

MUCOUS CELLS IN THE EPITHELIAL LINING OF DENTIGEROUS CYST

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HOW TO CITE THIS ARTICLE:

Pratiksha Kumar, Sangeeta Wanjari, Sumanta Koley, Prashanti Reddy, Sathyajitraje Tekade, Rajkumar Parwani. "Mucous Cells in the Epithelial Lining of Dentigerous CYST". *Journal of Evolution of Medical and Dental Sciences* 2014; Vol. 3, Issue 71, December 18; Page: 14494-14497, DOI: 10.14260/jemds/2014/4031

ABSTRACT: The epithelial lining of both the developmental and inflammatory cysts of odontogenic origin are primarily composed of squamous epithelium. Various forms of metaplasia and degenerations are observed in these epithelial linings e.g. mucous cells, ciliated cells, para and/or orthokeratinization and formation of hyaline bodies. The present study was designed to investigate the incidences of mucous cells in the epithelial lining of dentigerous cyst. Mucous cells were observed in 35% of the cysts examined. Moreover, the incidence of mucous cell was higher in maxilla than in mandible.

KEYWORDS: Mucous cells; odontogenic cyst; dentigerous cyst.

INTRODUCTION: The lining of both developmental and inflammatory cysts of odontogenic origin is composed of stratified squamous epithelium. Numerous studies have documented various forms of metaplasia and degeneration arising in the epithelial lining of the odontogenic cysts. The various forms of metaplasia and degenerations observed in these epithelial lining are mucous cells, ciliated cells, keratin formation and formation of hyaline bodies. The purpose of this study was to investigate the incidence of mucous cells in the epithelial lining of dentigerous cyst.¹

MATERIALS AND METHODS: Forty cases of non-inflammatory dentigerous cysts with well-preserved histological architecture were selected randomly from the archives of the Department of Oral and Maxillofacial Pathology, Modern Dental College and Research Centre, Indore. Out of forty cases 20 were taken from maxilla and 20 cases were taken from mandible. All tissues were fixed in 10% neutral buffered formalin and were embedded in paraffin. The sections of 4 to 5 µm thickness were taken from the selected specimens and stained with hematoxylin and eosin, alcian blue (pH 2.5) and mucicarmine stain.

The presence of mucous cells were considered only in those cases where mucous cells were found in the areas devoid of moderate to severe inflammatory cell infiltrate in order to exclude the possibility that mucous cell metaplasia may have resulted from an inflammatory process. The number of mucous cells whether single/multiple and its position in the epithelial lining was recorded.

RESULTS: Out of 40 dentigerous cysts selected for the study, 14 exhibited individual mucous cells in epithelial lining with the overall incidence being 35%. Out of 20 cases of maxillary cyst 10 cases exhibited mucous cells with overall incidence being 50% in maxilla and out of 20 mandibular cyst 4 cases exhibited mucous cells with overall incidence being 20% in mandible. The mucous cells were found scattered and isolated in all the layers of stratified squamous epithelium. (Fig 1). Few clear cells were also observed near the mucous cells. (Fig 2).

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DISCUSSION: Odontogenic cysts have been classified into 2 main types based on their etiopathogenesis as inflammatory and developmental. Dentigerous cyst is the most common developmental cyst, estimated to be about 20% of all jaw cysts while radicular cyst is the most common inflammatory jaw cyst.

Dentigerous cyst can be defined as an odontogenic cyst that surrounds the crown of an impacted tooth, caused by the fluid accumulation between the reduced enamel epithelium and the enamel surface.

The presence of mucous cells in the stratified squamous epithelium of dentigerous cyst is well documented. According to Yasunori Takeda et al in their study of 103 cases, have documented the presence of mucous cells in 23.8% of dentigerous cyst.¹ Browne in his study of 81 cases of dentigerous cyst found mucous cells in 30% of mandibular and 53% of maxillary cysts.² In the present study mucous cells were found in 20 % of mandibular cyst and 50% of maxillary cysts. Such variation in the incidences of mucous cells in the present study might be due to the number of specimens examined.

The presence of mucous cells in the lining of the intraosseous odontogenic cysts was thus considered to be metaplastic in origin, but the cause and biological significance of this phenomenon is not certain.

It was postulated that in the initial process of metaplasia the keratinocytes became vacuolated and then within some vacuolated cells mucin granules begin to appear and accumulate, ultimately leading to the formation of mucous cells.³

According to Shear, High & Hirschman the incidence of mucous cells in the dentigerous cyst increases with the increasing age of the patient. In these cases it would appear that the appearance of mucous cells is also dependent on the age of the cyst lining and this would be the further evidence in favor of their origin by metaplasia.^{3,4,5}

The possibility exists that mucous metaplasia may occur in the stratified squamous epithelial lining of the dentigerous cyst in response to some stimulus in the cyst fluid but this has not yet been demonstrated.³

Further the development of a mucoepidermoid carcinoma is also documented as the potentiality of the epithelial lining of the dentigerous cyst from the mucous secreting cells. The documented incidences of malignant changes in dentigerous cyst vary between 0.3% and 2%.^{6,7,8}

In conclusion, this study illustrates the presence of mucous cells and numerous vacuolated cells in the epithelial lining of dentigerous cyst. Furthermore it can be stated that the presence of numerous vacuolated cells may represent a stage in the histogenesis of mucous metaplasia however the proof for this phenomenon may require further investigations.

ACKNOWLEDGEMENT: The author wishes to thank Ms. Sapna Chaudhary for her technical assistance in preparation of the sections.

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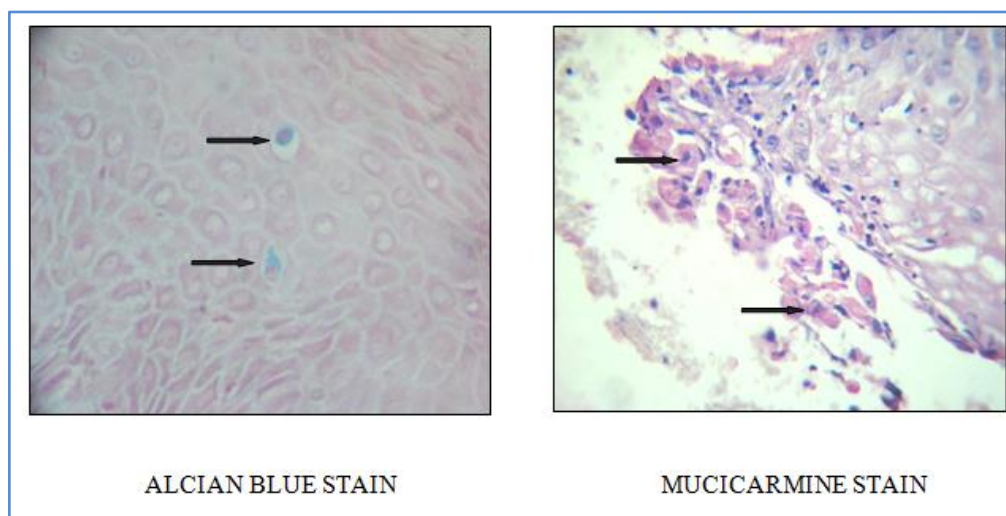


Fig. 1: Epithelial lining of dentigerous cyst showing single mucous cells

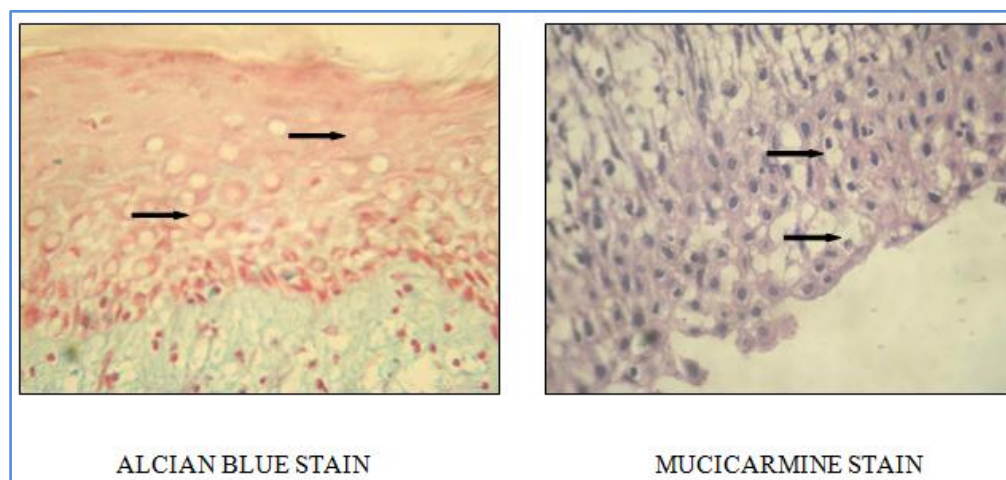


Fig. 2: Epithelial lining of dentigerous cyst showing many clear cells

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Date of Submission: 10/12/2014.
Date of Peer Review: 11/12/2014.
Date of Acceptance: 12/12/2014.
Date of Publishing: 16/12/2014.