Case report

**Extraction of sphenchoanal polyp with functional endoscopic sinus surgery approach: A rare case and review article**

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**A R T I C L E   I N F O**

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**A B S T R A C T**

Background: Sphenchoanal polyp, a rare case of nasal polyp, is a benign mass that originates in the sphenoid sinus and develops into a choanal polyp.

Case presentation: A 36-year-old Indonesian male complained of irregular right nasal obstruction and runny nose for one year. Physical examination showed soft tissue mass in the right nasal cavity, cyst retention in the right maxillary sinus, right sphenoid sinus and cervical spondylosis. Diagnosis of sphenchoanal polyp was supported by nasoendoscopy and CT-Scan of paranasal sinuses. The patient got medical care and underwent functional endoscopic sinus surgery (FESS) and rinsed the nose with normal saline and topical steroids. Evaluation at six months after the surgery, the patient came without complaint and showed no sign of polyp mass or cyst recurrence, so the patient was declared to have a full recovery.

**Discussion:** FESS is proven effective for managing sphenchoanal polyp and minimizes complications post-surgery and repetition of the polyp.

**Conclusion:** FESS is recommended for management of sphenchoanal polyp in term of minimizing recurrence.

1. Introduction

Sphenchoanal polyps are a solitary benign mass derived from the sphenoid sinus, especially the anterior wall progressing into the naso-pharynx to become a choanal polyp. Sphenchoanal polyp is a rare polyp, with only 3–6 % of nasal polyps [1,2]. Polyp mass originates from the sphenoid sinus that expands through the sphenoid sinus ostium to the sphenethmoid recess and choanal [3,4]. The recommended management of sphenchoanal polyps is functional endoscopic sinus surgery (FESS) which can see the location of the polyp so that the polyp can be extracted entirely with a low recurrence rate [1,5,6]. We are interested in reporting an Indonesian male with a sphenchoanal polyp. We wrote based on SCARE 2020 guidelines [7].

2. Case presentation

A 36-year-old male complained of irregular right nasal obstruction and runny nose for one year. The symptoms worsened in the last month with yellowish nasal discharge, thick consistency and foul odour. Other complaints included a bad smell in the right nose and pain behind the right eye and top of the head. The patient denied the presence of pain in both cheeks, the base of the nose, the back of the head and the presence of mucus in the throat. The patient also denied a history of previous nasal pain, asthma, allergy, diabetes mellitus and hypertension.

The physical examination found a greyish mass with a slippery surface, a spongy impression of not easy bleeding and yellowish secretion on the middle meatus of the right nasal cavity. In the nasoendoscopy examination, a polyp-like mass in the right middle meatus spread to the choanal, while some parts of the polyp were inflamed (Fig. 1). The CT scan with contrast of the paranasal sinuses showed the impression of soft tissue mass in the right nasal cavity, cyst retention on the right maxillary sinus, right sphenoid sinus and cervical spondylosis (Fig. 2). The patient was diagnosed with a right unilateral sphenchoanal polyp.

The patient got medical care and underwent right functional endoscopic sinus surgery (FESS) [8]. Preparation for surgery included informed consent and antibiotic prophylaxis cefazolin 2 g intravenously. The patient was in supination position, reverse Trendelenberg 20°. The surgery location was disinfected with alcohol 70 %. The 0.05 % oxymetazoline was used to decongest the nasal cavity. At initial exploration, polyp mass was partially inflamed in the right nasal cavity extended to

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The polyp was extracted as clean as possible until the base in the lateroinferior right of the sphenoid sinus using cutting forceps. Middle turbinate was pushed to the lateroposterior side (Fig. 3a–f). The bone was exposed from the sphenoid sinus, which was the polyp origin (Fig. 3f). Bleeding was treated with suction, cautery, and surgical installation in the surgical area. The surgery lasted 2 h without complication, and the amount of bleeding was about 100 ml. The patient received treatment of physiological normal saline for nasal irrigation and oral antibiotics cefadroxil of 500 mg twice daily for seven days postoperatively.

Histopathology of the biopsy was not performed because it was microscopically similar to a polyp and the patient refused to biopsy because of his low income. Weekly postoperative care, and in the sixth month, nasoendoscopy results showed complete wound healing. Nasoendoscopy examination showed a wide enlarged sphenoid ostium, the mucosal epithelialization was well established, and no polyp recurrence (Fig. 4).

3. Discussion

The sphenchoanal polyps are often associated with precursors of the intramural cysts in the sphenoid sinus [1]. The sinus inflammation will obstruct the lymphatic vessels and the formation of intramural cysts. Then it develops into a polyp mass extending through the ostium to the choanal or nasopharynx. The presence of accessory ostium, the role of the urokinase enzyme, and arachidonic acid metabolism are also thought to cause sphenchoanal polyps [9]. Fungal infections of the sinuses, inverted papilloma, internal carotid artery aneurysm, pituitary adenoma and neoplasm both primary and metastatic can also stimulate the formation of polyp masses in the sphenoid sinus [1,10].

Clinical manifestations in patients with sphenchoanal polyps are unilateral nasal obstruction and chronic purulent discharge, with headache complaints, especially in the retro-orbital and vertex [1,11]. An intranasal polypoid mass may be obtained in anterior rhinoscopy examination, extending from the choanal to the nasopharynx [2,12]. Radiological examination is necessary to make the diagnosis. Computed tomography scans are superior to MRI because they are better in bone visualization and shorter examination times. On CT-scan, there is a description of soft tissue mass that fills the sphenoid sinus, extends through the ostium of the sphenoid sinus to the cavum nasi and may extend to the choanal and the nasopharynx in the posterior. The cyst mass in the right sphenoid sinus will push the ostium of the sphenoid sinus into the cavum nasi resulting in thrombosis from the lymphatic flow followed by sinus inflammation. Chronic inflammation will cause polyp mass [1,10].

The treatment used for sphenchoanal polyps is simple polypectomy, but a newer and superior technique used nowadays using FESS. The FESS is conducted by performing intranasal polyp excision and enlarging the sphenoid sinus ostium endoscopically [8,13]. The surgery is first initiated by resectioning the inferior turbinate to expand the visual field [1,14]. Endoscopic sinus surgery may increase the accuracy in removing the origin of the polyp due to its ability to provide detail and magnified surgical view especially intra sphenoid sinus. Preservation of healthy mucosa is also enhanced by this endoscopic surgery. Blakesley forceps and Heuwieser antrum grasping forceps were used in this procedure. The duration of FESS is also faster than simple polypectomy [15,16].

The lack of FESS procedure is only applicable in certain advanced healthcare facilities. This is due to limited facilities and human resources. In addition, there is a risk of injury to the structures around the surgery area, cavernous sinus and cranial nerve II, III, IV, V1, V2, VI and carotid arteries. This risk will increase in simple polypectomy [17].

Fig. 1. Nasoendoscopy of the right nasal cavity showed polyp mass in the middle meatus area and mainly fulfilled the posterior part of the nasal cavity and reached choana (arrow).

Fig. 2. (A–B) CT-scan of paranasal sinuses. A soft-tissue mass in the right nasal cavity expands to the choana (red circle).
Evaluation of post-FESS aims to evaluate or monitor the wound healing process, complications and signs of recurrence. Post surgical nasal irritation aims to facilitate a mucosal reepithelization and clean the nasal cavity from crust and secretion induced by the surgery [17,18].

Complications that can occur from FESS include infection, bleeding, sound changes, and injuries to the eyes and brain. Inflammation that can arise from the procedure is rhinitis or sinusitis, so appropriate antibiotic therapy is required to eliminate the causal microorganisms and prevent a recurrence. Analgesic therapy is given to reduce symptoms. Typically, minimal bleeding can occur post FESS. However, if bleeding occurs in large volumes and is accompanied by secretions, it must be evaluated and cauterized. The voice change is caused by the shift in sinus structure post FESS. Eye and brain injury complications are rare [13,15,16].

The functional endoscopic sinus surgery technique has a lower recurrence rate than simple polypectomy, 6 %. A simple polypectomy has a higher recurrence rate of 46 % [1,13,14]. The cause of recurrence of sphenochoanal polyps is an imperfect polyp extraction on intrasinus. This is due to the unidentified polyp origin on large polyp masses or intraoperative visualization limitations. The perfect identification of polyp origin and extraction is the basic of sphenochoanal polyps management. In addition, other factors can cause inflammation in the mucosa, such as lifestyle, environment, and smoking habits [13,18].

4. Conclusion

Sphenochoanal polyp, a rare case of nasal polyp, is a benign mass that originates in the sphenoid sinus and develops into a choanal polyp. The diagnosis of sphenochoanal polyp needs to be confirmed by a better biopsy. FEES is the recommended management for sphenchoanal polyps because it minimizes complications and recurrence of polyps.
Fig. 4. The ostium of the sphenoid sinus was wide open, mucosal epithelialization is well established, and there is no polyp recurrence.

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Consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Declaration of competing interest
Bunga Aline Ditha and Budi Sutikno declare that they have no conflict of interest.

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