



MEROCEL PACKING TO MANAGE DIFFUSE EPISTAXIS IN PATIENTS AT RURAL HEALTH CARE FACILITIES.

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ABSTRACT

Epistaxis, or nasal bleeding, is common emergency encountered by ent specialist at all level of health care services. It is due to various etiological factors and also affects both male and female and almost all age groups. Common treatment of a nosebleed is pinching of nose between thumb and finger to apply pressure, referred to as the Hippocratic technique to stop nose bleed. In our study, we used different treatments depending on the severity of nasal bleeding, the etiology and efficacy of these modalities. This was a prospective study. We recruited 30 patients (16 at civil hospital jawalamukhi and 14 at civil hospital nagrota baghwan) who presented with epistaxis in the ENT departments. We evaluated the etiology of epistaxis and efficacy of the treatments used. The patients had multiple episodes of epistaxis and were managed using anterior nasal packing with ointment and with Merocel alone. The incidence of epistaxis was more common in males than in females. It was effectively managed by anterior nasal packing with Merocel. After removal of merocel pack patients did not reported further bleeding.

KEYWORDS :

INTRODUCTION

Epistaxis or nasal bleeding the most common ENT emergencies and has been reported in 60% of the general population [1].

a standardization of bleeding location, with bleeding anterior and posterior to the plane of the pyriform aperture classified as anterior and posterior epistaxis, respectively. .more common in males than in females [2]. Its incidence

Epistaxis, whether spontaneous or otherwise, is experienced by 2 of 3 people in their lifetime; however, only 6% of people require medical treatment and 1.6 in 10,000 require hospitalization [3]. The principal of nasal packing for epistaxis has changed since Hippocrates used sheep's wool on pugilistic noses in ancient Greece [4]. Most patients can be treated within an emergency setting; however, some elderly patients may require more intensive treatments and hospital admission. In rare cases, severe epistaxis can lead to death [5, 6]. The nose has a rich vascular supply, derived from both the external and internal carotid arteries. Historically, epistaxis is classified as anterior or posterior with no definite demarcating line. McGarry [7] recently proposed there is an underlying coagulopathy, such as in patients who

Different treatment options are used to treat bleeding from nose mainly dependent on the severity bleeding. In minor bleeds, manual compression or plugging of the affected nostril with cotton, direct application of pressure for 5–20 minutes, and cold sponging on the forehead could help control the bleeding. Severe and massive bleeding may be managed by different methods, such as anterior nasal packing [8], posterior nasal packing [9], and chemical and electric cauterization of the bleeding point [10].

There is a wide variety of nasal packing techniques available. The most common are conventional nasal packing, Merocel, balloons which are inflatable, Rapid rhinos, and petroleum-infused gauze.

Diffuse bleeding from septum with multiple bleeding sites, or repeated bleeding could be seen in various diseases i.e hypertension and coagulopathies. In such cases, the patients' coagulation profile, blood count, blood grouping, and cross matching should be investigated. In cases of clotting factor deficiency and coagulopathies, the

hemodynamic stability of the patient should be ensured with fluid replacement, electrolytes, and blood transfusion.

MATERIAL AND METHODS

This study was conducted at two rural health care centers. We recruited 30 patients (16 at civil hospital jawalamukhi and 14 at civil hospital nagrota bhagwan) who presented with epistaxis to ent department.

Of the 30 patients who presented with epistaxis, 21 were males and 9 females, respectively. The age of the patients ranged from 26 to 75 years. The mean age of patients was 58. The major causes of epistaxis in these patients were idiopathic, hypertension, cardiac disorder, and coagulopathy. All patients had experienced several episodes of nasal bleeding either unilateral or bilateral. Each time the conventional packs were removed, the bleeding would restart, both anteriorly and posteriorly. Nasal suction to remove residual clots was done in few cases to see for site of bleed, two disposable cotton packs soaked in a local 1 : 1 mixture of 0.1% oxymetazoline and 1% topical lidocaine were inserted into each nostril by direct visualization and maintained in place for a few minutes to control bleeding and identify bleeding sites.

Once the cotton pledges were removed, the bleeding began again. Next, Merocel (length, 8–10 cm) inserted into each nostril of all adult patients. To make sure that the Merocel does not causes any further trauma and maintains good alignment we lubricated them with gel and expanded using 10 ml of saline, and inserted according to the manufacturers' instruction. Nasal bleeding and postnasal bleeding were controlled by nasal packing.

During three day stay after nasal packing, we assessed the pain and discomfort associated with the pack *in situ*. The packs were left *in situ* for 48 hours and kept in ward 24 hrs after removal of pack. All patients received prophylactic antibiotics along with decongestants during the treatment duration. In all cases, we kept the Merocel in nose for 48 hrs and were removed after 48 hours.

After removal of Merocel packs, no further bleeding was observed in 28 patients but 2 patients with coagulopathy had recurrent bleeding and they were referred to higher centers. All 28 patients were followed up for one week. In all cases, no further episodes of bleeding were observed.

Table 1: Patient Characteristics.

Patient	No.OfPatient
TotalNo.OfPatients	30
MalePatient	21
FemalePatient	09
Adults	24
MeanAge	58yrs

DISCUSSION

posterior epistaxis predominates in individuals who are >Epistaxis or nasal bleed is the most common otorhinolaryngologic emergency that requires hospital admission. Arterial epistaxis is the result of degenerative changes affecting the tunica media in old age people [11]. Shaheen suggested local ischemic changes as a potential cause of epistaxis [12]. Epistaxis could be attributed to common local factors, such as digital trauma, septal deviation, chemical irritants, and inflammation or systemic factors, such as coagulopathies, renal failure, alcoholism, and vascular abnormalities [13, 14]. Hypertension is a major cause for epistaxis. It is responsible for 31.82–47.3% of all cases [15–18], which could be linked to anxiety in some patients [19]. Anterior epistaxis is common in younger age, 60 years of age [20].

In addition, anterior epistaxis is the most common condition in ENT practice. This term was first described by Cullen in 1785. To date, multiple theories relating to etiology, clinical manifestations, diagnosis, and management have been reported in the literature [21]. There are a wide variety of

nasal packing techniques available, such as ribbon gauze, Bismuth iodine paraffin paste, and balloon catheters. These techniques, although effective, can cause complications, such as patient discomfort, infection, septal perforation, pressure necrosis of nasal alae, and cardiovascular instability. Stangerup et al. used irrigation with hot water as a method of treatment for posterior epistaxis, which was effective and less painful and reduced hospital stay when compared with traditional nasal packs [22].

The nasal pack which provides effective control of nasal bleed with easy and smooth insertion and removal, no pain while in situ with comfort in place along with minimum risk of aspiration, tissue sensitivity and infection is said to be ideal pack. But there always is a risk of aspiration in all type of nasal pack used [23]. The possibility due to its size and its shape of aspiration or swallowing is small with Merocel. It is always recommended to tie the string of Merocel to the nasal dorsum or cheek to prevent aspiration. However, Hashmi et al. [24] reported a case of a nasal pack being swallowed during the treatment of epistaxis, which caused bowel obstruction and perforation.

In our study, bleeding was successfully controlled in 93.3% of the patients by using Merocel in rural health care centre. This rate of success was higher than that in studies by Pringle et al. [25] and Corbridge et al. [8], who reported success rates of 91.5% and 92.6%, respectively, in patients with epistaxis treatment with a Merocel pack alone.

Table 2: Patient Clinical Data.

Pt.number	Age	Sex	Riskfactor	Onanticoagulant	Site	Pain(outof10)	Previousepistaxis	Complication
1	26	Male	NONE	NO	Unilateral	4	Yes	None
2	55	Male	HTN	No	Unilateral	6	Yes	None
3	38	Male	NONE	NO	Unilateral	6	Yes	None
4	41	Male	HTN	NO	Unilateral	4	Yes	None
5	68	Male	DM/HTN	Yes	Bilateral	5	Yes	None
6	47	Male	NONE	NO	Unilateral	6	Yes	None
7	75	Male	Cardiac/HTN	Yes	Bilateral	6	Yes	REBLED
8	56	Male	HTN	NO	Bilateral	7	Yes	None
9	58	Male	HTN	NO	Bilateral	6	Yes	None
10	29	Female	NONE	NO	Unilateral	7	Yes	None
11	53	Female	DM/HTN	NO	Bilateral	8	Yes	None
12	57	Female	HTN	NO	Bilateral	5	Yes	None
13	33	Male	NONE	NO	Unilateral	4	Yes	None
14	69	Male	DM	Yes	Bilateral	6	Yes	None
15	64	Male	HTN	NO	Bilateral	7	Yes	None
16	40	Male	CKD	NO	Unilateral	5	Yes	None
17	59	Female	HTN	NO	Unilateral	4	Yes	None
18	72	Male	DM/HTN	YES	Bilateral	5	Yes	REBLED
19	60	Female	HTN	NO	Bilateral	6	Yes	None
20	55	Male	HTN	NO	Bilateral	5	Yes	None
21	55	Female	DM/HTN	YES	Bilateral	5	Yes	None
22	61	Male	HTN	NO	Bilateral	5	Yes	None
23	74	Male	CKD	NO	Unilateral	4	Yes	None
24	70	Female	DM/HTN	Yes	Bilateral	6	Yes	None
25	58	Female	NONE	NO	Bilateral	6	Yes	None
26	39	Female	NONE	NO	Unilateral	4	Yes	None
27	30	Male	NONE	NO	Unilateral	4	No	None
28	46	Male	NONE	NO	Unilateral	5	No	None
29	49	Male	NONE	NO	Unilateral	4	No	None
30	59	Male	HTN	NO	Bilateral	7	Yes	None

DM: diabetes mellitus; HTN: hypertension;CKD :chronic kidney disease

Merocel is a, dehydrated sponge which is mainly made of hydroxylated polyvinyl acetate which is in compressed form. After insertion, it requires rehydration with normal saline to achieve its optimal size within the nasal cavity and compress the bleeding vessels. In addition, it acts as a surface for platelet aggregation and actively encourages hemostasis. It absorbs water and swells to provide tamponade at the bleeding sites. Its fibers entrap fluid,

blood proteins, platelets, and cells to form a gel-like “pseudo-clot” that acts as a barrier to blood flow and subsequently as a matrix for solid fibrin clot formation. Shinkwin et al. evaluated the clinical effectiveness of Vaseline

gauze, and Merocel as forms of nasal packing. They concluded that there is less discomfort while using merocel with

vasline both *in situ* and on removal when compared with Merocel alone [26]. Pressure dressing and sutures are commonly used to achieve hemostasis; however, numerous products had been developed to achieve the same aim. These include topical hemostatic agents, such as sponges, thrombin, gelatin-thrombin, fibrin glue, and other types of surgical sealants [27]. Oxidized regenerated cellulose is fully absorbed in 7–14 days with minimal tissue reaction, and it shows antimicrobial activity against a wide range of Gram-positive and Gram-negative organisms, including methicillin-resistant *Staphylococcus aureus* (MRSA) both *in vitro* and *in vivo* [28]. In this study, only 2 patients showed complications in the form of rebleed were observed with the use of Merocel. Bleeding was successfully controlled in all patients except two, who exhibited rebleeding. Following removal of the Merocel pack, we kept the patient in ward for 24 hrs and then followed up after a week. Taken together, our results and previous studies show that merocel packs are associated with fewer complications. Furthermore, patients with anterior nasal packing can be managed safely as outpatients with no adverse events [29].

With regard to the study limitations, we were unable to blind the physician investigator or patients. Moreover, the follow-up periods were limited; therefore, the long-term outcomes remain unclear.

CONCLUSION

Epistaxis is the most common otorhinolaryngological emergency that requires hospitalization. Our results provide evidence that it can be effectively managed with Merocel packing. To the best of our knowledge, this is the first time the use of merocel was done at rural health care center with minimal resources.

Anterior nasal packing via Merocel is safe and effective for nasal bleeding in patients with comorbidities at rural health care facilities.

Conflicts Of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

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