

Salivary Duct Carcinoma of Parotid Gland

¹TR Ramna, ²Jobin Mathew, ³PK Muhammad Wasim, ⁴Anila PC Namboodiripad, ⁵Archana Mukunda, ⁶Arun Mohan

ABSTRACT

Context: Salivary duct carcinoma accounts for <1% of the epithelial salivary gland neoplasms of which 75% occur in the parotid gland.

Aims: Salivary duct carcinomas are rare and commonly affect the parotid gland followed by the submandibular gland. A case report and a brief review of the salivary duct carcinoma of parotid gland is presented here.

Settings and designs: The representative tissue received was 10% formalin fixed, was 8 cm in diameter, and was floated on the surface of the fixative.

Materials and methods: Sections of 0.2 μ thickness were obtained from paraffin-embedded tissues that had been processed and stained with routine hematoxylin and eosin stain. These stained sections were then reviewed.

Conclusion: Examinations of paraffin-embedded section showed cribriform pattern of tumor cells invading into tissue parenchyma and central comedo necrosis, the typical feature of salivary duct carcinoma.

Keywords: Comedo necrosis, Minor salivary glands, Salivary duct carcinoma.

How to cite this article: Ramna TR, Mathew J, Wasim PKM, Namboodiripad APC, Mukunda A, Mohan A. Salivary Duct Carcinoma of Parotid Gland. *Oral Maxillofac Pathol J* 2016;7(2):752-754.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Salivary duct carcinoma (SDC) is a rare aggressive malignancy, with a propensity for invasive growth resulting in early regional and distant metastases.¹ Previously grouped with adenocarcinoma and not otherwise specified, it was classified as a distinct clinicopathologic entity by the World Health Organization (WHO).² It was first described by Kleinsasser and Klein in 1968 who considered SDC analogous to the ductal carcinoma of the breast and defined by WHO in 2005 as "an aggressive

adenocarcinoma which resembles high-grade breast ductal carcinoma."³

The term SDC should be used only for those tumors of the salivary glands that histologically resemble ductal carcinoma of the breast. However, it has been used generally for any primary adenocarcinoma showing focal ductal differentiation. The majority, about 88%, of SDCs occur in the parotid gland, 8% in the submandibular gland, and about 4% in the minor salivary glands. It is believed that SDC arises from either excretory ducts or due to malignant transformation of ductal cells in pleomorphic adenoma. Salivary duct carcinoma is highest in the sixth and seventh decades of life and is seen more in males.

CASE REPORT

A 60-year-old male patient presented with toothache and facial swelling on left cheek and ear lobe. The patient reported that the swelling was initially small in size approximately 1.5 years ago and noticed that the lesion had been increasing in size over the past 4 months with loss of sensation and reduced functions on the left side of the cheek. He also complained of drooping of the left eyelid.

On extraoral examination, an enlarged left parotid swelling with left eye ptosis was visible. The contour of the left eyelid was altered. On assessment of vision, no disturbance was found. The lesion measured 3 to 4 cm in greatest anteroposterior dimension. The skin over the swelling was normal but stretched. Swelling was non-tender, firm, and without any ulceration or discharge. Intraorally, the swelling was non-tender, firm, immobile, and non-compressible involving the buccal mucosa, obliterating the right upper buccal vestibule. The mucosa over the swelling was intact.

Following strict aseptic precautions, blood examination, fine needle aspiration cytology (FNAC), and magnetic resonance imaging (MRI) were done. Blood examination revealed elevated erythrocyte sedimentation rate (ESR) and increased lymphocyte count. Magnetic resonance imaging showed an ill-defined 25-24-34 mm enlarging area of hypointensity with cystic areas and fluid levels involving neurovascular plane in the deep lobule suggesting a parotid lesion.

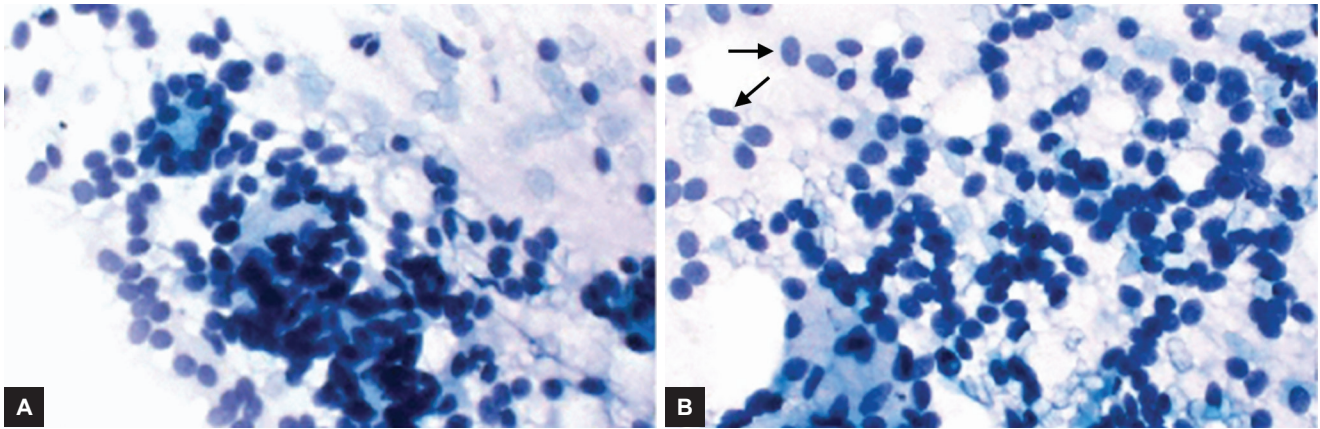
Fine needle aspiration cytology revealed highly cellular, non-cohesive, and basaloid pleomorphic cells arranged in cords suggestive of salivary gland neoplasm (Figs 1A and B).

After excluding other systemic diseases, a total left parotidectomy and selective upper neck dissection was

¹⁻³Postgraduate Student, ^{4,5}Professor, ⁶Senior Lecturer

¹⁻⁶Department of Oral and Maxillofacial Pathology, Royal Dental College, Chalissery, Kerala, India

Corresponding Author: TR Ramna, Postgraduate Student Department of Oral and Maxillofacial Pathology, Royal Dental College, Chalissery, Kerala, India, e-mail: ramna8190@gmail.com



Figs 1A and B: (A) Highly cellular basaloid cells arranged as cords; and (B) non-cohesive sheets of pleomorphic cells

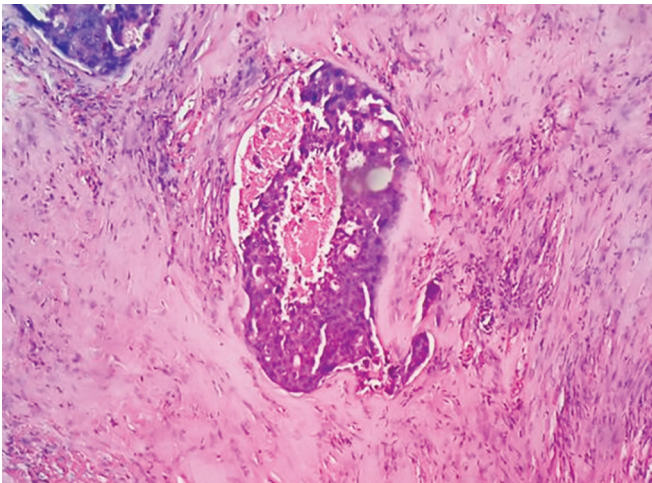


Fig. 2: Solid tumor islands in cribriform pattern with central comedo necrosis

performed. Frozen section of deep lobe and level II lymph node was done; facial nerve and its branches were identified and preserved. Gross examination of a frozen section revealed a firm, solid, gray-white lesion measuring 8 cm with a cystic component. Cut surface had areas of cystic changes and necrotic debris. Serial sections showed tumor infiltrating the deep margin of the larger piece. Tissues were sent for routine processing and microscopic examination. Tumor cells were seen to be arranged in cribriform pattern with central comedo necrosis (Fig. 2). Cells were round to oval in shape with moderate amount of eosinophilic cytoplasm and vesicular nuclei. Mitotic activity was noted. Thus, a final diagnosis of SDC of parotid gland was made.

Postoperative healing was uneventful and the patient was taken for a locoregional radiotherapy and chemotherapy with a diagnosis of T₄N₀M₀.

DISCUSSION

Salivary duct carcinoma is an aggressive adenocarcinoma that resembles high-grade ductal carcinoma of the breast. It is also known as cribriform salivary carcinoma of the

excretory ducts or high-grade salivary duct carcinoma. Salivary duct carcinoma represents 9% of all salivary malignancies. The male:female ratio is at least 4:1 and most patients present with the condition after 50 years.⁴ Though parotid gland is most commonly involved, submandibular gland, sublingual gland, minor salivary gland, maxillary, and laryngeal tumors have also been reported.² Salivary duct carcinomas are usually firm, solid, tan, white, or gray, with a cystic component. Infiltration of the adjacent parenchyma is usually obvious, but occasional tumors may appear to be circumscribed. Salivary duct carcinoma may also arise as the malignant component of an ex-pleomorphic adenoma, so that the macroscopic features of pleomorphic adenoma may also be present. For SDC, perineural spread (60%) and intravascular tumor emboli (31%) are common.⁴ Salivary duct carcinoma resembles intraductal and infiltrating mammary duct carcinomas, both architecturally and cytologically.

Principal cytological features of SDC are moderate-to-marked anaplastic cells and necrotic background.²

Histologically, the infiltrative tumor resembles mammary intraductal carcinoma and invasive ductal carcinoma. The intraductal-like component shows cribriform, papillary-cystic, or solid patterns, often with prominent islands of comedo necrosis.

The neoplastic cells exhibit a morphology characterized by an apocrine appearance with abundant eosinophilic cytoplasm, large pleomorphic vesicular nuclei, and prominent nucleoli. Cytoplasmic mucin is occasionally present. Moderate-to-high mitotic figures are seen. The stroma is densely fibrous or desmoplastic. Vascular invasion, perineural invasion, intravascular tumor emboli, and invasion to adjacent structures are common.³⁻⁵

Histological subtypes of SDCs are identified and are as follows:

- Sarcomatoid variant
- Mucin-rich variant
- Invasive micropapillary variant

All these subtypes represent the dedifferentiation of SDCs, but none of them have a role in the prognosis of the tumor.

DIFFERENTIAL DIAGNOSIS

- High-grade mucoepidermoid carcinoma can resemble SDC, but the mixture of cell types, such as epidermoid cells and goblet cells, is not seen in SDC.¹
- Metastatic breast carcinoma: Salivary duct carcinoma resembles intraductal and infiltrative mammary duct carcinomas, but breast carcinoma shows prominent spindle cells and mucin lakes.¹
- Oncocytic carcinoma: It is characterized by large tumor cells with granular eosinophilic cytoplasm but it lacks the comedo necrosis.¹
- Polymorphous low-grade adenocarcinoma: Though it resembles SDC closely, comedo necrosis, pleomorphic cells, and high mitotic activity are characteristics of SDC.⁶

CONCLUSION

- Salivary duct carcinoma is one of the rarest and most aggressive forms of parotid gland tumor that closely resembles mammary duct carcinoma.
- It is aggressive clinically with facial nerve invasion, recurrence, and metastasis to brain, lungs, etc.
- It is similar to polymorphous low-grade adenocarcinoma.

- Comedo necrosis is the typical pathognomonic sign of SDC.
- Life expectancy is 5 months to 10 years in 65% of patients after diagnosis. Aggressive treatment by surgical management and postoperative radiation therapy and optional chemotherapy is the only hope for long-term survival.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

REFERENCES

1. Fletcher CD. Diagnosis in histopathology of tumors. 4th ed. Vol. 1. Churchill Livingstone; 2012. p. 1013-1045.
2. Koss LG, Melamed MR. Koss's diagnostic cytology and histologic bases. 5th ed. Vol. 1. Lippincott William Wilkins; 2011. p. 1245-1246.
3. Acharya S, Padmini S, Koneru A, Krishnapillai R. Intraoral salivary duct carcinoma: a case report and a brief review. *J Oral Maxillofac Pathol* 2014 Sep;18(Suppl 1):S121-S127.
4. Pons Y, Alves A, Clement P, Conessa C. Salivary duct carcinoma of parotid gland. *Eur Ann Otorhinolaryngol Head Neck Dis* 2011 Sep;128(4):194-196.
5. Ellis GL, Auclair PL. Tumors of the salivary glands. AFIP atlas of tumor pathology. Washington (DC): Armed Forces Institute of Pathology and American Registry of Pathology; 2008. p. 322-332.
6. Kinnear VS, Mandyam KR, Chowhan AK, Nandyala R, Bobbidi VP, Vutukuru VR. Salivary duct carcinoma of the parotid gland. *J Oral Maxillofac Pathol* 2009;13(2):85-88.