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Case Report

ORAL BAG-VALVE-MASK INSUFFLATION TECHNIQUE TO REMOVE UNILATERAL FRIABLE NASAL FOREIGN BODY IN EMERGENCY DEPARTMENT

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ABSTRACT
Nasal foreign body in children is not an uncommon presentation to the Emergency Department. Removal is essential. Many methods of removal exist. Nasal wash technique is advocated mainly in friable foreign bodies. We report the successful use of the oral bag-valve-mask insufflation technique to remove friable facial tissue in the left nose of a 2 year-old girl. We used a pediatric bag-valve-mask with a pop-off pressure relief valve to avoid barotrauma. Pop-off pressure relief valve limits the pressure beyond 30mmHg. Conscious sedation was not required. There were no complications.
Key words: Unilateral nasal foreign body, friable facial tissue, oral bag-valve-mask insufflation technique.
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INTRODUCTION

Insertion of foreign body into anatomical orifices by healthy active children is not an uncommon complaint at the Emergency Department (ED). This is usually by sheer inquisitiveness of children.[1-3]

A wide array of objects have been reported including button batteries, beads, seeds, nuts and actually anything you can think of. There have been many suggested methods of removal from the non-invasive to the most invasive depending on the type of foreign bodies. Direct instrumentation, hooked probes, balloon catheter, suction and adhesives are relatively contraindicated in removable of friable foreign body.[4-8] Meanwhile, positive pressure is mainly to remove large, occlusive or posterior foreign bodies. Nasal wash technique is advocated in friable foreign bodies.[4]

Here, we report a case of a piece of facial tissue being inserted up the nasal cavity which was removed fairly easily, non-invasively, with positive pressure delivered via a standard bag and mask available in the emergency department. Facial tissue is soft and friable, and presents quite a challenge in removal as it usually tears when grabbed by a pair of forceps.

CASE REPORT

A 2-year-old girl was brought to the ED with the mother complaining that she inserted a piece of facial tissue into her left nostril, about four hours prior to presentation. Apparently the mother was able to visualise the piece of tissue earlier. She made a few attempts to remove it at home using a pair of toothpicks but failed. She also asked the child to blow her nose but that also failed. After all the manipulation, the tissue was no longer visible.

The child was complaining of discomfort in the nose with some nasal discharge. However, she had no shortness of breath or noisy breathing. She had no other complaints.

The patient was bright and playful on arrival. She was comfortable, not tachypnoeic and did not have noisy breathing. Vital signs were normal, oxygen saturation 100% under room air. On examining the nasal cavity, we were unable to visualize any foreign body. However, the left cavity was full of whitish mucous. Examination of the oral cavity and other systems also did not reveal any abnormalities.

Since the child looked cooperative, we decided to use the Bag-Valve-Mask (BVM) insufflation technique for removal of the soft facial tissue. Verbal consent was obtained from

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the mother after telling her that there might be a risk of failure of removal and need for more invasive procedures if this method fails.

Equipment needed; a paediatric size bag with a "pop-off pressure relief valve" and mask, and two helpers to hold the patient. The BVM was not connected to any oxygen source and the procedure was carried out in the semi-critical care area (yellow zone) of the ED with resuscitation equipment on standby.

The patient was put in supine position with the mouth in a slightly open position. The mask was small enough to just cover the mouth without occluding the nose. Making sure there was a good seal on the mouth, a quick pump on the bag was made. The initial puff showed no results of anything exiting from the nose. A second attempt was made, this time with another helper occluding the right nose. A piece of tissue covered in mucous darted out forcefully and stuck onto the mother's shirt once the bag was pumped this time. The deed was done and smiles all around including the child. Post procedure, the ears, nose and oral pharynx examinations were normal.

A happy customer, the mother wanted the tissue back to show other family members at home. The child had no discomfort after the removal. No sedation was needed and there was no trauma to the patient. She was discharged with syrup paracetamol 125 mg 8 hourly and was advised to seek treatment from the community clinic if she develops persistent nasal discharge, fever or sinusitis.

DISCUSSION

Despite the frequency of foreign body insertion into the nose among children, there are very few large studies on this problem in the literature.[1-3, 9,10] There is lack of interest among Emergency Physicians regarding this subject due to the traditional practice of referring directly to the Ear Nose and Throat (ENT) Department for removal. Furthermore, there is lack of practice in using such equipments in the ED. An uncooperative patient is also a limitation in finding a quick and easy technique to remove the foreign body in the ED. According to a study conducted by T. Mackle (2006), emergency residents failed in removing the nasal foreign body in 29 (35%) of the 82 studied children. The failures appeared to be operator dependent instead of an association with any particular characteristics of either the patient or the type of foreign body involved.[3]

As medical officers working in the ED, we strive daily to solve various complaints from patients as quickly and non-invasively as possible. The oral BVM technique has been described before and present as a choice method due to its simple usage, non-invasive and lack of complications, especially from sedative drugs. The whole process, including preparation, takes minutes.[8,11] This technique is advocated for large objects occluding the entire nasal passage which limit the ability to pass a Foley catheter or a hooked probe. For friable foreign bodies, nasal wash is the preferable method.[1,2]

In our case, we managed to remove the friable soft facial tissue easily without any complications by oral BVM technique. To minimize the risk of aspiration, a 30-degree Trendelenburg position is advocated, however, this is not required for friable tissue removal using positive pressure technique.

Although there is a theoretical potential for barotrauma to the tympanic membrane or lower airway, a review of the literature found no cases of barotrauma related to the use of oral positive pressure by ambu-bag or mouth to mouth.[1,7,8,11]

The use of BVM with a pressure relief valve in our technique limits the airway pressure up to 30mmHg. In contrast to nose blowing that produces a pressure up to 60mmHg.[12] It makes our method safer. In addition, the pressure needed to remove the nasal foreign body in children may be as little as 10mmHg.[8]

In conclusion, this method is easy to be learned by emergency residents or outpatient doctors. Here, we suggest that the doctors in ED attempt to remove the foreign body first using this method before referring the patient to their ENT colleagues. However, one must always be careful of the rocketing out of the foreign body once the BVM is squeezed. It is important to practice universal precautions while performing this procedure. Suitable types of foreign bodies for removal using this method include friable and solid foreign bodies. Certain items such as button batteries and sharp edged objects need urgent referral to the ENT department for removal due to the potential complications. Referrals are also indicated when there is a concern that there might be more than one foreign body or when there is any suspected trauma from the procedure. Despite no literature describing the incidence of barotraumas, we advocate that the ears, nose and oral pharynx be examined for any evidence of trauma after the procedure.

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Research Digest

One in four adult primary care patients is possibly suffering from psychiatric disorders

Zamzam R, Thambu M, Midin M, Omar K, Kaur P. Psychiatric morbidity among adult patients in a semi-urban primary care setting in Malaysia. *Int J Ment Health Syst.* 2009; 3(1):13.

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This is one of the many prevalence surveys of psychiatric morbidity in primary care. Adult patients from a public primary care clinic in Kuala Lumpur complete the Patient Health Questionnaire (PHQ). The proportion of respondents who had at least one PHQ positive diagnosis was 24.7% and some respondents had more than one diagnosis. Diagnoses included depressive illness (14.4%), somatoform disorder (12.2%), panic and anxiety disorders (6.5%), binge eating disorder (3.4%) and alcohol abuse (2.3%).