

Section of Odontology

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Muco-epidermoid Odontogenic Cysts of the Jaws with Special Reference to those in the Mandible

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ODONTOGENIC cysts are usually lined by stratified squamous epithelium. Occasionally cysts in the maxilla may contain in places a respiratory epithelium with a few goblet cells which is said to arise from the antrum or nose. Stafne and Millhon (1945) found one such case in 88 epidermoid cysts of the jaws. I have found 4 in 54 maxillary dental cysts. There is little information in the literature regarding the presence and nature of mucous cells in odontogenic cysts, and no mention of them in cysts of the mandible. Sonesson (1950), Stones (1954) and others note their occasional presence but give no details. Linell (1948) found 4 cases (6%) out of 70 which showed goblet cells in the squamous epithelium. He illustrates one but does not say whether they were present in mandibular or maxillary cysts, or both.

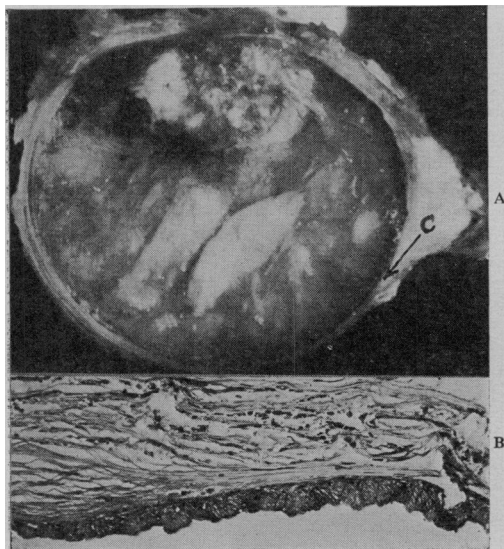


FIG. 1.—A, Cut surface of enucleated residual cyst from premolar area of mandible of male age 32. Two years' history. Contents, fat, cholesterol, blood, &c. Cyst wall (C), fibrous tissue with scattered patches of chronic inflammatory cells, a few epithelial clumps, some with mucous changes—cyst lining, stratified squamous epithelium, half of which was replaced by mucous cells. B, Goblet cells in cyst lining backed by one or two layers of flattened epithelial cells. Hæmatoxylin and mucicarmine. $\times 89$.

In 1949 a residual cyst of the mandible was received for routine histological report and sections showed that a large part of the stratified squamous epithelial lining contained goblet and other shaped mucous cells (Fig. 1). Since then, 89 odontogenic cysts have been examined and out of 53 maxillary cysts 12 contained mucous cells (22%) and out of 36 mandibular cysts 8 contained mucous cells (22%). Those cysts containing mucous cells may be termed muco-epidermoid cysts. Table I shows an analysis of the cysts examined.

TABLE I
EPIDERMOID CYSTS

Site	Radicular	Residual	Eruption	Dentigerous	Lateral	Total	
Maxilla	18	13	6	4	0	41	} 69
Mandible	6	15	1	2	4	28	
MUCO-EPIDERMOID CYSTS							
Maxilla	3	7	0	2	0	12	} 20
Mandible	2	6	0	0	0	8	

Total Cysts 89. Muco-epidermoid 22%.

Maxillary cysts 53—Muco-epidermoid 22%. Mandibular cysts 36—Muco-epidermoid 22%.

The 53 cysts in the maxilla include 2 radicular cysts and 1 residual cyst containing portions of respiratory epithelium (one recent one not included). The number of mucous cells varied from a few to many, sometimes comprising half or more of the luminal cells. Identification was based on morphology, routine metachromasia, and staining with mucicarmine and the periodic-acid Schiff reagent. It may be pointed out that more than one kind of mucin may be present and eosinophilic mucins may occur within cysts and cells. In epithelial pearls the latter may be mistaken for keratin (Fig. 5B). The age range of the muco-epidermoid cysts was 28–79 years, which does not differ from that of the usual epidermoid cysts.

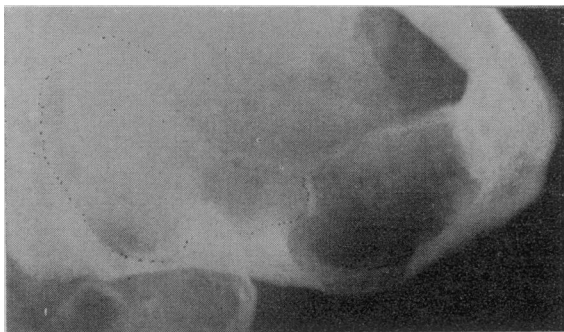


FIG. 2.—Bi-loculated residual cyst in mandible—male age 59—history three years. No solid contents—moderate acute and chronic inflammatory cell infiltration.

The finding of a similar percentage of muco-epidermoid cysts in the mandible to those in the maxilla (Figs. 1–5), indicates that proximity to the antrum or nose does not explain their presence. Detailed microscopic study shows that except for the respiratory goblet cells, the mucous cells arise by metaplasia of squamous, and possibly intermediate cells. In many cases, adjacent cells with dense granular cytoplasm are seen and are suggestive of pre-mucous changes. The mucous cells may be found on the luminal surface of the cyst (Figs. 1B and 3A), also deep within the squamous epithelium, sometimes forming intra-epithelial mucous

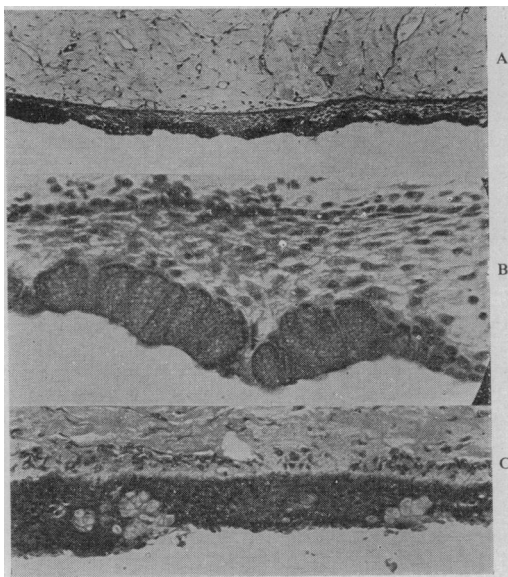


FIG. 3.—Areas from the wall of cyst in Fig. 2. A, Low power showing dense fibrous tissue and stratified squamous epithelial lining with extensive replacement of the surface layer by goblet cells. Hæmatoxylin and periodic-acid Schiff reagent. $\times 58$. B, High power showing goblet cells. Hæmatoxylin and mucicarmine. $\times 244$. C, Showing intra-epithelial mucous gland-like formations. Hæmatoxylin and eosin. $\times 112$.

gland-like formations (Fig. 3C) and sometimes forming mucous microcysts (Fig. 4B). Their form as goblet-shaped cells (Fig. 3B) or flattened squames depends on the degree of intracystic pressure. They may also be found in columns, clumps and epithelial pearl-like nests of hyperplastic epithelium within the fibrous tissue of the cyst wall (Fig. 5B). They are present in inflamed, desquamating epithelium, in stabilized uninfamed cysts with sclerotic walls and also the pseudo-adamantinomatous spongiosis commonly seen in squamous epithelium of dental cysts.

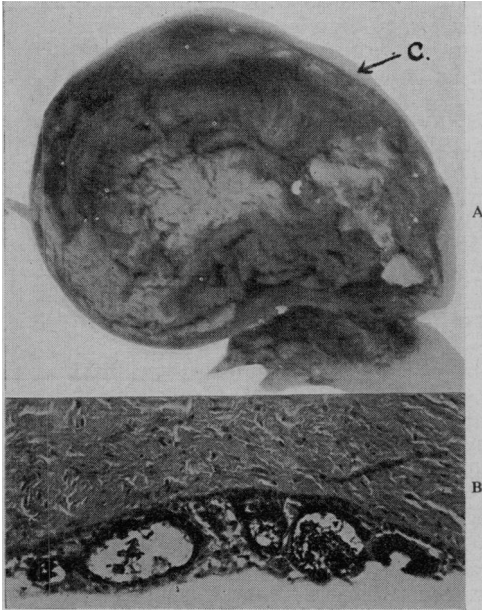


FIG. 4.—A, Cut surface of residual cyst in pre-molar area of maxilla—male age 49. History six months. Contents, fat, cholesterol, calcium deposits, mucin, &c. Fibrous wall (C) showed no inflammatory cellular infiltration. B, Showing microcysts lined by goblet cells in stratified squamous epithelial lining. Hæmatoxylin and mucicarmine. $\times 148$.

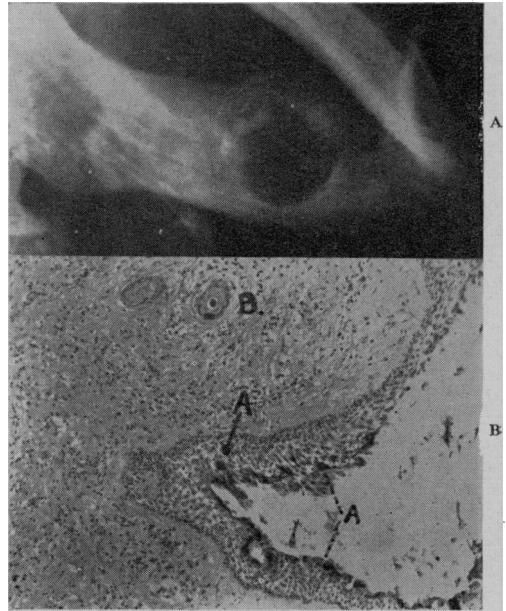


FIG. 5.—A, Residual cyst in mandible with root fragment—female age 54, history of five years. No loose contents. B, Section of cyst wall showing mucous cells on luminal surface and deeper within stratified squamous epithelium (A)—also mucous changes in epithelial nests (B). Cyst wall showed moderate inflammatory cell infiltration. Hæmatoxylin and mucicarmine. $\times 69$.

What is the significance of the presence of these metaplastic mucous cells in jaw cysts? I am not convinced that they are primarily degenerative in nature, although many of them appear to succumb to their own secretion or desquamate into the cyst lumen. Stewart *et al.* (1945) have stated that in salivary tumours, mucous cells once formed, have considerable powers of proliferation. It may be that their presence reflects the glandular potentialities of the oral epithelium. Their formation from squamous cells, however, does not add to this possibility, and I would regard the metaplasia as environmental in origin, i.e. an interference with cell metabolism. Our interest in the muco-epidermoid cysts lies in their similarity to the cystic areas and epidermoid proliferation in muco-epidermoid salivary tumours and muco-epidermoid features of adamantinomas (*Brit. J. Plastic Surg.* In press). We are also interested in the question whether these cysts show any different clinical behaviour to the ordinary epidermoid cysts. This is a long-term investigation which depends a great deal on the willingness of patients to return for further examination.

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