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Lecture Synopsis:
An interactive hands-on workshop designed to equip today’s dental clinician with the skill set to recognize and identify the earliest warning signs of today’s fastest growing segment of oral cancers. HPV-related oropharyngeal cancer manifests a number of subtle signs and symptoms, that if recognized early greatly impact survival rates.

Oral cancer typically is discovered in late stages with a 5 year survival rate of 30%. According to SEER data, survival rates increase to 80 - 90% when discovered in early stages. A recent statement in JADA related to late stage discovery of oral cancers “indicated the need for improving the COE and for developing adjuncts to help detect and diagnose oral mucosal lesions”. The extraoral and intraoral examination will be reviewed as well as the use of adjunctive screening devices to earlier identify abnormalities that may not have been visible with white light examination.

There has never been a greater sense of urgency to adhere to close examination of the oral cavity. There is an urgent need for change. It’s within our hands.

Learning Outcomes:
1. To perform a systematic extraoral and intraoral examination with attention to high risk anatomical areas related both to HPV and non-HPV oral and oropharyngeal cancer.
2. To recognize the subtle, life-saving signs and symptoms that may accompany HPV oropharyngeal cancer.
3. To compare and contrast the value of adjunctive screening devices designed to reveal what may not have been visible with white light examination.

Oral Cancer Screening for Today's Population:
The Need for Change
Understanding the HPV/Oral Cancer Connection:

- More than 120 types of HPV, only a few are high-risk factors for oral cancer; primarily HPV-16 and HPV-18; over 90% of HPV-positive oral cancers are HPV-16 positive
- HPV-6, HPV-11, HPV-16 and HPV-18 are related to a venereal wart and present in the oral cavity as condyloma acuminatum; 9 strains have been identified as being oncogenic
- HPV is associated with nearly all cases of pre-invasive and invasive cervical neoplasia
- The virus’ DNA integrates into nuclei of healthy cells to produce oncogenic proteins; E6 and E7. Both bind to tumour-suppressor proteins, p53 and pRb

Clinical Presentation: Condyloma Acuminatum

- Cluster of multiple, pink, slightly papillary nodules attached with broad base
- Painless, persistent, more common in young adults
- HPV 6,11, 16 and 18
- Sexually transmitted infection (STI)
- Lips, tongue and soft palate
- Also known as a venereal wart
- Local excision, laser ablation
- Re-inoculation amongst sexual partners is common

Verrucous Carcinoma:

- Diffuse, white papillary or corrugated thickenings
- Painless, continual enlargement
- HPV 16, 18 and smokeless tobacco
- Commonly occur at site of tobacco exposure

Management of a Papilloma:

- If a client has a papilloma in the tonsillar area should the tonsils be removed?
- Removal of the papilloma and serotyping the virus is indicated first; tonsillectomy is not a risk free surgery

Symptoms We Can't Afford to Ignore:

- Continuous sore throat; persistent infection
- Pain when swallowing or difficulty swallowing;
- Unilateral ear pain
- Pain when chewing
- Non-healing oral lesions
- Bleeding in the mouth or throat
- Hoarseness
- A lump in the throat or the feeling that something is stuck in the throat
- Continual lymphadenopathy
- Unexplained weight loss
- Slurred speech
- Tongue that tracks to 1 side when stuck out
- Asymmetry in tonsillar area

What Questions Should We Be Asking?
(Clinical Resource in Handout)
HPV-Positive Anatomical Sites:
HPV has an affinity towards lymphoid tissues present in lingual and palatal tonsillar areas, posterior area and base of the tongue, soft palate and oropharyngeal area.

HPV-Negative Anatomical Sites:
- Anterior segment of the tongue
- Floor of the mouth
- Palatal tissues

1st Step: Opportunistic Screening
Extraoral and Intraoral Clinical Assessment:
Accomplished by;
- Observation
- Palpation
- Auscultation
- Olfaction

Overall Evaluation of Head, Face and Neck:
- Face & neck
  - Symmetry, coloration
  - Removal of eyeglasses
  - Moles, freckles, scars etc.
  - Trauma (domestic abuse)
- Client’s voice
  - Hoarseness, quality of speech
- Eye movements & response
  - Tearing, redness, dilation/constriction
  - Colour of sclera
- Body odors
  - Alcohol, smoking, halitosis associated with periodontal disease, caries, ketosis (diabetic acidosis)

References & Resources:
http://www.dentalaegis.com/id/2010/03/oral-cancer-screening
Image Reference: https://gmeip.org/media/14814
Digital Palpation:
- Use of single finger
- Palpation of roof of the mouth
- Palpation of lateral border of the tongue

Bidigital Palpation:
- Use of finger and thumb of the same hand
- For palpation of the lips

Bimanual Palpation:
- Use of fingers and thumb
- For palpation of floor of the mouth

Bilateral Palpation:
- Use both hands at the same time
- Examine structures on opposite sides of the body
- For bilateral structures
  - Lymph nodes – excluding submandibular
  - TMJ
  - Parotid glands

The ABCDEs of Malignant Melanoma:
- Asymmetry
- Border
- Colour
- Diameter
- Evolution

Initial Extraoral Clinical Assessment:

Forehead and Frontal Sinuses:
- Visually inspect and use bilateral palpation of the forehead and frontal sinuses
- Check for masses, tenderness and increased skin temperature
- Area should be firm and smooth

Examination of the Temporomandibular Joint:

Bilateral palpatation
- Placing finger pads over the joint anterior to the ear
- Identify limitation or deviation upon opening
- Tenderness or sensitivity
- Audible sounds

Extraoral Examination of Parotid Salivary Glands & Masseter Muscle:

Bilateral Palpation
- Start in front of ear and move to the cheek area and down to the mandible
- Note any enlarged node; nodes drain area of the cheek
Place fingers of each hand over masseter muscle and have client clench several times

Area should be firm without tenderness or increased size or firmness

Systematic Examination of Lymph Nodes:

1. Submental
2. Submandibular
3. Cervical chain
4. Supraclavicular
5. Occipital
6. Posterior auricular
7. Anterior auricular

Extraoral Palpation of Submental & Submandibular Nodes:

Submental nodes
- Afferent vessels drain central portions of lower lip, floor of mouth, apex of tongue
- Efferent vessels pass partly to submaxillary glands and deep cervical nodes
- Instruct the client to bite together lightly and place their tongue into palatal vault tensing of the mylohyoid muscle allowing for easier palpation of submental glands

Submandibular nodes
- Unilateral palpation
  - Chin down, ear to shoulder; firm pressure
  - Note any enlargement, tenderness, hardness and asymmetry; nodes should not be clinically palpable or visible
  - Efferent vessels pass to deep cervical nodes
Extraoral Palpation of Cervical Nodes:

*Bilateral Palpation*

- Palpate the superficial and deep cervical nodes
- Turn the head to reposition the SCM to palpate the internal jugular chain
- Clinical considerations; past/chronic infection, malignancy

Extraoral Palpation of Supraclavicular Nodes:

*Location*

- Superior to the clavicle in the supraclavicular fossa directly above the collarbone

*Technique*

- Positioned behind client
- Bilateral palpation
- Enlargement should always be investigated

Extraoral Palpation of the Occipital Nodes:

*Bilateral Palpation*

- At posterior base of skull below the base of the occipital bone
Extraoral Palpation of the Posterior Auricular Nodes:

**Bilateral Palpation**
- On the mastoid insertion of the sternocleidomastoid muscle
- Beneath the auricularis posterior

Exterior Palpation of the Anterior Auricular Nodes:

**Bilateral Palpation**
- In front of the tragus
- Referred to as parotid nodes
- Roll your fingers in front of the ear against the maxilla

Lymphadenopathy Considerations:

**Infection Related**
- Soft, often painful or tender
- Moveable
- Client often aware of underlying infection

**Neoplasia Related**
- Firm, usually not symptomatic
- Firm and fixed
- Client often unaware

Palpation of Thyroid Gland:

**Bilateral palpation and visual inspection**
- Thyroid gland located on both sides as well as below the thyroid cartilage
- Instruct the client to swallow noting any enlargement, immobility or asymmetrical movement
• Normally not detected by palpation or clinically visible; gland should rise up and down during swallowing

7 Step Intraoral Examination:

1. Lips
2. Labial mucosa
3. Buccal mucosa
4. Gingival tissues
5. Tongue
6. Floor of mouth
7. Oropharyngeal and Palatal Tissues

Step 1: Lips
• Inspection with lips closed and open
• Bidigital palpation
• Note deviation from normal
• Reinforce need for sunblock protection

Step 2: Labial Mucosa
• Accomplished with the client's mouth partially open
• Visually examine the labial mucosa and sulcus of the maxillary and mandibular vestibule and frenum

Step 3: Buccal Mucosa
• Visual inspection and tactile palpation
• Systematic approach
• Bidigital palpation
• Assessment of parotid salivary gland, maxillary tuberosities and retromolar pad
Step 4: Gingiva Tissues
- Observe attached and free gingiva assessing for normal colour and contour
- Bidigital palpation with alveolar ridges palpated using index finger and thumb

Step 5: Tongue
A. Dorsum

B. Lateral Borders

C. Ventral Surface

Step 6: Floor of the Mouth
- Particularly vulnerable area
- Inspect floor of mouth for any changes in;
  - Colour
  - Texture
  - Swelling
  - Surface abnormalities
- Use bimanual palpation
Step 7: Oropharynx and Palatal Tissues

- Examine the entire area of the oropharynx including the tonsil region, uvula, tonsillar pillars and palatine tonsils for presence, color, size or any noted abnormalities
- Depress the tongue towards the floor of the mouth using either a tongue blade or the back of the mouth mirror
- Instruct the client to take a deep breath and hold or say “ah” enabling the clinician to gain better visual acuity

Oral Cancer and Dysplastic Progression:

“On the basis of the available literature, the authors determined that a COE of mucosal lesions generally is not predictive of histologic diagnosis. The fact that OSCCs often are diagnosed at an advanced stage of disease indicates the need for improving the COE and for developing adjuncts to help detect and diagnose oral mucosal lesions”.

Published in the Journal of the American Dental Association
http://jada.ada.org/content/143/12/1332.abstract (December 1, 2012)

June 30, 2010: World Health Organization (WHO) recognized VELscope® enhanced oral assessment system as an innovative device that addresses global health concerns. VELscope® was one of only eight devices to be honoured and was the only dental product recognized...
The Technology Platform of the VELscope Vx System

- Increased metabolic activity of the dysplastic cells in the epithelium, causes a decrease in FAD, resulting in decreased fluorescence
- Breakdown of the collagen matrix which occurs as a prelude to tumor invasion, results in decreased numbers of collagen cross-links, and thus decreases fluorescence
- The VELscope system uses enhanced tissue fluorescence visualization technology to directly view the oral mucosa with real-time feedback more effectively than can be achieved with traditional white light examination with the naked eye.

Value of Adjunctive Screening with Narrow Band (Light) Imaging

Application of Critical Thinking

What to look for;

- Unilateral as opposed to bilateral presentation
- Irregular and/or non-symmetrical shape
- Well-demarcated borders
- Abnormal patterns that appear “out of context”
- Abnormal patterns that spread across different anatomical structures

In conclusion...

With the acquired knowledge of risk behaviours and prevention strategies, our profession is strategically positioned to play an integral role in earlier discovery of an abnormal lesion thus contributing strongly to better treatment outcomes, improved survival rates and enhanced quality of life for our dental clients.

“There are costs and risks to a program of action, but they are far less than the long-range risks and costs of comfortable inaction.”

John F. Kennedy

Thank you to VELscope Vx and to the Canadian Dental Hygienists Association for the use of the photographs depicting the extraoral and intraoral examination. Special thanks also to Dr. Samson Ng, certified specialist in Oral Medicine and Oral Pathology, Clinical Assistant Professor at UBC Faculty of Dentistry for permission of clinical photographs in the lecture. If I may assist you with any further information regarding today’s presentation, please don’t hesitate to contact me at jjones@rdhconnection.com

Thank you for joining me in the quest for earlier discovery of oral cancer!
Medical History Update

Client Name: _________________________________ Date: ______________________________

Recent research indicates a strong relationship between the mouth and the body. Since we now know how closely they are related, we are going to be asking you some questions about your family history and your overall health that we may not have asked you about before. This additional information will assist us in providing the best possible care to maintain your oral health and overall wellness.

Any changes in your health since your last dental visit? □ Yes □ No If yes, please list:

__________________________________________________________________________________________________

What medications are you taking? ________________________________________________________________

Any changes in medication dosage or medications? □ Yes □ No If yes, please list:

__________________________________________________________________________________________________

What over the counter or ‘herbal/natural’ supplements are you taking on a regular basis? Please list:

__________________________________________________________________________________________________

Are you taking any bisphosphonates in the past or presently? □ Yes □ No If yes, please provide details:

__________________________________________________________________________________________________

Do you have a persistent sore throat, hoarseness, ear ache or feeling of something being caught in your throat? □ Yes □ No If yes, please provide details:

Have you had any surgery or been hospitalized since your last visit? □ Yes □ No If yes, please explain: ________________________________________________________________________________

Are you being treated for any medical problem presently? □ Yes □ No If yes, please explain: ________________________________________________________________________________

Have you ever taken antibiotics prior to having your teeth cleaned or before dental work? □ Yes □ No If yes, please explain: ________________________________________________________________________________

Any allergies to drugs, food, metal or latex? □ Yes □ No If yes, please list: ______________________________________________________

History of illness or disease in family? If yes, please explain: ________________________________________________________________________________

Have you been diagnosed with diabetes? □ Type I □ Type II □ Pre-diabetes
□ Diet-controlled □ Medication controlled Under control: □ Yes □ No

Have you had any heart problems or a knee, hip or prosthetic joint replacement? □ Yes □ No If yes, provide details: ________________________________________________________________________________

Have you had a bone mineral density test? □ Yes □ No Results: ______________________________________________________

Female clients; Are you pregnant? □ Yes □ No

On a scale of 1 to 10 (10 being highest), how would you rate your general health at this time? ____________________

How would you rate your level of stress presently? □ Low □ Moderate □ High

On a scale of 1 to 10 (10 being highest), how closely related is the health of your mouth to your overall health in your opinion? ____________________