



Special Radiological Procedures Of The Head ,Breast And Respiratory System

Methods Of Imaging Of The Salivary Glands

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قسم تقنيات الاشعة والسونار

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المرحلة 3

محاضرة رقم 6

الجانب النظري

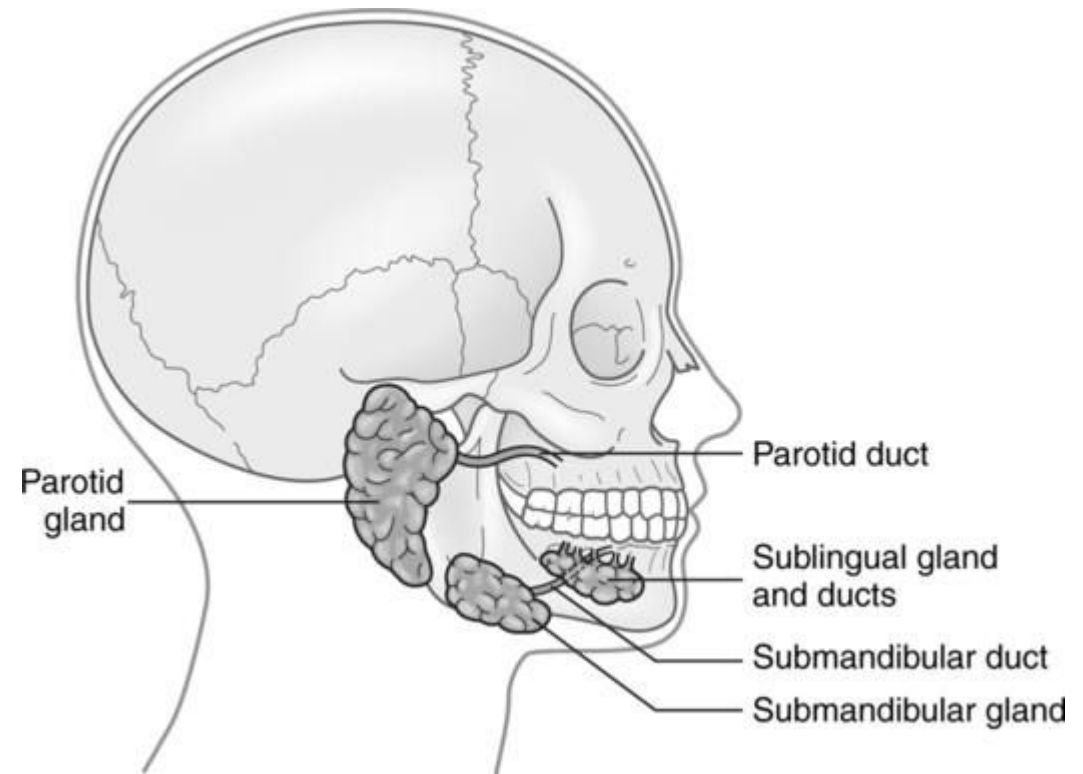
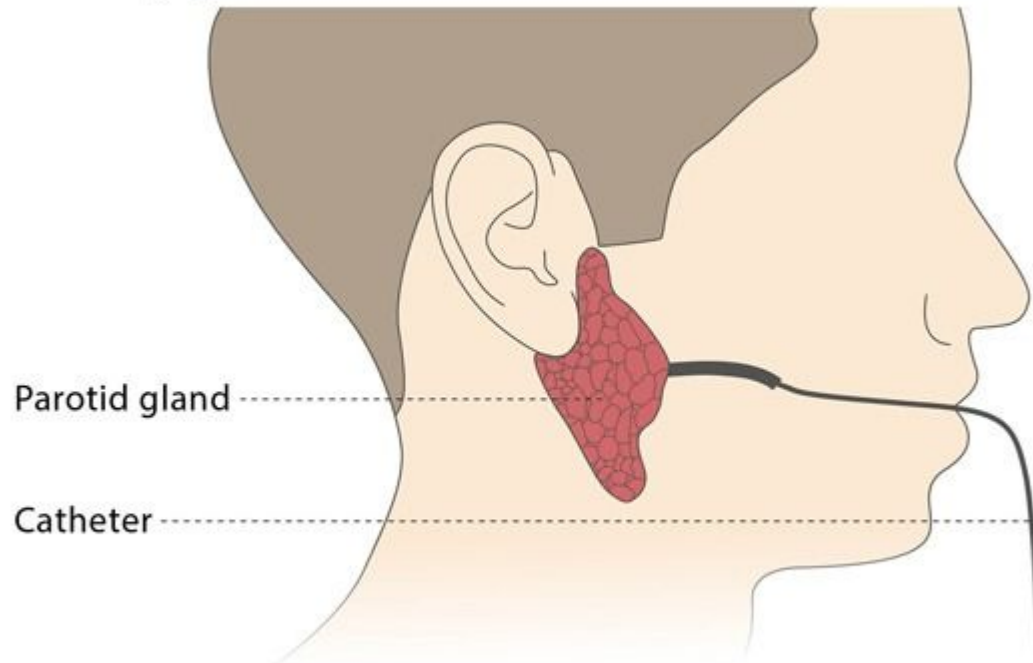
Lecture No.6.

Theoretical

تدريسي المادة : م.م خيرات رحيم لهمود

The primary methods for imaging the salivary glands include **ultrasound (US)**, **computed tomography (CT)**, **magnetic resonance imaging (MRI)**, **sialography**, and **nuclear scintigraphy**. The specific method used often depends on the clinical suspicion (e.g., stones, inflammation, or tumors) and the location of the gland or lesion

Salivary gland interventions



Contrast medium is injected into the salivary gland duct.

1.Primary Structural Imaging

These techniques provide excellent images of the gland parenchyma and surrounding tissues

Imaging Modality

High-Resolution Ultrasonography (US)

Computed Tomography (CT)

Magnetic Resonance Imaging (MRI)

Description and Key Indications

Initial screening method of choice. Fast, inexpensive, and non-invasive. Excellent for differentiating cystic from solid masses, identifying small salivary stones (**sialolithiasis**), assessing gland size, and guiding needle biopsies (FNA). It is the preferred initial method for palpable masses and inflammatory/obstructive diseases, especially in children and pregnant women.

Useful for evaluating the full extent of larger masses, looking for bony destruction or invasion, and assessing acute inflammatory processes, such as abscesses. **Non-enhanced CT** is particularly effective for detecting minute or multiple salivary stones (sialolithiasis). **CT with contrast** (CT sialography, see below) can also be performed.

Modality of choice for soft tissue masses and tumors. Provides superior soft-tissue contrast, which is excellent for characterizing masses (benign vs. malignant), defining the relationship to the facial nerve (in the parotid gland), and assessing perineural spread of tumors. It does not use ionizing radiation.

Ductal System Imaging (Sialography)

These methods focus on the ductal system, which is crucial for diagnosing obstructions, chronic inflammation, and autoimmune diseases like Sjögren's syndrome.

Imaging Modality

Conventional Sialography

Description and Key Indications

The "gold standard" technique for visualizing the detailed anatomy of the ductal system. A small catheter is inserted into the main duct opening, and water-soluble contrast medium is injected. It is mainly indicated for chronic swelling or inflammation (chronic sialadenitis) to look for ductal strictures or a "fruit-laden tree" appearance (sialectasis). **It is contraindicated in acute infection.**

MR Sialography

A non-invasive MRI technique that produces images of the fluid-filled salivary ducts without the need for catheterization or iodinated contrast injection. It is useful as an alternative to conventional sialography, especially in cases where acute inflammation is present, or cannulation is difficult.

CT Sialography

A method combining conventional sialography (contrast injection) with CT imaging for better anatomical detail and localization. Useful for evaluating the ductal system in relation to surrounding structures.

Sialoendoscopy

While a diagnostic and therapeutic tool, it involves inserting a miniature endoscope into the duct to visualize the ductal system directly. It is highly effective for locating and removing salivary stones or treating strictures.

3.Functional and Other Imaging

Imaging Modality



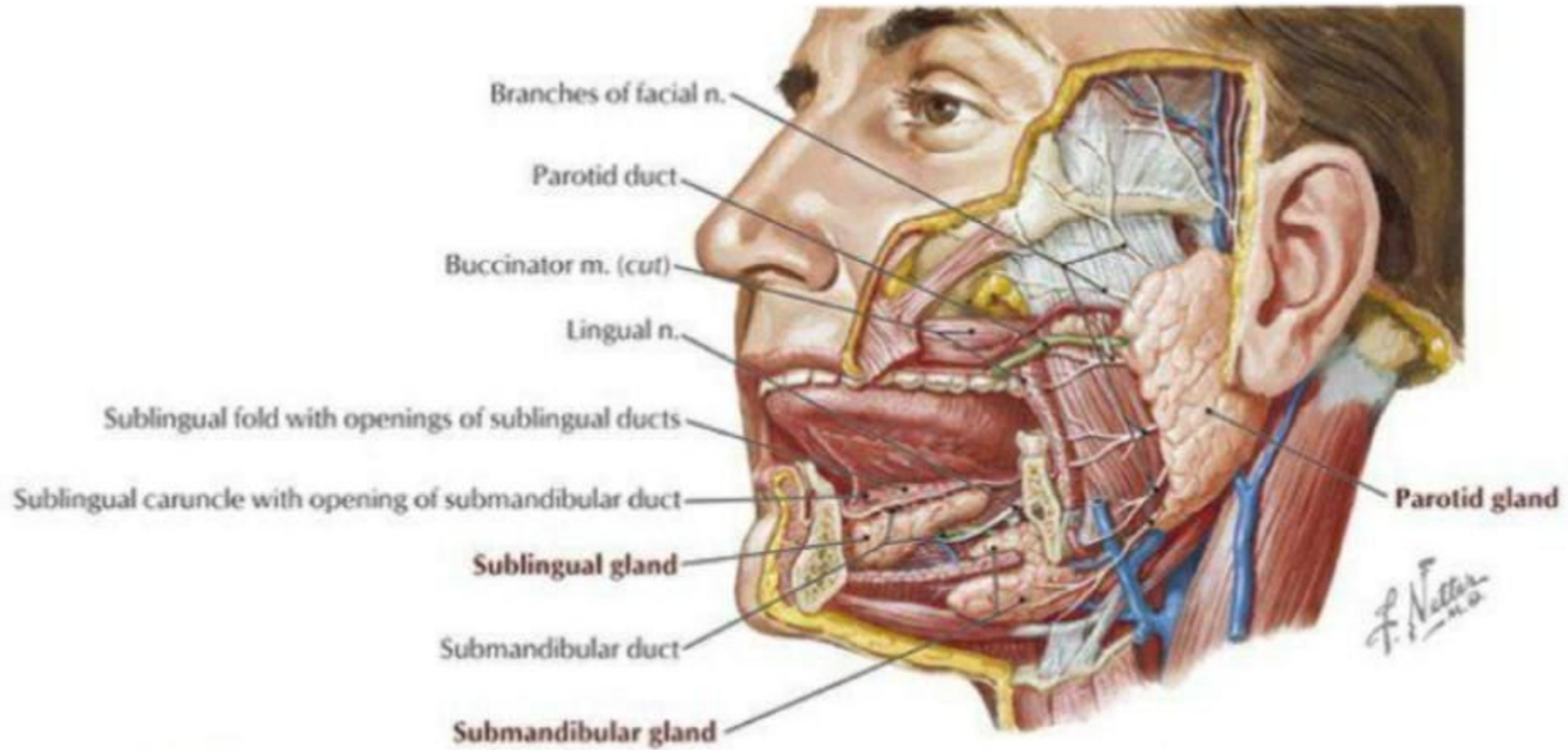
Radionuclide Scintigraphy (Salivary Gland Scan)

Plain Film Radiography (X-ray)

Description and Key Indications

A functional test where a radioactive tracer (e.g., Technetium-99m) is injected to assess the uptake, concentration, and secretion rate of the tracer by the glands. Primarily used for diagnosing functional impairment, such as in **Sjögren's syndrome**, or monitoring gland function after radiation therapy.

The simplest and oldest method. Mainly useful for detecting large, highly calcified salivary stones (**sialoliths**), which are visible as radiopaque objects. However, up to 20% of stones may be radiolucent (not visible on plain film), and cross-sectional imaging is usually preferred.



Figure(2) parotid gland(Netter, 2019).

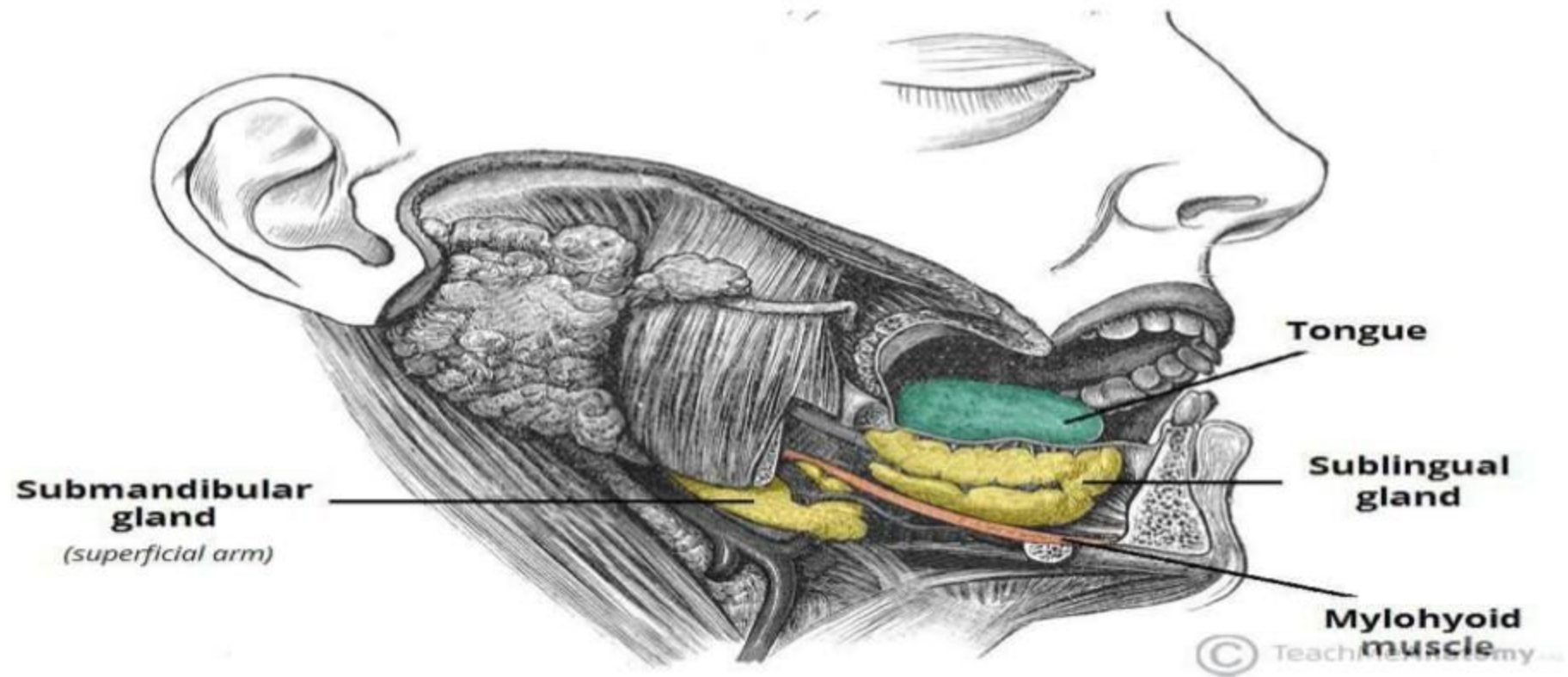
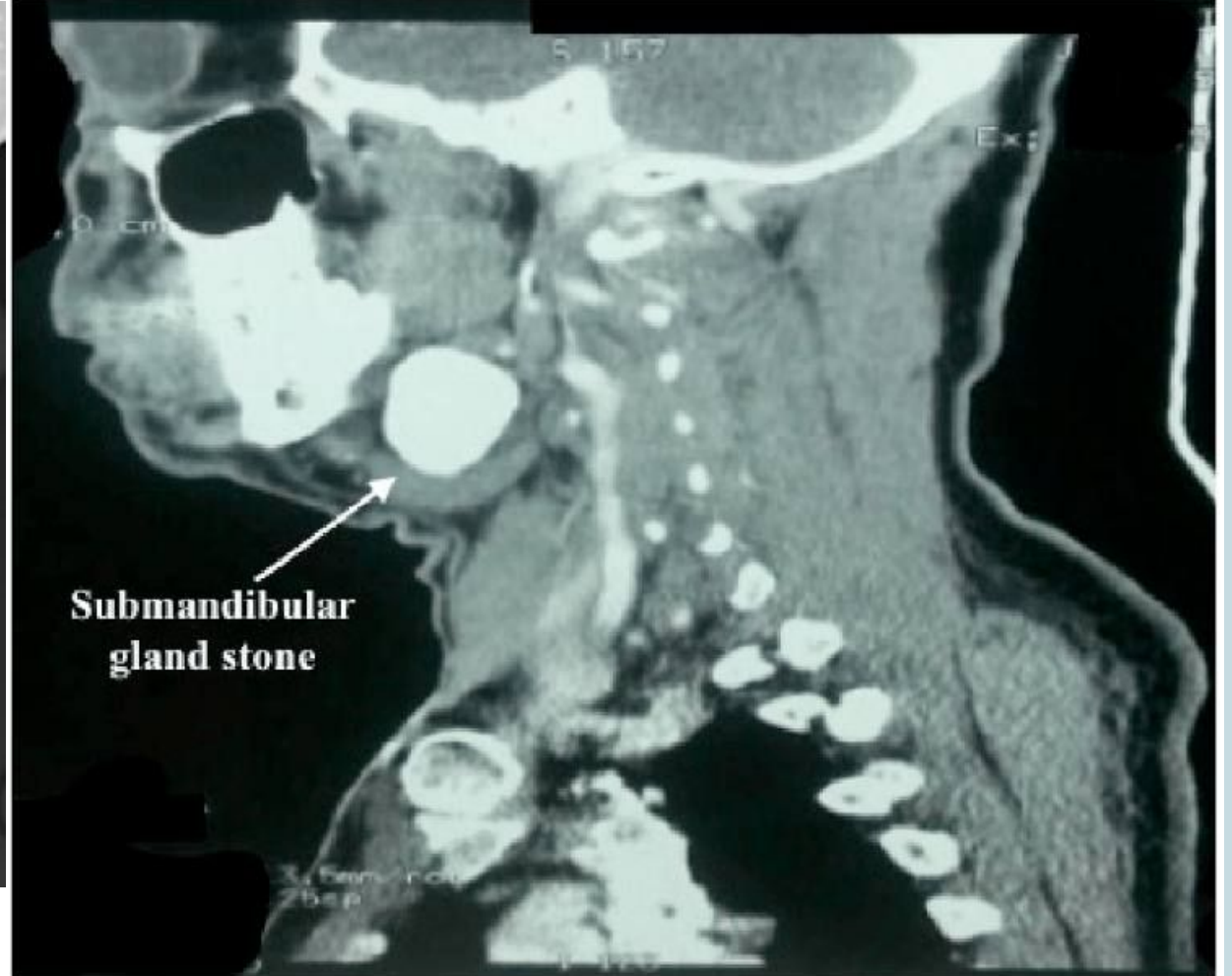
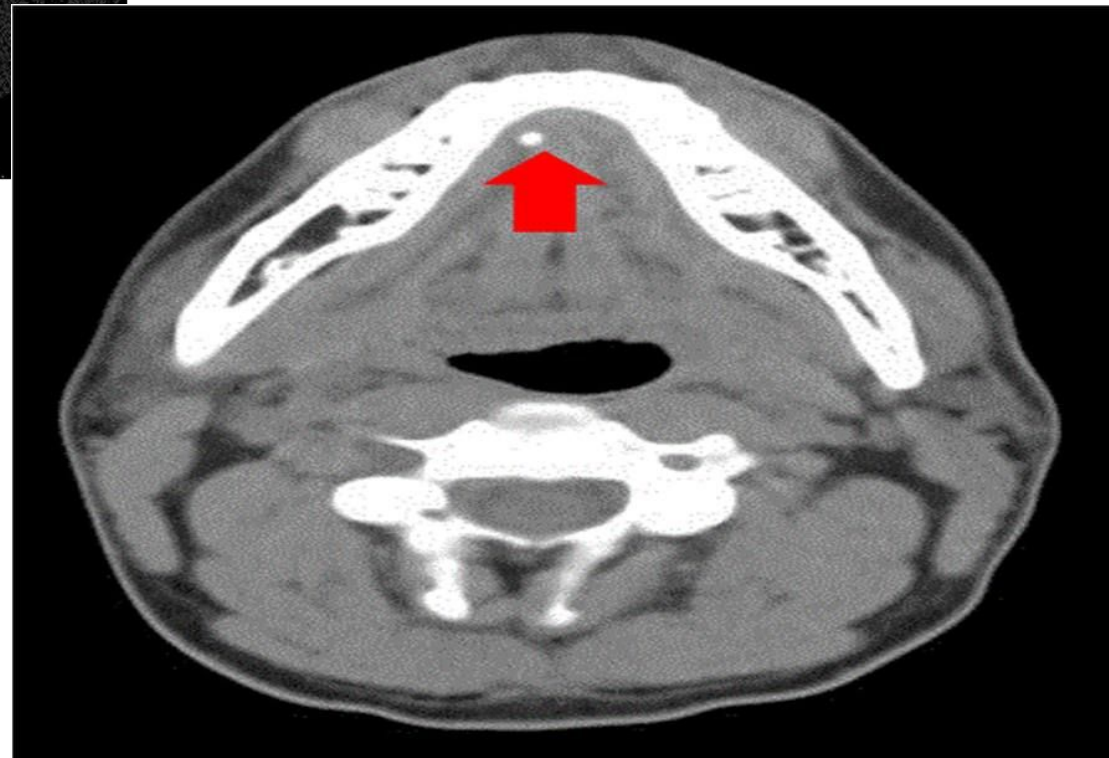
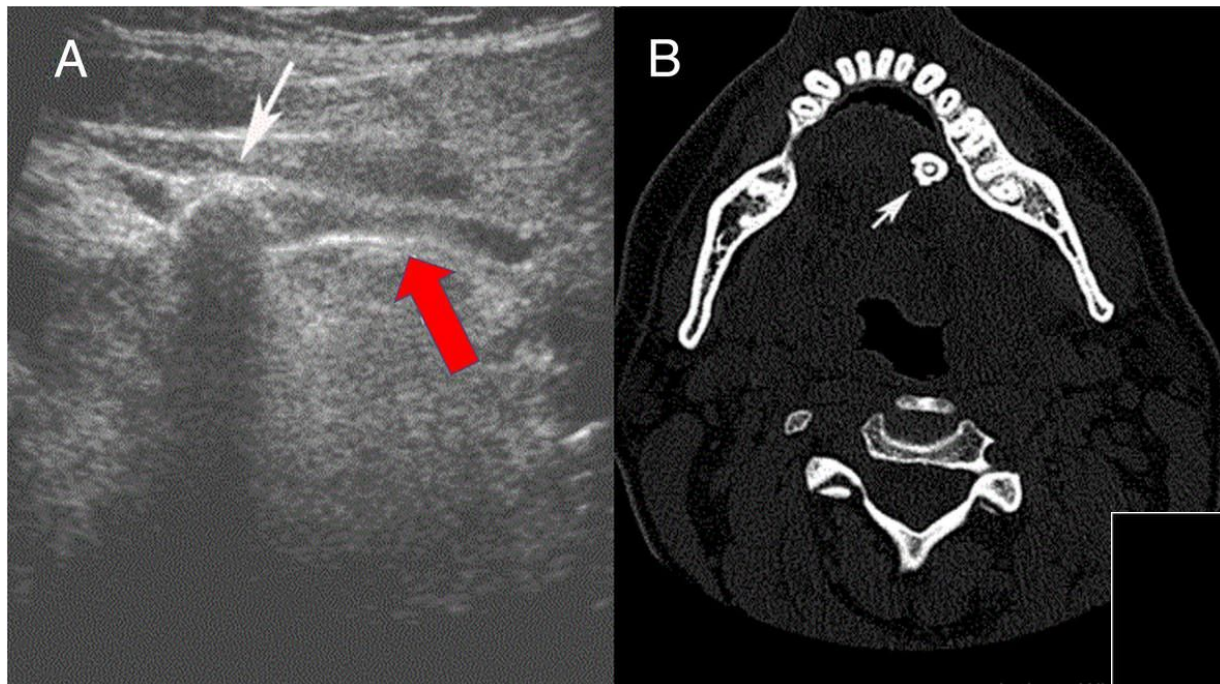


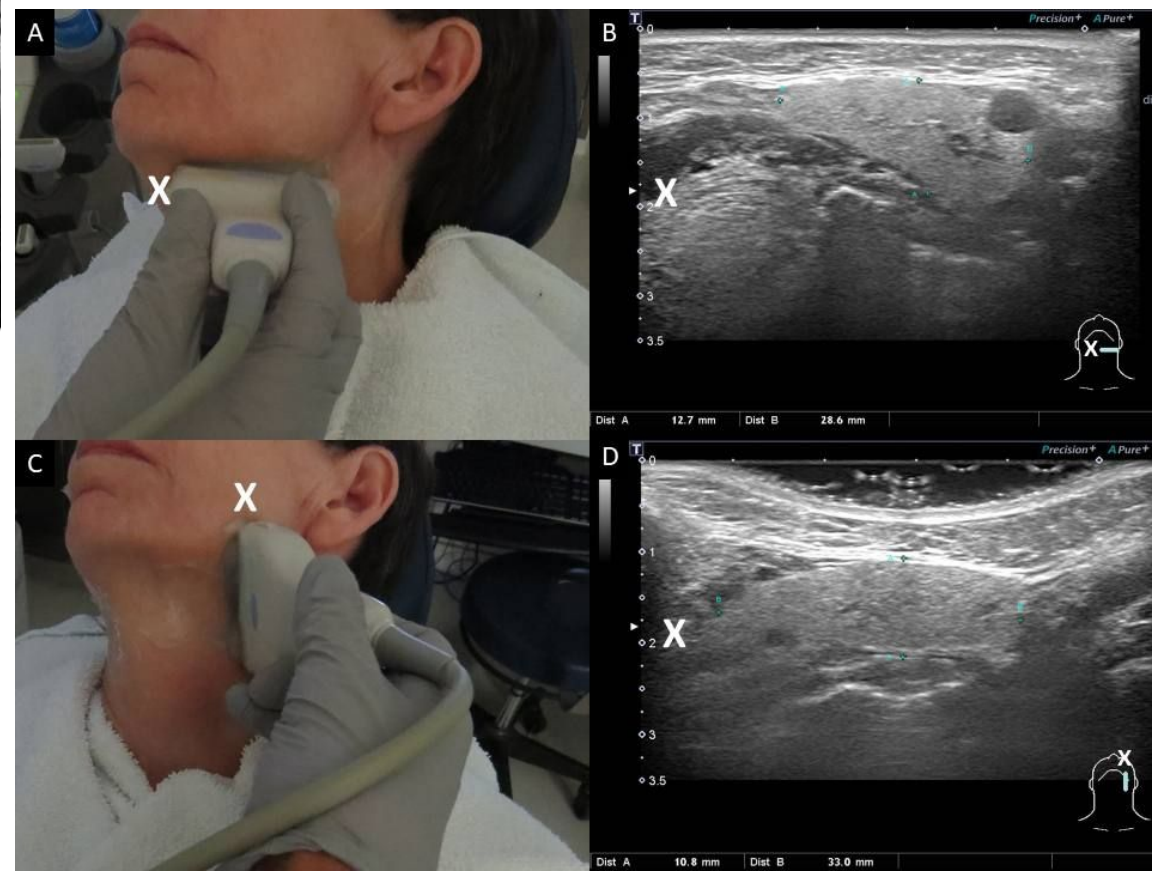
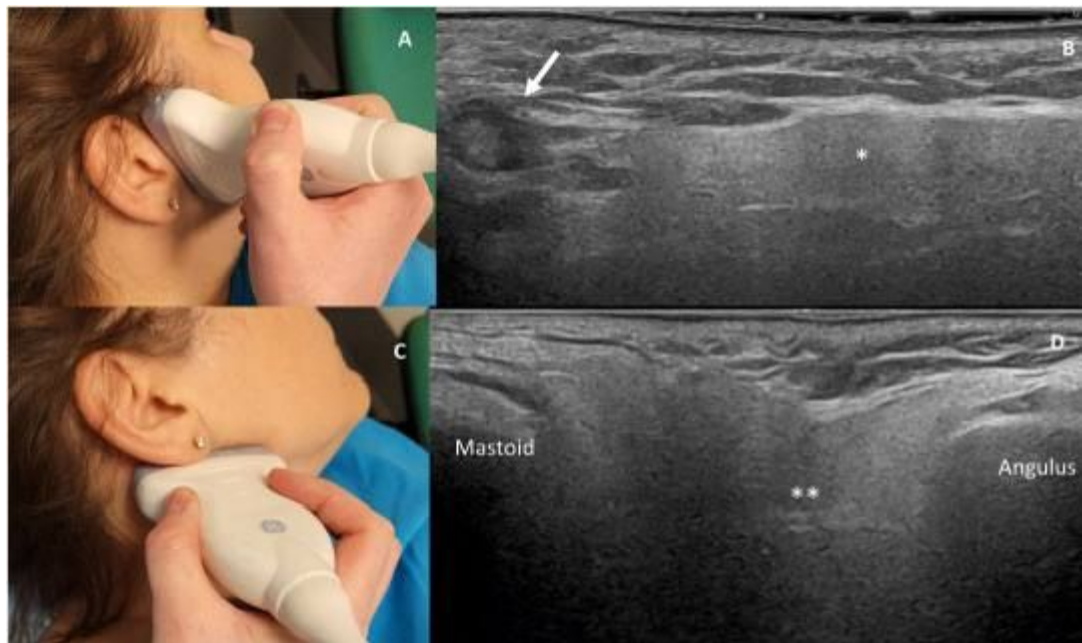
Figure (3) submandibular salivary gland(Jonathan et al.,2020).



Figure(5)(A) Standard mandibular occlusal and (B) Periapical images demonstrating an oval- shaped radiopaque sialolith in a Wharton duct(**Saniav et al. 2019**)







Any questions?

*Thank
You*