A 40-year-old man with a 20-year history of chronic nasal obstruction, bilateral mucopurulent rhinorrhea, and headache was referred to our hospital. He was treated with antibiotics and analgesics but his symptoms persisted. He reported no history of underlying systemic disease or trauma. He had undergone right sinus surgery at a private clinic 2 years before. He said that the left side bled during surgery and could not do it anymore.

Nasal endoscopy revealed severe obstruction of the left middle meatus and posterior nasal cavity owing to multiple polyps. In addition, the right middle meatus had an inflamed and swollen mucosa with a significant amount of pus. A computed tomography (CT) scan of the paranasal sinus showed soft tissue densities occupying both frontal sinuses, both anterior and posterior ethmoid sinuses, both maxillary sinuses, and the left sphenoid sinus. A severely osteitic uncinate process (UP) was observed (7.17-mm thick with a Hounsfield unit [HU] of 793; Figure 1).

Endoscopic sinus surgery was performed under general anesthesia. Before anesthesia was induced, 2 mL of 1% lidocaine with 1:100 000 epinephrine was injected transorally into the left-side greater palatine canal using a 25-gauge needle to minimize bleeding. Right middle meatal antrostomy, ethmoidectomy, and frontal sinusotomy were performed first, followed by left sinus surgery. Multiple polyps were removed using a microdebrider to find the middle turbinate and UP. After polyp removal, a hard structure could be discerned in the middle meatus. For the UP, curettes and upbiting Blakesley forceps were used to remove the osteitic bone, although with some difficulty. Therefore, Kerrison punch forceps were engaged inferiorly with a retrograde approach to cut the UP several times. After the UP was separated, the large surrounding polyp was removed using straight Blakesley forceps (Figure 2). Following this, middle meatal antrostomy, ethmoidectomy, and frontal and sphenoid sinusotomies were performed.

The postoperative course was uneventful. Antibiotics (augmentin) were prescribed for the 4 weeks following surgery, and nasal saline irrigation was recommended 5 or 6 times per day, depending on the presence of crusts. The patient’s condition improved markedly throughout the first 3 postoperative months. Nasal obstruction, mucopurulent rhinorrhea, and headache were all resolved. He returned to the clinic regularly throughout the 18-month postoperative period.

Chronic rhinosinusitis (CRS) is a chronic inflammatory disease that simultaneously invades the nasal cavity and sinus mucosae and bone tissue. Osteitis may be a cause of poor responses to drug or surgical treatments for CRS. It is used in the words hyperostosis, bone hyperplasia, bone remodeling, and osteoneogenesis.1

Figure 1. Patient’s severely osteitic left uncinate process (arrow); it was 7.17-mm thick and had a Hounsfield unit of 793.

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The mechanism of bony remodeling is not yet elucidated, but it is thought to be due to a dynamic interaction between osteoclasts and osteoblasts with regulation by the transforming growth factor superfamily.\(^2\)

Bone inflammation can involve the paranasal sinus border, but more commonly it invades ethmoid partitions because the ethmoid sinus is centrally located and consists of thin bones. If the bone thickness is 3 mm or more, it is diagnosed with osteitis; at 3 mm, it is classified as mild, 4 to 5 mm is moderate, and 5 mm or more is designated severe.\(^3\)

Hyperostosis bone density of CRS patients can be assessed using the HU from CT scans; this figure represents the attenuation coefficient provided by CT reconstruction. Air is given a HU of \(-1000\), water 0, and bone \(+300\) to \(+1000\).\(^4\) The ethmoid sinus bone is approximately \(+300\) HU without inflammation, but it exceeds \(+500\) when osteitic.

Uncinctomy is the first step performed in sinus surgery; the techniques and methods used depend on a clinician’s training and preferences. The UP can be removed via an anterograde or retrograde approach. The anterograde method uses a sickle knife or freer elevator. Retrograde uncinctomy uses small backbiting forceps. Uncinctomy can also be performed via other techniques, such as microdebriders, which depend on the surgeon’s expertise. In the majority of cases, removal of a nonosteitic UP is straightforward. However, severely osteitic bone can be encountered during primary sinus surgery. A suction irrigation drill is occasionally necessary to remove diseased bone.

In CRS patients, those with osteitis have worse surgery outcomes than do those without; more prolonged postoperative medication is also required.\(^5\) During surgery, the inflammatory bone should be removed entirely to eliminate the source of inflammation. We here report a case of CRS with a severely osteitic UP.

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