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POINT OF TECHNIQUE

Surgery Is an Art, Live Yours in Colors: Specimen Color Coding in Head and Neck Oncology

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Introduction

One of the most critical issues of surgical oncology is not only the complete removal of tumor but also achieving clear surgical margins. Removal of microscopic or subclinical foci of malignancy is very essential and critical to achieve successful local control of the disease [1]. Failure to achieve a clear surgical margin results has both therapeutic and prognostic implications leading to an increased risk of local recurrence and reduced overall survival [2, 3].

Margin examination by "marking sutures," separate submissions, and shave sectioning techniques has been used in the past but suffice only as rough guides. The ambiguity and misinterpretation of the margins often leads to discordance between the surgeon and the pathologist. To address this issue and add precisin to margin examination, we suggest a technique for color coding of the surgical specimen prior to gross dissection inspired from intitial technique described by Weinstein et al [4].

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Materials and Methods

Annually, our department handles approximately 500 complex specimens from the head and neck region that require marking for orientation and surgical margins. We have been using these acrylic colors for 6 years, resulting in approximately 3000 specimens marked by this method.

Discussion

The pathological analysis of a specimen involves the examination of the mucosal margin, base of resection, and the soft tissue between these two. A collaborative approach between the surgeon and the pathologist is very important for orientation of the specimen. For consistent interpretation and better communication between the surgeon and the pathologist, the soft tissue margins of the specimen are inked by the surgeon with different colors of acrylic ink to denote pertinent margins. The protocol followed at our institute is as follows: Red color is used to ink the anterior margin, yellow for the posterior, blue for the superior margin, and green for the inferior margin. The base of resection is inked with black acrylic color (Figs. 1 and 2). A picture of the color-coded specimen is taken with a camera for future reference and the specimen is sent for frozen section. If the surgeon and pathologist agree that the margins are negative for cancer grossly an on microscopic examination, the specimen undergoes processing for permanent margins. If the margins are close or positive, then the corresponding color is conveyed to the surgeon who then looks at the picture of the specimen and removes additional soft tissue margin in the area of question, inked again, and sent for frozen section.

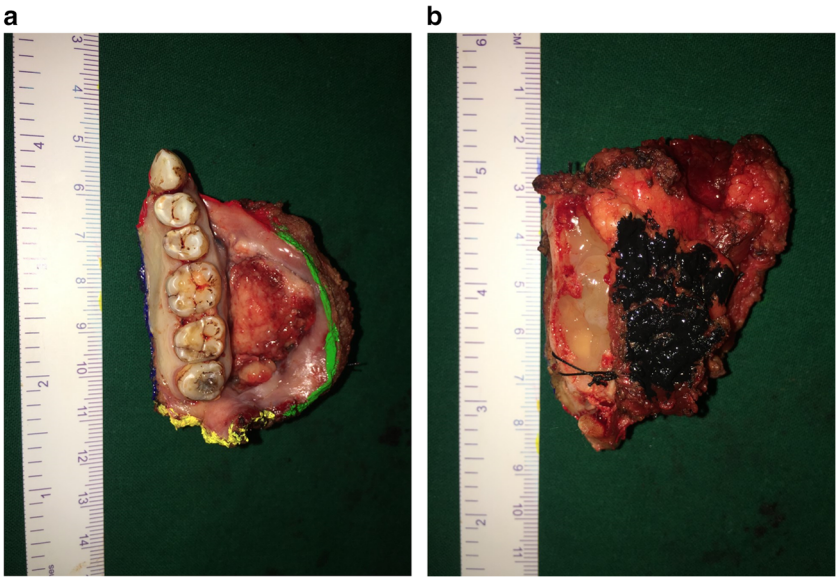

Fig. 1 **a** Painting of the surgical margins with acrylic colors**:** Anterior margin—red color; posterior margin—yellow color; superior margin—blue color; inferior margin—green color. **b** Base of resection—black color

Conclusion

Color coding of the surgical specimen is important as it allows the surgeon and the pathologist to speak the same language regarding margins of the specimen; maintains orientation of grossed and dissected specimens enabling the surgeon to revise the appropriate margin or pathologist to re-visit the grossed specimen, if required; and confidently allows further sampling if necessary.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Consideration None

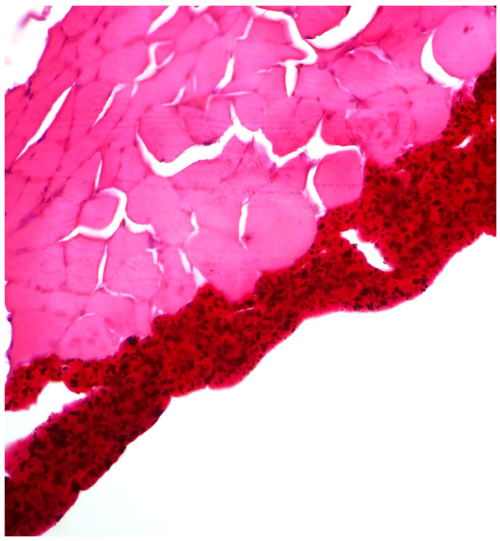

Fig. 2 Photomicrograph showing clear uninterrupted blue acrylic color at the surgical margin under compound microscope (Hematoxylin and Eosin stain; 400×)

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