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Parotid dermoid cyst: a rare entity

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Abstract

Objective: We report a rare case of parotid dermoid cyst.

Method: A case report of parotid dermoid cyst is presented, as well as a brief review of the literature and a summary of the lesion's salient clinicopathological features.

Results: A 69-year-old man presented with a slow-growing, soft tissue mass of the left parotid gland. Pre-operative evaluation included fine needle aspiration cytology and computed tomography. He subsequently underwent a superficial lobectomy; both the macroscopic and histopathological findings were consistent with a dermoid cyst. Although dermoids within the head and neck are not uncommon, such cysts have only rarely been encountered in the parotid gland.

Conclusion: To our knowledge, there are only four previous case reports of parotid dermoid cyst in the English literature. Although the majority of cases of parotid dermoid cyst are diagnosed retrospectively, our case demonstrates the role of fine needle aspiration cytology and highlights the key cytological features suggestive of this entity.

Key words: Dermoid Cyst; Parotid Gland; Needle Biopsy

Introduction

The dermoid cyst is a rare, congenital, epithelially lined, cystic cavity that contains tissues of both mesodermal and ectodermal origin. It may include skin and a variety of adnexal structures such as hair follicles and sebaceous glands.

Dermoid cysts have only rarely been encountered in the parotid gland. To our knowledge, there have been only four previous case reports in the English literature, highlighting six patients presenting with intra-parotid dermoid cyst. We describe an additional case of this entity and briefly summarise its salient clinicopathological features.

Case report

History

A 69-year-old man presented with a long history (eight to 10 years) of a slowly expansile, soft tissue swelling in the left parotid gland.

Clinically, this was a soft, non-tender mass, approximately 5 cm in diameter, occupying the superficial lobe of the parotid gland. Facial nerve function was normal. There was no medical history of note. The patient was not taking any medication.

Pre-operative investigation included fine needle aspiration cytology (FNAC) and computed tomography (CT) scanning. Aspiration yielded thick, white material. Cytological examination identified numerous anucleate squames in a proteinaceous background. Computed tomography scans confirmed a 5 cm, cystic mass in the superficial aspect of the parotid gland (Figure 1). The differential diagnosis is summarised in Table I.

Surgery

A left, intra-parotid, cystic lesion was excised via a superficial lobectomy, with preservation of the facial nerve. The patient's post-operative course was uneventful, with a normally functioning facial nerve evident at day one.

Histopathology

Histopathological examination of multiple transverse sections through the surgical specimen revealed parotid gland parenchyma comprising serous acini with intervening prominent fatty infiltration. There was a large cyst ($55 \times 26 \times 14$ mm) identified in the specimen. The lumen was filled with keratin and the lining comprised thin, stratified squamous, ortho-keratinised epithelium. The wall was composed of compressed, fibrous connective tissue and interspersed with sebaceous glands and focal collections of chronic inflammatory cells (Figure 2).

Discussion

New and Erich reviewed 1485 cases of dermoid cysts, and highlighted the fact that 7 per cent of all such cysts occurred in the head and neck.[1] The most common site was the orbit, accounting for 49.5 per cent. A further 23 per cent were found in the floor of the mouth, with the remainder occurring in various other sites.

Although several classifications of dermoid cysts have been described based on embryopathogenesis and microscopic findings, there is currently no universally accepted method.[1,2]

The occurrence of a dermoid cyst within the parotid gland is exceedingly rare. To our knowledge, there are only four previously published papers, documenting a total of six cases, in the English literature.[2–5] The clinicopathological features of the reported cases in the English literature are summarised in Table II.

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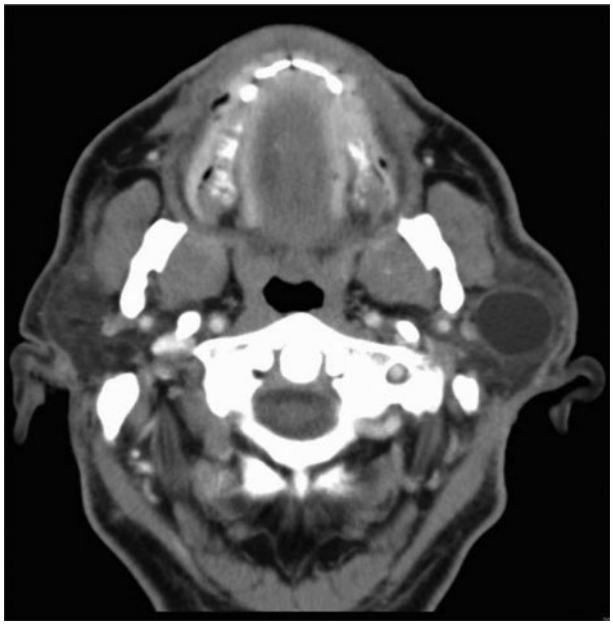


FIG. 1
Axial computed tomography scan showing dermoid cyst in the left parotid gland.

New and Erich found no sex predilection for dermoid cysts. However, it is noteworthy that all those lesions which have been documented within the parotid gland have occurred in males (mean age 31 years).[1] This was also the case in our patient.

Several authors have highlighted the difficulty in definitive pre-operative diagnosis of these lesions. This is largely due to the lesions' equivocal clinical and radiological findings. Definitive diagnosis in these cases has generally been retrospective, based on the macroscopic features of the excised specimen and histopathological examination.[2,3,5] Baschinsky *et al.* used FNAC, supplementing clinical and radiological assessments, as the diagnostic modality.[4] Significantly, these authors highlighted the value of FNAC, and described pre-operative cytological findings, derived from FNAC samples, which were suggestive of dermoid cysts (see Table II). Cramer and colleagues also reported similar cytological features of a floor of mouth dermoid cyst, and recommended FNAC as the diagnostic procedure of first choice.[6]

We disagree with Naujoks *et al.*,[5] who state that 'investigations like FNAC may induce nerve violation and infection, and are irrelevant for the choice of operation on a process that appears to be benign on MRI'. Given the differential diagnosis for cystic pathology affecting the parotid gland (Table I), we would agree with Baschinsky and colleagues, and recommend FNAC as part of the diagnostic evaluation. In keeping with Baschinsky and colleagues' findings, our case highlights a finding of proteinaceous aspirate displaying 'anucleate squames' as being highly suggestive of parotid dermoid cyst.

TABLE I

DIFFERENTIAL DIAGNOSIS OF CYSTIC LESIONS OF THE PAROTID GLAND

Branchial cleft cyst
Mucous retention cyst
Cystic pleomorphic adenoma
Warthin's tumour/papillary cystadenoma lymphomatosum
Epidermoid cyst
Dermoid cyst
Lymphoepithelial cyst (HIV-associated)
Keratocystoma
Cystic degeneration within 1° or 2° malignant neoplasm
Parotid duct cyst

HIV = human immunodeficiency virus; 1° = primary; 2° = secondary

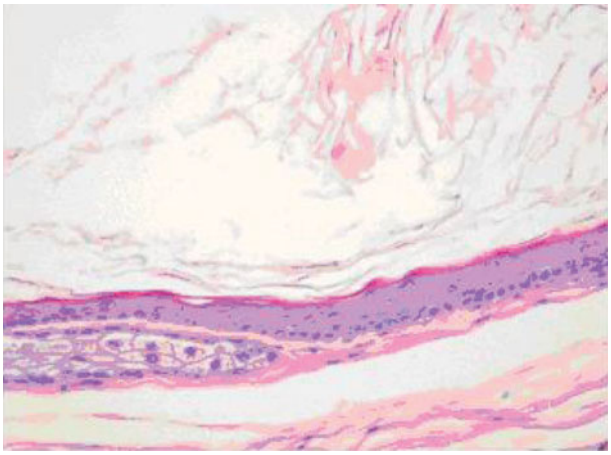


FIG. 2
Photomicrograph of cyst lining, showing presence of sebaceous glands and intraluminal keratin debris (H&E; original magnification ×200).

When interpreting these cytological features, the integration of the clinical and CT findings is crucial. An important caveat is that, although no frankly dysplastic or malignant cells were identified in our case, the demonstration of anucleate squames would not exclude consideration of a well differentiated squamous cell carcinoma (SCC), either as an SCC that had undergone cystic degeneration, or as cystic degeneration of a metastatic (intra-parotid) lymph node.

- **Dermoid cysts have only been rarely encountered in the parotid gland**
- **This case highlights the potential benefit of pre-operative FNAC**
- **a parotid aspirate displaying anucleate squames, in the absence of frankly dysplastic or malignant cells, in a radiologically benign lesion, is suggestive of a dermoid cyst**

Computed tomography and magnetic resonance imaging (MRI) scanning of parotid dermoid cysts usually demonstrate a well defined, low density mass consistent with an intra-parotid lipoma.[3,4] However, it has been suggested that a fat–fluid level appearing on an MRI or CT scan is a characteristic feature of a dermoid cyst.[7]

Although dermoid cysts are generally regarded as benign entities, rare cases of malignant transformation of such cysts within the oral cavity have been reported.[8]

Treatment of dermoid cysts involves surgical excision. The standard approach for the surgical management of most parotid lesions is superficial lobectomy. Dermoid cysts are usually well encapsulated and this facilitates dissection. They may also contain yellowish-white, 'cheesy' contents, which may be observed during surgery.[3,5] The cyst should be removed en bloc to minimise the risk of recurrence. To date, all documented cases of intra-parotid dermoid cysts appear to have been successfully treated with superficial

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TABLE II

SUMMARY OF DOCUMENTED CASES OF INTRA-PAROTID DERMOID CYST

Author	Cases (*n*)	Age (yrs)/sex	Clinical features	Investigations	Treatment	Histology	Outcome
Choi *et al.*[2]	2	22/M	4 × 4 cm, round, firm non-tender mass Tail of parotid Asymptomatic Normal facial nerve function	Ultrasound suggestive of lipoma Sialography showed normal ductal system	Superficial parotidectomy	Encapsulated, lined with stratified squamous epithelium, chronic inflammatory infiltrate, presence of sebaceous glands & various skin adnexae (both cases) Oncocytic changes seen in ductal epithelium (case 1)	No recurrence
		22/M	4 × 5 cm, non-tender, cystic mass Tail of parotid Present >12 mths Normal facial nerve function	Ultrasound showed cystic mass Sialography showed mild compression of ductal system	Superficial parotidectomy	As above	No recurrence
Moody *et al.*[3]	1	37/M	4 × 4 cm parotid mass, soft, non-fluctuant Present >20 yrs Asymptomatic Normal facial nerve function	Routine haematological & biochemical investigations NAD Orthopantomogram NAD MRI showed well defined mass in superficial part of parotid, fat suppression sequence, consistent with intra-parotid lipoma	Superficial parotidectomy	Dense fibrous capsule, partly lined by stratified squamous epithelium of variable thickness, with sebaceous glands Granulomas (associated with eosinophilic/keratin debris) & macrophages present within capsule	No recurrence
Baschinsky *et al.*[4]	2	38/M	3 × 3 cm, mobile mass Angle of mandible Present 2 yrs Painless Normal facial nerve function	CT scan showed low density, cystic mass in tail of parotid, no sinister features FNAC suggestive of dermoid cyst (anucleated squamous cells & keratin debris using Pap stain	Superficial parotidectomy	Encapsulated, lined with keratinised squamous epithelium, with presence of sebaceous glands & other skin adnexal structures (both cases)	No recurrence
		26/M	2.5 × 2.5 cm, non-tender, mobile parotid mass Present > 3 yrs & increasing in size Painless Normal facial nerve function	CT scan showed well circumscribed, cystic lesion in tail of parotid, no sinister features FNAC suggestive of dermoid cyst	Superficial parotidectomy	As above	No recurrence
Naujoks *et al.*[5]	1	46/M	3 × 2 cm, soft, non-fluctuant mass Superior portion of parotid Present >3 yrs Asymptomatic Normal facial nerve function	MRI showed well defined mass in superior portion of parotid gland, no sinister features Ultrasound showed encapsulated, homogeneous, hypodense mass in parotid	Superficial parotidectomy	Cyst lined by squamous epithelium, with associated sebaceous glands, hair follicles & sweat glands	No recurrence

Yrs = years; mths = months; M = male; NAD = no abnormality detected; MRI = magnetic resonance imaging; CT = computed tomography; FNAC = fine needle aspiration cytology; Pap = Papanicolau stain

parotidectomy. There has been no recurrence in our patient at the time of writing.

Conclusion

Dermoid cysts have only rarely been encountered in the parotid gland. This case highlights the potential benefit of pre-operative FNAC, and the fact that a parotid aspirate displaying anucleate squames, in the absence of frankly dysplastic or malignant cells and in a radiologically benign lesion, is suggestive of a dermoid cyst.

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