



Case Report

Clinical Study of Tumors in the Nasal Septum

Tessei Kuruma^{1*}, Mariko Arimoto¹, Kunihiro Nishimura^{1,2}, Nobuyuki Katahira^{1,3}, Kinga Yo¹, Yuka Kawade¹, Akira Kondo¹, Yasue Uchida¹, Tetsuya Ogawa¹, Yasushi Fujimoto¹

¹Department of Otorhinolaryngology, Head and Neck Surgery, Aichi Medical University, Aichi, Japan

²Nishimura ENT Clinic, Aichi, Japan

³Department of Otorhinolaryngology, Head and Neck Surgery, Nagoya Ekisaikai Hospital, Aichi, Japan

***Corresponding author:** Tessei Kuruma, Department of Otorhinolaryngology, Head and Neck Surgery, Aichi Medical University, 1-1 Yazakokarimata, Nagakute-shi, Aichi 480-1195, Japan.

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Abstract

The purpose of this article was to investigate the clinical properties of and treatment outcomes for nasal septal tumors. Data from a total of 56 patients with nasal septal tumors who visited the Department of Otorhinolaryngology at Aichi Medical University between 2010 and 2020 were included in this study. Demographic characteristics, sex, age, chief complaints, size and localization of the nasal septal tumor, imaging findings, presence or absence of pre-treatment biopsy and intraoperative frozen sections, surgical method, histopathological results, treatment outcomes, and postoperative complications were reviewed. The 56 nasal septal tumors comprised 42 (75%) benign tumors and 14 (25%) malignant tumors. Pathological diagnoses for benign tumors were hemangioma (20 cases), inverted papilloma (9 cases), polyp (5 cases), fibroma (4 cases), pleomorphic adenocarcinoma (2 cases), and schwannoma (2 cases). Pathological diagnoses for malignant tumors were squamous cell carcinoma (6 cases), malignant melanoma (3 cases), hemangiopericytoma (2 cases), adenocarcinoma (1 case), adenoid cystic carcinoma (1 case), and rhabdomyosarcoma (1 case). The chief presenting complaint was epistaxis in 33 cases (58.9%). Forty benign tumors were resected by endoscopic surgery, with a recurrence rate of 0%. For malignant tumors, surgery was performed for 8 of the 13 cases treated, with endoscopic surgery in 6 cases (2 cases of hemangiopericytoma, 2 cases of squamous cell carcinoma, 1 case of adenoid cystic carcinoma, 1 case of malignant melanoma), external incision in 2 cases (1 case of adenocarcinoma, 1 case of squamous cell carcinoma), and anterior craniofacial surgery in 1 case of squamous cell carcinoma. Concurrent chemoradiotherapy was performed for 4 cases (3 cases of squamous cell carcinoma, 1 case of rhabdomyosarcoma), proton radiotherapy was performed for 2 cases of malignant melanoma, and CyberKnife radiotherapy was performed for 1 case of squamous cell carcinoma. For the 8 cases of malignant tumor that underwent surgery, 2 cases (25%) showed local recurrence. The 3-year survival rate was 66.6%. For both benign and malignant nasal septal tumors, endoscopic surgery can generally remove the tumor with a firm safety margin, and the tumor can be completely removed using intraoperative frozen section histopathology. For malignant tumor, depending on the case, treatment with a combination of external incision surgery and radiotherapy may increase the survival rate by controlling local lesions.

Keywords: Endoscopic Sinus Surgery; Intraoperative Frozen Section Histopathology; Nasal Septal Tumor

Introduction

Tumors of the nasal septum are rare, and malignant nasal

septal tumors represent only 2.7-8.4% of nasal and paranasal malignancies [1-5]. Differential diagnoses for nasal septal tumor range from benign tumors to malignant tumors [1-6]. The understanding of these pathologies is limited due to their rarity. The optimal diagnostic and therapeutic methods for nasal septal

tumors remain unclear, so the objective of this study was to review the clinical characteristics and treatment outcomes of nasal septal tumors based on 10 years of experience in our institution.

Subjects and Methods

The purpose of this article was to review the spectrum of nasal septal tumors. A total of 56 patients with nasal septal tumor who visited the Department of Otorhinolaryngology at Aichi Medical University between 2010 and 2020 were included in this study. This study population was subdivided into 42 patients (75%) with benign tumor and 14 (25%) with malignant tumor. Demographic characteristics, sex, age, chief complaints, size and localization of nasal septal tumor, imaging findings, presence or absence of pre-treatment biopsy and intraoperative frozen section, surgical methods, histopathological results, treatment outcomes, and postoperative complications were reviewed. Separately, we examined 20 cases of hemangioma, 9 cases of inverted papilloma and 6 cases of Squamous Cell Carcinoma (SCC).

The statistical analysis was as follows. Student’s t-test was used to compare sex and median age between patients with benign and malignant nasal septal tumors. The Mann-Whitney U test was used to compare the size and location (i.e., in cartilage or in bone) of nasal septal tumors between benign and malignant tumors. Values of p<0.05 were considered statistically significant.

Results

Among the 56 patients with nasal septal tumor, the breakdown was benign tumor in 42 (75%) and malignant tumor in 14 (25%). Of the 42 patients with benign nasal septal tumor, 22 were male and 20 were female. Mean age was 54.0±19.0 years (range, 18-94 years). Of the 14 patients with malignant nasal septal tumor, 7 were male and 7 were female. Mean age was 67.0±17.0 years (range, 33-90 years). No significant sex difference was evident between patients with benign and malignant tumors of the nasal septum (P=0.88). Mean age was slightly but significantly higher for patients with malignant tumors than for patients with benign tumors (p = 0.028). According to histopathological results for nasal septal tumor, the 42 benign tumors comprised 20 cases of hemangioma (19 cases of lobular capillary hemangioma, 1 case of angioleiomyoma), 9 cases of inverted papilloma, 5 cases of nasal polyp, 4 cases of fibroma, 2

cases of neurinoma, 2 cases of pleomorphic adenoma, and 2 cases of adenoma. The 14 malignant tumors comprised 6 cases of SCC, 3 cases of malignant melanoma, 2 cases of hemangiopericytoma, and 1 case each of sarcoma, adenocarcinoma, and adenoid cystic carcinoma. The most common presenting complaint of patients with nasal septal tumor was epistaxis, appearing in 22 cases (52.3%) of benign tumor and 11 cases (72.9%) of malignant tumor. In particular, for malignant tumors, epistaxis accounted for 80% of initial symptoms. Among the benign tumors, patients showed nasal congestion and self-awareness of a nasal cavity mass in 8 cases each. In malignant tumors, there were two cases in which the patient noticed cervical lymphadenopathy rather than nasal symptoms (Table 1).

	Benign tumors(n=42)	Malignant tumors(n=14)
Epistaxis	22(52.3%)	11(78.5%)
Nasal congestion	8(19%)	1(7.1%)
Awareness of tumor	8(19%)	0
Detection by image	3(7%)	0
Other symptom		
Facial pain	0	1(7.1%)
Neck lymphadenopathy	0	2(14.2%)
Abnormal sense in the throat	1(2.3%)	0

Table 1: Chief complaints of benign and malignant tumors of the nasal septum.

Mean size of the nasal septal tumor was 16.3 ± 11.3 mm (range, 6.0-60.0 mm) for benign tumors and 34.7 ± 18.1 mm (range, 20.0-82.0 mm; P<0.001) for malignant tumors. When the location of the nasal septal tumor was divided into nasal septal cartilage or bone, benign tumors occurred from cartilage in 22 cases and bone in 20 cases, while malignant tumors occurred in cartilage in 1 case and bone in 13 cases (P<0.001). Thus, compared to benign tumors, malignant tumors were significantly larger and more likely to be situated in bone (Table 2).

	Benign tumors	Malignant tumors	P value Mann-Whitney U test
Size	16.3±11.3	34.7±18.1	0.0000251
Location(cartilage/bone)	22 / 20	1 / 13	0.000034
Significance was defined as values of p<0.05			

Table 2: Size and location of benign and malignant tumors of the nasal septum.

We examined the presence or absence of biopsy (before treatment and as intraoperative frozen sections) and the use of surgery. Surgery was performed for 40 cases of benign tumor, excluding 2 cases in which the patient declined surgery, and for 8 of 14 cases of malignant tumor. Biopsy was performed before treatment in 26 of the 42 cases (61.9%) of benign tumor and in 13 of the 14 cases of malignant tumor (92.8%). Twelve of the 16 benign tumors that were not biopsied before treatment were removed for biopsy on an outpatient basis. The one case of malignant tumor that was not biopsied before treatment was a hemangiopericytoma. Intraoperative frozen section histopathology was performed for 8 of 40 patients (20%) who underwent surgery for benign tumor and for 7 of 8 patients (87.5%) who underwent surgery for malignant tumor, to confirm that the tissue around the resected tumor was negative for tumor cells. Pre-treatment biopsy and postoperative final diagnosis matched in 92.3% of benign cases and 100% of malignant cases (Table 3).

	Benign tumors(n=42)	Malignant tumors(n=14)
Pretreatment biopsy	26(61.9%)	13(92.8%)
Intraoperative frozen section	8(19%)	7(87.5%)
Diagnostic rate	92.3%	100%
Surgery	40(95.2%)	8(57.1%)

Table 3: Number of preoperative biopsies and rapid pathologies for benign and malignant tumors of the nasal septum. Concordance rate between preoperative and intraoperative pathological examinations and the final histological diagnosis.

Endoscopic surgery was performed for 40 of the 42 benign tumors (12 cases on an outpatient basis, 28 cases in operating rooms). Benign tumors of the nasal septum were removed with inclusion of the perichondrium of the nasal septum, with a safety margin of about 2-5 mm. In both cases of pleomorphic adenoma, the tumor including cartilage was removed. Furthermore, in the both cases of schwannoma, the tumor was removed including the septal cartilage and contralateral mucosa. Mean duration of postoperative follow-up was 18.7 ± 30.9 months (range, 1-144 months). The recurrence rate was 0% (Table 4).

Benign tumors(n=42)		Malignant tumors(n=14)	
Surgery	40	surgery	13
Endoscopic surgery in outpatient	12	Endoscopic surgery	6
		External incision	2
Endoscopic surgery in operation room	28	Craniofacial surgery	1
		CCRT*	4
No treatment	2	Proton therapy	2
		Cyber-knife	1
		No treatment	1
Follow -up(months)	18.7±30.9 (1-144)	Follow -up(months)	58.2±41.6(10-132)
Recurrence	0	Recurrence	2/8(25%)
		3year over survival rate	66.6%
*CCRT: concurrent chemoradiation therapy			

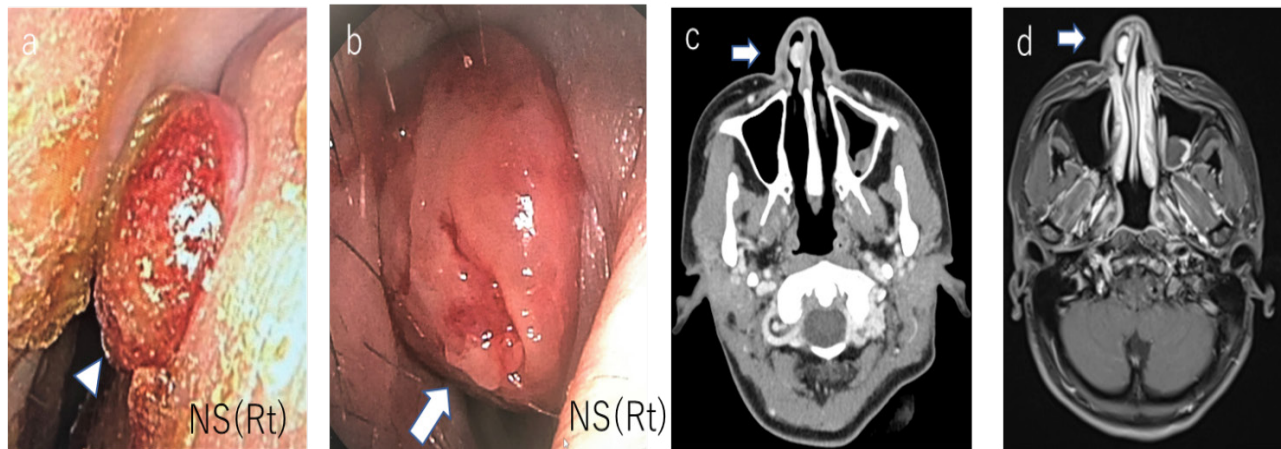
Table 4: Breakdown of treatment for benign and malignant tumors of the nasal septum, postoperative follow-up period, postoperative recurrence rate and survival rate.

For malignant tumors, surgery was performed for 8 of the 13 cases treated. Malignant tumors of the nasal septum were removed with a safety margin of about 5-10mm. In 3 cases of SCC and 1 case of adenocarcinoma, the tumor was resected together with the septal cartilage and bone and contralateral nasal septal mucosa. In 2 cases of hemangiopericytoma, 1 case of adenoid cystic carcinoma, and 1 case of malignant melanoma, the tumor was resected, leaving the contralateral nasal septal mucosa. The breakdown of surgeries was

endoscopic surgery in 6 cases (2 cases of hemangiopericytoma, 2 cases of SCC, 1 case of adenoid cystic carcinoma, 1 case of malignant melanoma), external incision in 2 cases (1 case of adenocarcinoma, 1 case of SCC), and anterior craniofacial surgery in 1 case of SCC. Concurrent chemoradiation therapy was performed in 4 cases (3 cases of SCC, 1 case of rhabdomyosarcoma), proton radiotherapy was performed in 2 cases with malignant melanoma, and CyberKnife radiotherapy was performed in 1 case of SCC. Mean duration of postoperative follow-up was 58.2 ± 41.6 months (range, 10-132 months). Two of the 8 cases (25%) that underwent surgery showed local recurrence, comprising SCC recurring 1 year after CyberKnife radiotherapy and malignant melanoma recurring locally 1 year after endoscopic surgery. The 3-year survival rate was 66.6% (Table 4). Preoperative vascular embolization was performed for 1 case of hemangiopericytoma and 1 case of SCC to reduce intraoperative bleeding. In addition, regardless of the benign or malignant nature of the tumor, the sphenopalatine artery and anterior and posterior ethmoidal arteries, which are considered to represent the feeding vessels for tumors in this location, were endoscopically ablated and resected before tumor removal. Postoperative radiotherapy was not a routine treatment for malignant tumors; the policy was to perform postoperative radiotherapy only when the surgical margin of the tumor appears microscopically positive.

Hemangioma

Hemangioma accounted for the largest group of benign tumors in this study, with 20 cases (47.6%). Epistaxis was the main complaint in 19 of the 20 patients with hemangioma, and in 19 cases the tumor occurred in the cartilage at the front of the nasal septum. Such lesions were easily diagnosed as a red or purple, apparently vascular mass under endoscopic view. In terms of imaging, 7 of 20 hemangioma cases underwent Magnetic Resonance Imaging (MRI) and were visualized as signal-hypointense on T1-weighted imaging and signal-hyperintense on T2-weighted imaging. Contrast-enhanced Computed Tomography (CT) was performed for 8 of the 20 hemangioma cases, and the tumor appeared deeply stained in 5 of these. Treatment was performed endoscopically in all cases. Five cases were resected on an outpatient basis for biopsy, and the other 15 cases were resected in the operating room. Among these 15 cases, 5 cases had undergone outpatient biopsy before surgery, but 2 of the 5 cases showed relatively high bleeding. In one case, hemangioma was suspected and surgery was scheduled 3 weeks after the initial diagnosis, but since the tumor was observed to grow rapidly, contrast-enhanced CT and MRI were performed on the day of surgery. No infiltration was evident, and contrast-enhanced imaging showed strong tumor staining (Figure 1). This was a typical hemangioma finding. At the time of surgery, intraoperative frozen analysis confirmed the tumor as hemangioma with negative surgical margins.



a. Nasal endoscopic findings at the first visit: A red tumor is found in front of the right septum (arrow head). b. Nasal endoscopic findings 3 weeks after the first visit: The tumor had grown rapidly (arrow). c. Contrast-enhanced CT image. d. Contrast-enhanced T1-weighted MRI image: Both images show a tumor shadow with a strong contrast effect in front of the right nasal septum. No evidence of infiltration of the tumor into the nasal septum was found (arrow). NS: nasal septum, Rt: right.

Figure 1: A Hemangioma case that increased rapidly in a short period of time.

Papilloma

Inverted papilloma was the second most common benign tumor, identified in 9 cases (21.4%). All cases underwent endoscopic surgery. At the time of surgery, intraoperative frozen section histopathology was used to determine the extent of excision for tissue surrounding the tumor, and the tumor was removed together with the perichondrium of the nasal septum. The rough bone surface was drilled with a diamond bar so that no tumor remained on the remaining nasal septal cartilage or bone surface.

SCC

We identified 6 cases of SCC, representing the most common malignant tumor of the nasal septum (Table 5). Among these 6 cases of SCC, surgery was performed in 3 cases and Concurrent Chemoradiation Therapy (CCRT) was performed in 3 cases. In Case 2, surgery under an external incision approach was performed for local recurrence after CyberKnife treatment, but since local recurrence and cervical lymph node metastasis were found again, endoscopic surgery and neck dissection were performed. No subsequent recurrence of the lesion was seen. In Case 4, the tumor disappeared on CCRT, but external rhinoplasty using ilium was performed for the saddle nose that resulted from surgery. In Case 6, an immune checkpoint inhibitor was being used for cervical metastasis and distant metastasis to the lung that occurred after CCRT. None of the SCC cases died of the underlying disease.

patient	stage	Therapy	Follow-up	Local recurrence	Metastasis	Note
1	4b	CCRT*	7years	-	-	
2	3	Cyber-knife →external incision	7years	+	Cervical lymph node metastasis	ESS** and neck dissection for recurrent lesions
3	2	ESS	6years	-	-	ESS**after vascular embolization
4	4a	CCRT*	11years	-	-	External rhinoplasty for saddle nose
5	4a	Craniofacial surgery	12years	-	-	Postoperative chemotherapy
6	4c	CCRT*	10months	-	Multiple lung and cervical metastasis	Adjuvant chemotherapy
*CCRT: concurrent chemoradiation therapy; **ESS: endoscopic sinus surgery						

Table 5: Stage, treatment, and post-treatment course of 6 cases of squamous cell carcinoma of the nasal septum.

Discussion

The histological types of nasal septal tumor are very diverse [1-6]. However, very few case series have reported specifically on nasal septum tumors, including benign and malignant tumors. To the best of our knowledge, over the last 20 years only Lee et al. reported a series (of 34 cases) including benign and malignant tumors of the nasal septum [7]. We therefore compared the clinical findings of our case with those of Lee et al., with separate results for benign and malignant tumors (Tables 6, 7).

Cases of Lee, et al. [7]
Variables Benign tumors(n=22) Malignant tumors(n=14) Age (years) 10-72(36.0±16.4) 21-75(57.0±10.0) Sex (M: F) 16:6 8:4 Chief complaint Nasal congestion (36.4%) Nasal congestion(58.3%) Duration of complaint 0.3-240(34.2±70.7) 0.5-6(2.0±1.5) (months) Location (cartilage: bone) 15:7 4:8 Tumor size(cm) 0.5-3(1.7±0.8) 0.5-4.2(2.5±1.1)
Our cases
Variables Benign tumors(n=42) Malignant tumors(n=14) Age (years) 18-94(54.0±19.0) 33-90(67.0±16.0) Sex (M: F) 22:20 7:7 Chief complaint Epistaxis (52.3%) Epistaxis(78.5%) Duration of complaint 0.1-60(5.3±11.4) 0.5-24(4.95±6.9) (months) Location (cartilage: bone) 22;20 1:13 Tumor size(cm) 0.5-6(1.6±0.8) 1.0-8.2(3.5±1.8)

M: male, F: female

Table 6: Clinical findings of patients with benign or malignant septal tumors (comparison between our report and that of LEE et al.) (Part 1).

Cases of Lee, et al. [7]
Variables Benign tumors(n=22) Malignant tumors(n=14) Surgery Endoscopic excision (100%) Endoscopic excision(83.3%) Histopathologic result (most common) Inverted papilloma(31.8%) Malignant melanoma(16.7%) Plasmacytoma(16.7%) Metastatic carcinoma(16.7%) Follow-up (months) 14-153(93.1±36.3) 5-126(53.9±39.4) Recurrence 0(0%) 4(33.3%)
Our cases
Variables Benign tumors(n=22) Malignant tumors(n=14) Surgery Endoscopic excision(100%) Endoscopic excision(35.7%) Histopathologic result(most common) Hemangioma(47.6%) Squamous cell carcinoma(42.8%) Follow-up (months) 1-144(18.7±30.9) 10-134(58.2±41.6) Recurrence 0(0%) 3(38.5%)

Table 7: Clinical findings of patients with benign or malignant septal tumors (comparison between our report and that of LEE et al.) (Part 2).

In terms of the ratio of benign tumors to malignant tumors, our series included a slightly greater proportion of benign tumors (75%) than that of Lee et al. (64.7%). Furthermore, in our series, the mean age of patients with both benign and malignant tumors tended to be slightly higher than that reported by Lee, et al. While Lee, et al. found a predominance of male cases, our cases showed no sex difference. The chief complaint was nasal congestion in the cases described by Lee et al., whereas epistaxis was the most common in our cases. In our cases, malignant tumors involved bone more often than the cases of Lee et al. In both our study and that by Lee, et al, tumor size was significantly greater in malignant disease than in benign disease (Table 6). In both series of benign tumors, endoscopic surgery was performed for almost all cases. However, we performed endoscopic surgery for malignant surgery less often than Lee et al. Histopathological examination revealed hemangioma as the most common benign tumor and SCC as the most common malignant tumors in our series, whereas Lee et al. identified inverted papilloma as the most common benign tumor, and no clear predominance was seen for malignant tumors. The recurrence rate was 0% for benign tumors and about 30-40% for malignant tumors in both series (Table 7).

In the case of nasal septal tumors, symptoms such as epistaxis and nasal congestion are likely. In our cases, 90% of benign tumors and 80% of malignant tumors resulted in symptoms. Symptoms such as epistaxis and nasal congestion are very common, but can lead patients to visit an otolaryngology clinic. The mean interval from symptom onset to visiting the hospital was 5.2 ± 10.6 months, and unlike the report by Ho et al. [2], nasal septal tumors tended to be detected relatively early.

For nasal septal tumors, those occurring anteriorly are relatively easy to confirm with a nasal speculum, but those occurring posteriorly are more difficult to confirm. The endoscope is therefore a very useful tool. Confirming the location and base of the tumor by endoscopic observation is important, using a suction elevator as appropriate. At that time, firmly contracting the mucous membrane with adrenaline gauze is necessary. Checking the surface properties and vascularity of the tumor is likewise important. In particular, hemangiomas and papillomas are easily distinguished on endoscopic observation.

Imaging modalities such as CT and MRI are useful for evaluating the extent and characteristics of the tumor [6,8,9]. Anatomically, the nasal septum has the skull base above, the palate below, the external nose anteriorly, and the sphenoid sinus posteriorly. CT reveals infiltration of these bone tissues around the nasal septum. Contrast-enhanced MRI can confirm the tumor progression into surrounding tissues. In particular, infiltration into the skull base can be clarified as extending either into the dura mater alone, or into the brain parenchyma. In addition, any progression to the external nose or cavernous sinus can be confirmed. By

combining endoscopic findings and imaging, the surgeon needs to construct a three-dimensional image of the tumor and make a surgical plan. Whether the tumor can be removed surgically can also be determined. If surgery is possible, whether the tumor can be removed endoscopically alone or in combination with lateral rhinotomy, midfacial degloving, or craniotomy can be determined. Furthermore, if a contrast effect is strongly confirmed on imaging and malignant vascular tumors such as hemangiopericytoma and hemangiosarcoma are suspected, we perform angiography and consider the need for preoperative treatments such as vascular embolization before surgery. Tissue biopsy is indispensable for definitive diagnosis [1,2,6]. The preoperative pathological results for our cases were >90%, consistent with the postoperative pathological diagnosis. For nasal septal tumors, biopsy leads to a near-certain diagnosis. Unlike sinus tumors, nasal septal tumors are less likely to develop secondary nasal polyps, so only the tumor can be biopsied. By cauterizing while suctioning blood at the time of biopsy, even a tumor with abundant blood flow can be biopsied within a short period.

Hemangioma

In this study, hemangiomas were the most common, representing 20 of the 42 cases of benign tumor. Epistaxis was the main complaint for 19 of the 20 patients with hemangioma, and this tumor occurred in 19 cases in the cartilage at the front of the nasal septum. Hemangioma was easily identified as a red or purple, apparently vascular mass under endoscopy. A red or purple mass in front of the nasal septum together with complaints of epistaxis may thus be diagnosed as hemangioma without biopsy. Hemangioma is a benign neoplasm of vascular phenotype, divided primarily into capillary and cavernous types, depending on the dominant microscopic vessel size [10]. Microscopically, capillary hemangiomas show simple growth and dilation of capillaries, including purulent granulomas [11,12]. Capillary hemangioma is the most common subtype and is mostly seen on the anterior septal cartilage, whereas cavernous hemangioma is more likely to be found on the lateral wall of the nasal cavity [13]. Likewise in our cases, 19 of 20 cases were capillary hemangiomas, including pyogenic granulomas. Hemangiomas located in front of the nasal septum are operated on as a biopsy. Sheppard et al. stated that leaving perichondrium of the nasal septum at the site of the hemangioma can allow recurrence, so firm removal of perichondrium is important [14]. However, in our cases, even if the tumor was relatively large in the anterior part of the nasal septum, the perichondrium remained and the tumor was excised, and the surface of the perichondrium was scraped with an inferior turbinate blade (Medtronic, Minneapolis, MI, USA). No tumor recurrences were observed after such ablation. In terms of wound healing, epithelialization of the wound seems to progress better if a thin perichondrium is left. However, hemangiomas present

in the bone need to be resected with the perichondrium and periosteum firmly attached. For suspected malignant tumors such as hemangiopericytoma and hemangiosarcoma, the nasal septal cartilage and bone must also be resected. Capillary hemangiomas are rapidly growing tumors [15], but malignancy should also be considered for rapidly growing vascular tumors. Distinguishing between benign and malignant tumors by intraoperative frozen section analysis and determination of the extent of tumor resection is advisable.

Even large hemangiomas in front of the nasal septum are often localized at the base of the tumor. When the assistant lifts the nasal wing with a hook or performs suction for bleeding during surgery, the field of view in front of the nasal cavity becomes clearer, and the tumor can be resected firmly from the tumor base with a sufficient boundary area. Pretreatment biopsy is essential for tumors posterior to the nasal septum. However, for blood flow-rich masses located posterior or superior to the septum, we hesitate to perform biopsy before treatment. Being well prepared for bleeding is important, and contrast-enhanced CT or MRI should be used to determine whether the tumor has abundant blood flow. Depending on the case, preoperative vascular embolization can also be considered.

Papilloma

Inverted papillomas are primarily lesions of the lateral nasal wall, but similar papillomas have been observed on the nasal septum. Inverted papillomas of the septum and lateral wall appear histologically similar [16]. Papilloma of the nasal septum is easily removed with a safe margin from the base. Recurrence rates may be reduced by determining the cutting area around the tumor from intraoperative frozen section histopathology during surgery for papilloma of the nasal sinuses [17]. No recurrences were observed among the 9 cases of inverted papilloma at our hospital in cases where the surgical tumor was removed after determining the excision range from intraoperative frozen section analysis.

Malignant Tumors

Primary carcinoma of the nasal septum mucosa is very rare [13]. Nasal septum malignancies constitute 9% of sinonasal malignancies [2]. SCC is the most common malignant tumor in this region, but tumors of every histological type can occur. The more common epithelial tumors include adenocarcinoma, olfactory neuroblastoma, malignant melanoma, and adenoid cystic carcinoma. Sarcomas (such as chondrosarcoma and rhabdomyosarcoma) and hemoproliferative tumors (such as lymphoma) may also occur. The American Joint Committee on Cancer has not recognized separate staging systems for nasal septum malignancies, which are classified as a subunit under sinonasal malignancies [18,19].

The treatment for nasal septal malignant tumors is extensive surgical excision, and postoperative radiotherapy is required if the surgical margin for the tumor appears microscopically positive or if the tumor is widespread [20]. In the early stages of disease, radiotherapy alone is not recommended because tumor recurrence can be seen with such an approach. Cartilage defects due to radiotherapy may also cause cosmetic problems [21]. However, surgical treatment can be used alone in the early stages [22]. Nasal septum carcinoma shows a better prognosis when diagnosed earlier. The nasal septum is easily accessible, so surgical resection is the preferred modality of treatment. Advances in endoscopic resection are providing excellent results for tumor control and cosmetic outcomes, as in other early-stage diseases [2]. The surgical approach is modified for the individual tumor according to the size and location of the nasal septum tumor. In endoscopic surgery, if the field of view deteriorates with bleeding, etc., or if the expectation is that the surgical field will not be able to be expanded well due to the narrow working space in the nasal cavity, an auxiliary external incision will be required. For anterior nasal septal tumors, lateral rhinotomy is the preferred surgical approach, whereas a sublabial incision with Denker's approach is considered more appropriate for posterior nasal tumors [3].

Nyquist et al. examined the extent of infiltration of malignant tumors in a unilateral septum into the contralateral septal mucosa and the risk of local recurrence when preserving the contralateral septal mucosa. Forty cases of malignant tumors in a unilateral nasal septum were examined, about one-quarter (23%) of which showed microscopic contralateral infiltration. Furthermore, the recurrence rate is reportedly high in cases infiltrating the nasal septal cartilage. This suggests need for intraoperative frozen section histopathology when leaving the contralateral septal mucosa during surgery [23]. In the present study, among the 8 cases of malignant tumor of the nasal septum for which surgery was performed, the contralateral nasal septal mucosa was left intact for 1 case of adenoid cystic carcinoma, 1 case of malignant melanoma, and 2 cases of hemangiopericytoma. In those cases, the presence or absence of infiltration into the nasal septum on preoperative imaging and intraoperative frozen section analysis determined whether the contralateral mucosa was spared. No local recurrence was observed in the other 7 cases, except for 1 case of malignant melanoma. Leaving the contralateral nasal septal mucosa intact relieves unpleasant symptoms such as nasal congestion, nasal congestion, and dry nasal passages due to physiological nasal ventilation. However, preservation of the contralateral septal mucosa should be carefully considered in individual cases to avoid local recurrence.

Among our series, endoscopic surgery was performed for few cases of SCC. However, even in cases of advanced SCC, endoscopic surgery can be performed in combination with external incision approaches (lateral rhinotomy, midfacial degloving

surgery, craniofacial surgery) to clarify the area around the tumor. As a result, the extent of resection needed is confirmed, and the tumor can be resected with sufficient safety margins. The progress in imaging modalities, tools, and surgical techniques for endoscopic surgery is remarkable, and endoscopic surgery may further reduce local recurrence rates. In fact, endoscopic surgery was performed for 1 case of septal SCC that recurred after radiotherapy and external incision surgery, and no recurrence has been seen since then. ESS may also be useful for reoperation in recurrent cases. In our case, the overall 3-year survival rate for malignancies was 66.6%. However, as far as SCC is concerned, although one case of distant metastasis was identified, the survival rate during the observation period is currently 100%. In the case of SCC, control may be easier to obtain with early detection, even if local recurrence occurs. Furthermore, in cases such as adenocarcinoma, malignant melanoma, and sarcoma, not only local recurrence, but also distant metastasis develops at a high rate [24]. As well as proper local treatment, control of distant metastasis leads to improved cure rates. Early diagnosis and proper management at the time of the first surgery may thus be the most important factors in managing malignant tumors of the nasal septum. Malignant tumors of the nasal septum have a high local recurrence rate and require frequent follow-up after surgery to observe local findings endoscopically [25].

Conclusion

Nasal septal tumors are often found early due to symptoms such as epistaxis and nasal congestion. The nasal septum is a site that is easily observed using an endoscope. In cases of suspected hemangioma at the front of the nasal septum, resective surgery may be performed as well as biopsy. However, in other cases, the diagnosis rate is high (90%), and biopsy before treatment is essential for definite diagnosis. The nasal septum can be clearly seen at the tumor margin using an endoscope. In both benign and malignant tumors, endoscopic surgery can remove the tumor with a firm safety margin, and the tumor can be completely removed using intraoperative frozen section histopathology. Depending on the case, treatment with a combination of external incision surgery and radiotherapy may lead to increased survival rates by controlling local lesions.

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