

Displaced nasal dilator caused severe pain: Case report and literature review

Eva M. Jungmark, M.D., and Eva K. Ellegård, M.D., Ph.D.

ABSTRACT

Internal nasal dilators are widely used but have not been reported to cause severe symptoms. We describe a case in which a male adult had accidentally, during sleep, inhaled a nasal dilator into his right nasal cavity, and we review the relevant literature. A PubMed search was performed of nasal dilators, especially of the internal types, including "Nasaline Snooze" (ENTPro, Stockholm, Sweden). A foreign body in adults may be an inhaled nasal dilator. It may be overlooked on computed tomography scans, and thorough inspection of the nose is diagnostic.

(Allergy Rhinol 3:e98–e100, 2012; doi: 10.2500/ar.2012.3.0029)

Nasal dilators can improve nasal breathing and are used by snorers and athletes, as has been reviewed earlier.¹ There are external dilators to lift the alar cartilages from the outside, and there are different internal stent-like devices to lift them from the inside. For the 1980s, the "Nozovent" (Pharmacure, Gothenburg, Sweden) has been a dominant internal dilator, but others have followed: "The Improved Mechanical Therapeutic Nasal Dilator," (Breathe-With-EEZ Corporation of Brooklyn, NY)² the "Francis alar dilator,"³ the "Ognibene dilator,"⁴ "INDS,"⁵ the "Nasanita," (Munich, Germany)⁶ and the "Sinuscones," (Sanostec, Beverly Farms, MA)⁷ which have been modified, and are now called the "Max-Air Nose Cones."⁸ The internal dilator, "Nasaline Snooze" (ENTPro, Stockholm, Sweden), has no published studies in PubMed but has been commercially available for several years. It consists of two separate silicone cylinders connected with a flexible bar (Fig. 1).

CASE REPORT

A 47-year-old male truck driver was referred to our department because of his snoring problems. He underwent a sleep polygraphy, which did not show any signs of obstructive sleep apnea. When he met with us to discuss the results of the sleep registration, he mentioned that since 5 weeks, he had been severely troubled by right-sided sinusitis. This was a new experience for him, because he was healthy except for mild

asthma and chronic neck problems due to a whiplash trauma many years earlier.

Anterior rhinoscopy revealed purulent secretions and a swollen, red mucosa. After decongestion, a foreign body could be seen high up between the middle turbinate and the septum. It was deeply embedded in the mucosa, and steady traction with a pair of forceps was needed to extract the silicone dilator identified as Nasaline Snooze. It was an intact single cylinder. After removal there was brief mild bleeding, which stopped spontaneously. An ulcerous mucosa could be seen, but no granuloma formation.

At that moment the patient recalled having used a pair of the nasal dilators and that one morning one of them had been missing. That was the same morning he also woke up with a very severe pain on the right side of his nose. The headache was more intense than the one he sometimes had due to his whiplash, and it made him call at the emergency ward of the nearest hospital. There, his symptoms were interpreted as possibly caused by a subarachnoidal hemorrhage. However, a cerebral computed tomography (CT) ruled that out. The next day he was sent home; however, as his pains persisted despite adequate doses of paracetamol, codeine, and diclofenac, he consulted his general practitioner, who suspected an acute maxillary sinusitis. C-reactive protein was 37 (normal values of the laboratory, 0–4.9), and the radiologist confirmed that the right maxillary sinus was opaque on the CT. The nose was then inspected for the first time, without decongestion: "quite narrow, maybe more on the right side." We were consulted by the general practitioner on the phone and we advised that the diagnosis of maxillary sinusitis was reasonable. Treatment with doxycycline monohydrate at 0.1 gram once daily for 10 days gave temporary relief.

When the dilator had been removed, we made a closer examination of the CT. Knowing where to look, we saw indications of a foreign body, but it was located more anteriorly than the ostiomeatal complex, which is

From the Ear, Nose, and Throat Department, Halland's Hospital Kungälv, Sweden
The authors have no conflicts of interest to declare pertaining to this article
Address correspondence and reprint requests to Eva Ellegård, M.D., Ph.D., Department of Otorhinolaryngology, Halland's Hospital Kungälv, S-434 80 Kungälv, Sweden

E-mail address: eva.ellegard@regionhalland.se

Published online September 18, 2012

Copyright © 2012, OceanSide Publications, Inc., U.S.A.

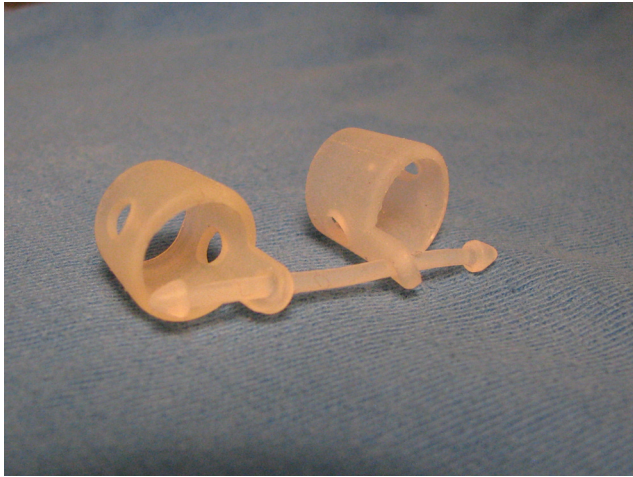


Figure 1. A pair of the internal nasal dilator Nasaline Snooze. According to the enclosed instruction, the parts should be connected with the bar.

the region mostly studied when sinusitis is suspected, so it was understandable that it was easy to overlook (Fig. 2).

The patient stated that he had not had only one part of the Nasaline Snooze in his nose during that night, but the two of them, connected with the bar. After the extraction of the dilator, his symptom quickly resolved.

DISCUSSION

In Pubmed, we found no articles on nasal dilators that have been displaced and caused trouble (up to November 16, 2011). However, it is often mentioned that they fall out during the night.¹

Unilateral pain and nasal secretion in a child are classic symptoms of a foreign body, which is not primarily suspected in adults. Sinusitis or, in case of long-standing symptoms, malignancy are more probable

causes in adults. In all cases, inspection of the decongested nose gives important information. It is the only certain way to find a foreign body, which is not always radiopaque, and the patient may not need to be subject to radiation. In our case, the CT rather confused the picture.

Nasal foreign bodies may also stay for a very long time, even to allow mineralization, without causing any pain. The most common symptoms in patients with rhinoliths have been shown to be purulent rhinorrhea and nasal obstruction.⁹ In our case, however, pain was the initial symptom, which persisted. It is possible, that the dilator was compressed as it was forced into the narrow nasal passage by intense inhalation and that its springiness exerted pressure on the mucosa, which caused immediate pain.

We were surprised to find a nasal foreign body in a mentally adequate adult, but because dilators often disappear during the night, he did not associate that with his simultaneously occurring problems. Except from rhinoliths, which may form around an endogenous or exogenous nidus (the latter may indeed have entered the nose when the person was a child), other case reports of unintentional nasal foreign bodies, not associated with penetrating trauma, in mentally healthy adults are extremely few. An unspecified object, which had been mistaken for a concha bullosa on CT scan, was removed from the nose of a Turkish woman.¹⁰ Studies on supernumerary teeth in the nasal cavity are scarce. Titan dental fixtures may be seen to penetrate the mucosa of the nasal floor, and in a patient of ours, the screw caused so much nasal irritation that it had to be removed. Other types of nasal foreign bodies are infestations by larvae, which are common on a worldwide basis, but are seldom encountered in urban patients.¹¹

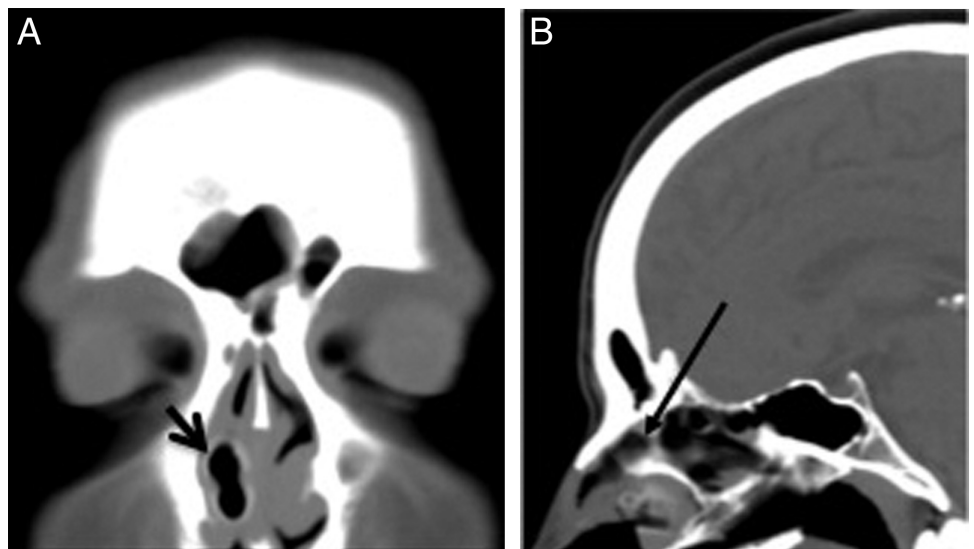


Figure 2. (A and B) Knowing where to look on the computed tomography (CT) scan of the brain, you find the foreign body anteriorly, superiorly in the right nasal cavity. The arrows indicate the suspicious areas on the CT.

Different types of internal nasal dilators may be more or less prone to inhalation, depending on the construction. The dilators may also break into smaller pieces, because of weakening by longtime use. Because nasal dilators are widely used, inhalation of intact or broken dilators will probably happen to other patients, who will hopefully be cured quicker than ours.

REFERENCES

1. Ellegård E. Mechanical nasal alar dilators. *Rhinology* 44:239–248, 2006.
2. Chaudhry MR, Akhtar S, and Dwalsaint F. Rhinomanometric evaluation of the improved mechanical therapeutic nasal dilator in patients with anterior nasal obstruction. *Rhinology* 34:32–34, 1996.
3. Shaida AM, and Kenyon GS. The nasal valves: Changes in anatomy and physiology in normal subjects. *Rhinology* 38:7–12, 2000.
4. Tasca I, and Compadretti GC. Study of nasal valvular stenosis by means of acoustic rhinometry using ognibene internal dilator. *Acta Otorhinolaryngol Ital* 24:193–198, 2004.
5. Brandt MG, Moore CC, and Doyle PC. Clinical evaluation of a novel internal nasal dilation stent for the improvement of nasal breathing. *Otolaryngol Head Neck Surg* 138:626–632, 2008.
6. Riechelmann H, Karow E, DiDio D, and Kral F. External nasal valve collapse—A case-control and interventional study employing a novel internal nasal dilator (Nasanita). *Rhinology* 48:183–188, 2010.
7. Barnes ML, and Lipworth BJ. Removing nasal valve obstruction in peak nasal inspiratory flow measurement. *Ann Allergy Asthma Immunol* 99:59–60, 2007.
8. Raudenbush B. Stenting the nasal airway for maximizing inspiratory airflow: Internal Max-Air Nose Cones versus external Breathe Right strip. *Am J Rhinol Allergy* 25:249–251, 2011.
9. Özdemir S, Akbas Y, Görgülü O, et al. Rhinolithiasis: Review of 21 cases. *Am J Rhinol Allergy* 24:136–139, 2010.
10. Uður MB, Evren C, Corakçi S, et al. Foreign body which resembles concha bulloza in the middle meatus: A case report. *Kulak Burun Bogaz Ihtis Derg* 19:307–310, 2009.
11. Einer H, and Ellegard E. Nasal myiasis by *Oestrus ovis* second stage larva in an immunocompetent man: Case report and literature review. *J Laryngol Otol* 125:745–746, 2011. □