

# *Vasovagal Attack During Anterior Nasal Packing in Patients with Epistaxis*

## *Ataque Vasovagal durante o Tamponamento Nasal Anterior em Pacientes com Epistaxe*

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### **RESUMO**

**Introdução:** Não é muito incomum o incidente de desmaio durante o tamponamento nasal para tratamento de epistaxe.

**Objetivo:** Observar o efeito do tamponamento nasal anterior sobre a tensão arterial e a frequência cardíaca durante o tratamento de epistaxe.

**Método:** Pacientes nepaleses do sexo masculino (n=40; com mais de 13 anos de idade) atendidos no Hospital de Ensino Universitário de Tribhuvan, em Katmandu, com sangramento nasal ativo, no Departamento de ENT, e foi usada Cirurgia de Cabeça e Pescoço no estudo, no período entre julho de 2005 e junho de 2008. Este estudo prospectivo e comparativo foi analisado usando o teste Z.

**Resultados:** A tensão arterial e a frequência cardíaca, em pacientes com epistaxe, ficam significativamente baixas durante o tamponamento nasal anterior (104±14.08/67±9.35 mmHg, 67±3.81/min) em relação aos mesmos pacientes antes do tamponamento (130±20.3/83±14.89 mm Hg, 73±34.82/min).

**Conclusão:** Durante o tratamento de epistaxe, o tamponamento nasal apresenta bradicardia e hipotensão, e, às vezes síncope vasovagal, que na maioria dos casos se devem à ação reflexiva do estímulo do nervo vago e das fibras simpáticas vasodilatadoras do músculo esquelético.

**Palavras-chave:** Ataque vasovagal, tensão arterial, frequência cardíaca, tamponamento nasal anterior, epistaxe.

### **SUMMARY**

**Introduction:** The incident of fainting during nasal packing to manage epistaxis is not so uncommon.

**Objective:** To observe the effect of anterior nasal packing on blood pressure and heart rate, during the management of epistaxis.

**Method:** Nepalese male patients (n=40; age more than 13 years) attended in Tribhuvan University Teaching Hospital, Kathmandu presenting with active nose bleeding in the Department ENT and Head and Neck Surgery were taken for the study in the time period between July 2005-June 2008. This prospective comparative study was analysed using Z test.

**Results:** The blood pressure and heart rate in patients presented with epistaxis show significantly lower during anterior nasal packing (104±14.08/67±9.35 mmHg, 67±3.81/min) compared with same patients before packing (130±20.3/83±14.89 mm Hg, 73±34.82/min).

**Conclusion:** Nasal packing during the management of epistaxis shows bradycardia and hypotension and sometimes vasovagal syncope which are mostly due to reflex action through stimulation of vagus nerve and stimulation sympatho-vasodilator fibres of the skeletal muscle.

**Keywords:** vasovagal attack, blood pressure, heart rate, anterior nasal packing, epistaxis.

## INTRODUCTION

Epistaxis is one of the most common otorhinolaryngologic emergencies having sudden onset (1-4). Idiopathic epistaxis is defined as any episode of bleeding from nasal cavity without any detectable cause (5). The bleeding may occur from one or many bleeding points particularly Little's area or posteriorly (6). During management of this emergency by introducing nasal packing, it has been noted that some of the patients fainted and exhibited the symptoms of neurogenic shock. Neurogenic shock is a kind of distributive shock in which a sudden burst of autonomic activity produce vasodilatation, pulling of blood in the extremities and fainting. These are called vaso-vagal attacks, and they are short-lived and benign (7). These incidents led us to explore the effect of nasal packing (during the management of epistaxis) on blood pressure and heart rate.

## METHOD

Nepalese male patients (n=40; age more than 13 years) attended in Tribhuvan University Teaching Hospital, Kathmandu presenting with active nose bleeding in the Department ENT and Head and Neck Surgery were taken for the study in the time period between July 2005-June 2008. This is a prospective comparative study. Blood pressure of each patient was recorded using aneroid sphygmomanometer as this is a simple and safe method by which blood pressure can be recorded almost accurately. Systolic pressure was determined at the point when the Korotkoff sound became audible and diastolic pressure was measured at the point at which the sound disappeared. Blood pressure was measured during epistaxis and also during anterior nasal packing using the same instrument (aneroid sphygmomanometer-Doctor, made in Japan), in supine position by the first author. Anterior nasal packing was done in all cases using bismuth iodoform paraffin paste. Children, patients with previous history of hypertension, coagulation disorders are excluded from the study. As blood pressure measurement is a part of routine clinical evaluation, and is a non-invasive procedure, local ethical committee approved to do this study easily (ref:328/08) and informed consent were taken from patients. Data were analyzed statistically using Z test.

## RESULTS

It is evident from the Table 1 that the patients presented with epistaxis showed significantly lower blood pressure and heart rate at anterior nasal packing compare before anterior nasal packing. The blood pressure and heart rate recorded before anterior nasal packing were  $130 \pm 20.3/83 \pm 14.89$  mm Hg, and  $73 \pm 34.82$ /min while at the time of anterior nasal packing were  $104 \pm 14.08/67 \pm 9.35$  mmHg,  $67 \pm 3.81$ /min respectively.

## DISCUSSION

Epistaxis is a common condition and number one emergency as well as frequent with up to 60% of people experiencing one episode in their life time and 6% seeking medical attention (8). The incidence of epistaxis was 60.4/1000 ENT admitted patients per annum in a study done at TU Teaching Hospital (9). Most cases of epistaxis do not have an easily identifiable cause. Both local and systemic processes can play a role in it (10). Epistaxis are managed by cautery (chemical or electric), anterior nasal packing, posterior nasal packing, arterial ligation or by embolization technique. Anterior nasal packing is the most common procedure in epistaxis.

Many patients experienced fainting attack (vaso-vagal attack) at the time of anterior nasal packing. It has been established that strong emotion may cause hypotension. Somehow, the higher brain centers involved with emotions enhance parasympathetic activity to the heart, resulting in markedly decreased arterial pressure and brain blood flow (transient vasovagal syncope). It also stimulates sympathetic vasodilator nerves to the skeletal muscle. The pathway is probably from: Cortex → Hypothalamus → Midbrain → Pons → Medulla → Lateral horn cells of sympathetic system of spinal cord → Sympathetic vasodilator nerves to the vessels of skeletal muscle (7).

Dripping blood from the nose may cause hypotension following strong emotion and not by the blood loss sometimes, since losing a little amount of blood will not by itself causes serious hypotension in an individual (11).

**Table 1. Blood pressure and Heart rate in patients before and during anterior nasal packing with BIPP.**

Condition	Systolic Blood Pressure	Diastolic Blood Pressure	Heart Rate
Before Anterior Nasal Packing	$130 \pm 20.3$	$83 \pm 14.89$	$73.7 \pm 4.82$
During Anterior Nasal Packing	$104 \pm 14.08^*$	$67.7 \pm 9.35^*$	$67.2 \pm 3.81^*$

\*= p value < 0.01, BIPP- Bismuth Iodoform Paraffin Paste

Rather, it resembles emotional fainting, that begins with intense psychic disturbances in the cerebral cortex (12).

Previous clinical reports indicated that packing in the treatment of epistaxis induce nasopulmonary reflex - changes in pulmonary function to cause hypoxia leading to arterial hypoxemia (13, 14). Nevertheless, studies established that pneumatic nasal pack with central airway that allowed a limited airflow did not cause any clinically important alveolar hypoventilation or changes in arterial oxygenation (15, 16). That posterior nasal pack did not alter oxygenation was also reported (16). Report supported that nasopulmonary reflex as previously described in term of primary drop in O<sub>2</sub> is clinically irrelevant (17). Although according to the reports no noticeable hypoxemia due to nasal packing takes place, irritation of the nasal /laryngeal mucous membrane due to nasal pack causes reflex apnea by switching off inspiratory centre which causes bradycardia through chemoreceptor sinu-aortic mechanism (18). That might be the cause of bradycardia and hypotension in all patients during nasal packing. In some cases where bradycardia and hypotension were extreme, patients exhibited vaso-vagal attacks. Our study showed that there is significantly lower blood pressure (both systolic and diastolic) and heart rate during anterior nasal packing compared with previous blood pressure and heart rate (before anterior nasal packing).

## CONCLUSION

Nasal packing during the management of epistaxis shows bradycardia and hypotension and sometimes vasovagal syncope which are mostly due to reflex action through stimulation of vagus nerve and stimulation sympatho-vasodilator fibres of the skeletal muscle.

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