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Title: Intraoperative Assessment of Resection Margins in Oral Cavity Cancer: This is the Way

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Author Questionnaire

1. **Microscopy**: Does your protocol require the use of a dissecting or stereomicroscope for performing a complex dissection, microinjection technique, or something similar? **No**

2. **Software:** Does the part of your protocol being filmed include step-by-step descriptions of software usage? **No**

Videographer: *Please film the screen for the shots labeled as* ***SCREEN*** *as authors are not able to provide the screen captures.*

3. **Interview statements:** Considering the COVID-19-imposed mask-wearing and social distancing recommendations, which interview statement filming option is the most appropriate for your group? **Please select one**.

☒ Interviewees wear masks until videographer steps away (≥6 ft/2 m) and begins filming, then the interviewee removes the mask for line delivery only. When take is captured, the interviewee puts the mask back on. Statements can be filmed outside if weather permits.

4. **Filming location:** Will the filming need to take place in multiple locations? **No**

Current Protocol Length

Number of Steps: 13
Number of Shots: 33

Introduction

1. Introductory Interview Statements

REQUIRED:

1.1. **Yassine Aaboubout:** This protocol describes a specimen-driven method of intraoperative assessment of resection margins in oral cancer. This method allows physicians to improve the number of adequate resections.

1.1.1. INTERVIEW: Named talent says the statement above in an interview-style shot, looking slightly off-camera

1.2. **Senada Koljenovic:** The method does not significantly interfere with the length of the surgical procedure nor with the final pathologic assessment. It can easily be implemented in any institute.

1.2.1. INTERVIEW: Named talent says the statement above in an interview-style shot, looking slightly off-camera

Ethics Title Card

1.3. Procedures involving human subjects have been approved by the Institutional Medical Ethics Committee at Erasmus MC University Medical Center, Rotterdam, The Netherlands.

Protocol

2. Tumor Resection

2.1. To begin, put the chlorhexidine pre-wetted tags **[1]** paired on the sides of the intended lines of resection, so that one tag remains on the resection specimen and the other remains at the corresponding spot in the wound bed **[2]**. Cut between each pair of tags **[3]** and remove the specimen with the tumor **[4]**.

2.1.1. WIDE: Establishing shot of talent (surgeon) in front of the patient.

2.1.2. Talent placing the tags on the sides of the intended lines of resection. *Videographer: This shot is important!*

2.1.3. Talent cutting between each pair of tags.

2.1.4. Talent removing the resection specimen.

2.2. Next, transfer the specimen to the grossing room **[1]**. Once the pathologist receives the specimen, rinse the specimen with water **[2]** and gently pat it dry with gauze or paper **[3]**.

2.2.1. Surgeon carrying the specimen to the grossing room and handing it over to the pathologist. *Videographer: This shot is important!*

2.2.2. Pathologist rinsing the specimen.

2.2.3. Pathologist patting the specimen with gauze.

2.3. Record the general information and indicate the locations of the tags on the anatomical template **[1]**. Place the specimen on the printed anatomical template **[2]**, then ink the superior resection surface blue and the inferior resection surface green according to the standard protocol **[3]**. Inspect the specimen visually and by palpation **[4]**.

2.3.1. Template: Information being entered and tag locations being indicated on the image of the specimen. *Videographer: Film the template*

NOTE: The 'Template' was filmed instead of the screen for shot 2.3.1.

2.3.2. Talent placing the specimen on the printed anatomical template and recording of the tags on the template.

2.3.3. Talent inking resection surfaces of the specimen. *Videographer: This shot is important!*

2.3.4. CU and WIDE: Talent inspecting and palpating the specimen.

NOTE: Shot 2.3.4. was also shot from a wide angle.

2.4. Indicate the location of any suspicious region on the anatomical template and relate it to the numbered tags **[1]**.

2.4.1. Talent with the specimen, using finger/tweezers, indicating the suspicious region location and related to the numbered tags on the template.

2.5. Depending on the size of the specimen and suspicious regions, make one or more incisions perpendicular to the resection surface of the suspicious regions at a distance of about 5 millimeters **[1]**.

2.5.1. Talent making the incisions. *Videographer: This shot is important!*

2.6. Measure the margins on the cross-sections **[1]** and record the exact values in millimeters in the anatomical template. If an inadequate margin is detected, indicate the exact location based on the tags and record it in the template **[2]**.

2.6.1. CU: Talent measuring the margins of the tissue.

2.6.2. CU: Template: Values being entered, the location is indicated, and details being entered on the template.

NOTE: Shot angle for 2.6.2. was changed to CU.

2.7. If an additional resection is not achievable, annotate the reason on the template in the additional comments section **[1]**. If an additional resection is achievable, mention the exact location and indicate the thickness needed to achieve an adequate resection in the recommended section **[2]**.

2.7.1. SCREEN: No being selected in the recommendation raw and reason being entered in the additional comments section.

NOTE: Shot number 2.7.1. was not filmed.

2.7.2. Tempalte: Yes being selected, location and thickness information being entered at the recommendation section.

2.8. Relocate to perform the additional resection **[1]**. Keep the main resection specimen in the refrigerator until the additional resection is received **[2]**, then verify the accuracy of the the location and size of the additional resection **[3]**.

2.8.1. Talent (surgeon) leaving the grossing room to perform an additional resection.

NOTE: Shot number 2.8.1. was not filmed.

2.8.2. Talent (pathologist) placing the main specimen in the refrigerator and awaiting additional resection.

2.8.3. Talent verifying the location and the size of the additional resection on the template.

3. Specimen Processing After IOARM

3.1. Reassemble the specimen by the correct orientation of the cross-sections and the polar ends sections of the tissue, based on the tags and the photographs recorded during IOARM *(I-O-A-R-M)* **[1]**.

3.1.1. Talent reassembling the specimen.

3.2. Cut the pieces of cork slightly larger than the tissue sections **[1]** and place each tissue section on a piece of cork **[2]**. Draw a line on the cork around the tissue section with a permanent marker **[3]** and capture the image **[4]**.

3.2.1. Talent shows pieces of different sizes of cork.

3.2.2. Talent placing the polar ends on the cork. *Videographer: This shot is important!*

3.2.3. Talent drawing the line surrounding the polar ends on the cork.

3.2.4. Talent capturing the image.

3.3. Insert the pins through the corks next to the edge of the tissue section to keep the upper and lower cork together with the tissue section in between **[2]**.

3.3.1. Talent placing cork on the top of cross-sections.

NOTE: Shot number 3.3.1. was not filmed and its corresponding VO text was dropped.

3.3.2. Talent inserting the pins from the edge of the tissue section into the cork.

3.4. To reassemble the whole specimen, put all the cork embedded tissue sections, including the polar ends, together in the correct anatomical orientation **[1]**. Keep all the tissue sections together by puncturing the adjacent corks **[2]**.

3.4.1. Talent arranging the cork embedded tissue section. *Videographer: This shot is important!*

3.4.2. Talent adjoining the corks with pins.

3.5. Place the correctly oriented specimen on the anatomical template **[1]** and capture the image **[2]**. Submerge the specimen in 4% formalin solution **[3]** and stick a clear and visible warning note on the container with the specimen to avoid accidents **[4]**.

3.5.1. Talent placing the specimen on the anatomical template.

3.5.2. Talent capturing the image.

3.5.3. Talent submerging the specimen in formalin solution.

3.5.4. Talent writing warning note on the container.

Results

4. Results: Effect of the Margin Recording During IOARM on the Resection

4.1. The specimen-driven intraoperative assessment of resection margins **[1]** resulted in the successful identification of tumor cells. The IOARM resulted in an adequate resection in one patient. After examining the suspicious region for an inadequate margin and tagging, the information was recorded **[2]** and an additional resection was recommended **[3]**.

4.1.1. LAB MEDIA: Figure 7

4.1.2. LAB MEDIA: Figure 7A *Video Editor: Please emphasize yes in the blue circle in the results of IOARM raw.*

4.1.3. LAB MEDIA: Figure 7A *Video Editor: Please emphasize yes in the blue circle in the recommendation raw.*

4.2. The final pathology report showed the presence of moderately differentiated pT2 *(P-T-2)* squamous cell carcinoma on the left side of the tongue. The minimal margins were recorded, and the IOARM was found to be in concordance with final pathology **[1]**.

4.2.1. LAB MEDIA: Table 1

4.3. However, in one patient, IOARM did not result in an adequate resection. After the first resection, the margins of the specimen were found to be less than 5 millimeters, but the inadequate margins were recorded as absent **[1],** and an additional resection was not recommended **[2]**.

4.3.1. LAB MEDIA: Figure 7B *Video Editor: Please emphasize No in the blue circle in the results of IOARM raw.*

4.3.2. LAB MEDIA: Figure 7B *Video Editor: Please emphasize No in the blue circle in the recommendation raw*

4.4. The final pathology report showed the presence of a well-differentiated pT1 *(P-T-1)* squamous cell carcinoma on the right side of the tongue. The minimal margins were recorded, and the IOARM was not concordant with the final pathology **[1]**.

4.4.1. LAB MEDIA: Table 2

Conclusion

5. Conclusion Interview Statements

5.1. **Senada Koljenovic:** Intraoperative assessment of resection margins in many other surgical disciplines could be easily developed based on this protocol.

5.1.1. INTERVIEW: Named talent says the statement above in an interview-style shot, looking slightly off-camera *Suggested B-roll: 2.1.2*