

Title: Quality of Life Changes after Surgery for Metastatic Spinal Disease: A Systematic Review and Meta-analysis

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Objective: As it remains questionable to what extent surgery improves quality of life (QoL) for metastatic spinal disease, it would be interesting to quantify the magnitude and duration of QoL benefits after surgery for metastatic spinal disease. Therefore, a systematic review and meta-analysis was conducted to assess QoL after surgery for metastatic spinal disease, and how surgery affects physical, social/family, emotional, and functional well-being.

Methods: Included were studies measuring QoL before and after surgery for metastatic spinal disease for various indications including pain, spinal cord compression, instability or tumor control. A random-effect model assessed standardized mean differences (SMD) of summary QoL scores between baseline and 1, 3, 6, or 9-12 months after surgery.

Results: After screening 992 titles and abstracts, 10 studies were included for data extraction. The pooled QoL summary score improved from baseline to 1-month (SMD 1.09, $p < 0.001$), to 3-months (SMD 1.28, $p < 0.001$), to 6-months (SMD 1.21, $p < 0.001$), and to 9-12 months (SMD 1.08, $p = 0.001$). Surgery improved physical well-being during the first 3-months (SMD 0.94, $p = 0.022$), improved emotional (SMD 1.19, $p = 0.004$) and functional well-being (SMD 1.08, $p = 0.005$) during the first 6-months, and only improved social/family well-being at month 6 (SMD 0.28, $p = 0.001$).

Conclusions: Surgery improved QoL for patients with metastatic spinal disease, and rapidly improved physical, emotional, and functional well-being; it had minimal effect on social/family well-being. However, choosing the optimal candidate for surgical intervention in the setting of metastatic spinal disease remains paramount: otherwise postoperative morbidity and complications may outbalance the intended benefits of surgery.