



ASO Author Reflections: Timing of Neoadjuvant Chemotherapy in Patients with Sarcoma

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PAST

Neoadjuvant chemotherapy (NACT) is widely utilized in patients with osteosarcoma and Ewing's sarcoma as a means of reducing tumor burden prior to surgical resection and reconstruction. However, the immunosuppressive effects of chemotherapy increase the risk of surgical site infections, which can be devastating for patients.^{1,2} There are limited data evaluating whether timing of NACT and surgical resection impacts infection and reoperation rates.

PRESENT

Our study prospectively evaluated 216 patients from 39 clinical sites with a lower extremity sarcoma undergoing surgical resection and endoprosthetic reconstruction as part of a larger clinical trial.^{3,4} The time from completion of neoadjuvant chemotherapy to surgery varied considerably. Multivariate analyses revealed that the time interval between NACT and surgery did not impact surgical site infections or reoperations at 1-year follow-up. The analysis demonstrated that longer surgical time was predictive of higher infection and reoperation rates in this population.

FUTURE

This study provided the first evaluation of the timing of NACT with respect to complication rates in patients with sarcoma undergoing endoprosthetic reconstruction. We identified considerable variability in the delivery of NACT with no impact of infection or reoperation rates. Future prospective multicentered cohort studies with long-term follow-up are warranted to evaluate the impact of timing and specific chemotherapeutic agents on oncologic and infection outcomes.

DISCLOSURES The PARITY Trial received funding through research grants from the Canadian Institutes of Health Research (CIHR), the Canadian Cancer Society Research Institute, the Canadian Orthopaedic Foundation, the Orthopaedic Research and Education Foundation in conjunction with the Musculoskeletal Tumor Society, and the Physicians' Services Incorporated Research Grant.

REFERENCES

1. Gradl G, de Witte PB, Evans BT, Hornicek F, Raskin K, Ring D. Surgical site infection in orthopaedic oncology. *JBJS*. 2014;96(3):223–30.
2. Anatone AJ, Danford NC, Jang ES, Smartt A, Konigsberg M, Tyler WK. Risk factors for surgical site infection in orthopaedic oncology. *J Am Acad Orthop Surg*. 2020;28(20):e923. <https://doi.org/10.5435/JAAOS-D-19-00582>.
3. Ghert M, Schneider P, Giglio V, et al. Comparison of prophylactic intravenous antibiotic regimens after endoprosthetic reconstruction for lower extremity bone tumors: a randomized clinical trial. *JAMA Oncol*. 2022;8:345–53.
4. Gazendam A, Schneider P, Spiguel A, Ghert M. Neoadjuvant chemotherapy and endoprosthetic reconstruction for lower extremity sarcomas: does timing impact complication rates? *Ann Surg Oncol*. 2022. <https://doi.org/10.1245/s10434-022-12258-w>.