Projected radiopacity
Introduction

Heterotopic calcification
Heterotopic calcification

- Dystrophic calcification
- Idiopathic calcification
- Metastatic calcification
Dystrophic calcification

- Calcification – occur locally dead & dying tissues.
Initiation phase
Propagation phase
Intra & extracellular
intracellular Mitochondria of dead & dying tissue
extracellular Phospholipids found in the membrane bound vesicle.
Ca concentration in vesicle
Membrane facilitated calcification

Robbins and Cotran, Fausto, Pathology basis of disease, 7th edition.
Metastatic calcification

Occur in normal tissue whenever there is hypercalcemia

- Hyperparathyroidism
- Boney destructive lesion
- Hypervitaminosis D
- Renal failure
### Heterotopic calcification

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General dystrophic calcification of the oral region

Clinical Features

- Common soft tissue sites include the gingiva, tongue, lymph nodes, and cheek.
- No signs and symptoms.
Radiographic Features

Location:

Shape and periphery:
- The outline of the calcified area usually is irregular or indistinct.

Internal structure:
- Homogeneous fine grains of radiopacities rarely exceed 0.5 cm in diameter.
Calcified lymph node

Clinical features:

- Asymptomatic
- common - submandibular and cervical nodes (superficial and deep) and less commonly, the preauricular and submental nodes.
- Palpated - single or multiple hard round.
Radiographic features

- **location** submandibular
- Appear as a single or a linear series of node
- The periphery – well defined, irregular lobulated appearance (cauliflower like).
- Internal structure- laminated appearance with varying degree of radiopacity.
Differential diagnosis

- Sialolith
- Phleboliths
- Myositis ossificans
- Tonsillar calculi

White S.C., Pharoah M.J., Oral Radiology – Principles and Interpretation, 5th edn, 2004
Tonsillar calculi

Clinical features:

- 20-60 yrs.
- Small calcification asymptomatic
- Larger calcification – pain, swelling, difficulty in swallowing. Foreign body sensation.
- Hard, round, white or yellow object projected from the tonsillar crypts

Radiographic feature

- **Location:** Single or multiple radiopacities that overlap the midportion of the mandibular ramus
- **Periphery:** cluster of multiple small ill-defined radiopacity.
- **Internal structure:**
  
  Appear slightly more radiopaque than cancellous bone and approximately the same as cortical bone.

Differential diagnosis

- Sialolith
- Phleboliths
- Myositis ossificans

Cysticercosis

Clinical Features

- Mild case - asymptomatic.
- Severe cases- mild to severe gastrointestinal upset with epigastric pain and severe nausea and vomiting.
- On palpation multiple small soft fluctuant swelling
Radiographic features

- While alive, larvae are not visible radiographically.

Location:
- The muscles of mastication and facial expression, the suprahyoid muscle, and the postcervical musculature.

Periphery and shape:
- Multiple, well-defined, elliptical radiopacities - resembling grains of rice.

Internal structure:
- Homogeneous radiopaque
Differential diagnosis

- sialolith

White S.C., Pharoah M.J., Oral Radiology – Principles and Interpretation, 5th edn, 2004
Arterial calcification

Arteriosclerosis - fragmentation, degeneration, and eventual loss of elasticity of arterial walls.

- Atherosclerosis
- Monckeberg’s medial calcinosis
- Arteriolosclerosis
Calcified atherosclerotic plaque

- Atheromatous plaque in the extracranial carotid vasculature.
- Dystrophic calcification occur within the intima of the involved vessel.
Radiographic feature

Location:

Periphery and shape:
- Multiple and irregular in shape and sharply defined from the surrounding soft tissues and have a vertical linear distribution.

Internal structure:
- The internal aspect is composed of a heterogeneous radiopacity.
MONCKEBERG'S MEDIAL CALCINOSIS (ARTERIOSCLEROSIS)

Calcific deposits in muscular artery in person older than 50.

Clinical Features

- Initially asymptomatic
- Late in the course of the disease develop, cutaneous gangrene, peripheral vascular disease and myositis due to vascular insufficiency.
- Pt with Sturge-Weber syndrome also develop intracranial arterial calcifications
Radiographic features

Location:
- Medial calcinosis - facial artery, less commonly the carotid artery.

Periphery and shape:
- The calcific deposits in the wall of the artery appears as a parallel pair of thin, radiopaque lines that may have a straight course or a tortuous path; this is described as a pipe stem appearance.
Differential diagnosis

- Calcified triticeous cartilage
Sialolith

Clinical feature:

- Common in middle aged men
- Common in submandibular gland
- Asymptomatic, but they usually have a history of pain and swelling in the floor of the mouth and in the involved gland. This discomfort may intensify at mealtimes, when salivary flow is stimulated.

Radiographic features

- About half of submandibular stones lie in the distal portion of Wharton's duct, 20% in the proximal portion, and 30% in the gland.
- Sialoliths located in the duct of the submandibular gland usually are cylindric.
- Stones that form in the hilus of a submandibular gland tend to be larger and more irregularly-shaped.
- Internal structure appear as homogenously radiopaque.

Differential diagnosis

- Lymph node calcification.
- Phleboliths.
- Myositis ossificans.
- Facial artery calcification.
- Hyoid bone.
- Avulsed tooth.

Phleboliths

Intravascular calcified thrombi, which arise secondary to venous stagnation, sometimes become organized or even mineralized.

Clinical feature:
- In the head and neck, phleboliths always signal the presence of a hemangioma.
- The involved soft tissue may be swollen, throbbing, or discolored by the presence of veins or a soft tissue hemangioma.
Radiographic features

- Round or oval, with a smooth periphery.
- The phlebolith may resemble a straight or slightly curved sausage.
- The internal aspect may be homogeneously radiopaque but more commonly has the appearance of laminations, giving phleboliths a "bull'seye" or target appearance. A radiolucent center may be seen, which may represent the remaining patent portion of the vessel.
Differential diagnosis

- Sialoliths
- Lymph node calcification.
- Myositis ossificans
- Osteoma cutis

Laryngeal cartilage calcification

- The small, paired triticeous cartilages are found within the lateral thyrohyoid ligaments. Both the thyroid and triticeous cartilages consist of hyaline cartilage, which has a tendency to calcify or ossify with advancing age.

Clinical Features

- Calcification of tracheal cartilages is an incidental radiographic finding with no clinical features.
Radiographic feature

Location:
- Inferior to the greater corn of the hyoid bone and adjacent to the superior border of C4. The superior corn of a calcified thyroid cartilage appears medial to C4 and is superimposed on the prevertebral soft tissue.

Periphery and shape:
- The word triticeous means "grain of wheat," well-defined and smooth.

Internal structure:
- Homogeneous radiopacity

RHINOLITH/ANTRROLITH

Clinical Features

- asymptomatic
- expanding mass may impinge on the mucosa, producing pain, congestion, and ulceration.
- The patient may develop a unilateral purulent rhinorea, sinusitis, headache, epistaxis and fever.
Radiographic Features

Location:
- Rhinoliths - nose
- Antroliths - antrum of the maxillary sinus

Periphery and shape:
- Vary in size and shape.

Internal structure: They may present as homogeneous or heterogeneous radiopacities, depending on the nature of the nidus and sometimes have laminations. Occasionally the density will exceed the surrounding bone.
Differential Diagnosis

- Odontoma.
- Mature cementoma.
- Periapical condensing osteitis.
- Palatine torus.
- Impacted tooth.
OSSIFICATION OF STYLOHYOID LIGAMENT

• Ossification of the stylohyoid ligament usually extends downward from the base of the skull and commonly occurs bilaterally.

• Conditions associated with ossification of the stylohyoid ligament include:

  - Eagle's syndrome
  - Sylohyoid syndrome
  - Stylohyoid chain ossification
Radiographic features

Elongated and mineralized stylohyoid ligament complex –

- Three type of appearance
- Four pattern of calcification
Elongated  
pseudoarticulated  
segmented
Differential diagnosis

- MPDS
- Impacted tooth.
OSTEOMA CUTIS

- Osteoma cutis is a rare soft tissue ossification in the skin occurring secondary to acne of long duration, developing in a scar or chronic inflammatory dermatosis.

Clinical Features
- Face is the most common site.
- Tongue is the most common intraoral site.
- If the lesion is large, the individual osteoma may be palpated.
- Some patients develop numerous lesions, usually on the face in females and on the scalp or chest in males. This form is known as multiple miliary osteoma cutis.
Radiographic Features

Location
- Most commonly appears in the cheek and lip regions.

Periphery and shape:
- Smoothly outlined, radiopaque, washer-shaped images.
These single or multiple radiopacities usually are very small, although the size can range from 0.1 to 5cm.

Internal structure:
- Homogeneously radiopaque but usually has a radiolucent center that represents normal fatty marrow, giving the lesion a donut appearance.
- Individual lesions of calcified cystic acne resemble a snowflake-like radiopacity, which corresponds to the clinical location of the scar.
Differential Diagnosis

- Myositis ossificans
- Calcinosis cutis

White S.C., Pharoah M.J., Oral Radiology – Principles and Interpretation, 5th edn, 2004
MYOSITIS OSSIFICANS

In myositis ossificans fibrous tissue and heterotopic bone form within the interstitial tissue of muscle and associated tendons and ligaments following acute traumatic episode which are frequently observer in athletes fibers. There are two principal forms: localized and progressive.

There are two principal forms:

- localized
- progressive
Localized myositis ossificans

Clinical Features

- Occurs most often in young men
- The site of the precipitating trauma remains swollen, tender, and painful. The overlying skin may be red and inflamed, and when the lesion involves a muscle of mastication, opening the jaws may be difficult.
- After about 2 or 3 weeks, the area of ossification becomes apparent in the tissues; on palpation the mass are firm, fixed and movable.
Radiographic features

Location:
- Radiolucent band can be seen between the area of ossification and adjacent bone.

Periphery and shape:
- Irregular, oval to linear streaks (pseudo trabeculae) running in the same direction as the normal muscle fibers.

Internal structure:
- 3 or 4 week after injury-homogeneous radiopacity.
- 2 months - radiopaque internal structure
- 5 – 6 months image is well defined and denser after this period the lesion may shrink.
Differential diagnosis

- Stylohyoid ligament
- Bone-forming tumors such as osteogenic sarcoma can form a linear bone pattern.

PROGRESSIVE MYOSITIS OSSIFICANS

- Progressive myositis ossificans is a rare disease of unknown cause.
- Affects children before 6 years of age, occasionally as early as infancy.
- Common in males.

Clinical Features

- Involve muscles of the neck and moves to the extremities.
- Soft tissue swelling that is tender, pain, redness and heat.
- The acute symptoms subside, stiffness and limitation of motion of the neck, chest, back, and extremities (especially the shoulders). Most patients die during the third or fourth decade.

References

- Robbins and Cotran, Pathology basis of disease, 7th edition.