

Supplementary Table S1: Preoperative Characteristics

Characteristic	Total Patients
Number of Vertebrae with Metastases	
1	37/128 (29%)
2 to 4	70/128 (55%)
5 to 10	15/128 (12%)
> 10	6/128 (5%)
Location of Metastases	
Cervical	32/128 (25%)
Thoracic	91/128 (71%)
Lumbar	32/128 (25%)
Sacral	5/128 (4%)
Radicular Symptoms	
Yes	68/128 (53%)
No	53/128 (41%)
Unknown	7/128 (5%)
Serum Albumin	
< 3.5	38/128 (30%)
3.5 or >	77/128 (60%)
Received Radiation Therapy	
Yes	59/128 (46%)
No	66/128 (52%)
Unknown	3/128 (2%)
Received Immunotherapy	
Yes	6/128 (5%)
No	118/128 (92%)
Unknown	4/128 (3%)
Received Cytotoxic Therapy	
Yes	56/128 (44%)
No	69/128 (54%)
Unknown	3/128 (2%)
Received Other Therapy^a	
Yes	19/128 (15%)
No	104/128 (81%)
Unknown	5/128 (4%)
Surgery on Primary Tumor	
Yes	48/128 (38%)
No	70/128 (55%)
Unknown	10/128 (8%)
Received Steroids Pre-operatively	
Yes	30/128 (23%)
No	80/128 (63%)
Unknown	18/128 (14%)

a: includes miscellaneous therapies such as EGFR inhibitors, other tyrosine kinase inhibitors, oral hormonal therapy, etc

Supplementary Table S2: Surgical and Peri-Surgical Characteristics

Characteristic	Total Patients	Characteristic	Total Patients
Surgical Approach		Postoperative Number of Transfusions	
Anterior	7/128 (5%)	0	35/128 (27%)
Posterior	46/128 (36%)	1 to 2	41/128 (32%)
Combined Anterior Posterior	73/128 (57%)	3 to 5	28/128 (22%)
Unknown	2/128 (2%)	>6	8/128 (6%)
Location of Vertebrae Decompressed		Unknown	16/128 (13%)
Cervical	19/128 (15%)	Length of Surgery (hours)	
Cervical and thoracic	3/128 (2%)	≤ 3	27/128 (21%)
Thoracic	73/128 (57%)	3 to 5	38/128 (30%)
Thoracic and lumbar	13/128 (10%)	>5	11/128 (9%)
Lumbar	9/128 (7%)	Unknown	52/128 (22%)
Lumbar and sacral	3/128 (2%)	Length of Hospital Stay (Days)	
Unknown	8/128 (6%)	≤ 3	17/128 (13%)
Number of Vertebrae Decompressed		4 to 7	67/128 (52%)
1	32/128 (25%)	8 to 14	30/128 (23%)
2 to 3	68/128 (53%)	>14	6/128 (5%)
4 to 6	24/128 (19%)	Unknown	8/128 (6%)
Unknown	4/128 (3%)	Additional Spinal Surgery	
Location of Vertebrae Instrumented		Yes	23/128 (18%)
Cervical	15/128 (12%)	No	53/128 (41%)
Cervical and thoracic	24/128 (19%)	Unknown	52/128 (41%)
Thoracic	43/128 (34%)	Additional Spinal Procedure	
Thoracic and lumbar	29/128 (23%)	Cement Augmentation	6/128 (5%)
Lumbar	4/128 (3%)	Ablation	7/128 (5%)
Lumbar and sacral	7/128 (5%)	Unknown	17/128 (13%)
Sacrum	1/128 (1%)	Postoperative Infection	
Unknown	5/128 (4%)	Yes	17/128 (13%)
Surgical Graft/Cage Use		No	103/128 (80%)
None	22/128 (17%)	Unknown	8/128 (6%)
Cage	28/128 (22%)	Other Postoperative Complication	
Cement	26/128 (20%)	Yes	34/128 (27%)
Unknown	48/128 (38%)	Neurologic	8/34 (24%)
Number of Vertebral Levels Instrumented		DVT/PE	8/34 (24%)
1 to 3	19/128 (15%)	Wound	8/34 (24%)
4 to 6	68/128 (53%)	Cardiac/Respiratory	6/34 (18%)
>6	39/128 (30%)	No	79/128 (62%)
Unknown	2/128 (2%)	Unknown	15/128 (12%)
		Death Within 30 days of Surgery	4/128 (3%)

Supplementary Table S3: Characteristics of Receipt of Post-Operative Therapy

Characteristic	Total Patients
Received Cytotoxic Therapy	
Yes	53/128 (41%)
No	58/128 (45%)
Unknown	17/128 (13%)
Received Radiation Therapy	
Yes	78/128 (61%)
No	40/128 (31%)
Unknown	10/128 (8%)
Received Immunotherapy	
Yes	15/128 (12%)
No	96/128 (75%)
Unknown	17/128 (13%)
Received Other Therapy^a	
Yes	42/128 (33%)
No	71/128 (55%)
Unknown	15/128 (12%)

a: includes therapies such as EGFR inhibitors, oral tyrosine kinase inhibitors, oral hormonal therapy, etc

Supplementary Table S4: Neurologic Outcomes Following Surgery

Neurologic Symptom/Deficit ^a	Number of Patients		
	Pre-operative	Post-operative ^b	1 – 3 mo Post-operative ^c
Pain	67/75 (89%)		
Stable/Improved		64/67 (96%)	53/67 (79%)
Worsened		3/67 (4%)	14/67 (21%)
Motor	21/75 (28%)		
Stable/improved		19/21 (90%)	15/21 (71%)
Worsened		2/21 (10%)	6/21 (29%)
Sensory	15/75 (20%)		
Stable/Improved		12/15 (80%)	12/15 (80%)
Worsened		3/15 (20%)	3/15 (20%)
Asymptomatic	4/75 (5.3%)		

Detailed neurologic status was available for 75/128 patients pre-operatively. Immediate- and 1-3 mo post-operative status is reported as relative to their pre-operative neurologic status.

^bUnknown in 1/75 patients.

^cUnknown in 5 patients, 2 patients deceased. Known in 68/75 patients.

Supplementary Table S5: Univariate and Multivariate Logistic Regressions Assessing Risk Factors Associated with Post-Op Therapy

	Univariate		Multivariate	
Risk Factors	Odds Ratio (95% CI)	<i>p</i> -value	Odds Ratio (95% CI)	<i>p</i> -value
Age at Diagnosis		0.7074		
< 65	-ref-			
≥ 65	1.2 (0.46-3.11)			
Age at Surgery		0.1223		
< 65	-ref-			
≥ 65	0.51 (0.21-1.2)			
Tumor Type ^a		0.0582		0.0491
Hematologic	-ref-		-ref-	
Breast	1.86 (0.1-34.43)		1.77 (0.1-32.84)	
Lung	0.14 (0.02-1.35)		0.12 (0.01-1.12)	
Other Solid	0.17 (0.02-1.53)		0.15 (0.02-1.35)	
Renal	0.5 (0.05-5.36)		0.4 (0.04-4.34)	
Sarcoma	0.14 (0.01-1.49)		0.12 (0.01-1.31)	
BMI		0.4729		
≤ 30	-ref-			
>30	1.36 (0.58-3.18)			
# Vertebrae Involved		0.1841		0.1041
1 to 4	-ref-		-ref-	
≥ 5	2.23 (0.68-7.3)		2.78 (0.81-9.55)	
Extraspinal Mets		0.4881		
No	-ref-			
Yes	0.76 (0.35-1.65)			
ECOG		0.0593		
0/1	-ref-			
2/3	0.45 (0.19-1.03)			
Pre-Op Therapy		0.5821		
No	-ref-			
Yes	0.8 (0.37-1.74)			

^aThe 13 tumor types were consolidated into 6 groups: Breast, Lung, Renal, Sarcoma, Hematologic (Multiple Myeloma and Lymphoma), and Other solid (Bladder, Gastrointestinal, Gynecologic, Prostate, Thyroid, Melanoma, and Other (head and neck [2] squamous cell carcinoma of unknown primary [2], neuroblastoma, neuroendocrine tumor of unknown primary, thymoma)