

# Do Oncological Considerations in Malignant Peripheral Nerve Sheath Tumors Differ Among Surgical Specialties? An International Survey

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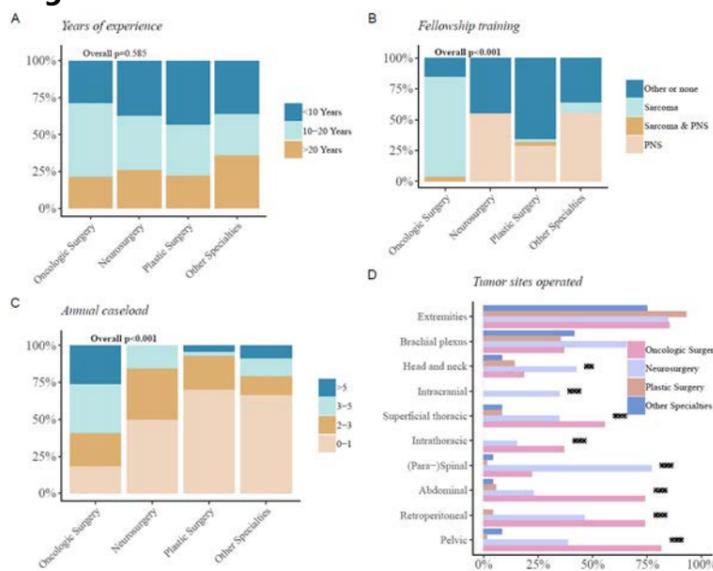
## Background

Malignant peripheral nerve sheath tumors (MPNSTs) are rare and aggressive soft tissue sarcomas (STS) that, because of their origin, are operated by several surgical subspecialties. This may cause differences in oncologic treatment recommendations based on presentation. This study investigated these differences by means of an international survey.

## Methods

A survey was distributed online among members of multiple surgical societies: the Dutch Society of Surgical Oncology (NVCO), the Dutch Society for Surgery of the Hand (NVVH), the peripheral nerve section of the Dutch Society for Neurosurgery (NVVN), the American Society for Peripheral Nerve (ASPN), the peripheral nerve section of the European Association of Neurosurgical Societies (EANS), and the Soft Tissue and Bone Sarcoma Group of the European Organization for Research and Treatment of Cancer (EORTC). Responses were summarized per surgical subspecialty: oncologic surgery, neurosurgery, plastic surgery, and other surgical subspecialties. Differences were calculated with  $\chi^2$ -tests for categorical data. P-values <0.05 were considered statistically significant. Statistical analyses and data visualization were conducted using R version 3.6.0 (R Core Team, 2019).

**Fig. 1**



**Fig. 2**

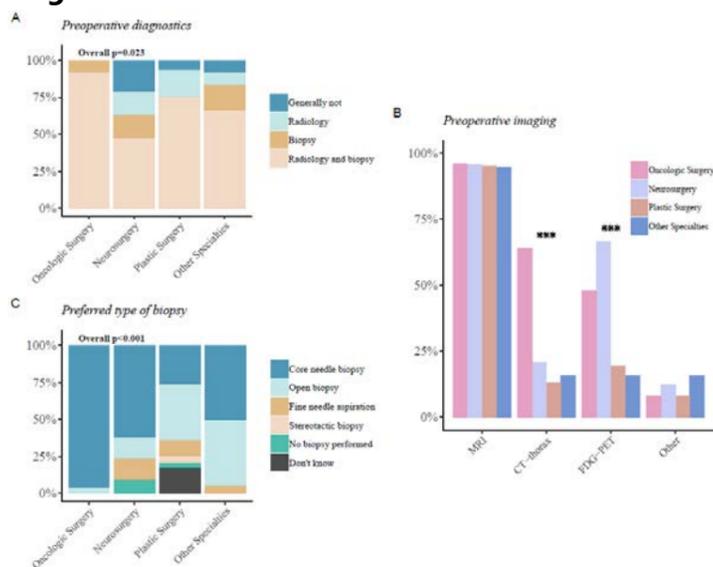


Fig. 1 Demographical data of respondents  
Fig. 2 Preoperative diagnostics performed  
p-values: \* = <0.05, \*\* = <0.01, \*\*\* = <0.001.

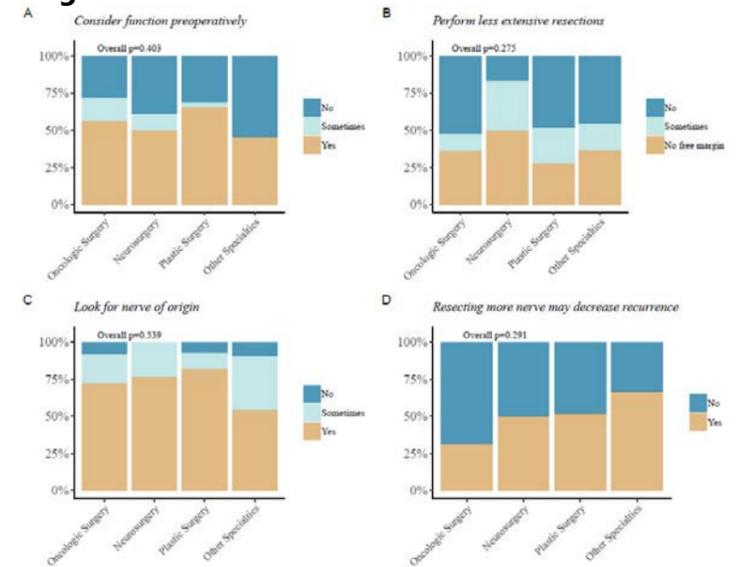
## Results

In total, 30 oncologic surgeons, 30 neurosurgeons, 85 plastic surgeons, and 29 'others' filled out the survey. Annual caseload, tumor sites operated, and fellowship training differed significantly between subspecialties (**Fig. 1**). While most surgeons agreed upon preoperative use of MRI, the use of radiological staging and FDG-PET use differed between subspecialties (**Fig. 2**). Oncologic surgeons agreed upon core needle biopsies as ideal type of biopsy while other subspecialties differed in opinion. On average, 53% of surgeons always consider preservation of function preoperatively, but 42% would never perform less extensive resections for function preservation (**Fig. 3**). The majority of respondents always looks for the nerve of origin preoperatively (74%). Opinions were equally distributed that resecting more of the nerve of origin may result in less recurrences. Respondents agreed that radiotherapy should be considered in tumor sizes >10cm, microscopic, and macroscopic positive margins (**Fig. 4**). Preferred sequence of radiotherapy administration differed between subspecialties. There was no consensus on indications and sequence of administration of chemotherapy in localized disease.

## Conclusion

Preoperative planning and diagnostics differ between surgical specialties, but oncologic surgeons most commonly follow sarcoma guidelines. Variation in oncologic treatment recommendation exists among all surgical specialties with a significant difference between specialties on sequence of chemo- and radiotherapy. Differences between specialties are likely caused by specialty bias, but combining knowledge may ameliorate patient outcomes.

**Fig. 3**



**Fig. 4**

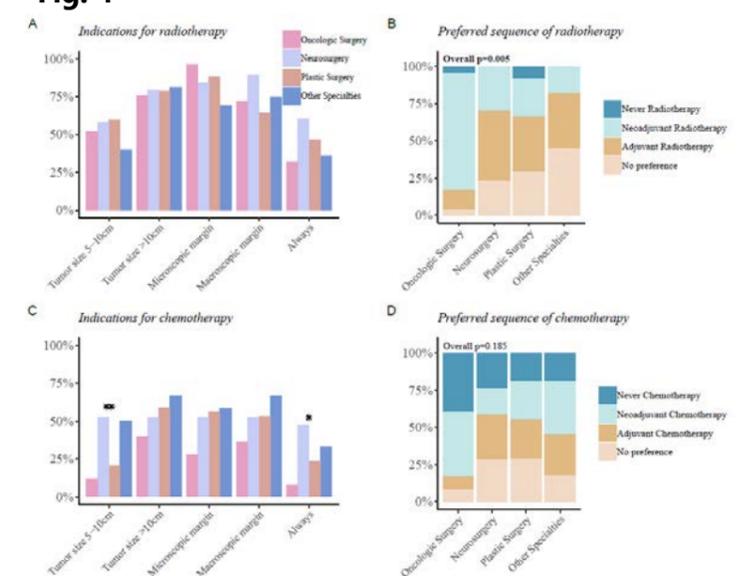


Fig. 3 Surgical considerations per surgical subspecialty  
Fig. 4 Use of multimodal therapy per surgical subspecialty  
p-values: \* = <0.05, \*\* = <0.01, \*\*\* = <0.001.