

## Case Report

### Epistaxis following post nasal swabbing – The new COVID related emergency?

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#### Abstract

##### Case overview

A patient who got admitted at term for an elective caesarean section underwent an ‘on admission’ routine nasopharyngeal swabbing for SARS-CoV-2. She developed resistant epistaxis one day after the procedure and was found to have a mucosal injury over the sphenopalatine artery entry point on the left side. She had to undergo an emergency caesarean section followed by endonasal sphenopalatine artery ligation. The epistaxis was successfully dealt with and the mother and baby were discharged 48 hours after surgery.

##### Conclusions

Proper training in nasopharyngeal swab technique is required. Departments need to consider having biodegradable nasal packing material for such instances. In such injuries early endonasal sphenopalatine artery ligation (ESPAL) should be considered as traditional methods available to us were not successful.

**Keywords:** COVID-19 Testing, SARS-CoV-2, Epistaxis, Endoscopic Hemostasis

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## Introduction

Epistaxis is not a disease but a symptom of a local or systemic cause and it is commonly seen emergency in ENT practice <sup>1</sup>. It varies from minor to major episodes which can be life threatening and most cases of epistaxis occur in the anterior part of nose where bleeding arises from a rich arterial anastomoses at nasal septum (Kiesselbach 's plexus) while posterior epistaxis arise from posterior nasal cavity via branches of sphenopalatine arteries.

Physical trauma is one of the common causes for epistaxis in clinical practice. Collection of specimens from the respiratory mucosa with nasopharyngeal swabs for polymerase chain reaction (PCR) testing for the SARS-CoV-2 virus is a common procedure these days due to the pandemic situation.

At the Army Hospital Colombo (AHCBO), PCR sampling is done on patients who have had a first or second contact history with a SARS-CoV-2 positive person in addition to patients who are deemed high risk following risk stratification. It is also done on all routine admissions. Inward patients are then retested every 48 hrs with rapid antigen testing (RAT). Rapid antigen testing is also done prior to minor OPD procedures (Such as nasendoscopy) and routine imaging (Ultrasound scanning, CT and MRI)

Sample collection is done in accordance with the Centre for disease control United states (CDC-US) guidelines <sup>2</sup> which is recommended and is being practiced at our hospital. However, incidents like mechanical trauma to the sphenopalatine artery as described below can happen due to poor corporation of the patient during the sampling procedure or due to a poor sampling technique.

## Case Report

A pregnant spouse (42 yrs.) of one of the officers, with a past obstetric history of G<sub>3</sub>P<sub>3</sub>C<sub>2</sub> and period of amenorrhea (POA) of 37 weeks was admitted to the obstetric ward on the 17<sup>th</sup> of November 2020 for a routine elective caesarean section. On admission PCR testing was done and she presented to us a day later with epistaxis (whilst in hospital) with no other nasal symptoms. The epistaxis started on the left-hand side and was followed by moderate bleeding bilaterally along with oral bleeding. The patient had not been on any anti-coagulant or anti platelet treatment and had experienced no preceding episodes similar to this one in the past. She also did not have any history of hypertension or nasal allergy treatment. On general clinical examination all her vital signs were within normal parameters and she was not pale. The patients SARS-CoV-2 status was also found to be negative.

Upon fibre-optic nasal endoscopy (FNE) an accumulation of clotted blood was observed at the postnasal space. This was removed under direct endoscopic vision to reveal mucosal damage over the area where the left sphenopalatine artery enters the nasal cavity. There was no active bleeding from this site even though the mucosal tear was noted. Our initial plan was to be conservative and to observe the patient in the ward setting, if there was no bleeding in the next 24 hours, no intervention was planned. Unfortunately, the patient developed epistaxis again and anterior and posterior nasal packing was done in a theatre setting.

Our unit had originally planned, after discussion with the obstetric unit, to keep the nasal packs in situ and proceed with the caesarean section as an elective procedure. Any intervention with regard to epistaxis was to be done after the child was safely delivered.

Unfortunately, the patient had another moderate to severe epistaxis episode the following day which prompted us to escalate her management. After discussing with her obstetric unit a new plan was devised which was to perform an emergency caesarean section under spinal anaesthesia and then to perform a left-sided sphenopalatine artery ligation (endoscopic) under general anaesthesia with throat packing.

The baby was safely delivered through caesarean section whilst the epistaxis was managed with reinforced packing under regional and local anaesthesia. After general anaesthesia was administered the nasal cavity was prepared for endoscopy after which the middle turbinate was medialised and a limited middle meatal antrostomy was done which enabled easy dissection of the middle meatal mucosa from its bony surface all the way up to the entry of the sphenopalatine artery. Temporary haemostasis was achieved by placing a 1:1000 adrenaline soaked gauze strip over the bleeding area with reinforced endoscopic packing. The main trunk of the artery was carefully dissected and exposed under the mucosal flap. A fine elongated bipolar diathermy was then used to cauterise this vessel under the mucosal flap along with any branches that were seen. Transection of the artery was not attempted at this moment as evaluation of the bleeding site showed complete resolution. The mucosal flap was replaced and the middle meatus was packed with a steroid-antibiotic (Tetracort™) nasal dressing.

The nasal packs were removed after 24 hours and the patient was observed in the ward setting for a further 24 hours afterwards. There was no epistaxis reported. The patient was discharged and was asked to attend a follow-up ENT OPD session in two weeks' time. A repeat flexible nasal endoscopy showed complete healing of the injured area with minimal crusting and no adhesions.

## **Discussion.**

The pandemic situation which rages across the world today has greatly affected the way we practice ENT. It has also affected our prioritisation of differential diagnosis. The treatment of epistaxis is one such instance. In this case report the epistaxis was clearly caused by posterolateral nasal wall trauma due to administration of postnasal swabbing. If prior knowledge of nasal swabbing was not known at the time of emergency presentation of the patient, the management may not have been escalated to endoscopic arterial ligation in such a short time period. The patient being pregnant and at term was a further complicating factor which we had to consider in this case.

Complications due to nasal swabbing for SARS-CoV-2 is relatively rare with WHO reporting a prevalence of adverse events (AEs) of 0.026%<sup>3</sup>. The WHO has admitted that this figure is underreported, and even with correction the incidence of complications due to swabbing is quite low. There have been only three published cases describing pharyngeal swab complications up-to-date, out of these there was only one reported case of epistaxis and this did not require surgical intervention<sup>3</sup>. Since there was an obvious error in swab technique and/or patient preparation let us consider the recommended technique for taking a swab when detecting or screening for SARS-CoV-2. According to the CDC-US guideline document depending on the testing kit available in the laboratory there are three types of swabs which we

can take from the nose. These are the nasopharyngeal specimen swab, the mid-turbinate specimen swab and the anterior nasal specimen swab. When collecting the specimen using the nasopharyngeal swab, the correct technique is gently tilting the patient's head backwards to 70° inserting the swab parallel to the soft palate to a depth equal to a distance measuring from the alar of the nose to the tragus of the ear on the ipsilateral side. Once this depth is reached the swab is supposed to be gently rolled/rotated until the 'mini tip' is saturated with fluid. It is not compulsory to swab both sides as the criteria for adequate sample collection depends on the saturation of the swab <sup>2</sup>. A literature survey carried out regarding nasopharyngeal swab accuracy did show that improper swab technique can increase the likelihood of false-negative results in RT-PCR testing for SARS-CoV-2. We did not find any literature supporting increase in false-negative results if there is resultant epistaxis in the patient.

With regard to epistaxis management ENT UK has released a SARS-CoV-2 epistaxis management protocol document which does recommend usage of biodegradable dressings (such as Nasopore™ or FloSeal™) as first line management <sup>4</sup>. This is considered standard treatment in many parts of the world. These type of dressings are not freely available in Sri Lanka at present and thus we had to resort to non-absorbable nasal packing. It is recommended that in the persistence of bleeding the treatment can be escalated to surgical intervention. ENTUK has also recommended that all patients be treated as SARS-CoV-2 positive patients and that the highest level of PPE (personal protective equipment) be worn when dealing with these patients. Since our patient had a negative RT-PCR test at the onset, and was in a secure environment, a lower level of PPE was worn during her treatment.

We could not use systemic medical therapy in the form of tranexamic acid in this patient as it would have been disruptive to the placental blood flow thus affecting the foetus. However, it was used after successful delivery of the child as an adjunct to control generalised oozing which generally follows removal of a packs from a nose.

Endonasal endoscopic sphenopalatine artery ligation (ESPAL) is the procedure of choice in controlling difficult nasal bleeds and has her high success rate which according to some studies is almost 100% <sup>5</sup>. Division of the artery or simple coagulation using bipolar diathermy are both acceptable methods in dealing with the sphenopalatine artery. It was the logical choice in our patient as direct injury to its posterior branch was suspected.

### **Key Messages /Conclusion**

1. Proper training in nasopharyngeal swab technique and patient preparation is essential to avoid serious adverse effects such as epistaxis.
2. Surgical procedure in these patients carries a high risk of infection with SARS-CoV-2, presence of biodegradable dressing material would have been greatly beneficial as first-line therapy for this patient. Emergency departments should consider having this option.
3. There is a direct risk of injury to the posterolateral nose using nasopharyngeal swabs and if moderate to severe epistaxis does happen early endonasal sphenopalatine artery ligation should be considered.

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