

A Narrative Review Of The Management Of Nasal Foreign Bodies In Children In General Practice

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ABSTRACT

Objectives: Children with nasal foreign bodies (FB) are likely to be brought to their general practitioners (GP) first. Successful removal of FBs requires preparation and correct selection of technique for each unique FB and child. Mismanagement may result in serious consequences. This review aims to provide the GP with the knowledge of preparation and different techniques of nasal FB removal in children.

Method: PubMed and the Cochrane library were searched for articles containing the MeSH terms “nose” or “nasal cavity” and “foreign bodies” or “foreign body” with filters for “Humans”, “Child” and “English” language. Further hand search was done. Based on the Oxford Centre for Evidence-Based Medicine 2011 levels of evidence, the studies were graded as Level 4.

Discussion: Nasal FBs in children tend to occur at a mean of 3 years of age. The type of FB is variable. Button battery FBs need to be removed as soon as possible. Proper preparation including adequate visualisation, restraint, analgesia and decongestion is discussed. The selection of technique depends on the type of FB and location. The advantages and disadvantages of each technique are discussed. The “mother’s kiss” method has been found to be effective and safe, making it an ideal first-line technique for the GP to employ.

Conclusion: Nasal FBs in children may be safely and effectively managed in the GP setting given adequate preparation and selection of the correct technique.

Keywords: Child; Foreign Body; General Practitioner; Nose;

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INTRODUCTION

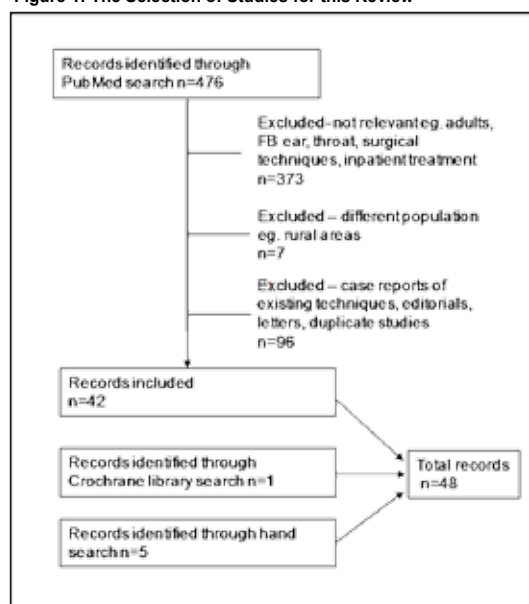
Foreign bodies (FB) in the noses of children may not be common presentations in general practice but they are likely to present to the general practitioner (GP) first. Many nasal FBs may be removed in the general practice setting using the correct techniques, but mismanagement may result in serious

consequences with distress to the patient, aspiration of the foreign body, trauma to the nasal passages, and necrosis of the nasal passages. Button batteries and magnet foreign bodies may cause corrosion and necrosis of tissue in a few hours. Immediate recognition and removal of these dangerous FBs in the primary care setting is ideal. The key to successful removal of a nasal FB in a child is adequate visualisation of the FB, immobilisation of the child, analgesia, decongestion, and selecting the right technique for the foreign body. However, given the potential risks of the procedure coupled with the lack of knowledge, training and confidence in nasal FB removal, GPs may often choose to refer the patient to the nearest emergency department (ED) or otorhinolaryngologist (ENT). There are safe and effective methods of nasal FB removal such as positive pressure methods which may be used in general practice. Most studies and reviews have been written for the ED or ENT doctor. This review aims to provide the GP with the knowledge of managing children with nasal FBs safely and effectively.

METHOD

A literature search was performed on 16 March 2016 using PubMed and the MeSH terms “nose” or “nasal cavity” and “foreign bodies” or “foreign body” with filters of “Humans”, “Child: birth to 18 years” and “English” language activated. A total of 476 articles were found. Exclusion criteria were articles which were not relevant, duplicate studies, and letters. Case reports which described existing techniques were excluded but case reports describing novel techniques of nasal FB removal were included. This led to 42 articles selected. The Cochrane library was searched with the same terms and 1 article was found and included. References of the selected articles were screened for relevance and another 5 articles were selected.

Figure 1: The Selection of Studies for this Review



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No study was found on nasal FBs in children in general practice, with most studies performed at ED and ENT departments. However, many of the techniques described could be used in a GP setting. There was 1 systematic review of positive pressure techniques.¹ The nature of nasal FBs does not lend itself to randomised controlled trials as the FB must be removed and there are no appropriate control groups. The articles therefore consisted mostly of observational studies, case reports, and clinical guidelines. Based on the Oxford Centre for Evidence-based Medicine 2011 levels of evidence, the studies were graded as Level 4.

DISCUSSION

Prevalence, Age Group and Types of FB

Nasal FBs in children tend to occur in younger children, with most studies reporting a mean of around 3 years of age.²⁻¹⁰ There was no difference between males and females in most studies. The right side of the nose was more likely to be affected (64% – 73%) perhaps due to handedness.^{4,8,11-14} However, it is imperative to examine both sides of the nose as bilateral FBs were seen in a minority of cases (<3%)^{4,8}. Children with attention deficit hyperactivity disorder (ADHD) were more likely to present with nasal FBs.^{15,16} Most cases of FB insertion occurred while the child was playing.^{2,5} Chinski et al (2011) reported that in over 90 percent of cases of nasal FB, an adult was present.⁵ This underlines the need for education in preventing FB injury by not allowing young children access to small objects they may potentially insert into their nose, ears, or mouth.

Most nasal FBs were asymptomatic and presented with a history of the FB insertion having been observed by the caregiver, or were reported as inserted by the child (54%-75%).^{4,6,14} These children usually presented within 24 hours. Other symptoms of early presentation included nasal pain and obstruction. Children who presented later usually had the pathognomonic unilateral nasal discharge, nasal pain, cacosmia and epistaxis.^{2,6} Facial cellulitis or impetigo was also seen.⁵ Most FBs were in the anterior nose and could be visualised (94%).⁶ They were most commonly located on the floor of the nose just below the inferior turbinate or more superiorly just in front of the middle turbinate.¹⁷

The types of FB found were variable and depended on the location of the patient. In Singapore, Ngo, Ng and Sim (2005) found that the most common FBs were beads, toy parts and organic matter (sweets, seeds, peanuts). Button batteries were found in 1 percent (4 out of 353) of cases.⁶ Pecorari et al (2014) in Turin found that most nasal FBs were <1cm (90%), of irregular 3D shape (55%) or spherical (27%), rigid (79%), and inorganic (87%). Insects, larvae and worms have been rarely reported as FBs in the nose though these occur more commonly in rural areas and in patients with poor personal hygiene.¹⁷

Radiographs were not found to be useful as many materials such as food, wood and plastic may not be visible on

radiographs.⁶ Radiographs will show button batteries and magnets. These FBs may cause tissue necrosis in a few hours. In a GP setting, the time required to obtain a radiograph must be weighed against early removal of these dangerous FBs.

Preparation

Successful removal of a nasal FB in a child requires adequate preparation before touching the child. These include adequate visualisation, analgesia, decongestion, and immobilisation. The first attempt at removal is most likely to succeed.^{6,18} Subsequent attempts with increasingly distressed child and parents are more likely to lead to complications such as trauma to the nose, epistaxis and dislodgement of the FB with aspiration. It is also essential to inform the parents of the procedure, risks, and possible complications.¹⁹

Visualisation

Adequate visualisation is essential to remove the FB. An otoscope may be used to visualise the object but a headlamp, mounted illuminated magnifying glass, or strong light from a stand lamp would be ideal as it allows for the use of both hands.¹⁸ If the FB cannot be seen, it is likely in the posterior nose and any instrumentation to locate the FB may result in its dislodgement and aspiration. If the FB is not visualised, it is advisable that the patient be referred to the ED or ENT department.¹⁹ It is also absolutely essential to carefully examine the other nostril and both ears to exclude bilateral nasal FBs or FBs in the ears.

Analgesia, decongestion, and sedation

Nasal FBs may lead to an inflammatory reaction with nasal congestion and swelling, causing further impaction of the FB. Many authors^{9,10,17,18,21-23} recommend the use of topical decongestants prior to removal of nasal FBs except for Kiger (2008)²⁰, who recommends decongestion only if the FB is well-visualised and so large that posterior displacement is not likely. Kiger also mentions that decongestion may be more useful for positive pressure methods. Phenylephrine 0.5 percent or oxymetazoline 0.05 percent in the form of a nasal spray or nasal drops may be used and are readily available in the GP setting.^{21,22}

Topical analgesia may be useful and can be applied by nasal spray or drops. 1- to 4-percent lidocaine as nasal drops may be used. 10-percent lidocaine spray may be used in children over 3 years of age. The maximum dose is lidocaine 3mg/kg/day. Randall (2009) describes adding 4-percent lidocaine in a 50-50 mixture to a spray bottle of oxymetazoline 0.05 percent to achieve analgesia and decongestion at the same time.²² Wait about 10 minutes for analgesia to work.

Most nasal FBs may be removed with little or no sedation.²³ Sedation may be useful in an anxious child but complications with the use of sedation in the removal of nasal FBs have not been reported. Moreover, sedation of the children in a GP setting carries risk as monitoring is often not available and there is a theoretical increased risk of aspiration due to the decreased protective reflexes of the airways.²³ If the child is anxious enough that sedation is warranted, perhaps referral to the ED or ENT would be wiser.

Restraint

Immobilisation of the child is almost always necessary for instrumented nasal FB removal as the child is young and most likely to move during the procedure.¹⁹ However, for “mother’s kiss” positive pressure methods, restraint may not be necessary.²⁴ Physical restraint is usually more effective than human restraint. Complications of restraint include bruising, oedema, or vascular compromise if applied too tightly, and mistrust if not explained truthfully. Physical restraints most commonly used are the “Papoose” board and mummy technique. The mummy technique is more commonly used in GP settings and involves a folded bed-sheet or towel with a length from the axilla to heel of the child. One end of the sheet is placed under one side of the body and the sheet passed under the back and other side of the body and then over the front and tucked in under the first side. The sheet can then be secured with adhesive tape. An assistant is needed to keep the head still and the use of electronic devices, rewards, and parent’s cuddles may also help.²⁵

Techniques

The type of nasal FB varies widely and hence different techniques may be required for different FBs. Table 1 summarises the different techniques.

Positive pressure methods

Positive pressure methods work by forcing the FB out through the affected nostril by positive air pressure introduced through the mouth or opposite nostril. During this procedure, the epiglottis is closed and the pressures generated are low, comparable to sneezing at 60mmHg.²⁴ There is a theoretical risk of barotrauma to the ears and lungs, but there have been no such reported adverse events.

There are various positive pressure methods. The simplest form is asking the child to blow the affected nostril while keeping the opposite nostril occluded. A bag valve mask occluding the child’s mouth may be used to apply a puff of air through the mouth to force the FB out²⁶. A nasal occlusion device attached to an oxygen or air outlet via oxygen tubing placed in the unaffected nostril has been used before to force the FB out.^{27,28} The “mother’s kiss” or “parent’s kiss” with an adult blowing air into the mouth of the child has been shown to be effective in removing nasal FBs.^{1,24,29-35}

1. Nose blowing

Asking the child to take a deep breath and blow his or her nose through the affected nostril while occluding the opposite nostril is the simplest method. However, this technique may not be possible in young or anxious children. Also, there is a risk of aspirating the FB or forcing the FB posteriorly if the child

Table 1: Nasal FB Removal Techniques, Indications, Advantages and Disadvantages

Technique	FB type	Location	Degree of obstruction	Advantages	Disadvantages
Positive pressure	Any	Ant/Post	Complete	Non-traumatic. May be repeated. Sedation and restraint may not be necessary. Does not preclude use of other techniques.	Theoretical risk of barotrauma.
Washout	Friable	Ant/Post	Complete	For friable FBs.	Reflux of saline into Eustachian tubes. Need to sit upright.
Suction	Hard	Ant	Partial	Ease of use	Need solid seal. Posterior FB displacement. Trauma. Noise of suction may frighten child
Hooks	Hard	Ant	Partial	For small FBs.	Posterior FB displacement. Trauma
Forceps	Hard	Ant	Partial	Post FBs. Any type of FB.	Posterior FB displacement. Trauma
Catheter	Soft	Ant/Post	Partial	Post FBs. Any type of FB.	Posterior FB displacement. Trauma. Epistaxis
Glue	Hard	Ant	Complete/Partial	Ease of use. Non-traumatic.	Accidental adhesion to nasal mucosa
Magnet	Hard	Ant	Complete/Partial	Ease of use. Non-traumatic.	Only for metallic objects. Requires specialised equipment.

inhales through the nose rather than through the mouth.²⁰ It is therefore necessary to explain the procedure clearly and practice with the child before a real attempt is made.

2. Bag valve mask

Finkelstien (1996)²⁶ described a case report of 3 patients aged 18 months to 5 years old with nasal FBs successfully removed by this method. The patient was restrained in a papoose in a 30-degree Trendelenberg position to reduce the risk of aspiration, the unobstructed nostril occluded by an assistant and the bag valve mask placed tightly over the mouth and squeezed. Potential disadvantages include not getting a tight seal around the mouth due to different sizes of masks required for different sized children. The child would be anxious having an object placed over his or her mouth.

3. Nasal occlusion device attached to oxygen outlet

Nasal occlusion devices have been described which occlude the unaffected nostril and deliver air pressure via an oxygen tubing attached to a standard oxygen outlet. These include the “Beamsley Blaster” which provides unmodulated pressure,²⁷ and a new Positive-Pressure Device which provides modulated air pressure by de la O-Cavazos et al (2014).²⁸ These devices have been reported to be successful, with the “Beamsley Blaster” removing 9 out of 9 FBs, and de la O-Cavazos’ device 17 out of 18 FBs. However, a case report of subcutaneous emphysema was reported after use of the “Beamsley Blaster”.³⁶ These methods also require an oxygen supply with an outlet and therefore would be less suitable in a GP setting. Radiographs will identify button batteries and magnets which can cause tissue necrosis in a few hours. However, in the GP setting, the benefit of confirming the diagnosis must be weighed against the time required to obtain the radiographs.

4. “Mother’s kiss” or “parent’s kiss” method

The “mother’s kiss” method was first described in the 1960s but has yet to gain widespread acceptance. Many GPs are unaware of this technique. The technique consists of the mother, or any trusted adult, placing their mouth over the child’s open mouth, forming a firm seal as if to perform mouth-to-mouth resuscitation. A small child may be carried on the lap while a larger child may be supine. The unaffected nostril is closed by either the adult or an assistant. The adult then blows until he or she feels a firm resistance caused by the closure of the glottis, at which time the adult blows sharply to deliver a short puff of air into the child’s mouth, which flows into the nasopharynx and out through the affected nostril, pushing the FB out. Failure with the initial puff may require an adjustment in technique and repeated attempts may result in success as the FB is progressively dislodged with each puff. Purohit et al (2008) used a maximum of 5 attempts.²⁴ Children are usually not distressed as the procedure is carried out by the parent explaining that they are giving the child “a big kiss”.^{24,29,34,35} If there is significant mucosal oedema, decongestants may be used.³⁵ A gauze shaped as a “parachute” may be placed outside the obstructed nostril to catch the FB as it is expelled together with mucous before it hits the cheek of the parent, making cleanup easier and more agreeable.³⁷

A systematic review of case series and case reports by Cook, Burton and Glasziou (2012)¹ showed the “mother’s kiss”

Figure 2: The “Mother’s Kiss” Method



Drawing by Miss Charlotte Tan XC

technique to be effective in around 60 percent of the time (95% confidence interval [CI] 52%–67%). There was no difference in the success rate of removing the foreign body based on type of object (73% [95% CI 56%–86%] for smooth regular objects vs 77% [95% CI 62%–87%] for irregular objects). However, 2 studies stated that a fully obstructing object is more likely to be successfully expelled than an irregularly shaped or hollow object which allows air to pass through.^{32,35} A secondary outcome was a reduced rate with which general anaesthesia was used when the “mother’s kiss” technique was employed. There were no adverse events reported. The glottis is closed during the technique, so there is little risk of barotrauma to the lungs. Also, the pressures generated are low, comparable to sneezing (about 60mmHg). The authors’ conclusion is that the “mother’s kiss” technique appears to be a safe and effective technique for first-line treatment in the removal of a nasal FB. Most parents also preferred this method to restraining the child and using instrumentation.³⁴

A modified “mother’s kiss” method was described by Harcourt (2007)³³. A reason that the “mother’s kiss” method may fail is the inability to obtain a firm air-tight seal over the child’s mouth. A drinking straw is placed in the child’s mouth and the other end in the adult’s mouth with both closing their lips around the straw. The contralateral nostril is occluded and a sharp blow delivered by the parent through the straw, forcing the FB out. The advantage of this method is that it is natural to put a straw in the mouth and therefore less distressing to the child. However, there have been no studies to validate this method.

The advantages of the “mother’s kiss” method are numerous. It is simple to use, sedation is not required, special equipment is not needed, no instrumentation is required. It is non-traumatic, no adverse events were reported and it works for all kinds of FBs. It can be repeated multiple times, it reduces the need for general anaesthesia and subsequent removals of FB using instrumentation are more successful³⁰. The advantages of the

“mother’s kiss” method make it the ideal method for GPs to use as a first-line treatment for nasal FB removal.

Mechanical removal

Mechanical removal of nasal FBs includes the use of instruments (forceps, hooks, wire loops, wax curettes and probes), negative pressure suction, balloon catheters, tissue glue, magnets, and nasal wash. The selection of method is largely dependent on the shape, consistency and location of the FB. Restraint, analgesia, decongestion and sometimes sedation are usually required for mechanical removal to reduce the likelihood of trauma to the nasal passages and the risk of pushing the FB further back and possibly causing aspiration of the FB.

1. Direct instrumentation

This is the most common method (together with suction) of nasal FB removal in the ED and ENT departments.^{2,6} The FB must be removed under direct visualisation with a direct light. A nasal speculum in the cephalad-caudad orientation can assist in maximum visualisation.²⁰ Forceps are most useful for an irregularly shaped and soft FB (e.g. cotton, paper, raisin). Friable FBs may disintegrate if forceps are used, so other methods such as nasal washout or positive pressure may be more suitable. Randall (2009)²² recommends the Hartman’s rather than alligator forceps as their longer jaws with less obtuse angle makes it easier to avoid pushing the FB posteriorly. A wire loop,³⁸ right-angled hook or wax curette is more useful if the FB is hard, spherical and not completely obstructing (e.g. beads, button batteries).¹⁸ The hook is passed along the nasal floor or side of the nasal septum behind the FB then used to hook or snare the FB and pull it out anteriorly. Disadvantages of these methods include pushing the FB posteriorly with risk of aspiration, pain, trauma to the nasal passages, and epistaxis.

2. Suction

A suction catheter is attached to 100–140mmHg of suction and applied to the FB. Once adequate suction is achieved, the FB is pulled anteriorly out of the nose. This technique is useful for large, smooth and round objects which allow for a solid seal between the FB and the suction tip.²³ Complications include tissue damage and pushing the FB posteriorly. A suction machine is also required and the loud sound of the machine may be frightening to the child.

3. Balloon catheters

A small (5, 6 or 8F) Foley or Fogarty catheter is lubricated (2% lidocaine jelly) and inserted into the nose above and distal to the FB. The balloon is then inflated with 2–3ml of air or water. The catheter is then gently withdrawn and the FB is pulled out by the balloon.^{39,40} Local anaesthetic and decongestion are usually required. This method is useful for posterior FBs which are not amenable to instrumentation, and for FBs which are not visualised. Nandapalan and McIlwain (1994)³⁹ successfully removed 23 nasal FBs using a 6F Fogarty catheter with minor complications of epistaxis in 2 children. Fox (1980),⁴⁰ using a 4F Fogarty catheter, successfully removed 14 FBs, but had a complication of 1 FB pushed posteriorly and presumably swallowed. The Katz extractor is a single-use, small balloon catheter attached to a syringe. The small size of the catheter allows a greater chance of passing the catheter behind FBs. Once the balloon is placed behind the FB, the syringe is

depressed and the balloon inflated and the Katz extractor pulled out with the FB.²⁰

4. Cyanoacrylate tissue glue

A small amount of tissue glue is applied to a cut surface of a hollow plastic swab stick and applied on the surface of the FB for 30–60 seconds. Once adhesion is achieved, the FB is pulled anteriorly out of the nose. It works best for smooth, round and dry FBs.⁴¹ Complications include adhesion to the nasal mucosa.

5. Magnets

The use of magnets has been described in removing metallic FBs such as button batteries,⁴² metallic ball bearings, and magnetic toys.²⁰ However, there are currently no commercial devices available and a custom-made device has to be fashioned with a powerful magnet securely attached to a probe and handle.

6. Nasal Wash

A bulb syringe filled with 7ml of saline is advanced into the contralateral nostril until a seal is made. The syringe is then forcibly squeezed and the FB expelled out by the flow of saline back through the nasal passage which contains the FB.⁴³ This technique is similar to the one used to collect virology samples. The nasal wash technique is especially suitable for friable FBs. Complications include potential reflux of the saline and nasal contents into the Eustachian tubes and aspiration of saline and the foreign body. This technique is also not suitable for button batteries as the saline may hasten corrosion of the battery.

Other methods

Nebulised adrenaline has been used by Douglas (1996)⁴⁴ to aid FB removal by vasoconstriction reducing mucosal engorgement. However, there is a risk of aspiration if the FB moves posteriorly and he only recommends this where emergency facilities are immediately available. Leopard and Williams (2015)⁴⁵ describe an experiment where common sweets such as TicTac, Smarties, Skittles and Polo were placed in the author’s right nostril and the time taken for the sweets to dissolve measured. All sweets were completely dissolved in under 1 hour, suggesting that if the FB were confirmed to be a dissolvable sweet, a watch and wait strategy may be a reasonable choice.

Special situations — button batteries, magnets

Button batteries are increasingly used in toys, hearing aids, and electronic devices. Their smooth and shiny appearance is attractive to children and their small size make it easy for children to insert them into their nose, ears, or mouth. Inside the body, moisture results in corrosion of the battery casing, leaking its alkaline contents. Batteries can generate local current resulting in thermal burns and production of more alkaline materials leading to extensive damage to the surrounding mucosa. Pressure necrosis can also occur.^{46,47} In a Singapore study by Loh, Leong and Tan (2003),⁴⁶ erosion of nasal tissue was observed just 4 hours after insertion of the battery and after 7 hours septal perforation was found. The GP must recognise button battery FBs as an emergency and attempt removal if appropriate. If there is mucosal damage or the FB cannot be removed, then immediate referral to an ED and informing the ED of the urgency is required.

The increasing use of small powerful rare-earth magnets as toys

has resulted in increased magnet FBs. Silverman et al (2013),⁴⁸ found that out of 893 cases of magnet-related FBs, 21 percent were nasal FBs. These tended to occur in older children (mean age 10.1 years) as older children used these magnets to imitate nasal piercings. These magnets potentially cause pressure necrosis of the nasal septum in the nose and bowel if swallowed, and perforation may occur due to pressure necrosis from magnets attracting across loops of bowel²⁰.

Follow-up

After successful removal of the nasal FB, the nose must be checked again for any other FBs and complications of the procedure such as epistaxis and trauma to the nasal mucosa. If there are signs of infection, antibiotics may be required.¹⁷ If there is mucosal damage and septal perforation due to button batteries or magnets, referral to an ENT department will be required.⁴⁶

LIMITATIONS

Studies in the GP setting only consist of a few case reports and clinical guidelines. Most studies were done in the ED or ENT department. The type of patient presenting to the GP may be different, but it is likely that the GP will see less complicated FBs than the ED, with the most complicated cases seen by the ENT department. The methods described by the included papers may still be used by the GP save for a few which require specialised equipment or monitoring. Most of the techniques have only case reports or case series to substantiate their effectiveness. Only the “mother’s kiss” method had a systematic review of case reports and case series done. However, the nature of the disease does not lend itself to randomised controlled trials. The limitations of case reports and case series which are publication and reporting bias are also limitations of this review.

RECOMMENDATIONS

1. Examine both nostrils and ears for FBs. If a nasal FB is suspected, both nostrils and ears should be examined for other FBs.
2. Button battery FBs must be regarded as an emergency and removed as soon as possible.
3. Adequate visualisation is essential. A good stand lamp, ring lamp with magnifying glass, or a head lamp will provide a good light source and leave both hands free. A nasal speculum may help obtain better visualisation.
4. Restraint, analgesia, or decongestion may be necessary. The decision to use restraint, analgesia and/or decongestion has to be individualised to the child, type of FB, and technique used. An anxious and younger child, a deeper and more impacted FB, and use of mechanical methods and instrumentation are indications for the use of some or all of these.
5. The “mother’s kiss” method is ideal as a first-line treatment in the GP setting. There is a 60-percent chance of success, it works on any type of FB, is non-traumatic, has no adverse effects and does not preclude the use of other methods later.
6. Subsequent attempts depend on the expertise of the doctor and state of the child. Initial failure to remove the FB may

result in an anxious and uncooperative child. Further attempts may result in complications such as trauma to the nasal passages and aspiration of the FB with resultant general anaesthesia to remove the FB.

7. After removal of the nasal FB, the nose must be examined again for other FBs.

CONCLUSION

The GP will, on occasion, face a child with a nasal FB. There is a need to recognise button battery FBs as an emergency. Nasal FBs may give rise to serious complications if mismanaged. Inadequate preparation and wrong technique may result in an uncooperative child in which the only solution is removal of the FB under general anaesthesia. However, armed with the knowledge of proper preparation and the advantages and disadvantages of each technique, the GP will be able to manage nasal FBs safely and effectively. The “mother’s kiss” method is an underutilised method which is ideal for the GP setting. It can be used for any type of FB, the chance of success is 60 percent, it reduces the need for subsequent general anaesthesia, has no side effects, and does not preclude the use of other techniques later.

APPENDIX

Recommended list of equipment needed

- Topical anaesthetic
- Local vasoconstrictor
- Headlamp or good lighting
- Otoloscope
- Nasal speculum
- Alligator/Hartmanns forceps
- Blunt right angle probe/wax curette/Jobson Horne probe
- Wire loop
- Suction unit and catheter
- Bag valve mask
- Nasal syringe bulb
- Tissue glue
- Magnets

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REFERENCES

1. Cook S, Burton M, Glasziou P. Efficacy and safety of the “mother’s kiss” technique: a systematic review of case reports and case series. *CMAJ*. 2012;184:E904–E912.
2. Pecorari G, Tavormina P, Riva G, Landolfo V, Raimondo L, Garzaro M. Ear, nose and throat foreign bodies: the experience of the Pediatric Hospital of Turin. *J Paediatr Child Health*. 2014;50:978–84. doi:10.1111/jpc.12673. Epub 2014 Jun 19. PubMed PMID: 24945078.
3. Mangussi-Gomes J, Andrade JS, Matos RC, Kosugi EM, Penido Nde O. ENT foreign bodies: profile of the cases seen at a tertiary hospital emergency care unit. *Braz J Otorhinolaryngol*. 2013;79:699–703. doi:10.5935/1808-8694.20130128. English, Portuguese. PubMed PMID: 24474480.
4. Chiun KC, Tang IP, Tan TY, Jong DE. Review of ear, nose and throat foreign bodies in Sarawak General Hospital. A five year experience. *Med J Malaysia*. 2012;67:17–20. PubMed PMID: 2582543.

5. Chinski A, Foltran F, Gregori D, Passali D, Bellussi L. Nasal foreign bodies: the experience of the Buenos Aires pediatric otolaryngology clinic. *Pediatr Int*. 2011;53:90–3. doi: 0.1111/j.1442-200X.2010.03176.x. PubMed PMID: 20500553.
6. Ngo A, Ng KC, Sim TP. Otorhinolaryngeal foreign bodies in children presenting to the emergency department. *Singapore Med J*. 2005;46:172–8. PubMed PMID: 15800723.
7. Higo R, Matsumoto Y, Ichimura K, Kaga K. Foreign bodies in the aerodigestive tract in pediatric patients. *Auris Nasus Larynx*. 2003;30:397–401. PubMed PMID: 14656566.
8. François M, Hamrioui R, Narcy P. Nasal foreign bodies in children. *Eur Arch Otorhinolaryngol*. 1998;255:132–4. PubMed PMID: 9561859.
9. Kadish HA, Corneli HM. Removal of nasal foreign bodies in the pediatric population. *Am J Emerg Med*. 1997;15:54–6. PubMed PMID: 9002571.
10. Baker MD. Foreign bodies of the ears and nose in childhood. *Pediatr Emerg Care*. 1987;3:67–70. PubMed PMID: 3615236.
11. Figueiredo RR, Azevedo AA, Kós AO, Tomita S. Nasal foreign bodies: description of types and complications in 420 cases. *Braz J Otorhinolaryngol*. 2006;72:18–23. PubMed PMID: 6917548.
12. Hon SK, Izam TM, Koay CB, Razi A. A prospective evaluation of foreign bodies presenting to the Ear, Nose and Throat Clinic, Hospital Kuala Lumpur. *Med J Malaysia*. 2001;56:463–70. PubMed PMID: 12014767.
13. Tong MC, Ying SY, van Hasselt CA. Nasal foreign bodies in children. *Int J Pediatr Otorhinolaryngol*. 1996;35:207–11. PubMed PMID: 8762593.
14. Balbani AP, Sanchez TG, Butugan O, Kii MA, Angélico FV Jr, Ikino CM, et al. Ear and nose foreign body removal in children. *Int J Pediatr Otorhinolaryngol*. 1998;46:37–42. PubMed PMID: 10190703.
15. Özcan K, Özcan Ö, Muluk NB, Cingi C, Durukan K. Self-inserted foreign body and attention-deficit/hyperactivity disorder: evaluated by the Conners' Parent Rating Scales-Revised. *Int J Pediatr Otorhinolaryngol*. 2013;77:1992–7. doi: 10.1016/j.ijporl.2013.09.020. Epub 2013 Oct 1. PubMed PMID: 24139587.
16. Celenk F, Gokcen C, Celenk N, Baysal E, Durucu C, Kanlikama M. Association between the self-insertion of nasal and aural foreign bodies and attention-deficit/hyperactivity disorder in children. *Int J Pediatr Otorhinolaryngol*. 2013;77:1291–4. doi: 10.1016/j.ijporl.2013.05.012. Epub 2013 Jun 14. PubMed PMID: 23751280.
17. Kalan A, Tariq M. Foreign bodies in the nasal cavities: a comprehensive review of the aetiology, diagnostic pointers, and therapeutic measures. *Postgrad Med J*. 2000;76:484–7.
18. Davies PH, Bengier JR. Foreign bodies in the nose and ear: a review of techniques for removal in the emergency department. *J Accid Emerg Med*. 2000;17:91–4.
19. Brownstein DR, Hodge D 3rd. Foreign bodies of the eye, ear, and nose. *Pediatr Emerg Care*. 1988;4:215–8. PubMed PMID: 3186530.
20. Kiger JR, Brenkert TE, Losek JD. Nasal foreign body removal in children. *Pediatr Emerg Care*. 2008;24:785–92; quiz 790–2. doi: 10.1097/PEC.0b013e31818c2cb9. Review. PubMed MID: 19018225.
21. Heim SW, Maughan KL. Foreign bodies in the ear, nose, and throat. *Am Fam Physician*. 2007;76:1185–9.
22. Randall DA. How to remove those things children put up their nose. *J Fam Pract*. 2009;58:315–6. Review. PubMed PMID: 19508844.
23. Chan TC, Ufberg J, Harrigan RA, Vilke GM. Nasal foreign body removal. *J Emerg Med*. 2004;26:441–5.
24. Purohit N, Ray S, Wilson T, Chawla OP. The 'parent's kiss': an effective way to remove paediatric nasal foreign bodies. *Ann R Coll Surg Engl*. 2008 Jul;90(5):420–2. doi: 10.1308/003588408X300966. PubMed PMID: 18634742; PubMed Central PMCID: PMC2645753.
25. Craig SS, Cheek JA, Seith RW, West A. Removal of ENT foreign bodies in children. *Emerg Med Australas*. 2015;27:145–7. doi: 10.1111/1742-6723.12387. PubMed PMID: 25808621.
26. Finkelstein JA. Oral Ambu-bag insufflation to remove unilateral nasal foreign bodies. *Am J Emerg Med*. 1996;14:57–8. PubMed PMID: 8630159.
27. Navitsky RC, Beamsley A, McLaughlin S. Nasal positive-pressure technique for nasal foreign body removal in children. *Am J Emerg Med*. 2002;20:103–4. PubMed PMID: 11880873.
28. de la O-Cavazos M, Ríos-Solis J, Montes-Tapia F, Elizondo-Omaña R, Cantu-Moreno D, Treviño-Garza C, et al. A new positive-pressure device for nasal foreign body removal. *Pediatr Emerg Care*. 2014;30:94–6. doi: 10.1097/PEC.000000000000062. PubMed PMID: 24457495.
29. Handbook of Non Drug Intervention (HANDI) Project Team, Glasziou P, Bennett J, Greenberg P, Green S, Gunn J, Hoffman T, et al. Mother's kiss for nasal foreign bodies. *Aust Fam Physician*. 2013;42:288–9. PubMed PMID: 23781527.
30. Taylor C, Acheson J, Coats TJ. Nasal foreign bodies in children: kissing it better. *Emerg Med J*. 2010;27:712–3. doi: 10.1136/emj.2009.086587. Epub 2010 Jun 26. PubMed PMID: 20581404.
31. Koppuravuri MR. Towards evidence based emergency medicine: Best BETs from the Manchester Royal Infirmary. Bet 4. Parent's kiss to remove nasal foreign bodies in children. *Emerg Med J*. 2010;27:480–1. doi: 10.1136/emj.2010.097196. PubMed PMID: 20562151.
32. Alleemudder D, Sonsale A, Ali S. Positive pressure technique for removal of nasal foreign bodies. *Int J Pediatr Otorhinolaryngol*. 2007;71:1809–11. Epub 2007 Sep 24. PubMed PMID: 7889941.
33. Benjamin E, Harcourt J. The modified 'Parent's Kiss' for the removal of paediatric nasal foreign bodies. *Clin Otolaryngol*. 2007;32:120–1. PubMed PMID: 17403230.
34. Botma M, Bader R, Kubba H. 'A parent's kiss': evaluating an unusual method for removing nasal foreign bodies in children. *J Laryngol Otol*. 2000;114:598–600. PubMed PMID: 11027049.
35. Backlin SA. Positive-pressure technique for nasal foreign body removal in children. *Ann Emerg Med*. 1995;25:554–5. Review. PubMed PMID: 7710169.
36. Hills RW, Brown JC, Brownstein D. Barotrauma: a complication of positive pressure for nasal foreign body removal in a pediatric patient. *Ann Emerg Med*. 2008;52:623–5. doi: 10.1016/j.annemergmed.2008.08.025. Epub 2008 Oct 16. PubMed PMID: 18926596.
37. Pollack CV Jr. Another positive-pressure tip. *Ann Emerg Med*. 1995;26:658. PubMed PMID: 7486380.
38. Fundakowski CE, Moon S, Torres L. The snare technique: a novel atraumatic method for the removal of difficult nasal foreign bodies. *J Emerg Med*. 2013;44:104–6. doi: 10.1016/j.jemermed.2012.07.070. Epub 2012 Oct 6. PubMed PMID: 23047194.
39. Nandapalan V, McIlwain JC. Removal of nasal foreign bodies with a Fogarty biliary balloon catheter. *J Laryngol Otol*. 1994;108:758–60. PubMed PMID: 7964137.
40. Fox JR. Fogarty catheter removal of nasal foreign bodies. *Ann Emerg Med*. 1980;9:37–8. PubMed PMID: 7356191.
41. Hanson RM, Stephens M. Cyanoacrylate-assisted foreign body removal from the ear and nose in children. *J Paediatr Child Health*. 1994;30:77–8. PubMed PMID: 8148197.
42. Alletag MJ, Jacobson D, Santucci K, Riera A. Nasal disc battery removal: a novel technique using a magnetic device. *Pediatr Emerg Care*. 2014;30:488–90. doi: 10.1097/PEC.000000000000168. PubMed PMID: 24987992.
43. Lichenstein R, Giudice EL. Nasal wash technique for nasal foreign body removal. *Pediatr Emerg Care*. 2000;16:59–60. PubMed PMID: 10698149.
44. Douglas AR. Use of nebulised adrenaline to aid expulsion of intra-nasal foreign bodies in children. *J Laryngol Otol*. 1996;110:559–60. PubMed PMID: 8763378.
45. Leopard DC, Williams RG. Nasal Foreign Bodies: A Sweet Experiment. *Clin Otolaryngol*. 2015;40:420–1. doi: 10.1111/coa.12385. PubMed PMID: 25639608.
46. Loh WS, Leong JL, Tan HKK. Hazardous foreign bodies: complications and management of button batteries in nose. *Ann Otol Rhinol Laryngol*. 2003;112:379–83.
47. Thabet MH, Basha WM, Askar S. Button battery foreign bodies in children: hazards, management, and recommendations. *Biomed Res Int*. 2013;2013:846091. doi: 10.1155/2013/846091. Epub 2013 Jul 11. PubMed PMID: 23936851; PubMed Central PMCID: PMC3725977.

48.Silverman JA, Brown JC, Willis MM, Ebel BE. Increase in pediatric magnet-related foreign bodies requiring emergency care. *Ann Emerg Med.* 2013;62:604–8.e1. doi: 10.1016/j.annemergmed.2013.06.019. Epub 2013 Aug 6. PubMed PMID: 23927958.
