

原文題目(出處)：	Clear Cell Variant of Calcifying Epithelial Odontogenic Tumor: Is It Locally Aggressive? J Oral Maxillofac Surg 2009;67:207-11.
原文作者姓名：	Ana Lúcia Carrinho Ayrosa Rangel, Andréia Aparecida da Silva, Fábio Augusto Ito, Márcio Ajudarte Lopes, Oslei Paes de Almeida, DDS, PhD, Pablo Agustin Vargas
通訊作者學校：	Piracicaba Dental School, State University of Campinas, Piracicaba, São Paulo, Brazil.
報告者姓名(組別)：	Intern L組 陳品卉
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內文：

- The calcifying epithelial odontogenic tumor (CEOT) is a rare benign odontogenic neoplasm of the jaws, accounting for approximately 1% of all intraosseous odontogenic tumors.
- Some histologic variants have been described, including CEOT with **Langerhans cells**, with **cementum**-like and **bone**-like material, combined epithelial odontogenic tumor and adenomatoid odontogenic tumor, **myoepithelial** cells, and the **clear cell** variant of calcifying epithelial odontogenic tumor (CCCEOT).
- The diagnosis of CCCEOT is very difficult and other clear cell lesions that affect the oral cavity should be excluded. According to some authors it is more aggressive when compared with other CEOT variants showing a recurrence rate of 10.52% and should be considered as a **low-grade odontogenic carcinoma**.

Report of a Case

- a specimen from a 65-year-old male of a painless swelling located between the mandibular right lateral incisor and canine that had been growing slowly for about 3 years.
- Clinical information → a fibrous, firm, sessile, and painless lesion covered by a smooth and regular mucosal surface in the anterior mandibular gingival between the right lateral incisor and canine, which measured nearly 1.5 cm in its maximum dimension.
- Periapical radiograph → a well-defined unilocular radiolucent lesion with radiopacities dispersed throughout the radiolucency, with resorption of the bone crest between the right mandibular lateral incisor and canine; however, the roots of the adjacent teeth were not displaced
- no sign of the root resorption (Fig 1).
- The lesion was removed by complete surgical excision.



FIGURE 1. Periapical radiograph showing a well-defined unilocular radiolucent lesion with radiopacities dispersed throughout the radiolucency, with resorption of the bone crest between the right mandibular lateral incisor and canine.

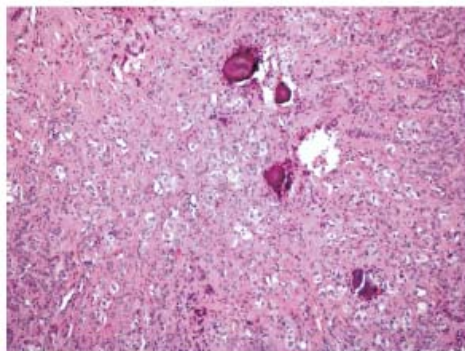


FIGURE 2. Microscopic features of the CCCEOT showing nests of polyhedral epithelial cells with clear cells and calcification (hematoxylin-eosin stain, original magnification x100).

Dense connective tissue that was replaced by irregular strands, cords, and nests of epithelial cells.

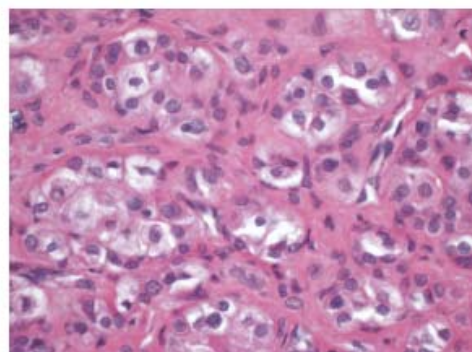


FIGURE 3. High-power view exhibiting mild pleomorphism on polyhedral and clear cells (hematoxylin-eosin stain, original magnification x400).

The polyhedral epithelial cells disclosed an abundant and

eosinophilic cytoplasm; round to oval relatively large nuclei with dense chromatin, and evident intercellular bridges. These cells showed mild pleomorphic and hyperchromatic nuclei.

These cells showed mild pleomorphic and hyperchromatic nuclei. In significant portions, the epithelial cells had a clear, foamy, vacuolated cytoplasm(Figs 2-4).

A: The calcifications areas and Liesegang’s rings were observed

B: Amyloid-like deposits could be observed in Congo red staining under polarized light (Fig5). **Fig. 6:** avidin-biotin complex technique showed positivity for cytokeratin cocktail in the epithelial neoplastic cells

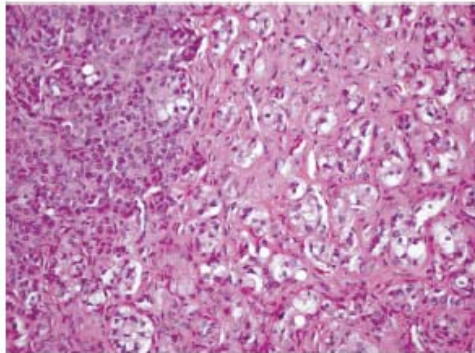


FIGURE 4. Microscopic features of the CCCEOT showing nests of polyhedral epithelial cells compounded by large and dark nucleus and clear cells with foamy and clear cytoplasm (hematoxylin-eosin stain original magnification ×200)

Fig.7: the stromal component was positive for vimentin

Analyzing all features described above the final diagnosis of central CCCEOT was established. The patient has been followed for about 24 months with no sign of recurrence observed.

Discussion

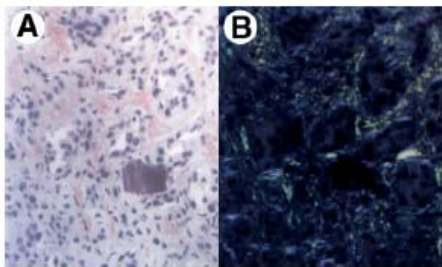


FIGURE 5. Amyloid-like material stained by Congo red (A) and shown by polarized light showing the characteristic green birefringence in a darkened background (B) (Congo red, original magnification ×200).

Table 1. WELL-DOCUMENTED REPORTED CASES OF CCCEOT*

Authors	Age (yr)	Gender	Site	Size (cm)	Treatment	Follow-Up
Abrams and Howell ⁸	16	F	Gingiva	0.5	Excision	FOD 3 yr
	50	M	Intraosseous	1.2	Enucleation	FOD 3 yr
Anderson et al ⁶	68	F	Intraosseous	3.0	Curettage	Recurrence at 4 mo
Wallace and MacDonald ¹³	65	M	Intraosseous	NR	Excision	FOD 22 mo
Greer and Richardson ⁵	37	F	Intraosseous	0.5	Enucleation	FOD 13 mo
Oikarinen et al ³	36	F	Intraosseous	10.0	Enucleation	FOD 2 yr
Wertheimer et al ²²	20	M	Gingiva	1.5	Excision	NR
Yanaguchi et al ²³	36	M	Intraosseous	2.5	Partial resection	FOD 2 yr
Ai-Ru et al ²⁴	32	F	Gingiva	NR	Partial resection	FOD 10 yr
	42	F	Intraosseous	NR	Resection	FOD 2 yr
Schmidt-Westhausen et al ¹⁴	38	M	Intraosseous	2.5	Resection	FOD 2 yr
Hicks et al ²¹	59	F	Intraosseous	3.8	Resection	FOD 3 yr
Houston and Fowler ²⁵	64	M	Gingiva	1.5	Excision	FOD 4 yr
	27	M	Gingiva	1.4	Excision	FOD 4 yr
Kumamoto et al ⁹	14	F	Intraosseous	NR	Partial resection	Recurrence at 13 yr
Orsini et al ¹²	32	M	Gingiva	NR	Excision	FOD 4 yr
Mesquita et al ¹⁶	48	F	Gingiva	2.0	Excision	FOD 30 mo
Anavi et al ⁷	27	M	Gingiva	1.0	Excision	FOD 1 yr
Germanier et al ¹¹	44	F	Intraosseous	3.0	Enucleation	FOD 1 yr
Rangel et al†	65	M	Intraosseous	1.0	Excision	FOD 1 yr

Abbreviations: CCCEOT, clear-cell calcifying epithelial odontogenic tumor; F, female; FOD, free of disease; M, male; NA, not available; NR, not reported.

*Eighteen cases were reported in 16 articles.

†Present report.

Rangel et al. Clear Cell Variant of Calcifying Epithelial Odontogenic Tumor. *J Oral Maxillofac Surg* 2009.

Currently 20 reported cases, 12 central and 8 peripheral lesions.

- M:F ratio → central 1:1.2 ; peripheral 1.66:1.
- Age ranged from 14 to 68 years with a mean age of 40.84 years. The mean age for the intraosseous CCCEOT is higher (46.36 years) than for the extraosseous variant (33.25 years).
- The surgical management modalities in the 20 cases were as follows: complete or partial resection, excision, enucleation, and curettage.
- The follow-up ranged from 4 months to 13 years (mean 3.6 years), and it was not available in 1 case. Recurrence was reported in 2 cases of central CCCEOT (10.52%). None of the peripheral lesions recurred.
- Histopathological diagnosis
 - typical epithelial clear cells within the tumor
 - nuclei vary in size and shape, with rare mitotic figures
 - irregular strands, cords, and nests of the polyhedral epithelial cells with abundant, eosinophilic cytoplasm, round to oval relatively large nuclei with dense chromatin, and evident intercellular bridging in association with clear epithelial cells
 - Deposition of extracellular amyloid-like material and calcifications are also typical.

● Differential Diagnosis of Clear cell tumors

Epithelial lining/ clear cell rests of dental lamina	Lateral periodontal cyst, gingival cyst	
Odontogenic epithelial tumor	Ameloblastoma, calcifying odontogenic cyst, calcifying odontogenic tumor	minor degree of atypia, good circumscription of the lesion, and presence of calcified and amyloid-like material.
Salivary gland tumors	mucoepidermoid carcinoma, acinic cell carcinoma	Actin, S-100 (-), PAS (+)
metastatic disease	kidney, thyroid, and lung carcinomas	PAS (-)
melanocytic and mesenchymal neoplasms.		arise in the soft tissue, rarely in the head and neck region. S-100 (+) melanoma associated antigen (HMB-45) (+)

- The diagnosis of CCCEOT in our case was supported by microscopically biphasic pattern, presence of apple-green birefringent/ Congo red-positive material between tumor islands, small calcifications, good circumscription of the lesion, and lack of mitotic figures.
- Our analysis showed that all cells (polyhedral and clear) strongly expressed CK AE1/AE3, CK7, and CK14 but were immunonegatives for S-100, muscle specific actin, desmin, and anti-human melanosome. The stromal component, however, was positive for vimentin.
- Although considered benign in nature, CCCEOT is designed as locally aggressive for some investigators because its moderate recurrence rate.
 - Anavi et al: there is evidence to support the classification of CCCEOT as a distinct, more aggressive variant of CEOT but not as a separate entity.
 - Veness et al described a case of CEOT suggesting a malignant transformation process.
 - Kumar et al reported a case with initial diagnosis of CEOT that showed posterior widespread infiltration, necrosis, and metastatic lesion in vertebrae and hip. Final diagnosis was metastasizing clear cell odontogenic carcinoma.
- Treatment of CCCEOT involves surgery; enucleation of involved tooth, or “in bloc resection” in some cases including any associated soft tissue mass. Tumor-free surgical margins should be obtained to reduce the risk of local recurrences. The recurrent cases of

CCCEOT occurred probably because of inadequate treatment.

- The clinical course of the present case did not show recurrence after 24 months.
- CCCEOT is not locally aggressive as mentioned previously because the cases reported have generally shown little evidence of aggressiveness even years after relatively conservative treatment.

題號	題目
1	<p>下列有關adenomatoid odontogenic tumor, calcifying odontogenic tumor及ameloblastic fibro-odontoma三者共同點的敘述，何者錯誤？</p> <p>(A) 都含有來自外胚層(ectoderm)的組織</p> <p>(B) 在放射線影像上都表現出同時有放射線透射及不透射區</p> <p>(C) 三者都是齒源性的良性腫瘤</p> <p>(D) 都比較常見於50歲以上的病患</p>
答案(D)	<p>出處：94年第二次高考</p> <p>AOT 好發在10~19歲的年輕人身上； calcifying odontogenic tumor 平均年齡17歲； ameloblastic fibro-odontoma 常見於小孩，平均年齡約10歲左右。</p> <p>Neville's Oral and Maxillofacial Pathology, 2nd Ed.</p>
題號	題目
2	<p>在組織病理切片裡，鈣化性齒源性囊腫(calcifying odontogenic cyst)最特別的是有下列何者？</p> <p>(A) cyst</p> <p>(B) ghost cells</p> <p>(C) stellate reticulum</p> <p>(D) Inflammation</p>
答案(B)	<p>出處：96年第一次高考</p> <p>“The most characteristic histoathologic feature of the calcifying odontogenic cyst is the presence of variable numbers of <u>ghost cells</u> within epithelial component.”</p> <p>Neville's Oral and Maxillofacial Pathology, 2nd Ed. (pg. 605)</p>
題號	題目
3	<p>關於calcifying epithelial odontogenic tumor，下列何者為非？</p> <p>(A) 常見於30~50歲的中年人</p> <p>(B) 病理玻片下可看到Liesegang's rings以及鈣化物質</p> <p>(C) 在放射線影像上整個病灶區是完全不透射區</p> <p>(D) 在congo red的染色下可染出amyloid substance。</p>
答案(C)	<p>“Radiographically, the tumor shows a unilocular or, more often, a multilocular radiolucent defect.”</p> <p>Neville's Oral and Maxillofacial Pathology, 2nd Ed. (pg. 623)</p>
題號	題目
4	<p>下列何者不是calcifying epithelial odontogenic tumor在病理組織切片下所觀察的結果？</p> <p>(A) irregular strands, cords, and nests of the polyhedral epithelial cells</p> <p>(B) pleomorphic and hyperchromatic nuclei.</p> <p>(C) Liesegang ring calcifications</p> <p>(D) Basophilic extracellular material</p>
答案(D)	<p>“The polyhedral epithelial cells disclosed an abundant and <u>eosinophilic</u> cytoplasm”</p> <p>From this journal</p>