PAPER 54

Title: MSTS Member Survey: Intra-Operative Peripheral Margins in Soft Tissue Sarcoma

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Background:

There are several recommendations regarding intra-operative peripheral margin sampling in soft tissue sarcomas, but it is unclear what is considered standard of care or what is routinely practiced[1-6]. In the setting of bone sarcomas, the utility of the marrow margin frozen assessment has been scrutinized with little impact on intraoperative decision making, with an increased cost and time[1]. Contrary to this, in breast conserving surgery intra-operative margin assessment potentially avoids a subsequent re-excision in 25% of patients[2].

While several recommendations exist, including: "6-8 perpendicular sections from all margins < 2cm", 2 samples from the closest margin and 1-2 sections from all other margins, and 6 or more specimens taken from margins <2cm, there is not a definitive standard of care[4-6]. The utility of intraoperative margin sampling has yet to be established, and it is unknown how members of the MSTS implement these varied recommendations.

Questions:

A: What are the practice patterns of intra-operative peripheral margin sampling amongst MSTS Members?

Methods:

This study was survey study of all MSTS members. Survey questions were reviewed and approved by the MSTS membership committee. The survey was administered with a branching logic format via Microsoft forms in an anonymous fashion. Participation was completely voluntary.

Results:

108 responses were collected for this survey. Of those, 55 (51%) reported routinely obtaining peripheral margins in soft tissue sarcoma resections. Of the 55 who routinely send margins, participants most commonly cited the reason was for concern of adequacy of the resection. Most individuals who routinely sent margins sent margins regardless of tumor type, and typically send 4-6 peripheral margins. Sampling patterns typically include peripheral anatomic margins and resection areas perceived to be high risk for inadequate resection. 29 (53%) of participants who routinely send margins reported waiting for margin pathology before primary closure, and 80% utilized frozen margins assessment prior to flap coverage in the same operative encounter. 29 (65%) of respondents who reported they do not wait for intra-operative frozen cited that they were confident of adequate margins and that if a margin were positive, it would not impact intra-operative decision making.

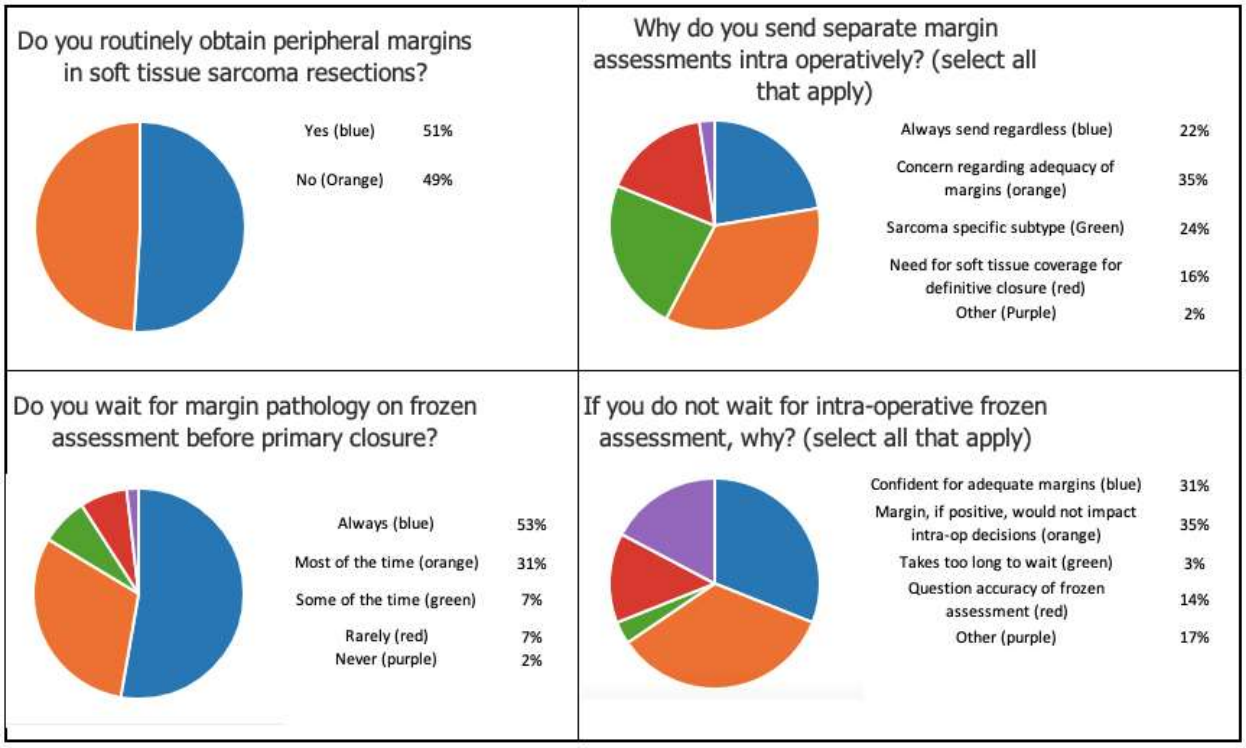
Conclusions:

This survey highlights a variety of approaches in clinical practice, in the absence of compelling evidence. The true utility of intra-operative margins would require multicenter consortium of cases with standardization of methods of sampling. Despite this, the results of this survey enhance the understanding of practice patterns within the MSTS, and suggest it is a reasonable standard to sample peripheral margins in a selective fashion. Routine sampling is frequent enough amongst MSTS members to warrant further study of the utility of this practice, with the hope of generating a standard practice of care.

Table 1: Survey questions distributed to MSTS members

MSTS Survey: Peripheral Margin Assessment in Soft Tissue Sarcoma						
Question		Answers				
1	Do you routinely obtain peripheral margins in soft tissue sarcoma resections?	Yes		No		
2	Why do you send separate margin assessments intra operatively? (select all that apply)	Always Send Regardless	Concern regarding adequacy of Margins	Based on Specific Sarcoma Sub-type	Need for soft tissue coverage for definitive closure	Other
3	If you base peripheral margins based on tumor type, which types do you consider? (check all that apply)	Myxofibrosarcoma	UPS	Synovial Sarcoma	Epithelioid Sarcoma	Perform Regardless of tumor type
4	How many margins do you send on average?	1-3	4-6	6-8	8+	
5	How/Where do you sample from? (select all that apply)	Peripheral anatomic margins	Resection areas perceived to be high risk	Planned close margin around neurovascular structures	Other	
6	Do you wait for margin pathology on frozen assessment before primary closure?	Always Send Regardless	Most of the time	Some of the time	Rarely	Never
7	Do you use intra-operative frozen margin assessment prior to pedicled or free flap coverage in the same operative encounter?	Yes		No		
8	If you do not wait for intra-operative frozen assessment, why? (select all that apply)	Confident for adequate margins	Margin, if positive, wouldn't impact operative decision (planned close margin to critical structure with neoadjuvant radiation)	Takes too long to wait	Question accuracy of frozen assessment	Other

Table 2: Schematics of survey results highlighting key considerations for margin sampling



References

1. Anderson, Megan E., et al. "Frozen section versus gross examination for bone marrow margin assessment during sarcoma resection." *Clinical Orthopaedics and Related Research®* 472.3 (2014): 836-841.
2. Cabioglu, Neslihan, et al. "Role for intraoperative margin assessment in patients undergoing breast-conserving surgery." *Annals of surgical oncology* 14.4 (2007): 1458-1471.
3. Sambri, Andrea, et al. "Margin assessment in soft tissue sarcomas: Review of the literature." *Cancers* 13.7 (2021): 1687.
4. Byerly, Saskya, et al. "The role of margins in extremity soft tissue sarcoma." *Journal of surgical oncology* 113.3 (2016): 333-338.
5. Kandel, R.; Coakley, N.; Werier, J.; Engel, J.; Ghert, M.; Verma, S.; Sarcoma Disease Site Group of Cancer Care Ontario's Program in Evidence-Based Care. Surgical margins and handling of soft-tissue sarcoma in extremities: A clinical practice guideline. *Curr. Oncol.* 2013, *20*, e247–e254
6. Cates, M.M., Cates, J.M.M. Surgical resection margin classifications for high-grade pleomorphic soft tissue sarcomas of the extremity or trunk: definitions of adequate resection margins and recommendations for sampling margins from primary resection specimens. *Mod Pathol* 32, 1421–1433 (2019). https://doi.org/10.1038/s41379-019-0278-9
7. O'Donnell, Patrick W., et al. "The effect of the setting of a positive surgical margin in soft tissue sarcoma." *Cancer*120.18 (2014): 2866-2875.
8. Gundle, Kenneth R., et al. "Analysis of margin classification systems for assessing the risk of local recurrence after soft tissue sarcoma resection." *Journal of Clinical Oncology* 36.7 (2018): 704-709.