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CLINICAL RECORD

Polyps originating from accessory middle turbinate and secondary middle turbinate

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Abstract

Objective: We report two extremely rare cases of polyps from unilateral accessory middle turbinates, one of which coexisted with a polyp from an inferomedially projecting, pneumatised, secondary middle turbinate.

Methods: Case report and literature review concerning accessory middle turbinate and secondary middle turbinate.

Results: Two patients presented with unilateral nasal obstruction. In both patients, nasal endoscopy revealed polypoid masses originating from the middle meatus. Paranasal sinus computed tomography and histopathological analysis confirmed the presence of polyps originating from an accessory middle turbinate and secondary middle turbinate, which were resected uneventfully via endoscopic sinus surgery.

Conclusion: To our knowledge, this is the first report in the world literature of polyps originating from a unilateral accessory middle turbinate and secondary middle turbinate. Pre-operative recognition of these rare anatomical variations is of particular importance in avoiding intra-operative complication.

Key words: Turbinates; Anatomy; Nasal Polyps

Introduction

Endoscopic sinus examination and paranasal space computed tomography (CT) enable the identification of nasal pathology and anomaly, most of which can be treated medically or surgically.

Turbinate anomalies resembling the middle turbinate comprise the bifid inferior turbinate, accessory middle turbinate and secondary middle turbinate. Bifid inferior turbinate has been defined as severe medial displacement and inferior rotation of the uncinate process.[1] Accessory middle turbinate has been described as a medially and anteriorly folded uncinate process.[2] Secondary middle turbinate is a rare anatomical variation originating from the lateral wall of the middle meatus and usually projecting superomedially without obstruction of the ostiomeatal unit.[2]

We present the first two published cases of a unilateral accessory middle turbinate with a polyp, which showed normal uncinate process development. One of these cases coexisted with a polyp from an inferomedially projecting, pneumatised, secondary middle turbinate.

Case reports

Case one

A 25-year-old woman presented at our clinic complaining of left nasal obstruction. The patient's history revealed that she had no other diseases and no previous nasal surgery.

Endoscopic examination revealed polypoid masses located medial to the inferior turbinate and anterior to the middle turbinate, together with a normal middle turbinate and uncinate process (Figure 1a).

Paranasal space CT scans revealed an inferomedially and anteriorly projecting bony lamella with attached polyp, originating from the uncinate process and attaching to the skull base superiorly (Figure 1b and 1c), together with a pneumatised bony structure with attached polyp projecting inferomedially from the left lateral wall of the ethmoidal bulla just beneath the basal lamella (Figure 1d).

A diagnosis of an accessory middle turbinate and secondary middle turbinate with polyps was established, based on the presence of the uncinate process.

The patient was treated successfully by endoscopic resection of the uncinate process, accessory middle turbinate and secondary middle turbinate.

Case two

A 39-year-old woman complaining of left nasal obstruction was referred to our clinic with a left nasal mass detected on magnetic resonance imaging brain scans. She denied any symptoms of chronic rhinitis or chronic sinusitis, and had no history of previous nasal surgery.

Upon endoscopic examination, a polypoid mass was detected in the left nasal cavity emerging anteriorly from the middle meatus.

Paranasal space CT scans showed that the left uncinate process was fully developed, and a polyp was arising from a thick, inferomedially projecting, bony bifurcation from the uncinate process (Figure 2).

In addition, both endoscopic examination and paranasal space CT scanning revealed an accessory middle turbinate with a polyp.

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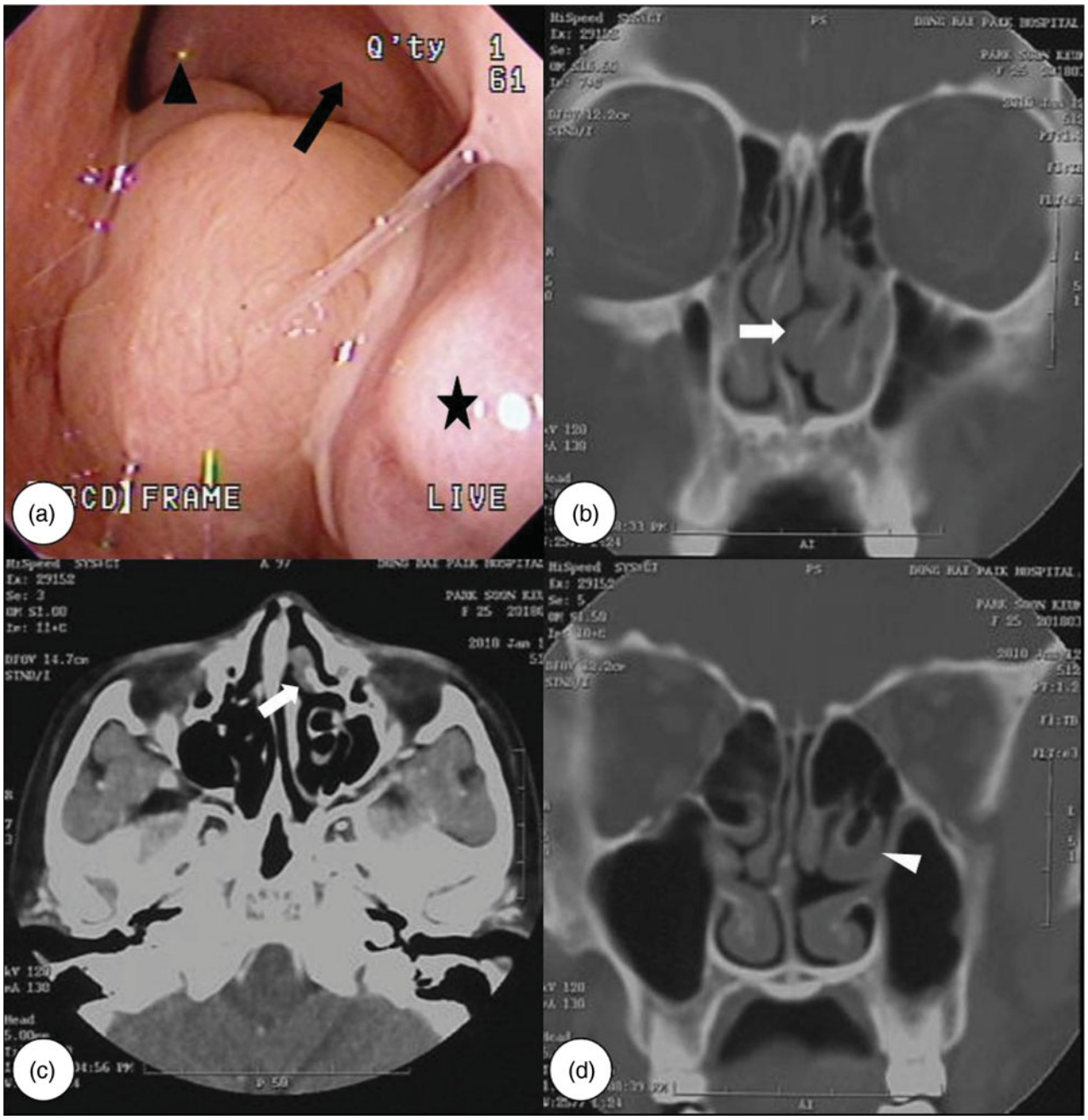

FIG. 1

(a) Endoscopic appearance of left nasal masses in case one: polypoid masses are located medial to the inferior turbinate (star), with a normal uncinate process (arrow) and middle turbinate (arrowhead). (b) Coronal and (c) axial paranasal space computed tomography (CT) scans show bifurcation of the left uncinate process with an obvious polyp (arrow). (d) Coronal paranasal space CT scan, using bone settings, shows a pneumatised left secondary middle turbinate with a polyp originating from the lateral wall of the ethmoidal bulla, just beneath the basal lamella, and projecting inferomedially (arrowhead).

The patient underwent endoscopic resection. Histopathological analysis confirmed the presence of a polyp.

Discussion

The uncinate process is normally a thin, sickle-shaped structure. Variations of uncinate process anatomy may obliterate the paranasal sinus drainage pathway but do not usually affect nasal airflow passage. If the uncinate process is bent medially and folded anteriorly to a greater than usual extent, it may give the impression that two middle turbinates are present, a condition referred to as accessory middle turbinate.[2] A bifid inferior turbinate could be confused with an accessory middle turbinate, but in fact a bifid inferior turbinate can be easily distinguished from an accessory middle turbinate on paranasal space CT scans because there is no uncinate process in a bifid inferior turbinate. It has been suggested that the upper part of the bifid inferior turbinate may represent a normal uncinate process,[3] or a severely medially displaced and inferiorly rotated uncinate process.[1]

In both the presented cases, the uncinate process showed normal development, reaching to the lamina papyracea or skull base, and the posterior free margin was markedly

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FIG. 2

(a) Axial and (b) coronal paranasal space computed tomography scans in case two, showing a polyp originating from a thick, inferomedially projecting, bony lamella from the left uncinate process (arrow).

bent medially and anteriorly displaced, corresponding to the definition of an accessory middle turbinate. Interestingly, polyps originated from the anteromedially folding, bony part in both cases.

A review of the literature indicated that such a combination of pathology together with accessory middle turbinate had not previously been reported.

The secondary middle turbinate is an extremely rare nasal cavity variant that arises from the lateral wall of the ethmoidal bulla just beneath the basal lamella. An incidence of 0.8–14.3 per cent has been reported.[4–8] The secondary middle turbinate has been described as projecting medially and then turning superiorly, with no ostiomeatal unit obstruction.[4–6] One case report described an inferomedially projecting, pneumatised, secondary middle turbinate.[9] In our first case, a left secondary middle turbinate showed pneumatisation and inferomedial projection, and a polyp originating from the secondary middle turbinate narrowed the ostiomeatal unit. A secondary middle turbinate might project inferomedially due to pneumatisation. There has been no previous report describing a polyp originating from a secondary middle turbinate, as in our first case.

- **Accessory middle turbinate is an excessively medially and anteriorly folded uncinate process**
- **Secondary middle turbinate originates from the lateral middle meatus wall**
- **The first report of polyps originating from a unilateral accessory middle turbinate and secondary middle turbinate is presented**

The complicated structure of the lateral nasal wall can be better understood by considering the embryological development of the turbinates. The inferior and middle turbinates have different embryological origins: the middle turbinate originates from the second ethmoturbinal, while the inferior turbinate develops from the maxilloturbinal. The uncinate process is regarded as the descending portion of the first ethmoturbinal.[8] A secondary middle turbinate might represent an additional turbinate originating embryologically from a section of the frontal ridge. (Normally, the frontal ridge evolves into the anterior ethmoidal cells.)[6]

Conclusion

A polyp extending from an accessory middle turbinate or secondary middle turbinate is an extremely rare anomaly. To our knowledge, this is the first report to present cases of polyps originating from an accessory middle turbinate and a secondary middle turbinate. Because the uncinate process is a landmark for endoscopic sinus surgery, pre-operative recognition of these anatomical variations is of particular importance in avoiding intra-operative complication.

Turbinate anomalies (including accessory middle turbinate and bifid inferior turbinate) are diagnosed endoscopically but their terminology can be confused. Therefore, we suggest that accessory middle turbinate and bifid inferior turbinate could be included amongst the recognised anatomical variations of the uncinate process.

References

1 Selcuk A, Ozcan KM, Ozcan I, Dere H. Bifid inferior turbinate: a case report. *J Laryngol Otol* 2009;**122**:647–9
2 Lin YL, Lin YS, Su WF, Wang CH. A secondary middle turbinate co-existing with an accessory middle turbinate: an unusual combination of two anatomic variations. *Acta Otolaryngol* 2006;**126**:429–31
3 Spear SA, Brietzke SE, Winslow C. Bilateral bifid inferior turbinates. *Ann Otol Rhinol Laryngol* 2003;**112**:195–6
4 Khanobthamchai K, Shankar L, Hawke M, Bingham B. The secondary middle turbinate. *J Otolaryngol* 1991;**20**:412–3
5 Aykut M, Gumusburun E, Muderris S, Adiguzel E. The secondary nasal middle concha. *Surg Radiol Anat* 1994;**16**:307–9
6 Aksungur EH, Bicakci K, Inal M, Akgul E, Binokay F, Aydogan B *et al*. CT demonstration of accessory nasal turbinates: secondary middle turbinate and bifid inferior turbinate. *Eur J Radiol* 1999;**31**:174–6
7 Ozcan KM, Selcuk A, Ozcan I, Akdogan O, Dere H. Anatomical variations of nasal turbinates. *J Craniofac Surg* 2008;**19**:1678–82

https://doi.org/10.1017/S0022215112000941 Published online by Cambridge University Press

8 McLaughlin RB Jr, Rehl RM, Lanza DC. Clinically relevant frontal sinus anatomy and physiology. *Otolaryngol Clin North Am* 2001;**34**:1–22
9 Apaydin FD, Duce MN, Yildiz A, Egilmez H, Ozer C, Talas UD. Inferomedially projecting pneumatised secondary middle turbinate. *Eur J Radiol* 2002;**43**:42–4

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