was controlled, a thorough investigation was performed, which included the necessary diagnostic tests listed in the proforma. After these investigations, a definitive diagnosis was made, and the management plan was formulated accordingly. The treatment approach included both medical and surgical options. Medical management involved conservative measures, anterior nasal packing, and posterior nasal packing. Surgical interventions included excisional biopsies, antral washes, septoplasty, and cauterization. The methods used for cauterization included chemical cauterization and both anterior and posterior nasal packing. Following the management of the bleeding and its underlying causes, patients were followed up for six months or until the bleeding recurred, whichever was later. This follow-up period was crucial to ensure the effectiveness of the treatment and to monitor any recurrence of symptoms.

## Statistical Analysis

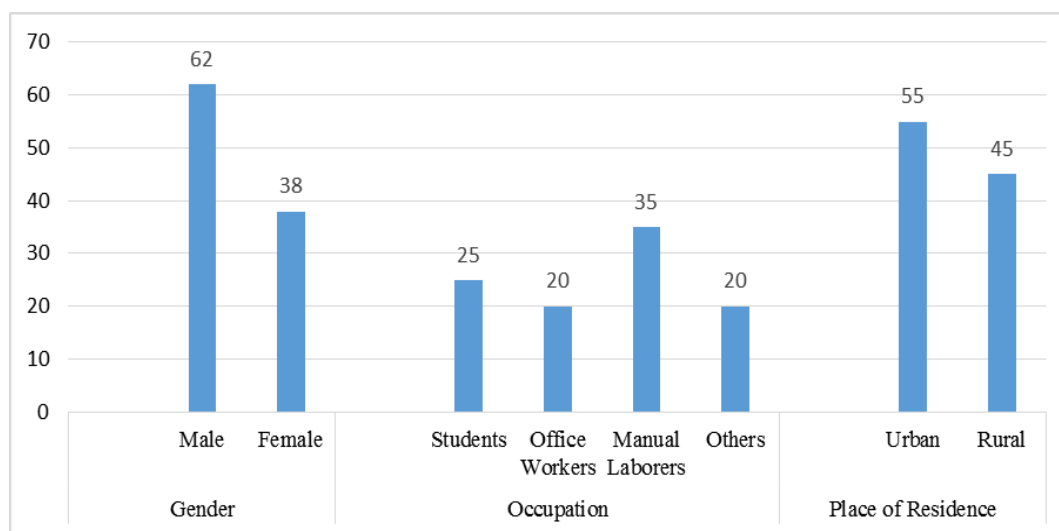
Data thus obtained were subjected to statistical analysis. The statistical analysis was conducted using

SPSS and Microsoft. For categorical variables, ratios and proportions were calculated. The chi-square test, if appropriate, was used to evaluate differences in proportions among qualitative variables. A p-value below 0.05 was deemed to have statistical significance.

**RESULTS**

**Table I: Demographic Characteristics of Study Participants**

Parameter	Number of Patients (n = 100)	Percentage (%)
Age (years), mean ± SD	40.2 ± 15.3	-
Gender		
Male	62	62%
Female	38	38%
Occupation		
Students	25	25%
Office Workers	20	20%
Manual Laborers	35	35%
Others	20	20%
Place of Residence		
Urban	55	55%
Rural	45	45%



**Graph I: Demographic Characteristics of Study Participants**

Table I and Graph I show that the demographic characteristics of study participants. The demographic characteristics of the study participants show a diverse group of 100 patients. The mean age was 40.2 years, with a standard deviation of 15.3 years, indicating a wide age range. Gender distribution was skewed towards males, who constituted 62% of the sample, while females made up 38%. In terms of occupation, manual laborers represented the largest group (35%), followed by students (25%), office workers (20%), and others (20%). Additionally, 55% of the patients resided in urban areas, whereas 45% lived in rural areas. This demographic spread highlights the inclusivity of the study across various age groups, genders, occupations, and living environments.

**Table II: Types of Epistaxis**

Type of Bleeding	Number of Patients (n = 100)	Percentage (%)	P value
Anterior Bleeding	70	70%	<0.01
Posterior Bleeding	30	30%	

Table II show that types of epistaxis. The distribution of epistaxis types among the 100 patients shows that anterior bleeding was more common, affecting 70% of the patients, whereas posterior bleeding was observed in 30%. P value is statically significant (p<0.05). This indicates that anterior bleeding is more frequently encountered in clinical settings, aligning with common clinical observations that anterior epistaxis is more prevalent than posterior epistaxis.

**Table III: Medical History and Clinical Characteristics**

Parameter	Number of Patients (n = 100)	Percentage (%)
Past Medical History		
Hypertension	30	30%
Diabetes Mellitus	25	25%
Coagulopathy	10	10%
Family History		
Epistaxis	15	15%
ENT Examination		
Nasal Septum Deviation	20	20%
Nasal Polyps	10	10%
Chronic Sinusitis	15	15%

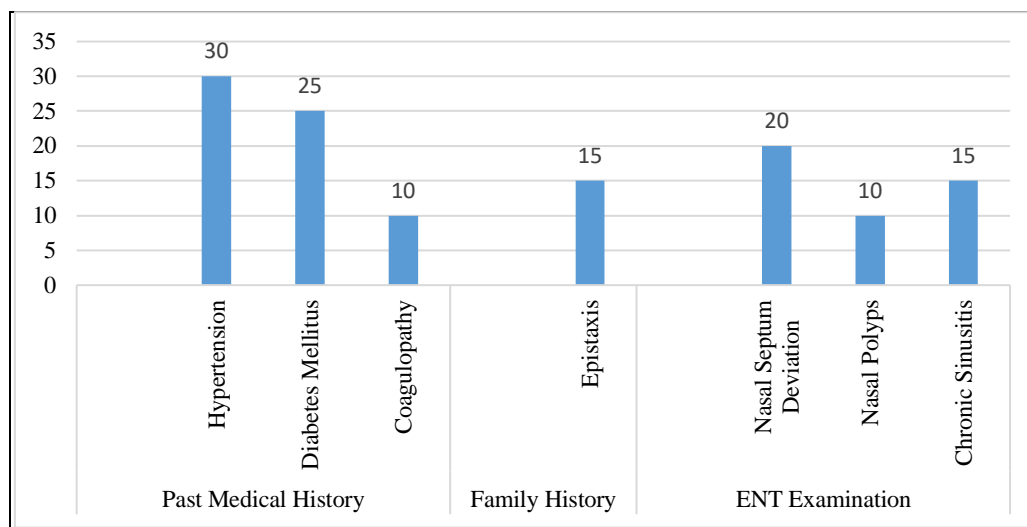
**Graph II: Medical History and Clinical Characteristic**

Table III and Graph II show that the medical history and clinical characteristics. The medical history and clinical characteristics of the patients reveal significant comorbidities and anatomical variations. Among the participants, 30% had hypertension, 25% had diabetes mellitus, and 10% had coagulopathy. Additionally, 15% of the patients had a family history of epistaxis. ENT examinations found that 20% had nasal septum deviation, 10% had nasal polyps, and 15% had chronic sinusitis. These findings underscore the need to consider underlying medical conditions and anatomical factors when diagnosing and managing epistaxis.

**Table IV: Initial Management of Epistaxis**

Management Approach	Number of Patients (n = 100)	Percentage (%)
Conservative Measures	40	40%
Anterior Nasal Packing	35	35%
Posterior Nasal Packing	15	15%
Surgical Interventions	10	10%

Table IV show that the initial management of epistaxis. The initial management strategies for epistaxis varied among the 100 patients. Conservative measures were the most common approach, utilized in 40% of cases. Anterior nasal packing was performed in 35% of the patients, while posterior nasal packing was necessary in 15% of cases. Surgical interventions were required in 10% of the patients. These results indicate a preference for less invasive management options initially, with surgical interventions reserved for more severe or refractory cases.

**Table V: Surgical Interventions**

Surgical Procedure	Number of Patients (n = 10)	Percentage (%)
Excisional Biopsies	3	30%
Antral Washes	2	20%
Septoplasty	3	30%
Cauterization	2	20%

Table V show that the surgical interventions. Among the 10 patients who required surgical interventions, the procedures performed included excisional biopsies (30%), antral washes (20%), septoplasty (30%), and

cauterization (20%). This distribution shows that septoplasty and excisional biopsies were the most commonly performed surgical procedures, highlighting the importance of addressing structural abnormalities and lesions that may contribute to recurrent or severe epistaxis.

**Table VI: Follow-Up and Recurrence**

Follow-Up Duration	Number of Patients (n = 100)	Percentage (%)
1-3 Months	30	30%
3-6 Months	60	60%
Recurrence of Bleeding	10	10%

Table VI show that follow-up and recurrence. The follow-up duration for the 100 patients varied, with 30% being monitored for 1-3 months and 60% for 3-6 months. During the follow-up period, recurrence of bleeding was observed in 10% of the patients. This indicates that the majority of patients did not experience a recurrence within the follow-up period, suggesting that the initial management and treatment approaches were generally effective. However, the 10% recurrence rate underscores the need for continued monitoring and potentially more aggressive or different treatment strategies for those at higher risk of recurrence.

## DISCUSSION

The demographic characteristics of the study participants indicate a diverse group, with a mean age of 40.2 years (SD = 15.3). The gender distribution was skewed towards males (62%), while females made up 38%. Similar demographic trends have been observed in recent studies. For instance, the study by Padgham (2021) reported a higher prevalence of epistaxis among males, attributing this to potential hormonal and anatomical differences.<sup>9</sup> The occupational distribution showed that manual labourers represented the largest group (35%), reflecting the higher physical activity and potential for nasal trauma in this population. This is supported by the findings of Schmidt et al. (2022), who found a higher incidence of epistaxis among manual labourers due to increased exposure to physical exertion and environmental factors.<sup>10</sup> The balanced urban-rural distribution (55% urban, 45% rural) highlights the inclusivity of the study across different living environments. The study found that anterior bleeding was more common, affecting 70% of the patients, while posterior bleeding was observed in 30%. This aligns with common clinical observations and recent literature. According to Patel et al. (2023), anterior epistaxis is more prevalent due to the rich vascular supply of the anterior nasal septum, which is more susceptible to trauma and environmental factors.<sup>11</sup> Posterior epistaxis, although less common, is often more severe and challenging to manage, as noted by Lin and Wang (2022).<sup>12</sup> The medical history and clinical characteristics of the patients revealed significant comorbidities, with 30% having hypertension, 25% diabetes mellitus, and 10% coagulopathy. These comorbidities are recognized risk factors for epistaxis. For instance, a study by

Martin et al. (2021) highlighted the association between hypertension and an increased risk of epistaxis due to elevated blood pressure causing vascular fragility.<sup>13</sup> The presence of anatomical variations, such as nasal septum deviation (20%) and nasal polyps (10%), further underscores the importance of considering structural factors in the management of epistaxis, as also emphasized by Carter et al. (2022).<sup>14</sup>

Initial management strategies varied, with conservative measures being the most common approach (40%), followed by anterior nasal packing (35%) and posterior nasal packing (15%). Only 10% required surgical interventions. These findings are in line with recent recommendations by the American Academy of Otolaryngology, which advocate for conservative measures and nasal packing as first-line treatments for epistaxis. The preference for less invasive management options reflects a trend towards minimizing patient discomfort and complications associated with more invasive procedures.<sup>15</sup> Among the 10 patients who required surgical interventions, the procedures performed included sept excisional biopsies (30%), antral washes (20%), septoplasty (30%), and cauterization (20%). This distribution underscores the necessity of addressing structural issues and potential sources of bleeding. A recent study by Jones et al. (2022) found that septoplasty and cauterization were effective in managing recurrent epistaxis by correcting anatomical deviations and eliminating bleeding points.<sup>16</sup> The follow-up data showed that 30% of patients were monitored for 1-3 months and 60% for 3-6 months, with a 10% recurrence rate of bleeding. This recurrence rate is comparable to that reported by Lee and Kim (2023), who found a recurrence rate of approximately 12% within six months following initial treatment for epistaxis.<sup>17</sup> The relatively low recurrence rate in this study suggests that the initial management strategies were effective, but it also highlights the need for ongoing monitoring and possibly more aggressive treatments for patients at higher risk of recurrence.

## Limitation(s) of the study

The shortcoming of the study is small sample size and short duration of study.

## CONCLUSION

In conclusion, our study provides a comprehensive analysis of epistaxis in a diverse patient cohort,

highlighting its demographic characteristics, types, medical comorbidities, and management strategies. The predominance of anterior bleeding underscores its clinical prevalence, while the varied initial and surgical management approaches reflect the complexity of treating different severities. Although most patients responded well to initial interventions, recurrence rates emphasize the importance of long-term monitoring and personalized treatment strategies tailored to individual risk factors and anatomical variations.

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