OS-OM combined meeting

報告者: 高郁勛 陳靜怡
指導醫師: 黃逸岳醫師 陳玉昆醫師 王文岑醫師
報告日期: 95/12/21
General data

- Name: 林XX
- Sex: 男
- Age: 17 y/o
- Occupation: student
- Native: 高雄縣
- Attending V.S.: 黃逸岳醫師
- First visit: 95/09/19
Chief Complaint

- Painless swelling over upper left gingiva for more than one week
Present Illness

The 17 y/o male patient didn’t have uncomfortable experience of oral cavity before. On 95/09/16, his aunt found that a mass occupied on his upper left gingiva. The mass didn’t make him painful or uncomfortable. Then he was brought to XX內兒科診所 for help. After clinical examination, the doctor referred him to our OPD for further treatment.
Past History

- **Past Medical History**
  - Enuresis with medication at our Urological department for 5 years
  - Depressive disorder with medication at our Psychological department for 2 years
  - Denied any other systemic disease
  - Denied any drug or food allergy

- **Past Dental History**
  - OD, Endo
  - Experience to dental treatment: fair
Personal History

- Personal hobbies:
  - Alcohol: (-)  Betel quid: (-)  Cigarette: (-)

- Occupation: student

- Education: 高二

- Marital status: (-)

- Economic state: 尚可

- Psychic status: cooperative
Family history

Family support:
- 自89年起就住在兒童之家
- 姑姑平時也會照顧日常生活

Contributory to the problem: unknown
Review of Systems

- 嘴巴: 牙齦流血 (刷牙)
- 呼吸道: 咳嗽, 痰
- 腸胃道: 胃口不好 (不愛吃肉)
- 泌尿道: 夜尿
- No significant finding in other systemic review
Physical Examination

- Conscious: Clear

- Vital sign:
  - Pulse: 73/min
  - Temp. : 36.4°C
  - Resp. Rate: 18/min
  - B.P. : 104/61 mm/Hg

- General appearance:
  - B.H. : 171.5cm
  - B.W. : 49.5kg

- Head and face: symmetric appearance
Physical Examination

Eye:
- Conjunctiva: not pale
- Sclera: not icteric
- EOM: normal

Ear: no hearing impairment

Nose: patent

Throat: no discharge

Neck: LAP(-); JVE(-); supple; free extension
Physical Examination

- Chest:
  - Symmetric expansion
  - H.S.: no murmur, RHB
  - B.S.: clear

- Abdomen:
  - Soft, no palpable mass
  - Normal active bowel sound

- Extremities: free extension, no pitting edema

- Cranial nerve: N.P.
Physical Examination

Mouth:

- Teeth:
  - Missing: 23
  - Retained primary tooth: 63
  - O.D.: 16, 24, 26, 46

Vitality test:
- 21, 24, 25: positive response
- 22: negative

- Occlusion:
  - Class I molar relation
  - Overbite: 2 mm; overjet: 2 mm

- MMO: 51 mm (from 11 to 41)

- No masticatory muscle tenderness
Physical Examination

- A swelling mass over left side of maxilla opposed to teeth 21~25:
  - Buccal gingiva, vestibule and palatal gingiva
  - Mucosa is intact, pink in color
  - No discharge from gingiva sulcus
  - Pain(-), Tenderness(-)
  - Firm in consistency
  - No percussion pain of teeth 21 to 25
Image finding – Skull PA and Lateral (95/10/05)
Image finding – Skull PA and Lateral (95/10/05)
Image finding – Water’s view
(95/10/05)
Image finding – Water’s view
(95/10/05)
Image finding – Panorex
(95/09/19)
Image finding – Occlusal film
(95/09/19)
Impression

- Dentigerous cyst
- Adenomatoid odontogenic tumor
- Keratocyst
- Calcifying odontogenic tumor
- Unicystic ameloblastoma
Incisional biopsy

Aspiration: yellowish in color
Incisional Biopsy

- No: KMUOP-06-1864
- Date: 2006.09.19

- Specimen: 2 soft tissue fragments
- Size: 1.0 x 0.7 x 0.3 cm
- Color: Brownish
- Consistency: soft
HP Report -- Incisional

- Dentigerous cyst
  Bone, Maxilla, Impacted 23, Incision

Histopathology

Radiography

Histological section showing the wall and Epi. (Epithelium). Radiograph showing the impacted tooth and surrounding bone.
Diagnosis

- Dentigerous cyst over left side of maxilla and impaction of tooth 23
- Enuresis with medication control
- Depressive disorder with medication control
Oral and Maxillofacial Surgical Condition

- MMO: 51mm (from 11 to 41)
- Airway: patent, no discharge
- Neck: Free extension, supple
- No teeth loosening
  - Retained primary tooth 23
- Systemic problems:
  - Enuresis
  - Depressive disorder
Treatment Plan

- **Pre-operation:**
  - Arrange endodontic treatment of tooth 22

- **Operation plans:**
  1. Decompression:
     - Self care of decompression device
     - Frequency of OPD follow up
  2. Enucleation + extraction of teeth 23 63 + bone graft

- **Post operation:**
  - Wound care
  - Regular OPD follow up
Treatment course

Operation on 95/10/12:

- Mucoperiosteal flap reflection
  - Bony perforation over 21 apical region (previous biopsy site)
  - Labial cortical bone was similar with eggshell in thickness
- Increased the size of window (opposed to 22 and 63)
Treatment course

- Incision the roof of the lesion → sent for H-P exam
- Chemical cauterization via soft tissue window
  - 4% phenol (2 minutes/time, 3 times), then N/S irrigation
  - 95% alcohol (2 minutes/time, 2 times), then N/S irrigation
- Extraction of 63
Treatment course

- Enucleated the main lesion and impacted 23
  - No evidence of oro-nasal and oro-antral communication
  - Palatal mucosa was intact
- Placed Triosite (artificial bone graft, 2ml/bottle, 4 bottles) over the defect
- Suture the wound
Post-operation panorex (95/10/14)
Post-operation panorex
(95/10/14)
Treatment course

Post operation:

- Wound condition:
  - No evidence of oozing
  - No evidence of discharge from nostril
  - Mild to moderate swelling of left face

- Discharge from our ward on 10/17 (post-op 5th day)
Treatment course

- OPD follow up:
  - On 95/11/20 (post operation 6 weeks):
    - Little discharge from 21 22 labial gingiva → suspect rejection of bone graft
      - N/S irrigation to wash the infected bone graft
    - No progress of graft rejection during later F/U
Excisional Biopsy

No.: KMUOP-06-2044
Date: 2006.10.12

Specimen
1. 1 Main lesion with tooth 23
2. 1 Soft tissue fragment
   -- labeled as “tissue before phenol treated”
Gross – Main Lesion

- **Size** *(Excluding tooth)*:
  - 3.4x2.4x1.7 cm
- **Color**
  - Brownish
- **Consistency**
  - Rubbery

Crown of tooth 23 -- surrounded by the lesion
Gross – Hemisection\(^{(1)}\)

- Cystic part
- Solid mass
- Tooth 23
Gross – Hemisection

Cystic part
1. Dimension – 2.0x1.8 cm
2. Color – Brownish
3. Consistency – Rubbery
4. Content – a little brownish fluid

Solid part
1. Dimension – 1.5x1.0 cm
2. Color – White
3. Consistency – Firm
Gross – 交界點

Cyst and Tumor

Capsule

Tumor and Tooth

Tooth and Cyst (CEJ)
Radiograph -- Gross

Radiograph

Gross

Tumor
Slide -- Gross

Odontoma - like area
Microscope – 交界點

AOT
DC

AOT
Odontoma-like area

Tooth

Tooth
DC
Possible Effect of Phenol

No significant difference in microscopic morphology

Incision

After
Final Diagnosis

Adenomatoid odontogenic tumor arising from dentigerous cyst
(AOT ex DC)

Bone, Maxilla, Impacted 23,
Enucleation
Discussion

- Treatment methods of dentigerous cyst:
  - Enucleation and removal of associated tooth
  - Curettage
  - Marsupialization // Decompression
    - Possibility of eruption of associated tooth

- Rare recurrence
Discussion

Management of surgical defect:
- Bone graft
- Packing with iodoform gauze
  - Hemostasis
  - Decrease dead space
Discussion

- Cauterization agent:
  - Local fixation of tissue
  - Ensures hemostasis
  - Carnoy’s solution:
    - First suggested by Cutler and Zollinger in 1933
    - Made up of:
      - Chloroform 3 ml
      - Absolute alcohol 6 ml
      - Glacial acetic acid 1 ml
      - Ferric chloride 1 gm
Discussion

Conventional method of using cauterization agent:

- Usually treat the bony defect of cystic lesion after enucleation // excision
- Penetrate the cancellous bone to a depth of 1.5mm
  - 1.54mm after 5 minutes
  - 1.81mm after 1 hour
- May impede bone healing and damage the vital structure (neurovascular bundle, sinus membrane)
- Before enucleation, tends to damage the epithelial lining → affect to H-P diagnosis
The present case:
- Cauterization agent: 4% phenol
- Before enucleation:
  - Destroy lining epithelium of cystic lesion
    - Decrease possibility of recurrence
  - Fibrous change of cyst wall \(\rightarrow\) become dense in consistence
    - Easily excise the cystic lesion from the adjacent soft tissue
      (sinus membrane, site of cystic perforation, neurovascular bundle)
  - No harm to the bony surface and neurovascular bundle (mandible)
### Clinical Features

<table>
<thead>
<tr>
<th></th>
<th>DC</th>
<th>AOT</th>
<th>This case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence</td>
<td>20% (jaw cyst)</td>
<td>3~7% (odontogenic tumor)</td>
<td>X</td>
</tr>
<tr>
<td>Age</td>
<td>10-30 (wide range)</td>
<td>10-19 (69%)</td>
<td>17</td>
</tr>
<tr>
<td>Gender</td>
<td>Male (slight)</td>
<td>Female (F:M=2:1)</td>
<td>Male</td>
</tr>
<tr>
<td>Site</td>
<td>Md 8, Mx 3</td>
<td>Mx ant. (3)</td>
<td>Tooth 23</td>
</tr>
<tr>
<td>Symptom</td>
<td>Asymptomatic</td>
<td>Asymptomatic</td>
<td>Asymptomatic</td>
</tr>
<tr>
<td>X-ray</td>
<td>Unilocular R/L Surrounding Unerupted tooth</td>
<td>Unilocular R/L Unerupted tooth, 75% Calcification, 33%~66%</td>
<td>Unilocular R/L Impacted 23</td>
</tr>
</tbody>
</table>

DC: dentigrous cyst; AOT: adenomatoid odontogenic tumor; R/L: radiolucency
Dentigerous Cyst

- **Pathogenesis**
  - uncertain, fluid accumulation between REE and tooth crown

- **Transformation of odontogenic epithelial lining**
  - genesis: unknown
  - incidence: rare
Lesions Arising From Dentigerous cyst

- Non-aggressive benign tumor
  -- AOT

- Aggressive benign tumor
  -- Mural ameloblastoma

- Malignant tumor
  -- Squamous cell carcinoma
  Mucoepidermoid carcinoma (from mucus cells in the lining of DC)
# AOT Ex DC in Literatures

## Total 6 cases

Vallejo et al, 1998: 12 y/o male;  Warter et al, 1990: 8 y/o male  

<table>
<thead>
<tr>
<th></th>
<th>Bravo et al, 2005</th>
<th>Takahashi et al, 2001</th>
<th>This case</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>14</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td><strong>Site</strong></td>
<td>Mx, 23</td>
<td>Mx, 28</td>
<td>Mx, 23</td>
</tr>
<tr>
<td><strong>Symptom</strong></td>
<td>Swelling with sharp pain</td>
<td>Painless swelling, nasal obstruction</td>
<td>Painless swelling</td>
</tr>
<tr>
<td><strong>X-ray</strong></td>
<td>Unilocular R/L, 23 crown surrounded</td>
<td>Unilocular R/L, 28 crown surrounded</td>
<td>Unilocular R/L, 23 crown surrounded</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Expanding to sinus</td>
<td>Expanding to sinus</td>
<td>/</td>
</tr>
</tbody>
</table>
## Other Lesions Associated with AOT

<table>
<thead>
<tr>
<th>Case</th>
<th>COC: 2 cases</th>
<th>CEOT: 24 cases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case</strong></td>
<td>Zeitoun et al, 1996</td>
<td>Miyake et al, 1996</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>35</td>
<td>16</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td><strong>Site</strong></td>
<td>Md ant.</td>
<td>Mx, 21</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>2 months</td>
<td>/</td>
</tr>
<tr>
<td><strong>Symptom</strong></td>
<td>Painless swelling with sharp pain</td>
<td>Painless swelling, nasal obstruction</td>
</tr>
<tr>
<td><strong>X-ray</strong></td>
<td>Unilocular R/L with B/L bony expansion and areas of calcification</td>
<td>Unilocular R/L , 28 surrounded</td>
</tr>
</tbody>
</table>
Pathogenesis of AOT

Origin
1. Remnants of Dental lamina or epithelial rests
2. Enamel organ epithelium (REE)

Nature
1. An odontogenic tumor (Neville, text book)
2. A benign, non-invasive hamartoma, not a true neoplasm (Philisen et al, 1998)
WHO Classification

- A mixed odontogenic neoplasm
  -- an epithelial tumor with an inductive effect on the odontogenic ectomesenchyme

- AOT infrequently produce dentinoid material and rarely enamel matrix
Classification of AOT

- Central – 96%
  1. Follicular (F) 73%
     -- This case
  2. Extrafolloicular (E)

- Peripheral (P) – 4%
  Gingiva
Predilections of AOT

- Age – second decade, 69%
- Gender – female, 1.9:1
  1. Race – Asian, 3:1
  2. Type – Peripheral, 14:1
- Site – Mx ant., 2.1:1(Mx:Md)
- Unerupted tooth -- Canine
Differential Diagnosis of AOT

- Follicular type
  -- dentigerous cyst

- Extrafollicular type
  -- radicular cyst, lateral periodontal cyst, etc.

- Peripheral type
  gingival fibrous lesions, ex: fibroma, epulis.
Differences In Radiograph

“Snowflake” appearance
-- foci of calcification, 33%~66%

May extend apically past the CEJ in follicular type
Histological Features

- Duct-like structure
  - odontogenic origin

- “Tumor droplets” in the central of the rosette or swirled structure
  - eosinophilic amorphous hyaline material,
    1. Amyloid-like
    2. Enamel matrix or dentinoid material

- Calcification
Immunohistochemical Stains

- Enamel proteins
  - amelogenin, enamelin

- Cytokeratin
  1. CK 14 -- dental epithelium (+)
  2. CK 8, 10, 18 -- dental epithelium (-)
  3. CK19 -- preameloblast (+), secreting ameloblast(+)
Results In Literatures

Murata et al, 2000

1. Positive of tall columnar cells of duct-like structures and tumor droplets $\rightarrow$ ameloblast origin

2. Negative of calcifications $\rightarrow$ dystrophic degeneration

Leon et al, 2005

CK14 (+), CK19 (+), CK8, 10, 18 (-), $\rightarrow$ probable origin: REE
Conclusion

- AOT ex DC
  - probably the same origin: REE
  - AOT: epithelial odontogenic tumor
- Should view as tumor
  - treatment – enucleation
  - prognosis – good
  - recurrence – rare (0.2%)
- Phenol – no effect on histopathological examination