

Original Research Article

Epistaxis: comparison of chemical cautery with topical vasoconstrictor in adult anterior epistaxis

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ABSTRACT

Background: To compare efficacy of 75% silver nitrate chemical cautery as opposed to topical vasoconstrictor spray (xylometazoline 0.1%) in adult anterior epistaxis.

Methods: This randomized controlled trial study was carried out at SMHS Hospital Srinagar from Jan 2019 to Dec 2019. 110 subjects that presented to ENT & HNS emergency with epistaxis and fulfilled the inclusion criteria were selected. Subjects were randomly distributed into two groups. Group-A individuals were treated by cauterization with 75% silver nitrate and Group-B individuals were treated with topical vasoconstrictor spray (xylometazoline 0.1%). All the subjects were reviewed at 1 month and success was determined in terms of control of epistaxis from same side of nose.

Results: The mean age of the cohort was 48.5yrs (age range, 17-59). There were total 60 (54.4%) males and 50 (45.4%) females among the cases. Both the groups were comparable as regards the age, sex, duration and frequency of epistaxis. 91.2% cases in Group-A (silver nitrate cautery) and 73.5% cases in Group-B (xylometazoline spray 0.1%) had no further epistaxis at one-month follow-up ($p=0.014$).

Conclusions: Chemical cauterization with silver nitrate is a feasible and safe technique for the treatment of adult anterior epistaxis and is more effective than topical vasoconstrictor spray.

Keywords: Chemical cautery, Epistaxis, Silver nitrate, Xylometazoline

INTRODUCTION

Epistaxis is one of the most common entities an ENT surgeon comes across in day to day clinical practice. Epistaxis or nasal bleeding is one of the commonest ENT emergencies globally and is a challenge in those centers in which facilities and resources to manage such emergencies are constrained.¹

William Cullen invented the word 'Epistaxis'. Nasal bleeding was considered a normal way of purifying body

from diseases as long back as middle age era. Hippocrates was the first to suggest nose pinching as a method to control nasal bleeds.

During their lifespan, epistaxis is estimated to occur in 60 percent of people worldwide and approximately 6 percent of those with nosebleeds seek medical treatment.¹⁻⁴

The prevalence is higher in children less than 10 years of age and then again rises after 35 years of age.⁵ Below 50 years of age, there is a higher prevalence of nose bleeds

in males but after 50 years both males and females are at equal risk.²⁻⁵

Epistaxis can be primary (no known causal factor) or secondary (known causal factor), childhood (< 16 years) or adulthood (> 16 years), anterior (bleeder anterior to pyriform aperture) or lateral (bleeder posterior to pyriform aperture). Different etiologies proposed for epistaxis include weather, NSAIDs, alcohol, hypertension and septal deformity. Seventy to eighty percent of epistaxis in adulthood is considered idiopathic where no established causal factor can be determined.⁶

Topical ointments such as oil and topical decongestants have a role in treatment of epistaxis.⁷ Nasal colonization with *Staphylococcus aureus* is also considered to play a role in epistaxis and application of an antiseptic ointment may also be helpful.⁸

Chemical cauterization of vascular telangiectasia identified on anterior rhinoscopy is an alternative treatment modality that can be applied in clinical settings.⁹ Silver nitrate is an inorganic compound and commonly used in ENT emergencies for topical chemical cautery due to its efficacy and ease of use. It is the treatment of choice in children with recurrent epistaxis and visible bleeder and in whom first-aid measures have failed. It acts as an oxidizing agent, generating free radicals and heat in aqueous and results in necrosis and coagulation hemostasis.¹⁰

Topical vasoconstrictor sprays such as oxymetazoline can be useful in the management of recurrent epistaxis in majority of patients with epistaxis, thus avoiding the need for nasal packing with its associated complications. The use of topical oxymetazoline in management of posterior epistaxis in the emergency setting is successful in up to 65–75% of cases.^{11,12} However, they are to be used with caution in patients with hypertension, particularly where distressed patients with profuse epistaxis may have substantially elevated blood pressure in the acute situation. Another issue is the drug's failure to access its target locations as blood floods the nasal cavity.

Chemical cautery has an advantage of being carried out under local anesthesia, needs a simple applicator and is tolerated well by children.¹³ It is cheap, easy to perform, and more readily available and is thus more commonly used. The main risk of this procedure is septal perforation, which increases with bilateral cautery on opposing sides.²

Electrocautery is not readily available, requires general anesthesia in children and moreover the restricted availability of endoscopes and endoscopic surgeons in small centers limits the use of this technique in adults too.

It has been associated with palatal numbness as well as thermal damage to neural structures, obstruction of the nasolacrimal duct, and trauma of the optic nerve,

especially if the patient has previously undergone ethmoidectomy.^{14,15}

This prospective study was designed to compare chemical cauterization of anterior nasal septum with topical vasoconstrictor nasal spray for treating cases of adult anterior epistaxis.

METHODS

This study was conducted in Department of Otorhinolaryngology of a tertiary care hospital in Srinagar, Kashmir, India for a period of 12 months from January 2019 to December 2019. It was a randomized controlled trial.

Patients aged under 16 years, patients in whom a bleeder could not be localized on anterior rhinoscopy and those who required nasal packing to stop the bleeding were excluded. Patients in whom a bleeder could be identified and who were suitable for nasal cauterization were included in the study.

A proforma recording information on pre-treatment frequency, duration of epistaxis, etiological factors and site of bleeding was completed. Patients were randomly allocated to treatment with either chemical-cautery with 75% silver nitrate (Group A) or application of readily available vasoconstrictor nasal spray i.e. 0.1% xylometazoline (Group B) thrice a day for one week (Randomization tables created by computers were used to produce sealed numbered envelopes containing the prescribed treatment; these were then used sequentially by the treating doctor). Informed consent was taken from all the cases.

Group-A patients were treated by chemical cautery of the anterior nasal septum with 75% silver nitrate and Group-B patients were treated with a topical vasoconstrictor spray (0.1% xylometazoline). Local anesthetic 4% lignocaine solution was applied for 5 minutes with help of wool pledgets in the cases of group-A before chemical cautery. Prominent visible blood vessels along with bleeding points on the anterior nasal septum were gently cauterized with cotton wool pledgets dipped in silver nitrate for approximately 20 seconds. All the cases were followed up for one month after the procedure.

A review appointment was arranged at 1 month after the procedure, and on review all the cases were asked to report on nasal bleeding from the side where cautery was done or nasal spray was used. The cautery site was also examined.

All reviews were performed, blind of the treatment method, by one of the authors (RTH).

The data were analyzed with help of SPSS-20. Chi square was used to compare qualitative variables like gender and t-test was used for quantitative variables like age. Chi

square was also applied to assess efficacy of both groups. A p- value of <0.05 was taken as statistically significant.

RESULTS

Of 133 patients entered into the study, 110 attended for follow-up examination. Despite multiple recalls 23 patients did not turn up for follow up. These 23 patients were excluded from the main study. Of the remaining 110 patients, 54.5% patients (n=60) were males and 45.4% (n=50) were females. Male to female ratio was 1.2:1 (Table 1). The treatment groups were compared for age, sex, duration and frequency of epistaxis and were not significantly different. There was also no notable difference in respect of etiology and site of bleeding (Table 1).

Table 1: Patient data.

	Group A	Group B
No. of patients	57	53
Median age (yrs.)	49.3	47.7
Sex (M/F)	31/26	29/24
Median duration of epistaxis	2.1 weeks	2.5 weeks
Median no. of episodes pre-treatment	3	4
Etiology		
Idiopathic	30	24
URTI	15	19
Others (trauma, etc.)	12	10

Table 2: Treatment outcome.

	Group-A n = 57	Group-B n = 53	p-value
Number of patients with no further epistaxis (%)	52 (91.2)	39 (73.5)	0.014
Number of patients with further epistaxis (%)	5 (8.7)	14 (26.4)	

Both groups were treated as per design and the findings were compared. The results of treatment for the two groups are shown in Table 2.

There was statistically significant difference (p <0.05) between the two groups in the number of patients having further epistaxis, with patients in Group-A (91.2% cases had no epistaxis) faring better than Group-B cases (73.5% cases had no epistaxis) at the end of 1-month follow-up period.

In Group-A, cautery sites had healed satisfactorily at follow-up and did not seem to be the source of any post-treatment bleeding. No further cautery was required in any Group-A patient.

DISCUSSION

Silver nitrate has been used as an antiseptic for centuries, and has been shown to have antibacterial properties.¹⁶ It is commonly used for chemical cauterization of nasal septum in cases of epistaxis. Two concentrations of silver nitrate (75% and 95%) are available commercially for use in ENT practice to control epistaxis. Seventy five percent silver nitrate has better efficacy than 95% silver nitrate in management of epistaxis and it is less painful and has fewer side effects.¹⁷ Ninety five percent silver nitrate is associated with higher complication rate.¹⁸

A number of studies have compared chemical cautery with either electrocautery or antibiotic ointments.¹⁹⁻²¹

This study was conducted with the intent of comparing 75% silver nitrate cauterization with local vasoconstrictor spray (0.1% xylometazoline nasal spray) in adults and to the best of our knowledge no previous research has compared these two modalities in management of adult anterior epistaxis.

A similar study has been conducted by Khan MA et al. in children and concluded that chemical cauterization with silver nitrate was more effective than topical xylometazoline in controlling recurrent anterior epistaxis.²²

Shargorodsky et al, reported that 77.1% of anterior epistaxis cases in their case review were treated with silver nitrate cautery with a 79% success rate on the first trial.²³ Toner et al, demonstrated no statistically significant difference in efficacy or complication rate between electro-cautery and chemical cautery using silver nitrate tipped applicators in the control of simple epistaxis in adults.²⁴

Ruddy et al concluded that both silver nitrate cautery and antiseptic nasal ointment were equally effective treatment modalities in controlling epistaxis.²⁰

Our study does not concur with studies by Krempl et al. and Doo et al, which favor a pharmacologic intervention in the form of topical vasoconstrictors for the treatment of epistaxis.^{11,12}

In essence, chemical cautery as an office-based procedure is very effective in managing adult anterior epistaxis and the advantage of being readily available and simple to use without the need for any special equipment makes it very appealing and popular among otolaryngologists. However, its use does require some basic training and is not without complications.

CONCLUSION

In a clinical setting, chemical cauterization with silver nitrate is a feasible and safe technique for the treatment of adult anterior epistaxis and is superior to topical

vasoconstrictor spray. It is a simple and effective treatment method, which provided rapid hemostasis and would appear to be the treatment of choice for simple adult anterior epistaxis.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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