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Case of Epidermoid Cyst in Parotid Gland in a 23-Year-Old Female Patient Initially Diagnosed as Parotid Tumor: A Rare Case Report

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ABSTRACT

Epidermoid cyst is a tumor-like lesion that is generally benign, containing slow-growing keratin and lined by epithelial cells such as epidermis located in the dermis or subcutaneous, where this cyst is very rare in the parotid gland. The incidence of epidermoid cysts in the parotid gland is unclear due to limited reports. Although this lesion is benign, an accurate diagnosis is very important early, so that better management can be carried out. In this case report, a 23-year-old female patient was reported with a lump on the back of the right cheek for 3 years ago. The lump was initially small and slowly enlarged to a fairly large size of about 3 x 4 cm. The lump was the same color as the skin, the punctum was not visible, it was soft to the touch, partially fixed and there was no palpable fluctuation. Ultrasonography examination showed a hypoechoic shadow with a clear boundary in the right parotid area, so that the initial diagnosis was as a right parotid tumor. Initially the plan was for superficial parotidectomy, but switched to parotid cyst excision after the incision in the parotid area showed that the cyst was visible. The removed cyst was examined histopathologically and showed cyst wall tissue with a surface covered with squamous epithelium, the lumen containing a keratin mass, thus confirming that the lesion was an epidermoid cyst. Epidermoid cysts in the parotid gland can be misdiagnosed as parotid tumors due to their similar clinical and radiological manifestations. Accurate identification of clinical and pathological features is essential to differentiate them. Slow growth and ambiguous radiological appearance can lead to misdiagnosis. Complete excision of the parotid cyst is the primary treatment of choice for epidermoid cysts.

INTRODUCTION

The parotid gland is the largest human salivary gland, which is specifically located between the masseter and sternocleidomastoid muscles, then extends from the tip of the mastoid to slightly below the angle of the lower jaw. Masses in the parotid gland can vary in origin, from benign tumors, malignant tumors or lesions that resemble tumors. Benign tumors are the most common tumors in the salivary glands with an incidence of around 80%, where the majority of benign tumors are pleomorphic adenomas, while the rest are malignant tumors, where the most common case is mucoepidermoid carcinoma. Thus, the mass that arises in this area is often suspected as a parotid tumor until further examination is carried out. However, this case report discusses a lesion that resembles a tumor in the parotid gland area, namely an epidermoid cyst or known as an atheroma cyst which is a benign lesion that forms due to squamous epithelium trapped under the skin, rarely detected in the parotid gland region (Bailey et al., 2008; Ghannam & Singh, 2019).

The reported case involved a 23-year-old female patient who came with a complaint of a mass in the parotid gland area, which after anamnesis, physical examination, routine blood tests and ultrasonography (USG) examination, the patient was initially diagnosed as a right parotid tumor. However, after the patient, who was initially planned to undergo superficial parotidectomy, switched to parotid cyst excision and histopathology was performed, the mass turned out to be a right epidermoid cyst.

Epidermoid cyst is a slow-growing keratin-filled cyst lined by epithelial cells like epidermis in the dermis or subcutaneous location. This cyst is lined by squamous cells, which can occur due to congenital or acquired factors. This cyst often occurs in the head and neck area, which is generally around 1.6% to 6.9%, and the prevalence of epidermoid cysts in the parotid gland specifically is still not very clear in the literature because of the limited case reports. There is some literature stating that epidermoid cysts in the parotid gland area are often initially diagnosed as parotid tumors due to the limitations of conventional imaging such as ultrasound or Computed Tomography (CT scan) which makes it difficult to distinguish between tumors and lesions that resemble tumors. This shows that epidermoid cysts in this location are very rare, and often a definitive diagnosis can be confirmed after biopsy or surgical resection (Chandra et al., 2024; Singh et al., 2023).

Epidermoid cyst in the parotid gland shows clinical manifestations like parotid tumors, which can cause difficulties in diagnosis. With this case report, the researchers hope that clinicians can be more aware of the possibility of epidermoid cysts as a differential diagnosis of parotid tumors, especially if the clinical presentation and imaging do not show definite signs of tumor. In addition, the surgical procedure performed in this case was without any complications, including maintaining the integrity of the facial nerve which is the main risk of this surgical procedure. Thus, this report adds to the literature on the importance of a thorough diagnostic evaluation and a careful surgical approach to prevent unwanted complications.

METHOD

Case Report

A 23-year-old female patient came to the surgical polyclinic of Arosuka Solok Hospital with a complaint of a lump on the back of her right cheek for 3 years ago. Initially the lump was small, then it slowly enlarged until it was quite large like a ping pong ball. The patient also complained of intermittent pain for 1 week, with a dull pain. The pain came and went and was not triggered by activity, changes in position or certain foods. The patient also did not complain of muscle weakness. The patient also denied any history of trauma, surgery or significant infection.

Physical examination of the right parotid gland area showed a skin-colored mass measuring approximately 3 x 4 cm and no punctum, and no signs of inflammation. On palpation, it felt soft, the surface was flat and partially fixed, and there was no palpable fluctuation (Figure 1).

Figure 1. Patient with right epidermoid cyst, preoperative lateral view.

On hematology examination, hemostasis and blood sugar of the patient were within normal range. USG imaging in the right and left colli areas showed a clearly defined hypoechoic shadow with the largest size of 3 x 9 cm in the right parotid area which gave the impression of an inhomogeneous mass in the right parotid (Figure 2). So from the report it was concluded that the working diagnosis was a right parotid tumor. This patient was initially planned for superficial parotidectomy, but switched to parotid cyst excision after the incision in the parotid area showed that the cyst was visible, this action prioritized the preservation of the facial nerve and the operation was completed by leaving a drain and there were no complications in this action (Figure 3). The cyst was taken for histopathological examination, which showed a section of cyst wall tissue with a surface covered with squamous epithelium, a lumen containing a keratin mass and no signs of malignancy in this preparation. This confirmed that the final diagnosis of this patient was an epidermoid cyst.

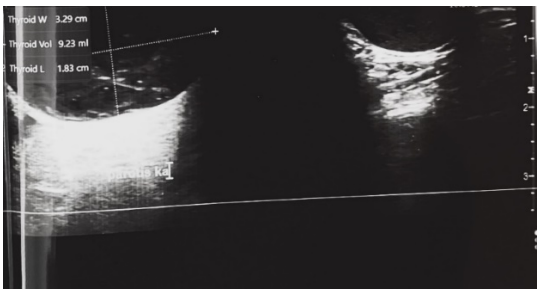

Figure 2. Right Parotid USG.

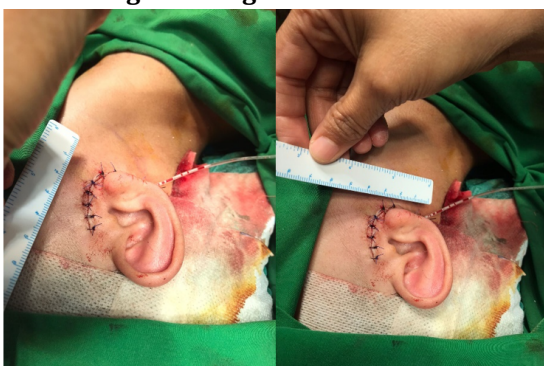

Figure 3. Post-operative patient with drain installed.

RESULTS AND DISCUSSION

In general, lumps in the parotid gland are caused by parotid tumors, the incidence of which is around 80% for benign tumors, where the most common benign tumor is pleomorphic adenoma, followed by Warthin tumor. Very rarely, lumps in the parotid gland are caused by epidermoid cysts. The prevalence of epidermoid cysts is around 1.6 to 6.9% of all cysts found in the head and neck, while there is no specific data in the parotid gland, due to limited reporting (Bailey et al., 2008; Chandra et al., 2024). This case report is very important, because to the best of the researcher's knowledge, epidermoid cysts in the parotid gland area have been rarely reported in the last 10 years (Table 1).

Table 1. Summary of 8 case reports of epidermoid cysts in the parotid gland published in the last 10 years.

Author	Patient	Main symptoms	Physical examination	Supporting investigation	Diagnose	Therapy
Muqtadir, F. dkk.[5]	12-year-old female patient	Lump on face just below left ear for 1 and a half years.	The lump is oval in shape, measuring 4 x 3 cm, with a soft consistency and is not painful to touch.	• USG examination showed a hypoechoic cystic lesion within the substance of the left parotid gland, measuring 2.3 x 1.9 cm. • Fine needle aspiration showed foul-smelling, thick, pulp-like material. The smear showed superficial and intermediate benign squamous cells in a background of mild inflammatory infiltrate.	Epidermoid cyst of the left parotid gland	The patient underwent complete enucleation of the cyst
Ganesan, A. dkk.[6]	62-year-old female patient	Lump on right side of face in front of ear for 2 years	The lump measures 6 × 8 cm and extends approximately 2 cm and when touched the lump has a soft consistency, is not painful to touch, and does not pulsate and can be moved under the skin.	• Ultrasound examination showed a hyperechoic cystic lesion in the right parotid area measuring 4.2 × 6.1 cm. • Histopathological examination shows stratified squamous epithelium with intraluminal laminated keratin material.	Epidermoid cyst of the right parotid gland	The patient underwent superficial parotidectomy
Kaur, K. dkk.[7]	30-year-old female patient	A lump in the preauricular area that has progressively enlarged over 3 years.	The lump measures approximately 2 x 3 cm and when touched the lump has a soft consistency, is not painful when pressed, moves and does not pulsate.	• Fine needle aspiration cytology showed sheets of superficial squamous cells as well as benign intermediates in a background of mild inflammatory infiltrate suggestive of an epidermoid cyst. • Contrast-enhanced CT scan of the neck shows a well-defined, finely demarcated hypodense lesion.	Epidermoid cyst of the left parotid gland	This patient underwent cyst enucleation
Samia, M.[8]	71-year-old male patient	A painless lump in the left retroauricular area that had progressively enlarged over 11 months.	A mass of about 7cm is seen, painless. The skin over the lump is normal and can be pinched, and no lymph nodes are found, facial nerve function is normal.	• USG and MRI showed a well-encapsulated polylobular cystic lesion of the deep and superficial lobes of the left parotid with extension into the retroauricular area. • Fine needle aspiration with echocardiography of the swelling supports pleomorphic cystic adenoma. • Histology showing parotid acinus with adjacent cyst wall lined by anucleate squamous epithelium.	Epidermoid cyst of the left parotid gland	The patient underwent superficial parotidectomy

Aoki, M. dkk.[9]	47-year-old female patient	A soft swelling in front of his right ear for a long time.	When palpated, an elastic and soft lump with a diameter of about 3 cm was felt in front of the right tragus, with mild pain.	• USG showed a uniform cystic lesion measuring approximately 2.5 cm in the right parotid gland. • Aspiration cytology showed only thick fluid. • CT scan showed a well-defined, low-density, encapsulated circular mass located in the upper part of the superficial lobe of the right parotid gland. • MRI showed a well-circumscribed nodular lesion measuring 29 x 16 x 15 mm in the superficial lobe of the right parotid gland. • Pathological examination revealed two cystic lesions lined by squamous epithelium and containing keratinized material.	Epidermoid cyst of the right parotid gland	The patient underwent superficial parotidectomy with a facelift incision, as neoplastic conditions could not be excluded
Chandra, R. B. dkk.[3]	51-year-old male patient	A lump in the left pre-auricular area that persisted for 3 years and progressively enlarged.	On palpation, the lump is soft in consistency, non-fluctuant, non-compressible, and non-reducible and the lesion is without visible punctum.	• T2-weighted MRI shows a hyperresonant, thin-walled, well-circumscribed cystic lesion in the subcutaneous plane of the preauricular area adjacent to the parotid gland. • Microscopic section shows the epithelial layer and connective tissue wall. The epithelial layer is ortho-keratinized stratified squamous epithelium with a prominent granular cell layer, and a flat epithelial connective tissue surface.	Epidermoid cyst of the left parotid gland	The patient was planned to undergo the same surgical excision with superficial parotidectomy.
Jidal, M. dkk.[10]	14-year-old female patient	The lump in the left preauricular area grew slowly over 2 years.	There is a soft, painless, nonfluctuant mass. The patient has no facial or trigeminal involvement and no evidence of palpable adenopathy.	• USG showed a clear, homogeneous hypoechoic ovoid mass at the superior pole of the left parotid gland. • MRI showed a round and well-defined cystic mass in the upper superficial part of the left parotid gland and the mass did not infiltrate the surrounding tissue. • Histopathological examination, the epidermal cyst is lined by stratified squamous epithelium with a granular layer, without sebaceous glands or eccrine glands in the wall and filled with keratin flakes.	Epidermoid cyst of the left parotid gland	Tumor resection was completed with partial and superficial parotidectomy
Omri, M. E. dkk.[11]	12-year-old male patient	A lump in the lateral cervical area that appears slowly and progressively over 1 year.	There was a 3 cm cystic mass. There was no visible fistula in the external ear canal, and the patient showed no signs of facial or trigeminal dysfunction and no evidence of palpable adenopathy.	• MRI showed a round, well-defined, multilobulated cystic formation in the retroparotid area, extending more than 4 cm. The mass did not appear to infiltrate the surrounding tissue. • Histopathological examination of the removed mass yielded results consistent with an epidermoid cyst.	Epidermoid cyst of the right parotid gland	The patient was treated with superficial parotidectomy performed after identification of the facial nerve

On September 5, 2024, at Arosuka Solok Hospital, a case of a 23-year-old female patient with a lump on the back of her right cheek was reported. This case is interesting because the epidermoid cyst was initially diagnosed as a benign parotid tumor, the histopathology results after the lesion was removed intact through parotid cyst excision surgery which was initially planned for superficial parotidectomy surgery showed that the lesion was an epidermoid cyst, so this provides a new perspective in the diagnosis of parotid tumors. This case is very rare, so this is what makes it unique in the existing literature.

This patient came with a complaint of a lump in the right parotid gland that had been going on for 3 years. This lump grew slowly without any signs of infection. So far, the patient has not complained of other symptoms, but in the last 1 week the patient has experienced intermittent pain and discomfort due to the lump which is quite large. The patient also did not complain of facial nerve weakness or other symptoms. On physical examination, a mass was seen in the parotid gland the same color as the skin measuring 3 x 4 cm, there were no signs of inflammation, and no punctum was seen, and when touched the surface was flat and felt soft, there was no fluctuation and it was partially fixed. So clinically, epidermoid cysts are similar to parotid tumors, where benign tumors such as pleomorphic adenoma or Warthin tumors often have cystic components, as well as malignant tumors such as mucoepidermoid carcinoma which can undergo cystic degeneration. This certainly causes confusion for doctors to diagnose (Chandra et al., 2024; Zuryani, 2023).

Epidermoid cysts in the parotid gland are likely derived from epithelium trapped in the dermis or subcutaneous layer and continue to produce keratin which eventually forms a mass with a cystic structure under the skin. Epidermoid cysts can occur at any age, but a study reported that cases of epidermoid cysts were most common in the 21–30-year age group (around 33.33%). Meanwhile, according to gender distribution, epidermoid cysts are more common in men with a ratio of 3:2 (Aoki et al., 2024; Ganesan & Nandakumar, 2015; Jidal et al., 2024; Kaur et al., 2018; Samia, 2022). In this case, the lesion began to appear at the age of around 20 years, initially appearing like acne, without any history of trauma or previous surgery, and without any history of significant infection, so this indicates that this cyst may have formed congenitally or could have been caused by other unidentified factors.

On ultrasound, an epidermoid cyst will generally appear as a well-defined cystic mass. This shows that the epidermoid cyst has clear boundaries and is filled with fluid or semifluid material that can be visualized using the ultrasound method. While MRI can provide a more detailed view of the cyst. This can help in differentiating cysts from other types of lesions, where it shows the internal structure and nature of the contents. Cysts are

generally well-circumscribed, meaning they have a distinct outline (El Omri et al., 2024; Jidal et al., 2024). Initial supporting examinations in this patient were hematology, hemostasis and blood sugar examinations, the results of which were within the normal range. The patient also underwent an ultrasound which showed a clearly defined hypoechoic shadow with the largest size of 3 x 9 cm in the right parotid area. This patient did not undergo an MRI or CT scan, because physical examination and ultrasound were sufficient to assess the nature of the lesion. This patient also did not undergo FNAB, this was to prevent the risk of tumor spread from this procedure if it turned out that the lesion was malignant, and FNAB did not always provide accurate results.

The most effective treatment for an epidermoid cyst is complete surgical excision of the cyst with the cyst wall intact (Kim et al., 2020; Zito & Scharf, 2018). This patient was initially planned to undergo superficial parotidectomy with a Blair incision, when an incision was made in the right parotid area and a cyst was seen above the superficial parotid lobe, the procedure was switched to parotid cyst excision and the Blair incision was not performed in full. The procedure was to remove the cyst and its sac completely in the parotid gland, and to ensure a definitive diagnosis. The cyst had ruptured during the parotid cyst excision and a brownish white material with a foul odor came out. So that the material was suctioned and the cyst and its sac were completely removed. During the procedure, facial nerve preservation was also performed, which functions to protect the facial nerve, which was successfully performed without complications. This patient also had a drain installed to control bleeding and prevent hematoma in the parotid gland area.

In addition to radiological imaging is very important in the initial assessment, the definitive diagnosis of epidermoid cyst is confirmed by histopathological examination after FNAB or cyst removal by cyst excision. This step is very important to verify the nature of the cyst (Jidal et al., 2024). The histopathology results of this patient showed microscopically visible cyst wall tissue sections with surfaces covered by squamous epithelium, lumens containing keratin masses and no signs of malignancy in this preparation. This confirmed that the final diagnosis of this patient was an epidermoid cyst.

The prognosis for life (quo ad vitam) of this patient is very good, where the tumor is benign and has no potential for metastasis, while the prognosis for the function of the parotid gland and facial nerve (quo ad fungsionam) is also very good, where the operation is performed with the right technique and there is no damage to the facial nerve or other important structures. The prognosis for recurrence (quo ad sanationam) is also very good, where this cyst also has a very low risk of recurrence, especially if the cyst is completely removed (Zito & Scharf, 2018).

One of the major challenges in this case is the difficulty in making a proper diagnosis before surgery. Many physicians may not consider an epidermoid cyst as a possible diagnosis when faced with a lump in the parotid gland. Uncertainty in imaging findings and differential diagnoses, including the potential for cystic degeneration, may also add to the complexity of this case, as it may lead to a possible misdiagnosis, which may lead to unnecessary intervention.

Given the complexity of diagnosis and potential complications associated with parotid gland lesions, researchers recommend a multidisciplinary approach in managing similar cases in the future. Advanced imaging such as CT-scan or MRI may be considered early to ensure an accurate diagnosis, allowing for better management.

CONCLUSION

Epidermoid cyst is a very rare case in the parotid gland area. Although generally benign, it is often challenging to diagnose because of its similarity to parotid tumors. Comprehensive clinical, radiological and histopathological assessments are needed to ensure an accurate diagnosis and appropriate treatment strategy.

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