



Research Article

EPISTAXIS RECURRENCE.COMPARISON BETWEEN CAUTERIZATION AND NASAL PACKING

Víctor Román Sánchez-Balderas and María Fernández-Olvera

Fray Diego de la Magdalena #700 Col. Las Aguilas. San Luis Potosi S.L.P. México

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ABSTRACT

**Background:** Epistaxis is a common cause of medical attention, and the possibilities of recurrence are high although has received initial treatment. The objective of this study is to assess the relationship between recurrence of epistaxis and initial treatment with cauterization or nasal packing.

**Methods:** A retrospective case-control study, we registered demographic data, underlying disease, nosebleed localization, type of treatment, the epistaxis recurrence, the month when the patient presented the first epistaxis episode and the amount of bleeding. The initial treatment was classified like nasal packing and cauterization.

**Results:** We included 165 records of patients who had presented epistaxis. The average age was 38.04 ( $\pm$  of 22.7), 76 patients were male (46.1%). We found 34 patients with allergic rhinitis (20.6%); 13.3% had arterial hypertension, five patients had diabetes, there were 36 recurrences (21.8%), No relationship was found between the presence of recurrent epistaxis and the type of initial treatment of epistaxis by cauterization or nasal packing. The history of allergic rhinitis was related to epistaxis recurrence ( $p = <0.05$ ), with an OR of 2.6.

**Conclusions:** There is no difference in the epistaxis recurrence if it is initially treated with nasal packing or cauterization of the nasal mucosa with silver nitrate. The only associated factor for the recurrence of epistaxis was allergic rhinitis.

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INTRODUCTION

Epistaxis has a prevalence of 10-12% in the general population and an incidence of 30 per 100,000 population 1,2 and it is a common cause to visit the Emergency Room. 1 The nasal bleeding can be profuse because the nose irrigation includes vessels from the external as internal carotid arteries 3, 4, 5 and it can present as anterior bleeding from the plexus of Kiesselbach and the ethmoid arteries or it may be from the back of the nose that is usually due to the sphenopalatine artery. 3, 5 Usually bleeding is minimal and most epistaxis is resolved in the home or in the first contact medicine and it is not life-threatening and can be controlled only with digital compression, just in some cases requires cauterization 6, 7 in a small percentage of patients with epistaxis must be valued by the ENT specialist.

The factors associated with the presence of epistaxis are digital nasal trauma picking, infection, hypertension, anticoagulation, and acetylsalicylic acid (AAS) consumption, allergic rhinitis (AR), septal deviation, smoking, alcohol consumption, low humidity, and extreme temperature.8,9,10,11 The control of nosebleeds can be compromised by abnormalities of the mucosa, pathologies of the blood vessels and alterations in blood coagulation.

\*Corresponding author: Víctor Román Sánchez-Balderas  
Fray Diego de la Magdalena #700 Col. Las Aguilas. San Luis Potosi S.L.P. México

12 There are recurrences in 37% of cases of epistaxis, and the factors that have been related to the recurrence are hypertension, use of anticoagulants and smoking.1, 3,9 The epistaxis can be treated with nasal lubrication, anterior or posterior nasal packing, septal cauterization, ligation or embolization of sphenopalatine and ethmoidal arteries and the use of anticoagulant gels. 12,13,14 The aim is to assess the relationship between recurrence of epistaxis and initial treatment with cauterization or nasal packing.

MATERIALS AND METHODS

A retrospective case-control study, performed in the otorhinolaryngology department of the Central Hospital "Dr. Ignacio MoronesPrieto", a third level hospital in San Luis Potosí, Mexico. An electronic search in a database was queried; the records of patients who had presented Epistaxis from January 2011 to December 2013 were selected. We excluded records with incomplete data, patients with postoperative bleeding and patients underwent surgery in the first epistaxis episode. We registered demographic data, underlying disease: diabetes (DM), hypertension, AR, heart disease and nasal trauma; nosebleed localization, type of treatment and if the patient had epistaxis recurrence (we considered recurrence when the patient presented epistaxis after hospital discharge) and the month when the patient presented the first epistaxis episode. We registered the amount of initial bleeding, it was considered mild if it was less than

50ml, moderate if it was between 50 and 500ml and abundant if it was greater than 500ml.

The treatment was classified like nasal packing (anterior or posterior); and cauterization. We classified the bleeding site in three groups, the first group if the bleeding place was described in Kiesselbach area, the second group when the bleeding place was in superior- ethmoidal and third group posterior bleeding. The place of the initial treatment was registered (ENT office, emergency room or hospitalization room).

A descriptive analysis was carried out, using means for continuous variables, with standard deviation, with maximum and minimum values and percentages for dichotomous variables. Normality tests were performed using the Shapiro Wilk test. T-tests were performed for independent variables for continuous variables and x<sup>2</sup> tests for dichotomous variables in case of normality and Fisher's exact test in case of absence of normality. The tests were carried out through the R program (version 3.2.4). Recurrence was taken as a binomial variable, as well as the treatment (cauterization or nasal packing), gender, the presence of hypertension, DM, AR, hematological disease and the history of nasal trauma. Age was taken as a continuous variable. There is not a declaration of interest and this research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.

**RESULTS**

We reviewed 182 records of patients who had presented epistaxis during the lapse of one year, 17 records were excluded (9.4%) because they had incomplete data. 165 files were included in this study. The average age was 38.04 ± 22.7, minimum of 2 years and a maximum of 81 years, 76 patients were male (46.1%). We found 34 patients with AR (20.6%); 13.3% had hypertension, five patients had DM, two patients were diagnosed by some pathology with hematologic manifestation and one patient was treated with anticoagulants due to coronary disease. In 9 patients it was secondary to nasofacial trauma and all required the placement of nasal package (Table 1).

**Table 1** Overview of study group

	Nasal Packing	Cauterization	All	Recurrence	Odd Ratio
Gender Female (%)	41(55.4%)	48(52.7%)	89(54%)	20(55.5%)	0.55(0.2-1.17)
Age (ds)	45.6 ± 22.9	31.8 ± 20.6	38 ± 22.7	29.7 ± 20.8	
Hypertension (%)	17(22.9%)	5(5.4%)	22(13.3%)	2(5.5%)	0.3(0.07-1.48)
AR (%)	7(9.4%)	27(29.6%)	34(20.6%)	11(30.5%)	2.6(1.12-2.24)
DM (%)	3(4%)	2(2.1%)	5(3%)	2(5.5%)	5.77(0.9-35.9)
HD (%)	1(1.3%)	0	1(0.6%)	0	
Trauma	9(12.1%)	0	9(5.4%)	4(11.1)	3.1(0.78-12.21)
Recurrence	17(22.9%)	19(20.8%)	36(21.8%)		
<b>Total</b>	<b>74</b>	<b>91</b>	<b>165</b>	<b>36</b>	

Nasal bleeding was treated in the ENT office in 87 cases (52.7%), and 16% of them were treated with nasal packing and 73.5% of the bleedings were considered mild (Table 2). The months with more incidence of epistaxis were April and December and the months with fewer cases of epistaxis were July and August (Figure 1).

In its initial assessment, it was found that the left side bleeding occurred in 81 patients (49.1%) and bilaterally in 4 patients (2.4%). In 70 cases it was considered mild bleeding (42.4%), in 78 patients it was considered moderate (47.2%) and in 15 cases it was considered severe (10.3%) (Table 2). In 74

patients were treated with nasal packing (46.1%), in 91 of the cases they were treated with cauterization (53.4%).

**Nasal Packing**

The nasal packing was placed in 74 cases of which the mean age of 46.3 ± 23 with a minimum age of 2 years and a maximum age of 81 years, 41 patients treated with nasal packing were male (55.4%) (Table 1), 14 patients were seen in ENT office (18.9%) (Table2). The bleeding amount in patients treated with nasal packing was considered moderate in 56 patients (75.6%) and the bleeding site was founded in the anterior area in 49 patients (66.2%) (Table 3).

In 59 patients (79.7%) anterior nasal packing was placed and posterior packing in 15 patients (20.2%). The nasal packing was placed in 42 on the left side (52.7%), 30 in the right side (40.5%) and in 2 patients in both sides (2.7%). There were 17 (22.9%) epistaxis recurrences in patients initially treated with nasal packing.

**Cauterization**

The treatment with cauterization was carried out in 91 with an average age of 31.8 years ± 20.6 with a minimum age of 3 years and maximum of 80 years, in 88 patients (96.7%) the anterior area was cauterized of the septum. In 39 patients, septum cauterization was performed on the left side (42.8%), in 2 patients the cauterization was bilateral (2.2%). Seventy-three patients who were treated by cauterization were seen in ENT office (80.2%) (Table 2). In patients who received treatment with cauterization, bleeding was considered abundant in 3 patients (3.2%) (Table 3).

**Recurrences**

There were 36 recurrences (21.8%) of which 16 were male (44.5%), with an average age of 29.7 years ± 20.8 with a minimum age of 2 and a maximum of 72. (Table 1). No relationship was found between the presence of recurrent epistaxis and the type of initial treatment of epistaxis by cauterization or nasal packing, there wasn't a relationship

between recurrence and history of hypertension, use of anticoagulants and nasal trauma. The history of allergic rhinitis was related to the recurrence of epistaxis (p = <0.05), with an OR of 2.6 (1.2 to 2.4) (Table 1).

**DISCUSSION**

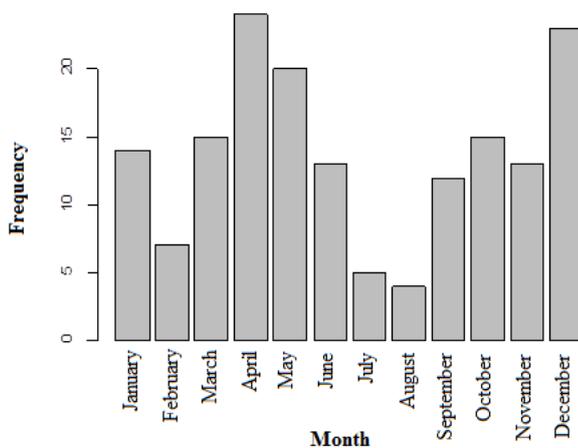
The failure rate of the first treatment of epistaxis is 26%. 15 In this study, the total epistaxis recurrence was 21.8%, and the initial treatment of epistaxis with nasal packing or with cauterization was not related to the presence of recurrence. Kumar *et al.* compared cauterization against conservative

treatment, finding no differences in recurrence, only patients who underwent cauterization experienced some more pain. 7

**Table 2** Bleeding, recurrence and treatment by place of initial attention.

Place of Attention	Bleeding	Treatment	TOTAL
Office	Mild 64	Nasal packing 14	Total 87
	Moderate 21	Cauterization 73	
	Abundant 2	Recurrence 20	
EmergencyRoom	Mild 6	Nasal Packing 58	Total 76
	Moderate 55	Cauterization 18	
	Abundant 15	Recurrence 14	
Hospital Room	Mild 0	Nasal Packing 2	Total 2
	Moderate 2 (100%)	Cauterization 0	
	Abundant 0	Recurrence 2	
Total	Mild 70	Nasal Packing 74	Total 165
	Moderate 78	Cauterization 91	
	Abundant 17		

In cases of epistaxis that were evaluated in the emergency department, nasal packing was elected in most cases, whereas when they were evaluated in the ENT office, the most were cauterized, this could be explained because the nasal bleeds that were more abundant required a visit to emergency room and they were evaluated by first contact physicians who facilitated them more (due to lack of experience and or adequate material in our hospital) to place the nasal packing than to perform cauterization, although Newton *et al* found that cauterization with silver nitrate is the most popular initial treatment in the area of emergencies.<sup>15</sup>



**Figure 1** The presentation the epistaxis presentation by months.

Purkey *et al.* found that the months of January had the most cases of epistaxis and the months of September in which fewer cases of epistaxis occur, while the seasons with the highest incidence of epistaxis occurred in winter, followed by autumn, spring, and summer.<sup>16</sup> This is related to the cold and low humidity. In case there are heaters indoor heating; or because of the dry winter weather. Water evaporates from the nasal mucosa, causing dehydration and predisposition to epistaxis.<sup>16, 17</sup> The climatic and seasonal conditions of each locality must be considered to determine the months with the most risk factors for epistaxis.<sup>16, 18</sup>

In this study, AR was the only risk factor associated with epistaxis recurrence. AR has been associated as a risk factor for epistaxis, due to irritation in response to mucosal inflammation. <sup>16,19</sup> Also, the prolonged use of topical steroids

has been linked to the risk of epistaxis.<sup>16</sup> The coagulopathies and the use of anticoagulants have been related to the presentation of epistaxis, in our study, these diseases were very few and it was not possible to associate it with epistaxis recurrence.<sup>20, 21,22</sup>

The demographic factors such as age and sex have not been related to the recurrence of epistaxis, the factors that have been related are the use of anticoagulants, arterial hypertension, and DM. <sup>22</sup> The recurrence of epistaxis could be explained because those are factors related to the development of atherosclerosis in the vessels of the nose <sup>22</sup> and the congestive heart failure has been a little-appreciated factor for the recurrence of epistaxis and could be secondary to the increase in venous pressure. <sup>22</sup>

In cases of persistent epistaxis, endoscopy is suggested to accurately locate the bleeding site, because the epistaxis recurrence has been related to deciding a treatment without having found the bleeding site previously. <sup>23</sup> There is no accepted consensus as to when to choose surgical treatment, it has been related to the persistence and recurrence of abundant bleeding from the ethmoid arteries or sphenopalatine and even with surgery there may be a recurrence of epistaxis of 13%.<sup>23</sup>

The decision to choose the initial treatment in an epistaxis must be individualized and the site of bleeding, the use of anticoagulants and platelet agents, cardiovascular and concomitant hematological diseases must be considered. <sup>22</sup>

**CONCLUSIONS**

The recurrence of epistaxis after initial treatment is 21.8%, there is no difference in the presence of recurrence if it is treated with nasal packing or cauterization of the nasal mucosa with silver nitrate. The only associated factor for the recurrence of epistaxis was the history of allergic rhinitis. The election of treatment should be individualized depending on the site of bleeding and the clinical characteristics of each patient.

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