Surgical versus Radiation Therapy for the Treatment of Cervical Metastases: From the Epidemiology, Process and Outcomes of Spine Oncology (EPOSO) Cohort

Disclosures

Grants and Research Support: AO Spine International

Consultant Fees: Globus, Stryker
Cervical Metastatic Disease

Represents 8-15% of all spinal metastases

Goal of treatment:
- Improve pain
- Maintain or improve neurological function
- Improve Health Related Quality of Life (HRQOL)

Unique anatomical region with complex anatomy

No prospective studies on treatment outcomes in cervical metastatic disease.

**Primary Objective:** To describe the impact of surgical intervention (+/- radiotherapy) **OR** radiotherapy alone on health related quality of life.

**Secondary Objective:** To describe the adverse event profiles of surgical intervention (+/- radiotherapy) and radiotherapy alone.
Methods

10 International Spine Oncology Centres

Surgery (+/- Radiotherapy)
- Treatment Data
  - Surgical Approach
  - Surgical Technique
  - Adverse Events

Outcomes Data
- Collected at 6, 12, and 26 weeks:
  - Pain NRS VAS
  - SF-36v2
  - EQ-5D
  - SOSGOQV2.0

Radiotherapy Alone
- Treatment Data
- Outcomes Data
  - Type of Radiotherapy
  - Median Dose
  - Adverse Events

Prospectively Collected Data
Results: Demographic Data

Most common sites of primary cancer: breast, lung, and kidney.

There were no patients with complete (AIS A) neurological deficits and all those who underwent radiotherapy alone were graded as AIS E.

Patients who received surgical intervention (+/- radiotherapy) had a higher mean SINS than radiotherapy alone (13.0 vs. 8.0, p<0.001).

Patients who received surgical intervention (+/- radiotherapy) were more likely to have mechanical neck pain (89.5% vs. 34.7%, p<0.001).

<table>
<thead>
<tr>
<th></th>
<th>Surgery +/- radiation N = 38</th>
<th>Radiation only N = 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (SD)</td>
<td>57.0 (10.9)</td>
<td>58.4 (7.9)</td>
</tr>
<tr>
<td>Gender, n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>21 (55.3)</td>
<td>7 (41.2)</td>
</tr>
<tr>
<td>Female</td>
<td>17 (44.7)</td>
<td>10 (58.8)</td>
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<tr>
<td>Mechanical or Postural pain</td>
<td></td>
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<tr>
<td>Pain-free lesion (%)</td>
<td>0 (0.0)</td>
<td>4 (25.0)</td>
</tr>
<tr>
<td>Occasional pain but not mechanical (%)</td>
<td>4 (10.5)</td>
<td>6 (37.5)</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>34 (89.5)</td>
<td>6 (37.5)</td>
</tr>
<tr>
<td>ASIA Impairement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A (%)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>B (%)</td>
<td>2 (5.3)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>C (%)</td>
<td>5 (13.2)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>D (%)</td>
<td>13 (34.2)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>E (%)</td>
<td>18 (47.4)</td>
<td>16 (100.0)</td>
</tr>
<tr>
<td>SINS Score (SD)</td>
<td>13.0 (2.8)</td>
<td>8.0 (2.8)</td>
</tr>
</tbody>
</table>
There were significant improvements in pain scores at 6 weeks maintained at 6 months in patients who underwent surgical intervention (+/- radiotherapy) ($p<0.05^*$).

No improvements were seen in pain scores in those who received radiotherapy alone.
There were significant improvements in EQ-5D scores at 6 weeks maintained at 6 months in patients who underwent surgical intervention (+/- radiotherapy) (p<0.05*).

Minimal improvements were seen in EQ-5D scores in those who received radiotherapy alone.
There were **significant improvements** in SOSGOQ scores at 6 weeks maintained at 6 months in patients who underwent surgical intervention (+/- radiotherapy) (p<0.05*).

**Minimal improvements** were seen in SOSGOQ scores in those who received radiotherapy alone.
Discussion

This study represents a large international collaboration and one of the first prospective cohorts that has utilized validated and reliable HRQOL measures to follow patients with spinal metastases.

- **Surgery (+/- Radiotherapy):** Statistically significant improvements in pain and HRQOL compared to radiation alone, sustained over time

- **Radiotherapy alone:** no improvement in NRS pain, slight but not statistically significant improvements in HRQOL

Limitations:
- Small sample size
- No standardization of surgical technique
- Not adjusted for confounding variables (due to sample size)
Summary Points

• The decision to undergo surgical intervention is best approached by a multi-disciplinary team including spine surgeons, radiation and medical oncologists in discussion with patients and families wishes.

• Patients who receive surgical intervention have baseline worse HRQOL and pain scores, but have significant improvements after surgery at 6 weeks, 3 and 6 months follow-up.

• Those who received radiation only for treatment were less disabled at baseline, but had no improvements of these scores throughout treatment.