EXAMINATION OF PAROTID TUMOR the exact steps with explanation and interpretation level 2.

Examination of parotid mass/swelling / a mass in the parotid gland

Differentials that must be considered in the swelling of a parotid region include the following

Parotid tumor (benign and malignant)
Preauricular lymph node
Lipoma
Sebaceous cyst and hemangioma
Chondroma
Osteoma
Neuroma

The question that is posed to the candidate is; examine the head or examine the (left or right) parotid region or examine this patient’s cheek or examine the head or head and neck of this patient

As is required for all process of clinical examination, the clinician should first introduce himself to the patient and seek consent to conduct the examination process:

Exposure:

This should be as for goiter; Expose the head and neck and upper chest up to the nipple line. This exposure is necessary in order to have access to the head and neck region and regional lymphatic channels

Inspection

Start by inspecting the contralateral side because it is a paired region of the body and the two parotid glands may be affected in diseases such as Sjogren syndrome, mickulicz syndrome, mumps-parotitis, cervical adenopathy

Error of execution: starting the examination from the side you have been asked to examine. Remember, when you have been asked to examine one side of a paired organ, always start from the side opposite the one you have been asked to examine. The reason for this is to have a feel of the seemingly normal side against which you compare the side you have been asked to examine.
Start from the normal side (fig1a), then Inspect the side that is diseased (fig1b) and compare with the normal side( figure 1 compares the two sides):

Note the location of the lesion around the earlobe; Antero-inferior to the earlobe and extending towards the back of the ear. This is the location of the parotid gland.

Note that it is causing asymmetry of the face, note whether the lesion pushes the earlobe upwards and backwards in which case one will suspect a mass with a pushing edge (benign) or whether the mass is infiltrating the ear/ external ear without pushing or raising the earlobe ( mass with infiltrating edge) suggestive of malignant lesion.

Note if there is change in the overlying skin and surface of the lesion-

Interpretation: Presence of previous scar suggests the lesion is probably recurrent, presence of punctum suggest sebaceous cyst, shiny edematous, erythematous and desquamating skin may suggest suppurative parotids, pigmentory changes in neuromas, ulceration and discharge in cervical tuberculosis,

Note the surface and outline of the lesion: It may be irregular, nodular or bosselated in parotid tumors, it may be smooth in inflammatory conditions or parotid cyst (note the nodular surface in figure 1b)

After inspection comes palpation. As with any swelling or lesion the first step in palpation is to check for features of local inflammation ( warmth and tenderness).

Check for differential warmth: This is done in 3 steps, use the back of an ungloved hand, first palpate way from the lesion, then over the lesion and then again away from the lesion.
Fig 2. Palpation for differential warmth is in 3 steps as follows: (a) palpation away from the lesion, then (b) palpation over the lesion and then (c) away from the lesion.

**Interpretation:** Warmth may suggest inflammation. Hemangioma and other vascular masses and osteosarcoma of the jaw bones may be warm.

**Check for tenderness:** check for tenderness by direct light pressure with the pulp of the index, middle and ring fingers together over the mass. When palpating for tenderness the clinician should keep his gaze at the patient's face looking to see whether there will be any change in facial expression of the patient.

**Check the dimension of the lesion:** In two perpendicular planes.

**Check for pulsation or thrill:** After palpating for tenderness, the clinician should withdraw his fingers from the mass in order to demonstrate to the observer that the step of palpation for tenderness is completed before progressing to palpation for pulsation or thrill. The method for palpation for thrill and...
pulsation is similar to the method for palpation for tenderness: This is done by placing the pulp of the index, middle and ring fingers over the mass as is done for palpation for tenderness but there are two minor differences.

1) When palpating for thrill or pulsation, the palpating fingers are simply placed over the lesion without applying any pressure and (2) the clinician’s gaze should not be directed at the patient’s face.

**Interpretation:** If it is a vascular lesion there will be presence of pulsation or thrill for example in tumors of preauricular or temporal vessels.

**Check for consistency, compressibility, emptying and blanking** by firm pressure over the mass. (This is done by using the method for tenderness but in these tests the pressure applied to the mass is firmer than the pressure applied when checking for tenderness. (If there is tenderness a void eliciting this signs because the process will be discomforting to the patient)

**Consistency**: soft may suggest pleomorphic adenoma, lipoma, cold tuberculous abscess, hemangioma. Firm or rubbery or elastic may suggest benign parotid tumor (pleomorphic adenoma, sebaceous cyst). Hard: may suggest malignant lesion parotid lesion, chondroma or osteoma. Cystic: parotid gland cyst, cold tuberculous abscess, suppurative parotitis.

**Check for indentation or pitting**: Withdraw all 3 fingers and then apply firm pressure again with the pulp of the index finger and then release. If there is sustained depression caused by the pressure of the finger then indentation is positive (presence of indentation suggests sebaceous cyst)
Check of fixity to the skin: this is done by attempting to pick and tent the skin over the lesion.

Interpretation: if the skin can be picked away from the lesion then there is no attachment to the skin.

For subcutaneous and deeper lesions the skin should be freely picked away from the lesion except there is skin infiltration. For cutaneous and intradermal lesions like sebaceous cyst it may not be possible to pick the skin separately from the lesion.

Check for fixity to the underlying structures (muscles and bone)

This is particularly directed at the muscle, tendon and bone. This is demonstrated in two steps. First step is to move the mass in two perpendicular planes with the muscle relaxed and then to repeat again after asking the patient to exert the jaw muscles (masseter) by clenching the teeth. The first step checks for fixity to the bone, while the second step checks for fixity to the muscles.

Interpretation

If the mass is freely mobile over the underlying structures when the masseter muscles are not exerted, then it will be concluded that there is no attachment to the bone. However, if the mass is not freely mobile when the muscles are in the relaxed state, it will be concluded that the mass is attached to the bone. In that case there will be suspicion of a bony mass or a malignant lesion infiltrating the bone. If the mobility of the mass is lost or reduced when the patient clenches the teeth, it will be concluded that the mass is attached to the masseter muscles, this may be due to infiltration or it may simply be that the mass is primarily a muscular mass and not a parotid lesion.

Check for mobility of the at the temporomandibular joint: ask the patient to open the mouth widely, note if there is any reduction in the ability to open the mouth (the reduction in the ability to open the mouth is called trismus).

Interpretation: trismus will indicate that the lesion is affecting the function of the temporomandibular joint, hence it may be a bony lesion (osteoma, chondroma) or a malignant parotid gland tumor infiltrating the temporomandibular joint or pterygoid muscle.

Check inside the mouth: Extend the neck slightly and then from above, shine a pen-touch into the oral cavity for inspection of the stenson’s duct and the tonsilar area on the side of the lesion to check for intra-oral extension (to see the stenson’s duct, a spatula will be needed to raise the check away from the teeth.)

Remember to also look for other oropharyngeal masses, because the mass could be a metastatic preauricular lymph node from an oropharyngeal malignant tumor.
After inspection of the oral cavity, pressure is applied over the external lesion to determine whether the content of the lesion will be expelled through the Stenson’s duct and Then by manual palpation of the mass and the course of the stenson’s duct will be attempted.

**Figure 5** Looking into the oral cavity

**Figure 6** In this figure the black arrow points to the Stenson’s duct, the check has been parted with the examiner’s fingers, this is not the correct method. The correct method requires the use of a spatula.

**Figure 7** Pressure over the mass in an attempt to expel the content through the stenson’s duct.

**Interpretation:** If the tonsilar pillar and the soft palate on the side of the lesion is raised or moved medially (then the curtain sign is positive). This suggests intraoral extension, this may be due to
involvement of the deep lobe of the parotid gland. curtain sign suggesting enlargement of the deep lobe of parotid).

Erythema, swelling discharge of pus from the Stenson’s duct suggest suppurative parotitis.

**Bimanual palpation of the parotid gland :**

After inspecting the oral cavity, an attempt should be made to bimanually palpate the parotid gland and the Stenson’s duct. If the gland is bimanually palpable it may suggest involvement of the deep lobe. Stoned may also be palpated within the gland and along the course of the Stenson’s duct.

Method of bimanual palpation:

One finger on the contralateral hand pushes the check in between the teeth while on the side the lesion the bimanual palpation is conducted with two digits; the thumb and the index or middle finger. (the thumb goes inside the oral cavity while the index or ring finger is used over the external lesion.

Pushing the patient’s check in between the teeth on the contralateral side protects against the bite reflex which may inadvertently make the jaw muscles contract and the teeth close down on the examiners digits leading to involuntary or unintentional bite of the examiner’s fingers.

![figure 8: note the contralateral digit pushing the patient’s right cheek in between the teeth on the right side to protect against bite reflex, while the palpating digits work on the gland and duct](image)

**Check for possible differentials:** because lesion in the parotid region may be a metastatic lymphadenopathy, the examination is not complete until other causes of cervical lymphadenopathy have been excluded.

This includes checking the ears and the nose for nasopharangeal tumor. Also remember to ask the patient to swallow to exclude metastatic malignant thyroid gland lesion.
ears by the examiner stands behind the patient, pulls the earlobe upwards and backwards and then shines his pen touch into it to check (b) checking for nasal tumor by pressing the tip of the nose upward, expending the head slightly and shining the touch into the nose (c) check for presence of goiter by asking the patient to swallow with the neck slightly extended.

**Check for feature of facial nerve palsy**

Step 1: Check the symmetry of the face: the eyelids, the nasolabial fold and the angle of the mouth. If there there is facial nerve palsy thee will be asymmetry of the face. This will be evident by sagging of the lower eyelid and angle of the mouth on the affected side and flatting or loss of the nasolabial fold /groove

Step 2: Flex the head slightly and then ask the patient to look up at the ceiling. If there is facial nerve palsy there will be no wrinkling of the skin of the forehead on the affected side

Step 3: Ask the patient to close the eyes tightly while you try to forcibly open the eyelids; if there is facial nerve palsy, the patient will not be able to close the eyelids completely on the affected side the eyeball will be seen to role upwards
Step 4: Ask the patient to clench the teeth. If there is facial nerve palsy, the angle of the mouth will be drawn away from the affected side

Step 5: Ask the patient to puff the cheeks or to attempt to whistle: if there is facial nerve palsy, the cheek on the affected side will bulge and there will be loss of air and saliva from the angle of the mouth on the affected side

**Check for presence of cervical lymphadenopathy**: this is done from behind the patient

Process: Stand behind the patient, rest the patient’s head on your trunk, and with the head in neutral position start the palpation from the submental group of lymphnodes, to the submandibular, the preauricular, the postauricular, the occipital, the upper jugular group, middle jugular group, lower jugular group, the supraclavicular group and finally the infraclavicular group

The palpation should be in the sequence listed above.