

# A Large Radicular Cyst Mimicking Pleomorphic Adenoma: A Case Report

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## ABSTRACT

This case report aimed to explain the diagnosis and treatment of a radicular cyst that is located on the palate, expands towards the nasal cavity, and causes breathing difficulty in the patient because it puts pressure on the nasal cavity.

A 17-year-old female patient presented to our clinic with palatal swelling and difficulty breathing. Intraoral examination revealed a lesion on the right side of the hard palate that spread to the base. Radiographic examination revealed a unilocular radiolucent lesion with loss of border definition involving the roots of the right maxillary first molar, extending towards the nasal cavity. Since the clinical appearance was characteristic of minor salivary gland tumors, the differential diagnosis included pleomorphic adenoma. In aspiration biopsy, cyst fluid was aspirated from the lesion and the preliminary diagnosis was revealed as an odontogenic cyst. Due to the large size of the cyst, treatment was started with surgical marsupialization and incisional biopsy to protect the surrounding anatomical structures. The biopsy result was a benign inflamed cyst. The lesion was excised completely in the 6th month. Any recurrence was observed at a 1.5-year follow-up.

## Pleomorfik Adenom ile Benzerlik Gösteren Büyük Radiküler Kist: Olgu Sunumu

### Makale Bilgisi

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### ÖZET

Bu olgu sunumunda sağ maksiller birinci molar dişten kaynaklanan, damakta şişlik oluşturan, nazal kaviteye genişlediği ve baskı yaptığı için nefes alma zorluğuna sebep olan radiküler kistin ayırıcı tanısı ve tedavisi anlatıldı.

Damakta şişlik ve nefes alma zorluğu olan sistemik olarak sağlıklı on yedi yaşında kadın hasta kliniğimize başvurdu. Ağız içi muayenede sert damağın sağ tarafında tabana yayılan karakterde lezyon izlendi. Radyografik muayenede sağ maksiller birinci molar dişin köklerini içine alan, nazal kavite doğru genişlemiş, uniloküler radyolüsent lezyon görüldü. Klinik görüntüsünün minör tükürük bezi tümörlerinin karakteristiğine uyması nedeniyle ayırıcı tanıda bening bir tükürük bezi tümörü olan pleomorfik adenom göz önüne alındı. Aspirasyon biyopsisinde lezyon içerisinden kist sıvısı aspire edildi. Ön tanı odontojenik kist olarak kondu. Kistin boyutlarının geniş olması sebebiyle, çevre anatomik yapıları koruma amaçlı tedaviye cerrahi marsüpyalizasyon ve insizyonel biyopsi ile başlandı. Biyopsi sonucu benign inflame kist olarak geldi. Marsüpyalizasyon tedavisi sonucu 6. ayda kitle total eksize edildi. 1,5 yıllık takip sonucunda nüks gözlenmedi.

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## INTRODUCTION

Radicular cysts are the most common cysts among all odontogenic cysts, with a rate of 57.3%. These lesions appear to be associated with tooth roots that have lost their vitality due to deep dentin caries and a history of trauma.<sup>1</sup> The most common places are anterior maxilla, posterior mandible and anterior mandible, respectively. Although it is seen in a wide age range, it peaks in the fourth and fifth decades.<sup>2</sup>

Radicular cysts are observed on radiological examination as well-circumscribed, radiolucent lesions associated with the apices of the affected tooth roots. It is uniform and unilocular. It is asymptomatic unless infected and does not grow too large and create asymmetry. They can be detected incidentally during radiological examination.<sup>3</sup> Although radiographic findings are similar to many cysts, the most important finding in the differential diagnosis of radicular cysts is that the involved teeth are nonvital.<sup>2</sup>

In treating radicular cysts, various methods are used such as root canal treatment, apical resection, marsupialization, enucleation, or enucleation following marsupialization. Preferred treatment; It is determined based on the size of the lesion, its proximity to vital structures, its location, and the presence of teeth and dental germs that need to be protected or maintained.<sup>3</sup>

This case report aimed to explain the diagnosis and treatment of a radicular cyst that is located on the palate expands towards the nasal cavity, and causes breathing difficulty in the patient because it puts pressure on the nasal cavity.

## CASE:

A 17-year-old female patient applied to our clinic with complaints of swelling in the right palate and difficulty breathing through the nose (Figure 1).

According to the anamnesis, no systemic disorder was detected in the patient. During intraoral examination, a lesion measuring 15x15 mm in size, covered with healthy mucosa, slightly fluctuant on palpation, and spread to the floor was observed in the right maxilla palatal region (Figure 1).

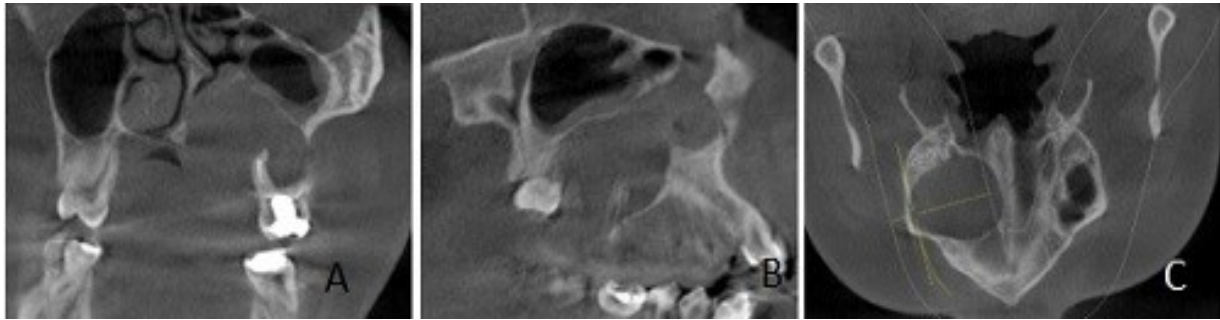
**Figure 1:** Preoperative intraoral image



Panoramic x-ray examination revealed that the right maxillary first molar tooth had root canal treatment. A radiolucent unilocular lesion involving the apical part of this tooth, with clear borders at the lower end and indistinct borders at the upper end, was noticed.

Due to cone beam computed tomography (CBCT) examination, a lesion with a homogeneous, hazy appearance was observed, extending from the palatal root of the right maxillary molar tooth towards the hard palate and nasal cavity, measuring 30x30mm, with blurred borders in places (Figure 2).

**Figure 2:** Cone Beam Computed Tomography A: Coronal cross-section B: Sagittal cross-section C: Axial cross-section



In the differential diagnosis, radicular cyst, pleomorphic adenoma, and odontogenic keratocyst were considered. A puncture biopsy was performed on the swelling with a 10cc syringe to understand the content of the lesion and help with the preliminary diagnosis. The resulting material was light yellow. When the gas was spread on the cloth, reflections of bright cholesterol crystals were observed. These findings strengthened the diagnosis of a radicular cyst. The root canal-treated right maxillary first molar tooth in the area supported this preliminary diagnosis. Since the lesion had expanded into the nasal cavity, marsupialization treatment was planned for protection instead of total excision. After the extraction of the right maxillary first molar tooth, a sample was taken from the lesion epithelium for biopsy. The lesion content was evacuated. The area was irrigated with saline. To create a marsupialization space, a sterile plastic tube was inserted and secured to the surrounding tissue using non-absorbable suture. The daily irrigation procedure was explained to the patient. The patient was prescribed antibiotics (amoxicillin + clavulanic acid 1 g, 2x1), analgesic (naproxen sodium 550 mg, 2x1), and antiseptic oral gargle (chlorhexidine gluconate 3x1) for pain and infection control. The rubber tube was removed during the 1st-week checkup. The patient reported that she could breathe easier than previously after the operation. The patient was regularly monitored to assess the closure of the cyst opening (Figure 3).

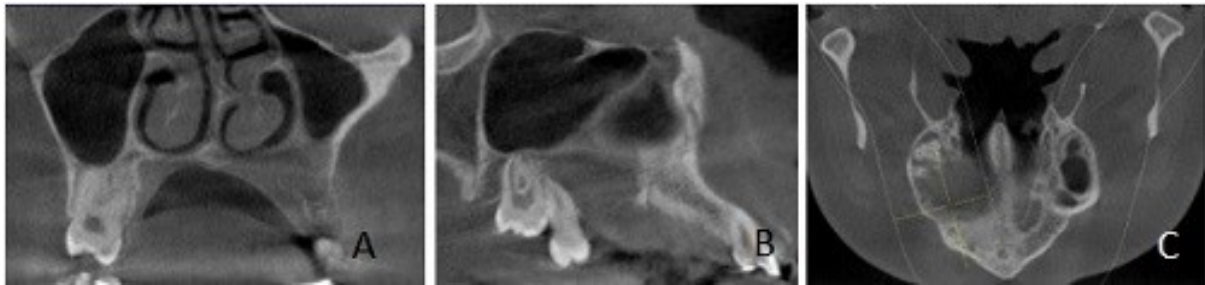
**Figure 3:** Intraoral image taken on the 10th day after the operation



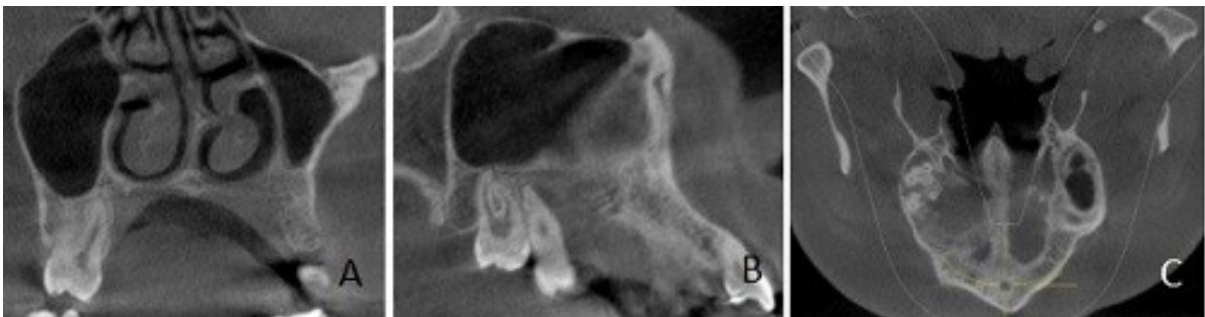
The incisional biopsy result was reported as an inflamed cyst lined with benign-squamous epithelium. In the CBCT taken at the sixth month, it was noticed that the cyst had moved away from the nasal cavity and bone had formed in the maxilla (Figure 4). Enucleation of the lesion was planned as the second surgery. Infiltration anesthesia was applied to the area from the buccal and palatal regions. A cut was made with a no. 15 scalpel around the area where marsupialization was performed. The cyst epithelium in the area was completely removed. The wound was sutured with a 3/0 non-absorbable suture. After the surgery, the patient was given important instructions for the recovery process and was given a prescription.

During patient follow-up, bone formation was observed in the relevant area and any recurrence was observed (Figure 5).

**Figure 4:** CBCT image of the lesion at 6 months after marsupialization. A: Coronal cross-section, B: Sagittal cross-section. C: Axial cross-section



**Figure 5:** CBCT image of the lesion at 6 months after enucleation. A: Coronal cross-section. B: Sagittal cross-section. C: Axial cross-section.



## DISCUSSION

Radicular cyst constitutes the inflammatory odontogenic cysts group of odontogenic cysts. Following necrosis of the dental pulp, epithelial residues in the periodontal ligament are stimulated due to apical granuloma, and the ground is prepared for a radicular cyst. A radicular cyst is routinely diagnosed during radiographic examination or when it shows acute symptoms.<sup>4</sup> Radicular cysts have a 60% higher prevalence in the maxilla than in the mandible. Radicular cysts grow slowly, can expand in the buccal or palatal region, and cause root resorption, displacement, and mobility of the teeth. When infected, it can lead to symptoms such as pain and swelling.<sup>5</sup> In this case, the radicular cyst caused swelling on the right side of the patient's palate and caused difficulty in breathing due to pressure on the nasal cavity. The lesion was detected after the patient applied due to these complaints. No root resorption or displacement was observed in the teeth, except for mild mobility in the right

maxillary first molar tooth. The asymptomatic course of radicular cysts may change as the cyst grows. Crepitation may occur due to thinning of the bone around the cyst, or fluctuation may develop following erosion under the soft tissue.<sup>6</sup> In our case, it was observed that the cyst caused bone erosion in the hard palate.

Radiographically, a radicular cyst appears as a round and unilocular radiolucency at the apex of a necrotic tooth, with radiopaque borders that are continuous with the lamina dura. However, this apparent radiopaque border may not be present in rapidly expanding cysts.<sup>6</sup> Panoramic radiographs may be insufficient to determine the anteroposterior dimension of the cyst. In this case, CBCT or computed tomography needs to be utilized for ascertaining the surgical margins. In our case, there was an image with unclear borders on the panoramic radiograph. In the CBCT images, it was seen that the borders of the cyst expanded from the right maxillary molar tooth to the hard palate and nasal cavity.

The hard palate is a special area of the mouth. It is lined with ortho-keratinized epithelium that adheres tightly to the underlying bone. The posterolateral part of the palate is thicker and softer. The submucosal region is rich in minor salivary glands, nerves, and vessels. Pathological lesions arising from the surrounding teeth, minor salivary glands, connective tissue, epithelium, bone, vessels, and nerves may cause lesions in this region.<sup>7</sup> In their study, Biswas and Crank conducted a prospective examination of the etiology and pathogenesis of maxillary swellings. According to the report, odontogenic cysts were identified as the most prevalent non-cancerous cause. Since there may be many reasons for swelling in the palate, diagnosis can sometimes be difficult.<sup>8</sup>

The differential diagnosis of radicular cysts includes Periapical granuloma, traumatic bone cyst, surgical ciliated cyst, globulomaxillary cyst, aneurysmal bone cyst, periapical cemental dysplasia, periapical cemento-osseous dysplasia, periapical scar, periapical surgical defect.<sup>9</sup> In this case, due to the clinical appearance, the primary differential diagnosis considered is pleomorphic adenoma; however, radicular cyst and keratocyst were also considered. The resemblance of the clinical picture to pleomorphic adenoma, a salivary gland tumor, was eliminated by the brightly yellow appearance of the material obtained in the aspiration biopsy. The endodontic treatment of the right maxillary first molar tooth in the area confirmed that the preliminary diagnosis was a radicular cyst.

Radicular cysts rarely reach sizes large enough to involve adjacent anatomical structures. Massive radicular cysts can sometimes extend into the maxillary sinuses. However, in this case, the pathological lesion started from the palatal root of the right maxillary first molar tooth and reached the nasal cavity via the hard palate. The cyst compressing

the right nasal cavity caused breathing difficulty in the patient.

Surgical treatment options for cystic lesions; apical-resection, enucleation, and marsupialization. Treatment preferences are based on the cyst's size, location, wall integrity, and proximity to vital tissues.<sup>10</sup> Marsupialization is an effective surgical treatment technique preferred before enucleation in the treatment of cysts that have reached large sizes, due to its low complication rate.<sup>11</sup> Reducing the risk of postoperative fractures and preserving anatomical structures can be considered among the advantages of the marsupialization technique.<sup>12</sup> This technique has a drawback as it takes a significant amount of time to complete the treatment. It should be applied to patients who cooperate well. Marsupialization also provides decompression in the lesion area until the incisional biopsy result is confirmed.<sup>13</sup> In this case, marsupialization treatment was preferred because the cyst included the nasal cavity. During marsupialization, the patient was called at regular intervals to check patient cooperation and if the drainage opening was closed. In cases where patient cooperation is poor, enucleation should be considered as a treatment option. Marsupialization time is influenced by both the characteristics of the cyst and patient factors. Cases followed for 8 to 40 months have been reported in the sources.<sup>14</sup> In our case, marsupialization treatment was continued for 6 months. By the end of the sixth month, CBCT was taken again to evaluate the size of the cyst. It was observed that the cyst sizes decreased, bone formation began around the nasal cavity and the cyst was completely enucleated. The prognosis of radicular cysts after enucleation is quite good. However, in the cases where apical resection was performed instead of tooth extraction, recurrence may occur and a second surgery may be required. Although very rare, primary intraosseous carcinoma has been reported to develop in untreated cases.<sup>2</sup> In the

current case, no recurrence was observed during the 1.5-year follow-up after enucleation.

### CONCLUSION

Accurate diagnosis and intervention are very important since swellings on the hard palate can occur due to various reasons. The differential diagnosis should be determined carefully and the most likely preliminary diagnosis should be made with accurate examinations. Since odontogenic cysts are not noticed until they cause symptoms, they can reach large sizes. Choosing marsupialization treatment for cysts that have reached a large size can reduce the risk of complications.

### Ethical Approval

An ethics statement was not required for this study type and no human or animal subjects or materials were used.

### Financial Support

The authors have no relevant financial or non-financial interests to disclose.

### Conflict of Interest

The authors deny any conflicts of interest related to this study.

### Author Contributions

Design: RTAÇ, Data collection and processing: RTAÇ, Analysis and interpretation: RTAÇ, Literature review: RTAÇ, Writing: RTAÇ, BB.

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