



Nasal foreign bodies in children: Types, locations, complications and removal



Erdem Atalay Cetinkaya^{a,*}, İlker Burak Arslan^b, İbrahim Cukurova^b

^a Antalya Ataturk State Hospital, ENT Service, Antalya, Turkey

^b Izmir Tepecik Training – Research Hospital, ENT Service, Izmir, Turkey

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ABSTRACT

Objectives: To evaluate 1875 cases of nasal foreign body (NFB) removal with regard to type of foreign body (FB), location, complications, techniques for removal, age and gender, and to present the results of the evaluation.

Methods: Between 2006 and 2013, a total of 1875 NFBs were removed from 1870 children in ENT Services of Antalya Ataturk State Hospital and Izmir Tepecik Training – Research Hospital. A retrospective review was undertaken to evaluate the parameters related to the NFBs and their removal and the data were analyzed.

Results: The most frequent NFBs were hard spherical objects and the most common locations to lodge were on the right side just anterior to the middle turbinate. Prolonged exposure increases the complication rate, and button batteries are particularly ominous as they drift into the airway, never observed. We found a higher incidence in patients between ages 2 and 5 years. The distribution of NFBs was 52.9% in boys and 47.1% in girls.

Conclusions: NFBs are most commonly hard, round objects. Button batteries and penetrating FBs must be treated immediately. Complications from NFBs are rare but may be potentially serious or even life threatening.

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1. Introduction

NFBs are quite common among pediatric patients. The patients may present asymptotically after having been witnessed inserting the item. The presence of a FB in the nose may not be life-threatening but it may cause morbidity. Complications may arise from the FB itself or from attempted removal. The method of removal usually depends on the type of FB, its position, and cooperation of the patient [1]. Compared to previous studies, this study better evaluates and explains complications in children who have a tendency to NFBs and what type of NFBs they are inclined to, since we have more data over a longer-period. This over six year study of 1875 children under 12 helps to better categorize the types of NFBs.

2. Materials and methods

From January 2006 to July 2013, the records of all children presenting with NFBs at the ENT Services of Antalya Ataturk State

Hospital and Izmir Tepecik Training – Research Hospital were reviewed. In our study, NFBs are limited to children younger than 12 years. Excluding the intellectually disabled patients, the oldest children with NFB were 12 years old.

All patients with a history of FB entry into the nose were included. Those patients with no indicated history but who were found to have NFBs were also included in the review. Parameters studied were: age, gender, patient history, NFB type, location, complications, removal techniques, subsequent management. A retrospective chart review was conducted on these patients. FBs were categorized into three main classes and six subclasses based on shape and texture (Table 1); additionally, complications were categorized into NFB itself and any prior removal attempts. Location and removal techniques were listed. NFB identity and description were included in the database. Data were analyzed using the χ^2 test for categorical variables.

3. Results

Over the 8-year period, there were adequate data in the charts for analysis. Among 623,000 children seen at ENT Services of Antalya Ataturk State Hospital and Izmir Tepecik Training – Research Hospital during the 8-year period of study, 1870 (0.3%)

* Corresponding author at: Antalya Ataturk Devlet Hastanesi, KBB Klinigi, Antalya, Turkey. Tel.: +90 5334110305; fax: +90 2423454550.

E-mail address: drerdemcetinkaya@gmail.com (E.A. Cetinkaya).

Table 1

Types of nasal foreign body. Values given as no. of cases (%).

Shape	Stiffness			
	Inorganic 1186 (63.2%)		Organic 689 (36.8%)	
	Hard 754 (40.2%)	Soft 432 (23%)	Hard 527 (28.1%)	Soft 162 (8.7%)
Spherical 767 (40.9%)	Bead	Toy fragment	Dried vegetables (chickpea, corn)	Fresh vegetables, peas
	Part of toy 348 (18.6%)	68 (3.6%)	Fruit seeds (cherry, orange, tangerine, carob) Nuts (hazelnut, roasted chickpea) 278 (14.8%)	73 (3.9%)
Cylindrical 344 (18.4%)	Button	Part of toy	Dried vegetables (lentil, bean)	Fruit jelly
	Coin	Eraser	Fruit seeds (pumpkin, melon, watermelon seeds)	Flower parts
	Pill	Pen top	Candy fragment	Ladybirds
	Battery	46 (2.4%)	93 (5%)	17 (0.9%)
	Pencil cap 188 (10%)			
Irregular 764 (40.7%)	Pebble	Foam	Wood fragment	Leaf fragment
	Part of toy	Paper	Candy fragment	Cotton
	Matchstick	Part of toy	Nut fragments	72 (3.9%)
	Glass fragment	Pen lid	Rhinoliths	
	Metal wire	Silicone fragment	Teeth	
	Rhinoliths 218 (11.6%)	318 (17%)	156 (8.3%)	

children had 1875 NFBs. There were 989 (52.9%) boys and 881 (47.1%) girls. The youngest child treated was 19 months old, and the oldest was 11.5 years old (mean age, 3 years 4 months; median age, 3 years). Five boys required treatment for NFB in both the right and left nasal cavities. Our findings showed that there was a slight increase (not statistically significant) in the number of cases during the spring months.

Adult caretakers, such as a parent, babysitter, or teacher, saw the child place a foreign body in his/her nose, or the child reported the presence of the foreign body in 93% of cases. In the remaining 7% of cases, the diagnosis came as a complete surprise because the nasal foreign body was inserted unwitnessed and was diagnosed only when complications occurred. In total, 49 children (2.6%) were referred for evaluation of a foul odor and unilateral purulent nasal discharge over a long period and after several courses of antibiotics.

As to the types of foreign body, of the 1875 cases, in 33.4% (626 cases), the most common types of FB removed were hard spherical objects such as beads, bead like toy fragments, dried vegetables, fruit seeds, nuts, etc. The second most commonly found FBs in the nasal cavities were irregular soft objects (sponge, paper, leaf fragments, etc.) in 20.9% (390 cases) (Table 1). Of all objects, 1186 (63.2%) were inorganic, and 689 (36.7%) organic. Live nasal cavity foreign bodies were very rare, only seen in three patients in our series. After the data had been analyzed using the χ^2 test for categorical variables, it was significant that children are prone to insert hard objects if they were round, but soft ones if they had irregular shapes ($p < 0.001$).

We observed 1151 cases (61.4%) in the right nasal cavity, 719 cases (38.3%) in the left nasal cavity and five cases (0.3%) in both

cavities. The most common locations for NFBs to lodge were just anterior to the middle turbinate, anterior below the inferior turbinate and posterior below the inferior turbinate. The rarest location was when a transnasal foreign body had penetrated the anterior skull base through the cribriform plate and passed between the frontal lobes (Fig. 1).

Complications were seen in 225 cases (12%), epistaxis being the most common (3.5%), followed by foul odor nasal discharge and nasal vestibulitis (3.4%), and mucosal irritation (1.6%). Early complications (before 72 h) were due to the NFB itself (52%) or prior removal attempts (48%). After prolonged exposure, an increase in complications was seen due to the NFB itself (88%) (Table 2). Prolonged exposure significantly increased the complication rate due to the NFB itself ($p < 0.001$, Risk Estimate Value 3.85). Evidence of local trauma from earlier removal attempts may be present, with erythema, edema, bleeding, or a combination thereof. However, NFBs located in part of the airway both as a symptom or complication of nasal obstruction were seen very rarely (1%). In total, 11 foreign bodies were firmly impacted and unidentifiable (beads, nut fragments, sponge fragments in Fig. 2) in time becoming rhinoliths. Button batteries deserve particular attention due to the severity of the injuries they cause. We found 10 cases of necrosis of the nasal mucosa and two cases of septal perforation due to button batteries. Three patients in this study underwent surgical debridement. The most life-threatening complication was an intracranial penetrating injury associated with a cerebrospinal fluid fistula [2]. It is worth noting that, in our study, we did not see any occurrence of an aspirated nasal cavity-FB, thus becoming a potential bronchial FB.

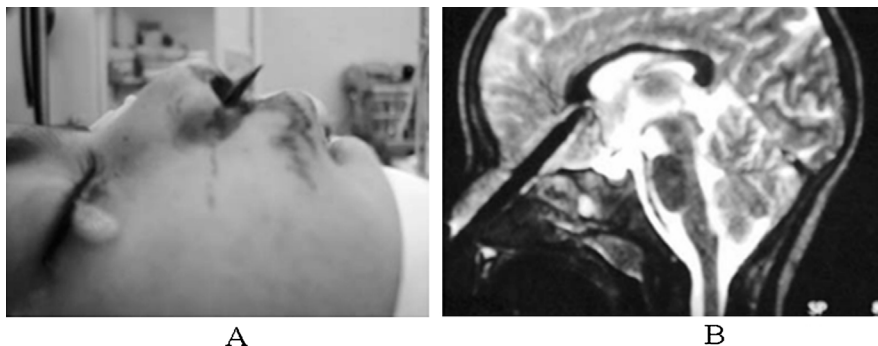


Fig. 1. (A) Foreign body (pencil) is seen protruding from the right nostril. (B) Sagittal magnetic resonance scan showing the position of the pencil. The tip is at the level of the anterior border of the 3rd ventricle.

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