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Residual nasal foreign body – a case report of a 12-year-old boy

Pozostałość ciała obcego w nosie – opis przypadku 12-letniego chłopca

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Summary

Nasal foreign bodies (NFBs) stand for a common pediatric emergency, mostly affecting children under the age of five, with peak incidents around three years old due to the developmental curiosity and nasal exploration. Incidents often occur without adults' supervision and there is usually observed right-sided nasal dominance reflecting children's right-handedness.
Symptoms like unilateral nasal obstruction, unilateral malodorous discharge, or nosebleeds may lead to the diagnosis. However, they may also remain symptom-free for an indeterminate duration. Foreign bodies can be either inorganic objects, like beads and batteries or organic materials, like seeds. Button batteries pose an exceptional risk of severe complications, including tissue necrosis, what can further lead to septal perforation or even meningitis. Therefore, raising awareness among parents and caregivers about this issue is crucial in prevention of such dangerous course of events. Removal techniques include the 'parent's kiss', mechanical/instrumental extraction, or saline irrigation, with general anesthesia needed in 6-18% of cases.
In this article, we would like to present a case of a 12-year-old boy with a residual NFB of unknown duration, discovered incidentally during an evaluation for adenoid hypertrophy.

Słowa kluczowe:

ciało obce w nosie, resztkowe ciało obce w nosie, ciało obce metalowe, dzieci

Streszczenie

Ciała obce nosa stanowią częsty problem wśród nagłych przypadkach pediatrycznych. Najczęściej dotyczą dzieci poniżej 5. roku życia, ze szczytem rozpowszechnienia u trzylatków, co wynika z samego okresu rozwojowego, ciekawości i tendencji do eksploracji nosa. Zdarzenia te często zdarzają się w momencie bez bezpośredniego nadzoru dorosłych. Najczęstsza lokalizacja to prawa jama nosa, co odzwierciedla praworęczność dzieci.
Do objawów sugerujących diagnozę zaliczamy: jednostronną niedrożność nosa, cuchnącą wydzielinę z jednej dziurki nosa czy krwawienia. Jednakże mogą również pozostać bezobjawowe przez długi czas. Ciała obce mogą być zarówno nieorganiczne (np. koraliki i baterie), jak i pochodzenia organicznego (m.in. nasiona). Baterie guzikowe stanowią wyjątkowe ryzyko poważnych powikłań obejmujących martwicę tkanek, która z kolei może prowadzić do perforacji przegrody nosa czy nawet do zapalenia opon mózgowo-rdzeniowych. Stąd też zwiększanie świadomości na ten temat wśród rodziców i opiekunów jest kluczowe dla zapobiegania niebezpiecznym powikłaniom. Techniki usuwania obejmują „pocałunek rodzica", mechaniczne/instrumentalne usuwanie lub irygację solą fizjologiczną, przy czym znieczulenie ogólne jest konieczne w 6-18% przypadków.
W naszej pracy chciałybyśmy przedstawić przypadek 12-letniego chłopca z przetrwałym ciałem obcym nosa o nieznanym czasie zalegania, odkrytym przypadkowo podczas rutynowej oceny przerostu migdałka gardłowego.

Introduction

Nasal foreign bodies (NFBs) stand for a common issue in pediatric otorhinolaryngology, particularly among children aged 2-4 years old (1). The early years of a child's life are marked by curiosity and environmental exploration. As they begin to crawl and walk, children gain access to various objects, often leading to the insertion of items into the ears, nose, or throat. A lack of parental supervision and leaving small objects within reach significantly contribute to the high occurrence of foreign bodies in this population (2). NFBs account for about one third of all foreign bodies presenting at ENT consultations (3).

The types of inserted foreign bodies vary from inorganic objects, such as beads, stones, paper, toy's parts etc., to batteries and organic materials, like seeds, other food and flower (e.g. catkin) particles (2, 4, 5).

Symptoms of NFBs include nasal obstruction, irritation, and unilateral rhinorrhea. If not promptly addressed, complications, such as sinusitis, epistaxis (nosebleed), unilateral malodorous nasal discharge or even septal perforation can occur (4). In extreme, fortunately rare, cases, meningitis have been reported (3).

Early recognition and removal of NFBs are crucial to prevent potential complications. Most foreign bodies can be safely extracted in an outpatient setting; however, the need for anesthesia may arise depending on the object's location and the child's level of cooperation (3).

Case report

A 12-year-old boy who presented symptoms of adenoid hypertrophy was qualified for the nasal fiberoscopy to assess the degree of its overgrowth. During examination performed ambulatorily, an incidental finding of a foreign body in the left nasal cavity was made. The boy was referred to the otorhinolaryngological department at the local hospital for consultation, where an initial attempt to remove the foreign body was unsuccessful. Consequently, he was referred to the university department of pediatric otolaryngology in Warsaw for the surgical removal of the object.

Patient's medical history revealed no chronic illnesses or medications taken on regular basis. Neither the boy nor his parents recalled an incident involving the insertion of a foreign body into the nose. Therefore, it was impossible to determine the estimated residual time or the object's type. They denied typical symptoms of NFBs, apart from nasal obstruction.

During examination, the boy was in a good general condition. The otorhinolaryngological (ORL) examination revealed no abnormalities in the neck, oral cavity, throat, or ears. Both inferior nasal turbinates were swollen, with mucosal discharge observed in both nasal cavities. After suctioning the discharge, a gray-green foreign body was visualized in the lower nasal passage, near the posterior nares. The object appeared partially embedded and stuck in place.

A subsequent attempt to remove the FB using suction was unproductive, and the child was qualified for a surgical removal endoscopically assisted under general anesthesia.

A computed tomography (CT) scan of the head was performed to further evaluate the foreign body and to exclude potential risk of a tumor imitating a FB. It confirmed the presence of a metallic, T-shaped object, identified as a screw, located medially in the left, lower nasal passage near the inferior turbinate. The surrounding mucosa was thickened, and no bone destruction was noted in the adjacent structures. The CT scan also revealed mucosal thickening in the left maxillary sinus, in the left ethmoid air cells and in the right sphenoid sinus. A slightly enlarged adenoid was also observed (figs. 1a-c).

A surgical procedure was performed. A FB, encased in granulation tissue and covered with a whitish deposit, was identified (fig. 2). Multiple attempts to move the FB forward using various instruments under optical control were only partially successful (due to its partial mobilization). Because of bleeding, neurosurgical cotton wools and setons soaked in lidocaine with adrenaline were applied several times. The FB was significantly corroded, with a tendency to disintegrate and leave small particles behind. A substantial portion

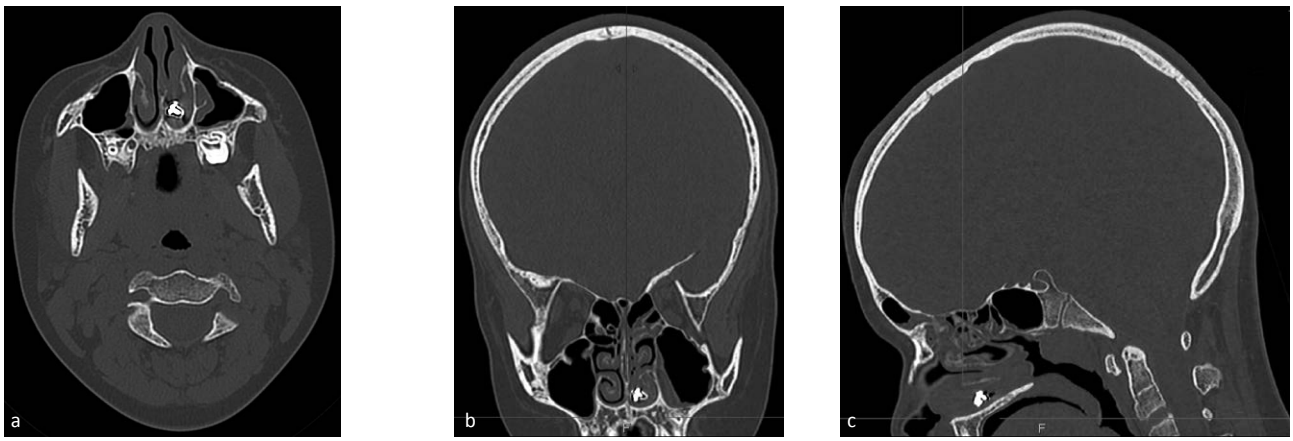

Fig. 1a-c. CT scan of the head in axial (a), coronal (b) and sagittal (c) projections: metallic, T-shaped object, identified as a screw, located medially in the lower nasal passage near the inferior turbinate. Own clinical material

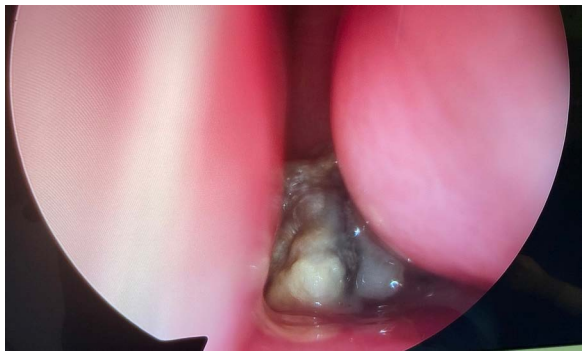

Fig. 2. Endoscopic view of the left nasal cavity during surgery (rigid endoscopy): a foreign body, encased in granulation tissue and covered with a whitish deposit

of the inflammatory granulation tissue was removed. Ultimately, a maxillary dilator and tongue retractor were used, and it was decided to push the FB towards the posterior nostrils in order to displace it into the nasopharynx, and then oropharynx. After such trial the FB seemed to be stuck somewhere in the nasopharynx, with unsuccessful identification on endoscopic examination or palpation. Endoscopic evaluation of the right nasal cavity was hindered by nasal septum deviation and local inflammatory process with associated bleeding. It was feared that it could have fallen into the larynx, so laryngoscopy was performed, but again unsuccessful. Eventually, an X-ray in two planes was performed to visualize the FB. It turned out to be trapped close to the posterior nostrils (figs. 3a, b).

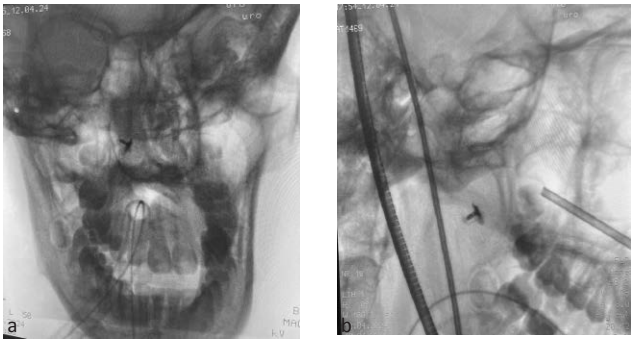

Fig. 3a, b. Intrasurgical X-ray images in two planes: coronal (a) and sagittal (b). FB trapped close to the posterior nostrils. Nose suction device on fig. 3b – aid in localization

Fig. 4. Removed NFB, identified as a severely corroded screw

Finally, the palate was elevated using 2 suction catheters entered through the anterior nostrils, exposing the FB surrounded by necrotic tissue. It was removed using bent sinus forceps. FB was identified as a severely corroded screw (fig. 4).

Severe inflammatory changes were visible in the mucosa of the left nasal cavity, attributed to the chronic inflammatory reaction to the FB and manipulations during the removal attempts. At the end of the procedure, an ointment containing detromycin was applied to the left nasal cavity.

Even after successful removal, neither patient, nor parents admitted to the incidence of the FB insertion, so the time of its retention remained unknown.

Postoperatively, the boy was treated with intravenous amoxicillin with clavulanic acid, along with dexamethasone and pain management medication. The combination of anti-inflammatory and antibiotic therapies was prescribed to promote healing and reduce the risk of infection. It was continued ambulatorily with oral and topical (ointment) antibiotic. He was discharged home in a good general condition on the day after procedure. Follow-up visits in an outpatient clinic showed appropriate healing, with no long-term complications.

Discussion

Nasal foreign bodies (NFBs) represent a common emergency, accounting for approximately one-third of all FB encountered in otorhinolaryngological cases (5). Age plays a critical role as a risk factor, with toddlers and young children experiencing the highest rates of incidence. This is largely due to their developmental stage, natural curiosity, and limited awareness of the potential consequences of their actions (5). Abou-Elfadl et al. showed in their study, with similar result to Kwon et al., that the mean age of children affected by NFB was under 5 years, with most incidents occurring around 3 years of age (6, 7). No significant gender differences were consistently observed, though some studies reported a slight male predominance (6-9). Children with developmental and psychological disorders may be more prone to NFBs (5). Perera et al. noted that children with ADHD are three times more prone to engage in nasal foreign body self-insertion (10).

Interestingly, only 38% of incidents occur under adult supervision (11); otherwise, the child may self-report the event, or parents may uncover it while washing or providing routine care. In some cases, a FB is identified incidentally during standard pediatric/otorhinolaryngological evaluation or when unexpected symptoms are encountered, such as unilateral malodorous rhinorrhea, nasal obstruction, nosebleeds, discomfort etc. (3). A residual NFB can lead to symptoms such as chronic sinusitis, nasal polyps, fungal infections, and improper growth of nasal septum leading to its deviation. This was exemplified by a patient in whom a glass foreign body was discovered 30 years after experiencing nasal trauma (12). Nevertheless, most children

with NFB remain asymptomatic (6). In our case, the patient presented with symptoms of nasal blockage that were attributed to potential adenoid hypertrophy and NFB was found incidentally during fiberoscopy.

Caregivers are said to be aware of the incident of FB insertion in 40% to 80% of cases, what led to frequent delays in seeking for medical attention. For instance, there are reports in which less than a half of caregivers sought medical care within 24 hours (3, 13).

The majority of reported in literature NFB were located in the anterior nasal cavity, particularly between the inferior nasal concha and the septum (1, 4, 14). Right-sided dominance was noted, likely due to the prevalence of right-handedness in children (1). The types of encountered FBs vary. In a study by Hira et al. inorganic objects, such as beads, paper, toy parts, and batteries accounted for 74.7% of cases, while organic materials, like nuts and fruit seeds comprised 25.3% (3). Beads, small toys, and food particles, such as seeds and nuts, are one of the most commonly retrieved objects (1, 4, 5).

Although rare, but an important type of NFB, due to its potential risk of severe complications, is a button battery. It can corrode and release caustic substances that damage the nasal mucous, leading to its necrosis and nasal septum perforation. Surprisingly, it may develop within hours of insertion, what necessitates urgent removal, sometimes under general anesthesia (1, 5). The importance of rapid identification and intervention to mitigate long-term sequelae is critical to emphasize in such cases (15).

Hopefully, the removal of NFBs is usually successful in most outpatient cases, with higher success rates in specialized otolaryngological clinics (95.56%), compared with general clinics (81.47%) (7). Techniques include positive-pressure methods, such as the "parent's kiss" where a parent exhales into the child's mouth to expel the object; mechanical extraction using forceps, hooks or other instruments; and irrigation with saline. Each method carries specific risks and benefits. For instance, the "parent's kiss" is effective in approximately 60% of cases and may improve visibility of the foreign body even when unsuccessful (16). General anesthesia is required in 6% to 18% of cases, primarily due to the lack of cooperativeness or complications during initial attempts of removal (17, 18). In presented case, due to consecutive attempts of unsuccessful removal, the patient was qualified for surgical, endoscopic-assisted removal under general anesthesia. Endoscopic assistance is rarely needed, reported in less than 2% of cases (19). Routine imaging is not obligatory in simple cases. X-rays or CT scans were indicated in only 2% to 8.5%, mainly for unwitnessed insertions or suspected metallic objects (5, 7, 20). According to published studies complications rates are minimal, with epistaxis being the most frequent (3, 6, 13). Post-removal care should include saline irrigation and topical antibiotics to promote healing and minimize secondary complications (5, 13).

Differential diagnosis for unilateral nasal symptoms involves anatomical abnormalities (e.g. deviated nasal septum, unilateral choanal atresia/stenosis, local inflammation (e.g. sinusitis, nasal polyps), and pathological masses (e.g. rhinoliths, neoplasms).

Conclusions

Nasal foreign bodies (NFBs) are a common pediatric emergency, particularly in children under the age of 5, with most cases involving curiosity-driven insertions. They are often asymptomatic or may be discovered incidentally during evaluation of unilateral malodorous rhinorrhea, nasal obstruction etc. Prompt recognition and appropriate management are crucial to prevent potential complications. Caregivers should seek medical attention without delay, especially in cases of suspected button battery insertion, which can cause rapid and severe tissue damage.

Removal techniques, such as the "mother's kiss" or mechanical extraction are generally successful, with specialized otolaryngology clinics demonstrating higher success rates. Post-removal care, including saline irrigation and topical antibiotics, supports healing and reduces secondary risks.

Imaging studies are rarely required, but may be necessary for unwitnessed events or suspected metallic objects.

Early diagnosis and timely intervention remain key to minimizing long-term complications and ensuring optimal outcomes.

Conflict of interest
Konflikt interesów

None
Brak konfliktu interesów

References/Piśmiennictwo:

1. Jung HJ, Kim SW, Lee JS et al.: Analysis of nasal foreign bodies in South Korea: Over 10-year experience. Diagnostics 2022; 12(8): 1810.
2. Figueiredo RR, Azevedo AA, de Ávila Kós AO, Tomita S: Nasal foreign bodies: description of types and complications in 420 cases. Braz J Otorhinolaryngol 2006; 72(1): 18-23.
3. Hira I, Tofar M, Bayram A et al.: Childhood nasal foreign bodies: Analysis of 1724 cases. Turk Arch Otorhinolaryngol 2019; 57(4): 187-190.
4. Yan S, Zeng N, Chen G et al.: Presentation and management of nasal foreign bodies in a Chinese metro area. Medicine 2021; 100(16): e25626.
5. Paladin I, Mizdrak I, Gabelica M et al.: Foreign bodies in pediatric otorhinolaryngology: A review. Pediatr Rep 2024; 16(2): 504-518.

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6. Abou-Elfadl M, Horra A, Abada R-L et al.: Nasal foreign bodies: Results of a study of 260 cases. Eur Ann Otorhinolaryngol Head Neck Dis 2015; 132(6): 343-346.
7. Kwon B, Choi Y, Kim S-K et al.: Ear, nose, and throat foreign bodies in children: A retrospective study. Children 2022; 9(1): 63.
8. Ngo A, Ng KC, Sim TP: Otolaryngological foreign bodies in children presenting to the emergency department. Singapore Med J 2005; 46(4): 172-178.
9. Cetinkaya EA, Arslan İB, Cukurova İ: Nasal foreign bodies in children: Types, locations, complications and removal. Int J Pediatr Otorhinolaryngol 2015; 79(11): 1881-1885.
10. Perera H, Fernando SM, Yasawardena ADKSN, Karunaratne I: Prevalence of attention deficit hyperactivity disorder (ADHD) in children presenting with self-inserted nasal and aural foreign bodies. Int J Pediatr Otorhinolaryngol 2009; 73(10): 1362-1364.
11. Gregori D, Salerni L, Scarinzi C et al.: Foreign bodies in the nose causing complications and requiring hospitalization in children 0-14 age: results from the European survey of foreign bodies injuries study. Rhinology 2008; 46(1): 28-33.
12. Wang D, Liu Q, Liu H, Wei J-S: Nasal congestion caused by long-term retention of a nasal foreign body near the orbit: A case report. World J Clin Cases 2024; 12(20): 4331-4336.
13. Regonne PEJ, Ndiaye M, Sy A et al.: Nasal foreign bodies in children in a pediatric hospital in Senegal: A three-year assessment. Eur Ann Otorhinolaryngol Head Neck Dis 2017; 134(5): 361-364.
14. Patil PM, Anand R: Nasal foreign bodies: a review of management strategies and a clinical scenario presentation. Craniomaxillofac Trauma Reconstr 2011; 4(1): 53-58.
15. Lou ZC: Analysis of nasal foreign bodies in 341 children, J Laryngol Otol 2019; 133(10): 908-912.
16. 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; 90(5): 420-422.
17. Yan S, Chen G, Zeng N, Gao C: Characteristics and treatment of pediatric nasal foreign bodies with button batteries-A retrospective analysis of 176 cases. PLoS One 2024; 19(8): e0309261.
18. Zavdy O, Vainer I, London N et al.: Intranasal foreign bodies: A 10-year analysis of a large cohort, in a tertiary medical center. Am J Emerg Med 2021; 50: 356-359.
19. Jungbauer WN Jr, Shih M, Nguyen SA, Clemmens CS: Comparison of pediatric nasal foreign body removal by care setting: A systematic review and meta-analysis. Int J Pediatr Otorhinolaryngol 2022; 158: 111162.
20. Oh H, Min HJ, Yang HS, Kim KS: Is radiologic evaluation necessary to find out foreign bodies in nasal cavity? J Craniofac Surg 2016; 27(1): e62-64.