

Evaluation of the Severity of Pain Caused by Management of Epistaxis in the Tertiary Center Emergency Department

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ABSTRACT

Background: Epistaxis can result from surgery, trauma, hypertension, hereditary hemorrhagic telangiectasia, or unknown reasons and can be treated in various ways. This study examined the pain severity related to epistaxis management in the emergency department of a tertiary otolaryngology facility.

Methods: This study was a descriptive and analytical cross-sectional analysis involving 129 patients. These patients were chosen from those referred to the emergency otolaryngology department for treatment of epistaxis. The treatment method was selected based on the severity of the epistaxis and whether a bleeding vessel was visible. Patients were categorized into nose pinching, anterior nasal packing, and bipolar electrocautery groups. For reducing pain from electrocautery and nasal packing, a mesh instilled with lidocaine and epinephrine is used before procedures. We assessed pain levels using a visual analog scale ranging from 0 to 10. We also studied the impact of xylocaine-prilocaine cream on reducing discomfort from anterior nasal packing in 42 patients who came to the emergency department with nosebleeds.

Results: The mean age of patients was 53.67 ± 19.96 years; 76 (57.6%) were male. Anterior nasal packing was the most common procedure for controlling epistaxis, with a mean pain severity of $6.61 (\pm 2.3)$. The pain score in the nostril-pinching group was significantly lower than in the other groups ($P < 0.001$). In the second part of the study, the mean pain score in the xylocaine-prilocaine cream group was 4.52 ± 2.3 , significantly lower than in the group without the cream ($P < 0.001$).

Conclusion: According to the results, nasal packing was the most prevalent procedure for controlling epistaxis, which causes severe pain for patients. Application of xylocaine-prilocaine cream can reduce the severity of pain in comparison with lidocaine solution alone.

Introduction

Epistaxis is more common in two age groups under 10 and over 60 [1]. Approximately 60% of people have experienced epistaxis during their life [2]. More than 90% of cases occur in the anterior segment of the septum, Kiesselbach's plexus, and about 10% of

cases occur in the posterior segment of the septum or lateral nasal wall [3]. This problem is generally a transitory, death-threatening condition, and most cases are self-limiting and do not require medical interventions [4].

Although epistaxis may occur following surgery, trauma, hypertension, hereditary hemorrhagic telangiectasia, and the use of antiplatelet and

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anticoagulant drugs, the etiology of 70-80% of the cases is idiopathic [4]. There are various ways to manage nosebleeds. One method involves using cotton soaked in anesthetic and vasoconstrictor medications like phenylephrine and oxymetazoline. This cotton is placed in the nasal cavities, and pressure is applied to the front of the nose [5].

Anterior nasal packing is used to stop bleeding from Kiesselbach's plexus when the previous treatments don't work [6]. Nasal packing was done using a variety of materials, including ordinary mesh or tampons impregnated with insoluble materials such as Vaseline or antibiotic ointment and polyvinyl acetate hydroxide sponges, and usually stays for 1 to 3 days [7].

An ice pack combined with pinching the nose is a commonly used approach for managing nosebleeds. This method is simple and effective, making it a reliable option for treatment [8]. Cauterization is also one of the popular methods for the treatment of recurrent cases. Studies have demonstrated the efficacy of this method in controlling epistaxis and mitigating pain. Nevertheless, potential complications such as septal abscess and accessibility limitations have constrained its widespread application [9]. This study aimed to evaluate the severity of pain associated with epistaxis management in an emergency department during January and February 2019.

Methods

This study was approved by the local research ethics committee (Ethical code: IR.TUMS.VCR.REC.1397.660). As a descriptive-analytic cross-sectional study, it aimed to evaluate the severity of pain associated with epistaxis management in an emergency department. The first part of the study assessed pain levels associated with anterior nasal packing, ice pack placement, nose pinching, and bipolar electrocautery.

After a brief medical and allergy history, as well as a physical examination, patients were informed about the potential procedures. Otolaryngology residents, following standard hospital protocols, selected the appropriate method for epistaxis control based on severity. Severe, localized bleeding cases were treated with electrocautery, while milder, diffuse bleeding cases were managed with nasal packing. The mildest cases were controlled with nasal pinching.

Otolaryngology residents performed all epistaxis control procedures, including nasal packing, electrocauterization, and bleeding control assessments. For anesthesia (excluding ice and nasal pinching), a 5-centimeter mesh impregnated with 2% lidocaine and 1:100,000 epinephrine solution was used for 20 minutes. Medical students (interns) administered all anesthetic

measures, including instilling the anesthetic solution onto the mesh and inserting it into the nasal cavity.

Nasal Packing

A 5-centimeter cotton mesh impregnated with tetracycline ointment was used for nasal packing. The mesh was inserted using a headlight, nasal speculum, and bayonet forceps. The entire nasal cavity was packed with two to three meshes unilaterally, starting from the bottom. Tetracycline ointment was used for nasal packing. The mesh was inserted using a headlight, nasal speculum, and bayonet forceps. The entire nasal cavity was packed with two to three meshes unilaterally, starting from the bottom.

Electrocauterization

Bipolar cauterization with 25 watts of power was used for severe, localized bleeding.

Pain Management

Before nasal packing, patients were informed about the pain management procedure. Forty-two patients received anesthesia with 2.5% xylocaine-2.5% prilocaine cream and 1:100,000 epinephrine for 20 minutes. A similar mesh was used to deliver the topical anesthetic.

Patient Selection and Exclusion Criteria

Patients' history of aspirin, clopidogrel, and warfarin use was evaluated. All patients were discharged after ensuring bleeding control.

Patients were excluded if they experienced recurrent bleeding before tampon removal or within three days of cauterization, required endoscopy or bilateral procedures, needed hospital admission, or required surgery.

Data Collection

Two designated individuals recorded pain levels and other relevant information. Pain was assessed using a 0-10 visual analog scale (VAS), with 0 representing no pain and 10 representing the worst imaginable pain. Informed consent was obtained from all patients for research purposes.

Statistical analysis

Descriptive statistics are presented as mean \pm standard deviation, frequency, and percentage. Independent t-tests were used to compare the means of continuous variables with normal distribution. For non-normally distributed data, the Mann-Whitney U test was used. One-way ANOVA was employed to assess differences between groups. A P value less than 0.05 was considered statistically significant. All data were analyzed using SPSS version 21.

Results

Patient Demographics

This study included 129 patients with epistaxis referred to the emergency department. The mean age of the patients was 53.67 ± 19.96 years. 76 patients (57.6%) were male, and 56 patients (42.4%) were female. (Table 1) presents the demographic characteristics of the patients and their respective epistaxis management methods.

Medication Use

There was no significant difference in the use of aspirin, clopidogrel, or warfarin among the three epistaxis management methods ($P > 0.05$). (Table 2) shows the distribution of these medications for each method.

Pain Assessment

A significant difference was observed in pain levels among the three groups ($P < 0.05$). Post-hoc analysis using the LSD test revealed that the nose-pinching group experienced significantly less pain compared to the other

two groups ($P < 0.001$). No significant difference was found between the nasal packing and electrocautery groups ($P > 0.05$). (Table 3) presents the mean and standard deviation of reported pain for each management method.

Gender and Pain Severity

Gender did not significantly impact pain severity ($P > 0.05$).

Anesthetic Agent

The mean pain score in the group receiving xylocaine-prilocaine cream as a topical anesthetic agent was 4.52 ± 2.3 , which was significantly lower than the group that did not receive the cream ($P < 0.001$). The mean age and gender distribution of this group were not significantly different from the previous groups.

Post-Procedure Outcomes

All patients achieved complete bleeding control and were discharged from the emergency department. No complications, such as allergic reactions, seizures, or arrhythmias, were reported within three days of tampon removal.

Table 1- Demographic characteristics of the patients with epistaxis

Variable		Tampon	Cautery	Ice Pack	P value
Age (Mean \pm SD)		56.38 \pm 18.21	35.36 \pm 21.96	43.22 \pm 24.82	0.001
Gender	Male	65(58.6)	65(58.6)	3(33.3)	0.022
	Female	46(41.4)	46(41.4)	6(66.7)	
Smoking	Yes	14(13.3)	14(13.3)	0(0)	0.563
	No	91(86.7)	91(86.7)	9(100)	
Hypertension	Yes	11(17.7)	11(17.7)	1(11.11)	0.860
	No	51(82.3)	51(82.3)	8(88.89)	

Table 2- Distribution of aspirin, clopidogrel and warfarin for epistaxis management

Variable		Tampon	Cautery	Ice Pack	P value
Aspirin	Yes	37(33.3)	2(16.7)	4(44.4)	0.417
	No	74(66.7)	10(83.3)	5(55.6)	
Colpidogel	Yes	9(8.1)	1(8.3)	1(11.1)	0.821
	No	102(91.9)	11(91.7)	8(88.9)	
Warfarin	Yes	17(15.3)	1(8.3)	0(0)	0.669
	No	94(84.7)	11(91.7)	9(100)	

Table 3- The status of pain reported by the patients for management of the epistaxis

Group	Mean	Std. Deviation	F	P value
Tampon	6.61	2.315	17.82	P<0.001
Cautery	5.60	2.875		
Ice Pack	1.50	2.330		

Discussion

Epistaxis is bleeding from the nose, either from the nostrils, the internal nasal cavity, or the nasopharynx. Approximately 60% of people experience epistaxis at some point in their lives, often due to factors like surgery, trauma, hypertension, hereditary hemorrhagic telangiectasia, or the use of antiplatelet and anticoagulant medications [10-11]. One common method for treating epistaxis involves inserting cotton, impregnated with anesthetic and vasoconstrictor drugs like phenylephrine and oxymetazoline, into the nasal cavities and applying pressure to the anterior nasal region. Cauterization is another popular method, often used for recurrent cases [12].

In summary, this study evaluated 129 patients with epistaxis, with a mean age of 53.67 ± 19.96 years. The majority of participants were male (57.6%). No significant differences were found in the use of aspirin, clopidogrel, or warfarin among the three epistaxis management methods.

Regarding pain, significant differences were observed between the three groups. The nose-pinching group experienced significantly less pain compared to the other two groups. Additionally, the use of xylocaine-prilocaine cream as a topical anesthetic significantly reduced pain associated with nasal packing compared to those who did not receive the cream. Therefore, the use of xylocaine-prilocaine cream can effectively mitigate pain during nasal packing for epistaxis management.

In a study by Singer et al., two different nasal tamponade methods, Rapid Rhino and Rhino-Rocket, were compared in terms of pain severity. The study included patients aged 48-70, predominantly male. Both methods were effective in controlling bleeding, with tampons removed after three days. However, the Rapid Rhino method showed significantly lower pain scores. The mean pain score for Rapid Rhino was 3, compared to 4.3 for Rhino-Rocket. Similarly, tampon removal pain was lower for Rapid Rhino (1.1) compared to Rhino-Rocket (2.3) [13]. Our study aligns with Singer et al.'s findings in terms of patient demographics, with a majority of middle-aged male patients. Both studies demonstrated effective bleeding control using different methods.

In our study, nose pinching demonstrated the lowest mean pain score of 1.5, although it was effective for only a minority of cases. Electrocautery, while not significantly different from nasal packing, was perceived as a more tolerable method for bleeding control. However, potential complications like septal abscess and limited accessibility restrict its widespread use.

Prilocaine cream, containing xylocaine and prilocaine, is a topical anesthetic FDA-approved for intact skin and genital mucosa. Contraindications for its use include

sensitivity to local amide-type anesthetics, consumption of class III antiarrhythmic drugs, and methemoglobinemia [14]. Xylocaine-prilocaine cream is a potent anesthetic agent used in oral mucosal procedures with a low incidence of serious adverse effects [15]. Xylocaine-prilocaine has been successfully used as a topical anesthetic for nasal fiber optic intubation and transnasal laryngoscopy, demonstrating efficacy with no reported adverse effects in the field of nasal procedures [16-17]. Xylocaine-prilocaine, used topically, has been employed to reduce pain after functional endoscopic sinus surgery without significant adverse effects [18].

In our center, xylocaine-prilocaine cream is used for epistaxis control in selected patients who cannot tolerate procedures, as there is established safety for its topical application on nasal mucosa [16-17]. The most common adverse effect of topically applying xylocaine-prilocaine cream to the nose is a choking sensation, which can be mitigated by applying the cream on a mesh. In our study, no adverse effects, including choking sensations, were observed with the use of xylocaine-prilocaine cream as a topical anesthetic for routine anterior nasal packing. To provide more robust evidence for the efficacy and safety of xylocaine-prilocaine cream, a randomized clinical trial is necessary.

Although previous studies have suggested gender differences in pain perception [19], we did not find significant differences between male and female patients during epistaxis management procedures.

Conclusion

According to the results, anterior nasal packing was the most common procedure for controlling epistaxis in the otolaryngology tertiary center, often causing significant patient discomfort. The application of xylocaine-prilocaine cream can effectively reduce pain severity compared to lidocaine solution alone.

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