

A Case of a Retained Surgical Sponge after Endoscopic Sinus Surgery Depicted on CT Imaging¹

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A retained surgical sponge is an uncommon complication in endoscopic sinus surgery. A 53-year-old woman who underwent endoscopic sinus surgery two years prior presented with nasal stuffiness and posterior nasal dripping that had persisted for one year. On CT images, a soft-tissue mass with mixed high and low attenuation was noted in the posterior air cells of the right ethmoid sinus. CT imaging features of the surgical sponge granuloma are described.

Index words : Surgical sponges
Ethmoid sinusitis
Tomography, X-Ray computed

An intranasal endoscopic operation of the paranasal sinuses for chronic sinusitis is mainly performed to open the narrow bony points and to restore ventilation and internal drainage. Obstruction of the anterior ethmoid cells and the frontal recess by scar tissue or by a granulation polyp is a common cause of recurrent sinusitis after an ethmoid sinus operation (1). Mucocele formation, due to scarring in the frontal recess, may be also a cause of recurrent disease. Although rare, a retained surgical sponge can cause recurrent sinusitis after endoscopic sinus surgery (2). A case of a retained surgical sponge with granuloma with CT findings is presented.

Case Report

A 53-year-old woman presented with nasal stuffiness and posterior nasal dripping that had persisted for one

year. The patient had a history of endoscopic sinus surgery at another clinic that was performed two years prior. Endoscopic findings of the nasal cavity showed a polypoid change of the nasal mucosa and mucoid discharge. Evidence of previous endoscopic sinus surgery was noted with a middle meatal antrostomy on the right side. CT images obtained with and without the administration of contrast agent demonstrated the presence of a mildly enhanced soft-tissue mass in the posterior air cells of the right ethmoid sinus with an irregular and linear internal structure of mixed high and low attenuation (Fig. 1). The attenuation value of the lesion ranged from 60 to 70 HU on a precontrast scan and from 80 to 90 HU on a postcontrast scan. A moderate space-occupying effect was noted with displaced adjacent bony septa of the right ethmoid sinus. Combined sinusitis was noted on the right frontal and both ethmoid and maxillary sinuses on CT images. The preoperative diagnosis was a mucocele combined with sinusitis on both ethmoid and maxillary sinuses. During revised endoscopic sinus surgery, a retained surgical sponge and granulation tissue were removed from the posterior air cells of the right ethmoid sinus (Fig. 2).

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Discussion

Nasal packing after endoscopic sinus surgery is performed for bleeding control. Nasal packing with different materials such as cotton gauze (Furacin impregnated gauze) or absorbable hemostatic material or no packing method have been used for better clinical effects. Usually, the nasal packing is removed during the acute postoperative phase, that is, the first or second day after surgery. Though more commonly associated with other general surgeries, a retained surgical sponge ("gossypiboma") may be seen in patients that have undergone endoscopic sinus surgery, as a surgical sponge is frequently used in dissection and hemostasis. Only two cases af-

ter endoscopic sinus surgery have been reported including the present case (2).

Imaging features of a retained surgical sponge might be non-specific and might vary depending upon the time that has elapsed between surgery and the detection and state of the granulation tissue. Packing gauze used for endoscopic sinus surgery does not usually contain radiopaque marker materials and may be difficult to recognize on radiological studies (3, 4). A retained surgical sponge and granulation that manifested as an enhanced solid mass on CT images in our case showed the space-occupying effect of a gossypiboma, including apparent bone remodeling, which has been previously described by Gotwald *et al.* (2). The differential diagnosis of a mass in the ethmoid sinus includes a granulation



Fig. 1. CT imaging findings are presented for a 53-year-old woman with nasal stuffiness and posterior nasal dripping that had persisted for one year. Non-enhanced axial image (A) at the level of the ethmoid sinus shows a soft-tissue mass (arrows) with an irregular and linear internal structure of mixed high and low attenuation on the posterior air cells of the right ethmoid sinus. Contrast enhanced axial (B) and coronal (C) images reveal contrast enhancement on the internal structure of the mass (arrows).

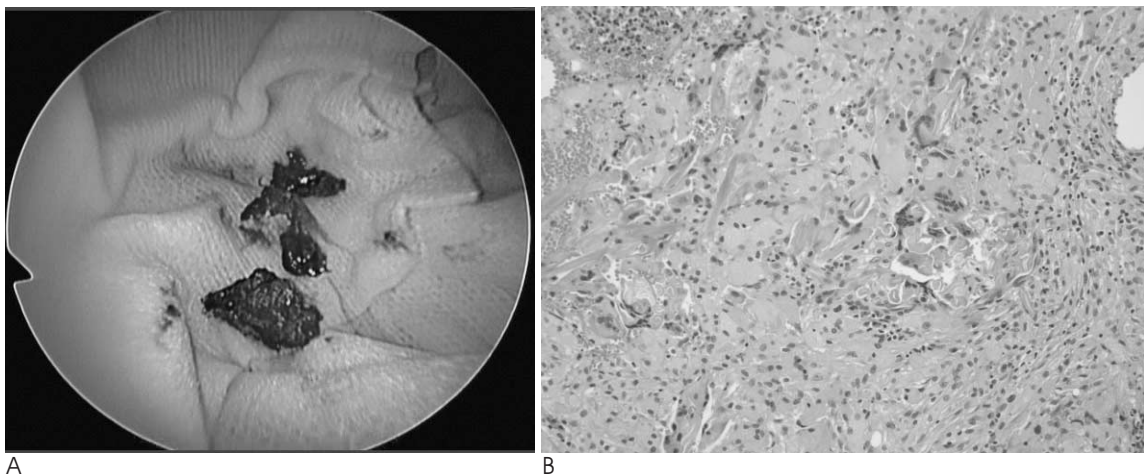


Fig. 2. A. A surgical specimen of the revised endoscopic sinus surgery performed on the right ethmoid sinus shows the surgical sponge and granulation tissue. B. A photomicrograph shows chronic inflammation and a foreign body reaction with macrophages engulfing foreign bodies (H & E staining, $\times 400$).

polyp, fungal sinusitis or sinus tumors. In contrast to soft-tissue masses such as polyps or tumors, the retained surgical sponge in our case showed an irregular and linear structure of a enhanced mass in the ethmoid sinus and the CT attenuation value was very high (60-70 HU) on a precontrast scan. A mucocele, a common complication following endoscopic sinus surgery, can be excluded in the differential diagnosis as a mucocele is usually seen as a cystic lesion of mucoid attenuation ranging from 10 to 20 HU with a peripheral smooth enhancing wall (5, 6). MRI may demonstrate the presence of a foreign body and the internal structure of a retained surgical sponge and granuloma with more detail as compared to CT imaging (7). However, MRI is not frequently used in sinonasal disease since bone is demonstrated only as a signal void and inflammatory disease may be over-diagnosed. MRI is not considered as an adequate substitute for CT imaging in sinonasal disease. Therefore, CT findings of a retained surgical sponge and granuloma are important and radiologists should be aware of the CT findings.

Although a retained surgical sponge is an infrequent complication of endoscopic sinus surgery, a radiologist should be aware of the possibility of a retained surgical sponge when a soft-tissue mass is encountered with the internal structure of mixed high and low attenuation on

CT imaging. With careful evaluation of CT findings, the presence of a surgical sponge and granuloma in the sinus might be detected by analysis of the morphology of a high attenuation region and enhancement pattern. Due to legal issues, the ability to detect a retained surgical sponge and to report the findings immediately is of importance (8).

References

1. Wigand ME, Iro H, Birkholz T, Bozzato A, Bumm K. *Endoscopic surgery of the paranasal sinuses and anterior skull base*. 2nd ed. Stuttgart: Thieme, 2008:8-12
2. Gotwald TF, Sprinzl GM, Fischer H, Rettenbacher T. Retained packing gauze in the ethmoidal sinuses after endonasal sinus surgery. *AJR Am J Roentgenol* 2001;177:1487-1489
3. Kapila BK, Lata J. A rare foreign body impaction: a case report. *Quintessence Int* 1998;29:583-584
4. de Lacey G. Retained surgical swabs: possible causes of errors in x-ray detection and an atlas to assist recognition. *Br J Radiol* 1978;51: 691-698
5. Lloyd G, Lund VJ, Savy L, Howard D. Optimum imaging for mucoceles. *J Laryngol Otol* 2000;114:233-236
6. Zinreich SJ. Functional anatomy and computed tomography imaging of the paranasal sinuses. *Am J Med Sci* 1998;316:2-12
7. Mathew JM, Rajshekhar V, Chandy MJ. MRI features of neurosurgical gossypiboma: report of two cases. *Neuroradiology* 1996;38: 468-469
8. Lund VJ, Wright A, Yiotakis J. Complications and medicolegal aspects of endoscopic sinus surgery. *J R Soc Med* 1997;90:422-428

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내시경부비동 수술 후의 스폰지 육아종의 전산화단층촬영소견 1예¹

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내시경부비동 수술 후에 남은 스폰지 육아종은 드문 합병증이다. 2년 전 내시경부비동 수술을 받은 과거력이 있는 53세의 여자 환자가 1년간 코막힘과 후비루를 주소로 내원하였다. 전산화단층촬영술에서 후 함기동 사골 부비동에 고음영과 저음영이 혼합된 병변이 사골동과 상악동 부비동염과 함께 관찰되었다. 저자는 스폰지 육아종의 전산화단층촬영술 소견을 보고 하고자 한다.