

Evaluation of intraoperative frozen section collection and analysis in patients with squamous cell carcinoma of the oral cavity: a retrospective review of 157 specimens

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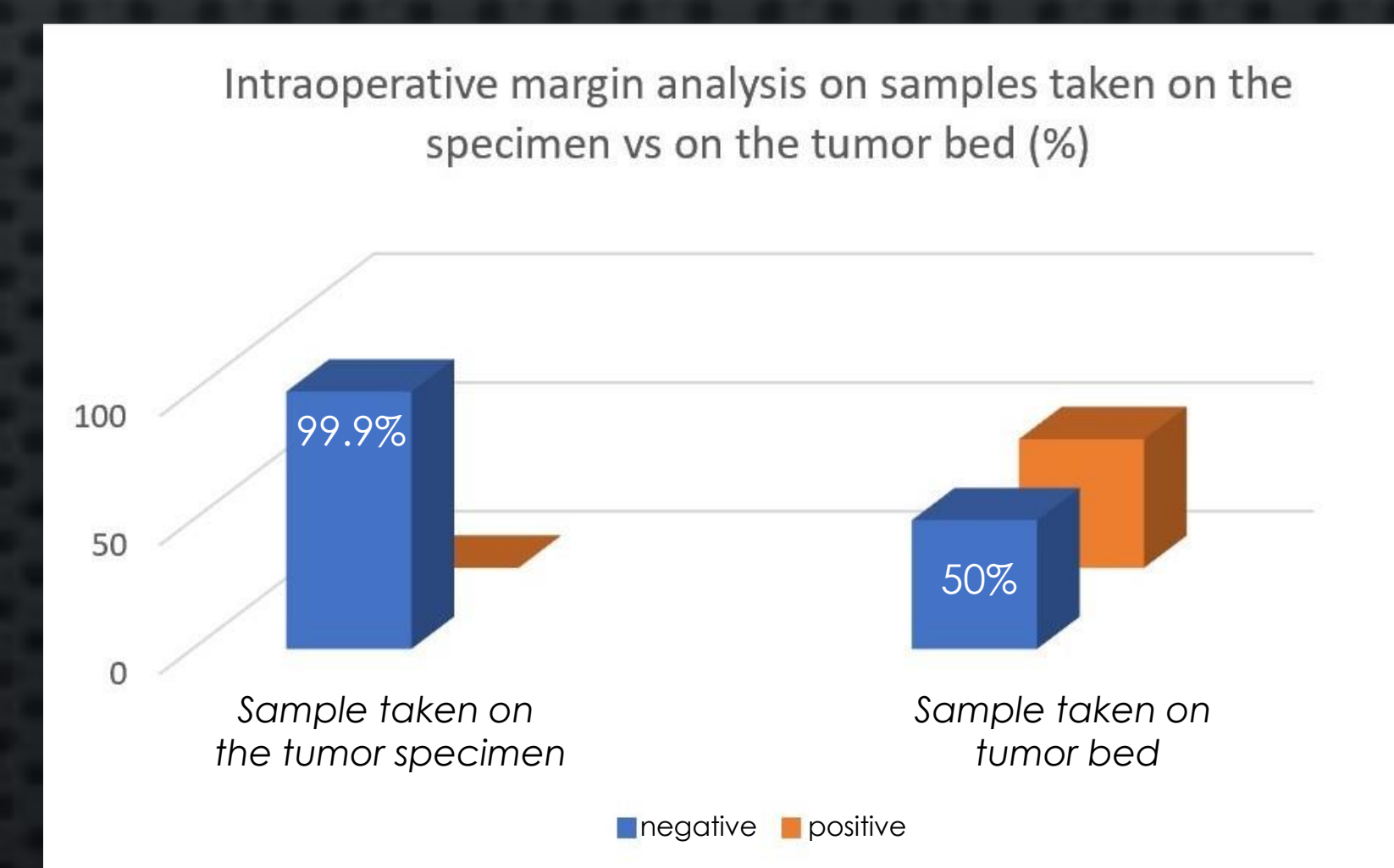
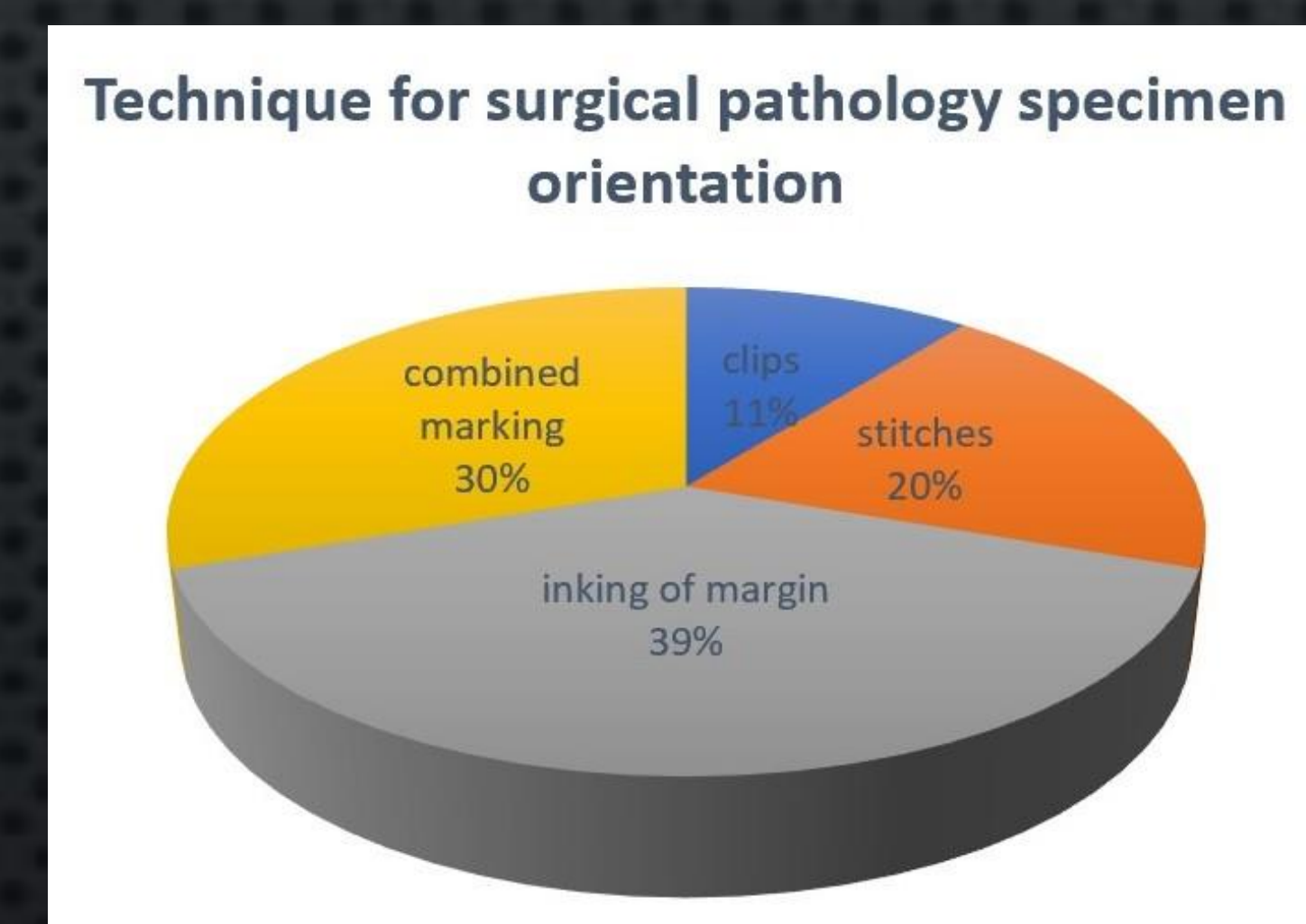
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Introduction: During oral cavity cancer resection, complete tumor removal is guided by intra-operative frozen section pathology evaluation to ensure microscopically clear margins (1). Optimal assessment of margin status during surgery and ultimately, the concordance between intraoperative and final pathology results (2), have a direct impact on disease control and the decision for adjuvant therapy (3). The aim of this study was to determine the current practices of the collaborative efforts between our head and neck surgeons and pathologists and to quantify intraoperative and final surgical margin concordance rates in patients with oral cavity squamous cell carcinoma (SCCa). Secondarily, this study aims to identify potential best practices that enhance the ability to accurately report surgical margins intraoperatively and to create a new standard operating procedure (SOP) to improve frozen section collection, marking, handling and analysis.

Methods: This is a single institution, retrospective review of patients who underwent surgical resection with intraoperative frozen specimen analysis for oral cavity SCCa between 01/01/2018 and 09/30/2020. A review of the medical records, pathology and operative reports was conducted and examined for each patient matching the inclusion criteria. Incomplete charts or pathology reports were excluded from the analysis. Statistical analysis was conducted using Spearman’s non parametric measure of rank correlation.

Results: A total of 157 oral cavity SCCa specimens were included in the analysis (stages T1: 15.9%, T2: 31%, T3: 8.9% and T4: 18.5%), among which 33.8% (53/157) had previously been treated with chemotherapy, radiotherapy, surgery or a combination thereof. Frozen section analysis of tumor margins was performed on all resections and oriented in 35.7% (56/157) of the cases, using clips (6/56,10.7%), stitches (11/56, 19.6%), ink on the true margin (39.3%) or a combination of techniques in 30.3% (17/56). Among the intraoperative frozen sections, 9.6% (15/157) required re-resection to get negative margins (Spearman’s rho 0.85), 12.7% (20/157) of the margins were positive intraoperatively (which also correlated with final pathology results, rho 0.72) among which 50% (13/26) were sampled on the tumor bed. We report 18.5% (29/157) of close margins (< 5mm), among which 96.6% of frozen sections were collected on the tumor specimen. Our study finds a 1.9% discordance rate between intraoperative frozen section (incorrectly reported as negative for cancer on frozen) and final permanent results (3/157 specimens). Marking and analysis were not significantly different, frozen sections were sampled on the tumor bed for 2 out of those 3 specimens.

Conclusion: This study demonstrates good concordance rate between intraoperative frozen section analysis and final pathology results during oral cavity SCCa resection (rho 0.85). This is consistent with the current literature that reports an average concordance rate of 97% (1). Sampling of the tumor bed more often resulted in final margins being positive on the main specimen. Future directions include designing, standardizing and implementing a SOP within our institution to improve communication between surgeons and pathologists, increase concordance rates and decrease frequency of positive margins on final report.



References:

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