

Introduction

- Metastatic epidural spinal cord compression (MESCC), occurs in 10% of patients with systemic cancer,
- With advances in surgical treatments, surgery demonstrates an important role in conjunction with radiation.
- Aggressive surgical options have been associated with an increased morbidity. As a result, MIS approaches are a viable alternative to open surgery.

Methods

- 51 patients with MESCC operated on from 2010-2017
- Greater than 3 months of life expectancy, single neurosurgeon operations
- MIS techniques: tubular laminectomy and fusion, tubular transpedicular corpectomies, and tubular costo-transverse corpectomy.
- Analysis: functional status, blood loss, complications, and length of stay.

Learning Objectives

- Minimally invasive surgery (MIS) can be utilized as an alternative to open decompression in a subset of patients with MESCC
- MIS has lower overall morbidity than open surgical techniques with similar functional results
- Consideration for patient return to adjuvant therapy as part of the decision-making process for surgery

Results

Table 1. Patient characteristics and outcomes.

Variable	Value
Age (years (mean (SD)))	58.7 (13.6)
Female (n (%))	26 (51%)
Spinal level (n (%))	
Thoracic	26 (51%)
Lumbar	15 (29.4%)
Thoracolumbar	10 (19.6%)
Number of levels (Med (IQR))	4 (2)
Primary Tumor (n (%))	
Breast	9 (17.6%)
Renal cell	8 (15.7%)
Multiple myeloma	7 (13.7%)
Lung	6 (11.8%)
Prostate	4 (7.8%)
Other	17 (33.3%)
Surgery type (n (%))	
Decompression and fusion	15 (29.4)
Partial Corpectomy	17 (33.3)
Complete Corpectomy	19 (37.3)
Pre-op Frankel grade (n (%))	
A-B	3 (5.9%)
C	9 (17.6%)
D	32 (62.7%)
E	7 (13.7%)
KPS (Med (IQR))	80 (20)
Blood loss (ml) (mean (SD))	1226 (1633)
Hardware failure (n (%))	3 (5.9)
Complications (n (%))	16 (31.4)
Length of stay (days) (mean (SD))	5.4 (4.4)
Post-op Frankel grade (n (%))	
A-B	2 (3.9%)
C	2 (3.9%)
D	15 (29.4%)
E	32 (62.7%)

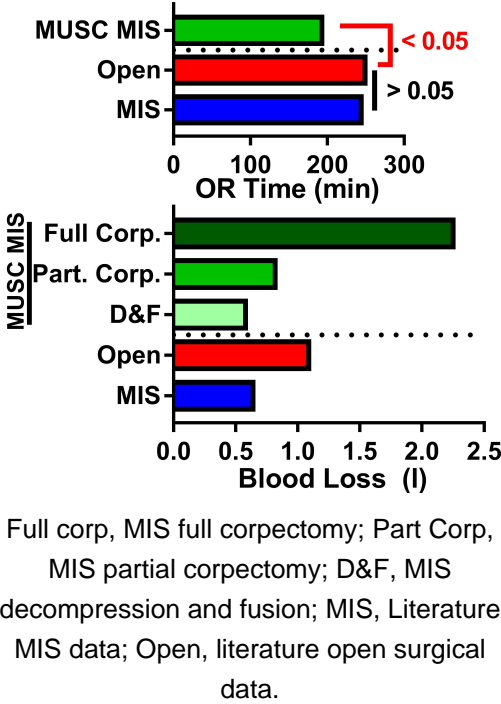
Values are n (%) or mean (SD) or median (IQR=inter quartile range).

Table 2. Comparison of patient outcomes by operation type.

Variable	All	D&F (N=15)	Partial Corp. (N=19)	Complete Corp. (N=17)	p-value
Age (years (mean (SD)))	58.7 (13.6)	61 (10)	58 (15)	57 (15)	> 0.05
Female (n (%))	26 (51%)	8 (55.3%)	8 (42.1%)	10 (59%)	> 0.05
Number of levels (Med (IQR))	4 (2)	2 (1)	3 (2)	4 (1)	> 0.05
Spinal level (n (%))					> 0.05
Thoracic	26 (51%)	5 (33.3%)	13 (68.4%)	8 (47.1%)	
Lumbar	15 (29.4%)	7 (3%)	3 (15.8%)	5 (29.4%)	
Thoracolumbar	10 (19.6%)	3 (20%)	3 (15.8%)	4 (23.5%)	
Pre-op Frankel grade (n (%))					> 0.05
A-B	3 (5.9%)	1 (6.7%)	2 (10.5%)	0 (0%)	
C	9 (17.6%)	3 (20%)	5 (26.3%)	1 (5.9%)	
D	32 (62.7%)	9 (60%)	10 (52.6%)	13 (76.5%)	
E	7 (13.7%)	2 (13.3%)	2 (10.5%)	3 (17.6%)	
KPS (Med (IQR))	80 (20)	70 (30)	70 (20)	70 (15)	> 0.05
Blood loss (ml) (mean (SD))	1226 (1633)	581 (497)	818 (1872)	2251 (1570)**	0.004
Hardware failure (n (%))	3 (5.9)	1 (6.7%)	2 (10.5%)	0 (0%)	> 0.05
Complications (n (%))	16 (31.4)	3 (20%)	5 (26.3%)	9 (47.1%)^	0.05
Length of stay (days) (mean (SD))	5.4 (4.4)	5.8 (4.7)	4.6 (2.4)	6.4 (5.6)	> 0.05
Post-op Frankel grade (n (%))					> 0.05
A-B	2 (3.9%)	1 (6.7%)	1 (5.3%)	0 (0%)	
C	2 (3.9%)	0 (0%)	2 (10.5%)	0 (0%)	
D	15 (29.4%)	6 (40%)	5 (26.3%)	4 (23.5%)	
E	32 (62.7%)	8 (53.3%)	11 (57.9%)	13 (76.5%)	
Improvement in Frankel grade	35 (69%)	10 (67%)	14 (74%)	11 (65%)	> 0.05

Values are n (%) or mean (SD) or median (IQR=inter quartile range).
** One-way ANOVA with Bonferroni, p<0.05 compared to either of the remaining groups.
^ Positive trend (p<0.050) toward higher rate compared to D&F.

Figure 1. Comparison of blood loss and OR time between MIS and open.



Conclusions

- Patient pre-selection is vital for making decision on type of operation
- MIS provides a comparable outcome to open surgery and can be utilized as an alternative
- Post-operative considerations should focus on: stable fixation, wound healing, faster mobility, and rapid return to chemotherapy and radiation therapy

References

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