Spinal Tumor Surgery for Metastatic Cancer: Complete vs Partial Resection and Treatment

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BACKGROUND

The optimal extent of surgical resection for spinal metastases remains a topic of debate. This project aims to investigate if minimally invasive surgery, involving partial resection of tumors, can enhance patient outcomes. The focus is on reducing complications and recovery time while ensuring effective tumor control.

METHODS

- **Study Design**: 119 patients who underwent spinal surgical resection for metastases were identified from multiple centers.
- **Data Collected:** Patients with primary bone tumors or intradural spinal cord tumors were excluded, as treatment for these entities differ from metastases.
- **Complications Measured:** wound dehiscence, spinal infection, CSF leak, hardware failure, PE/DVT, epidural hematoma, UTI, readmission within 30 days, neurological decline, and mortality.
- **Statistical Analysis:** Summary data are presented as proportions or medians with standard deviations.

RESULTS

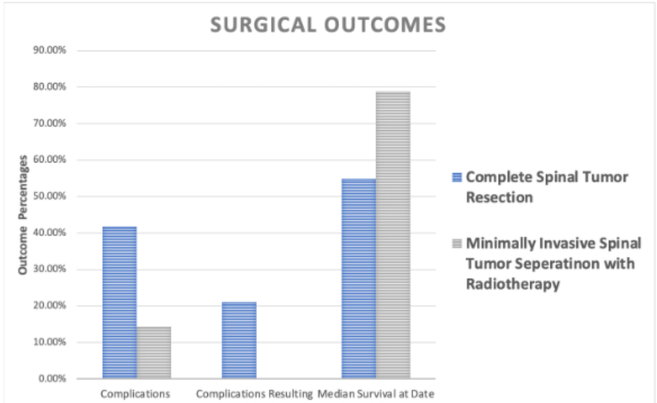

Figure 1: Surgical outcomes comparing complete spinal tumor resection to minimally invasive surgery with conjugate radiotherapy.

Characteristic	Complete Resection (N=91)	Partial Resection (N=28)
Age	62±12.0	62±12.8
Sex (male)	61.5%	46.4%
Race (white)	75.8%	78.6%
Congestive Heart Failure	7.7%	10.7%
Coronary Artery Disease	6.6%	25.0%
Diabetes	17.6%	3.6%
Tobacco Use	42.9%	42.9%
Karnofsky Performance Score	80±13.8	80±12.1

Table 1. Demographics and Comorbidities

Characteristic	Complete Resection (N=91)	Partial Resection (N=28)
Initial Presentation	73.6%	82.1%
Spinal Instability Neoplastic Score	10.0±2.8	11.5±2.6
Kyphoplasty	12.1%	53.6%
Decompression	92.3%	60.7%
Fusion	74.7%	89.3%
Cemented Screws	40.7%	89.3%
Cage Placement	41.6%	0%
Surgery Duration (min)	193±133.9	202±87.1
Estimated Blood Loss (mL)	250±628.7	50±305.0

Table 2. Operative Details

DISCUSSION

Reducing the invasiveness of spinal metastases surgery could enhance patient outcomes. This study presents initial data; ongoing analyses include both univariate and multivariate assessments. Study limitations encompass restricted ethnic diversity, patient follow-up challenges, limited minimally invasive procedures, and surgeon variances. Future research should involve multi-institutional data on minimally invasive surgeries and comprehensive patient follow-up for a more comprehensive understanding.

CONCLUSIONS

Initial findings indicate that less invasive surgery may result in reduced inpatient complications, shorter hospital stays, and faster access to subsequent adjuvant therapies for patients.

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Plain Language Summary

Our study aimed to see if a less invasive surgery, combined with radiation, leads to less complications compared to removing the entire tumor while offering the same survival benefits. We discovered significant reductions in complications, fewer cases requiring hospitalization, and improved median survival rates for patients. These findings highlight the importance of future larger studies comparing the surgical techniques.