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Original research

Margin control in oral squamous cell carcinoma: A survey of contemporary practice in India

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ABSTRACT

Background: Determining margin status is the key in management of oral squamous cell carcinoma, indicating risk of local recurrence and guiding the use of adjuvant therapy. Frozen sections are commonly employed intraoperatively to assess the adequacy of resections. There is however no standard approach as to how frozen sections are used. A practice based survey was carried out in an attempt to establish consensus between surgeons and pathologists with regards to margin sampling and acceptable surgical margins.
Methods: A questionnaire consisting of twelve questions was sent to surgical oncologists in various head and neck cancer centers in India. It was divided into two main subsets: 1) The definition of surgical margins and 2) The use of frozen sections to evaluate tumor margins.
Results: Of 440 surveys mailed, 50 completed surveys were received. Majority of responses stated that acceptable clear margins varied according to site, and individual patient factors. Macroscopically clear surgical margins ranged between 0.5–1.5 cm. Best practice for intraoperative margin assessment was frozen tissue analysis of the entire specimen. The majority of responses for choice of sampling site were for both the surgical bed and tumor margin. The overwhelming majority defined microscopically clear margins as 5 mm of tissue or more without tumor.
Conclusion: No standard guidelines and strategies exist among head and neck surgeons about the definition of clear margins and the practice patterns. However, these results have to be applied on a larger sample size in order to validate and authenticate our findings.

Introduction

Achieving loco-regional control in ablative surgery depends on successful removal of gross and microscopic disease. Thorough resection of the tumor is an indisputable norm of surgical oncology [1]. Studies have shown the significance of positive margins and its effect on loco-regional control and survival [1]. Intraoperative frozen section sampling may play a pivotal role in achieving clear margins. [2] Oral cavity in comparison with other aero digestive carcinomas is more likely to have biological characteristics leading to occurrence of recurrent or residual tumors [1]. The complex anatomy of the oral cavity can limit the ability to achieve wide margins, a problem further confounded by post fixation shrinkage [3].

Clear, unambiguous communication between the surgeon and pathologist leads to a signifiant clinical benefit [4]. Disparity in the anatomic correlation between interdisciplinary professionals can lead to confusion over margin adequacy [5]. We carried out a survey to analyze the current practice patterns among head and neck surgeons in determining a tumor free surgical margin.

Materials and methods

A practice based questionnaire was sent to 440 Head and Neck surgical oncologists. The survey comprised of two components– an introductory letter and a survey apparatus i.e. the questionnaire. The questions aimed at defining two important objectives 1) The basis to define surgical margins (comprising of four items) (Table 1) and 2) The use of frozen sections to evaluate surgical margins (com-

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Table 1
The basis to define surgical margins.

No	Question	Choices	Answer
1	What is the most representative sampling site for determining the surgical margins?	a. Surgical bed b. Tumor margin c. Both the surgical bed and tumor margin	
2	Anticipating the post fixation shrinkage, which of the following best defines a 3D clearance of surgical margins macroscopically? [1]	a. ≤5 mm b. >5 mm but ≤10 mm c. >10 mm but ≤15 mm	
3	Would description of clearance of surgical margins differ case wise considering the regional variations of the oral mucosa? [12]	a. Yes b. No c. Any other (please specify)	
4	Is the patient demographics an important determinant in the assessment of surgical margins?	a. Yes b. No (If yes, arrange these parameters in the order of importance: Age, Gender, Habits, Medical history/Co-morbid conditions and Infectious etiology)	

Table 2
The Use of Frozen Sections to Evaluate Surgical Margins.

No	Question	Choices	Answer
1	Which of the following is the best practice for the assessment of surgical margins while submitting the sample for frozen section analysis? [5]	a. Provide the tissue margin of concern from the main specimen b. Provide the tissue from the margin of the surgical defect after the removal of the specimen c. Provide the entire specimen for evaluation along with the margins of concern after inking	
2	After the submission of specimen for evaluation if the margins of concern show features of dysplasia, how is it to be interpreted?	a. Positive b. Negative c. Close	
3	If the initial evaluation suggests a positive margin and resampling yielded a negative margin, what should the final assessment of margin be? [1]	a. Safe b. Close c. Negative	
4	If the specimen submitted has positive margin, what is the best practice for resampling? [5]	a. Margins are resampled and areas previously evaluated are clearly indicated b. Margins are resampled and areas of prior evaluation are not indicated c. Margins are not re-sampled instead wider surgical margins are tentatively made	
5	What is a clear margin microscopically? [6]	a. Margin less than 5 mm without any tumor cells at the inked margin b. Margins greater than 5 mm without any tumor cells at the inked margin c. Eithe rways it is clear	‘
6	Which of the following is a major constraint with frozen tissue analysis? [14]	a. It is time bound b. Re-sampling if needed c. Faulty interpretation d. All of the above	
7	If the initial sampling showed positive margins and subsequently the margins were confirmed negative, the chances of local recurrence in the patient is:	a. Definite b. Likely c. Unlikely	
8	What would be the type of tumor margin if dysplasia/carcinoma in situ are present? [6]	a. Positive b. Negative c. Safe	

prising of eight items) (Table 2). The responses were tabulated and standard statistical methods used to calculate the frequencies.

Results

Of the 440 surveys mailed to surgical oncologists, 50 completed questionnaires were returned which accounted for a response rate of 12.5%. The most consistent response for frozen section assessment of surgical margins involved sampling from both the surgical bed and the tumor margin, with nearly 68% of the responses favoring this. 20% of surgeons favored providing the entire specimen along the margins of concern after inking. Individual patient factors were cited by 48% of surgeons as an important determinant in the adequacy of surgical margins (Fig. 1). 68% of surgeons defined microscopically clear margins as greater than 5 mm without any tumor cells at the inked margins. If however the margins of concern exhibited features of dysplasia, then nearly half the surgeon community (46%) considered it to be positive (46%) (Fig. 2). The most common response for macroscopic surgical margins was 1.5 cm (52% of respondents). Clear margins, were perceived to differ according to site within the oral cavity (60%). According to 58% of surgeons the major limitation of frozen tissue analysis was interpretative errors felt to be as a result of rapid processing and assessment. (Fig. 3).

Discussion

In our survey, the leading response for a most representative sampling site for determining surgical margins was both from the surgical bed and the tumor margins. Meier et al. in his analysis of 476 practicing surgeons concluded that samples taken from the surgical bed had greater number of sampling errors, which was ascribed to the increased difficulty in margin repositioning [6]. It is also recognized that a mean error in the repositioning of oropharyngeal cancer is 9 mm for samples at mucosal margins [7]. Ribeiro et al. contended that the results are most favorable when samples were obtained both from the deeper and the mucosal surfaces of the surgical defect [1]. Questionnaire based study by Gerber

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