

Frailty and Spinal Conditions

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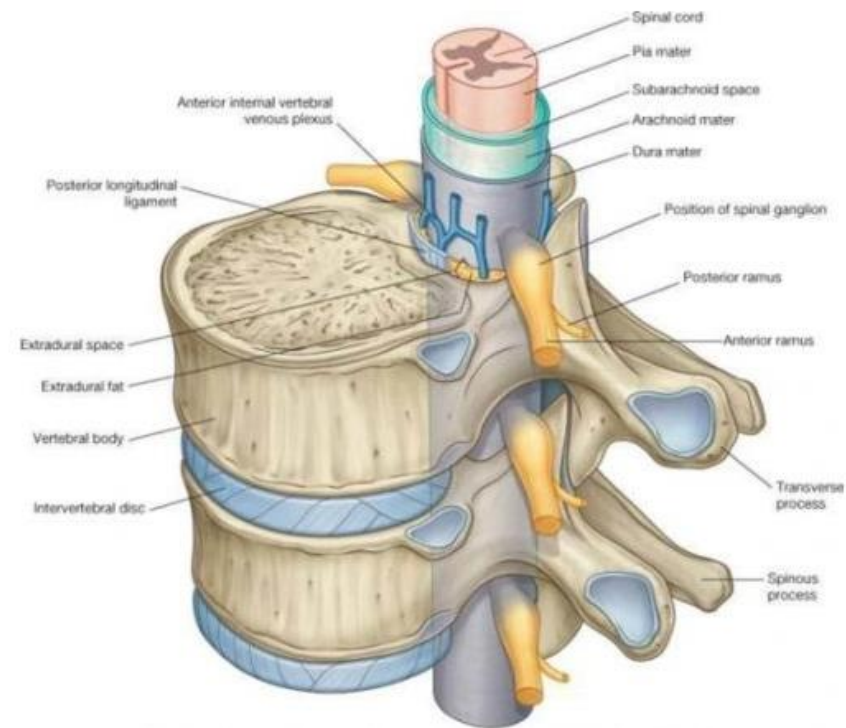
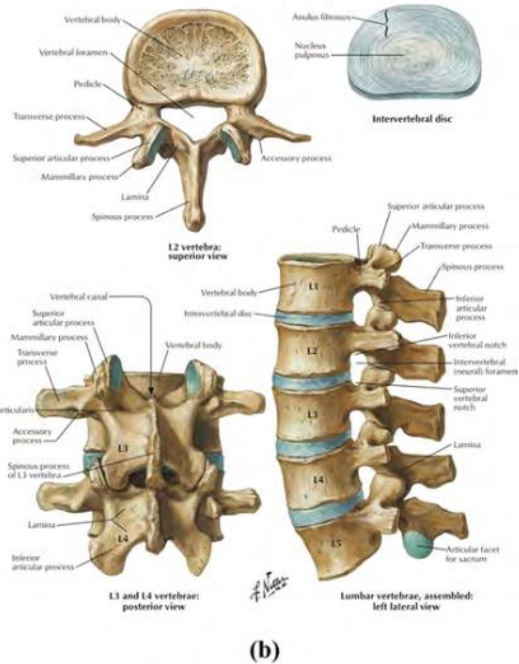
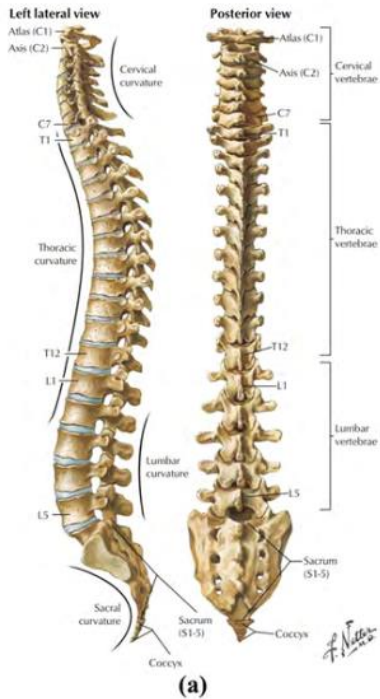


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M E D I C I N E

Disclosures

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- Johns Hopkins School of Medicine Dean's Fellowship

Spinal Anatomy



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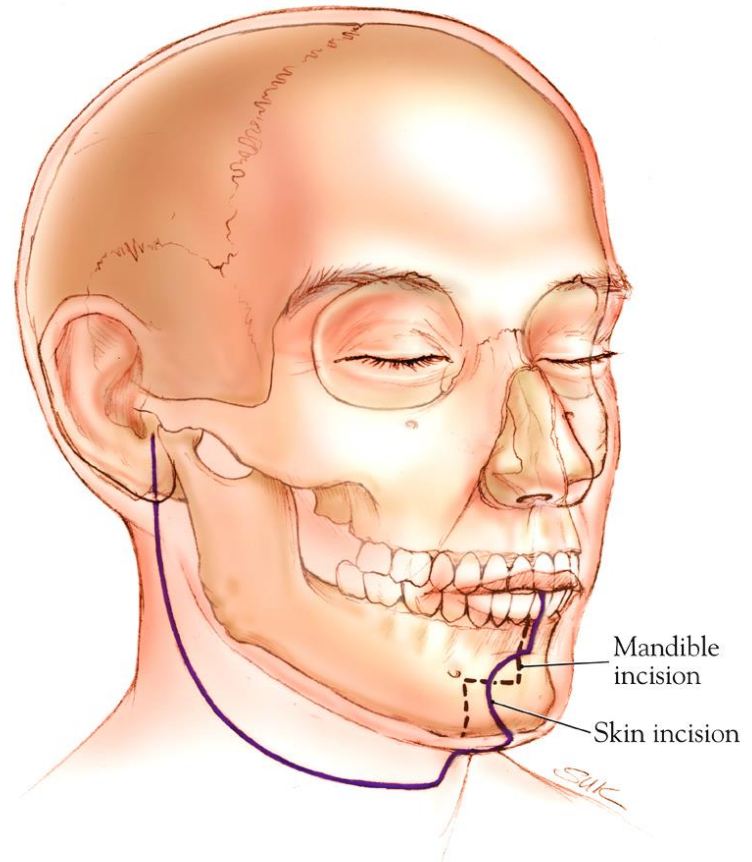
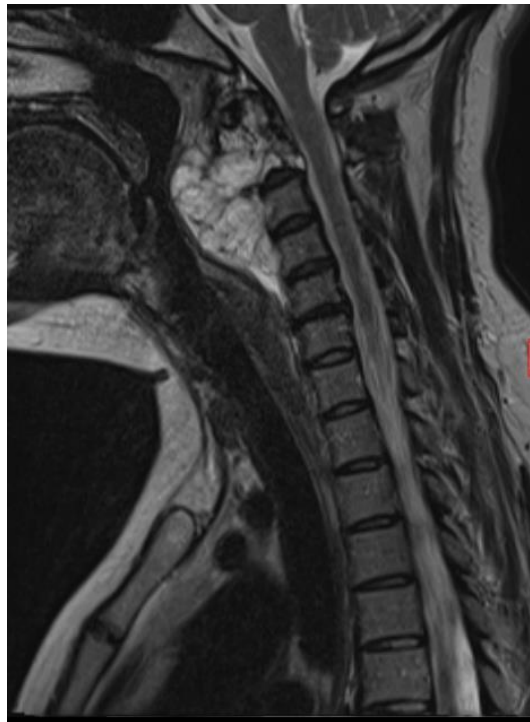
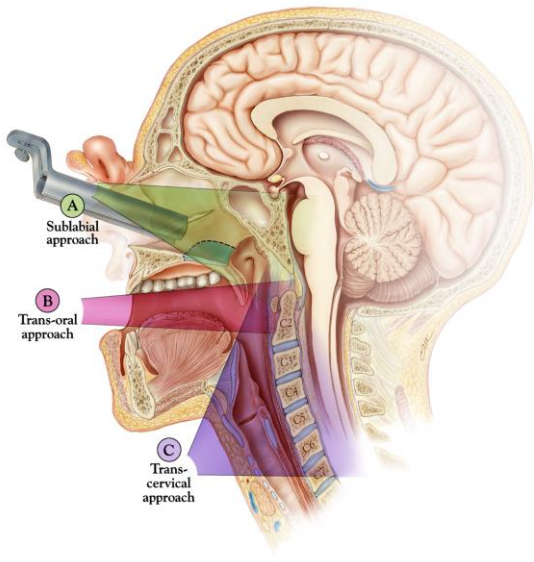
Gray's Anatomy 2006

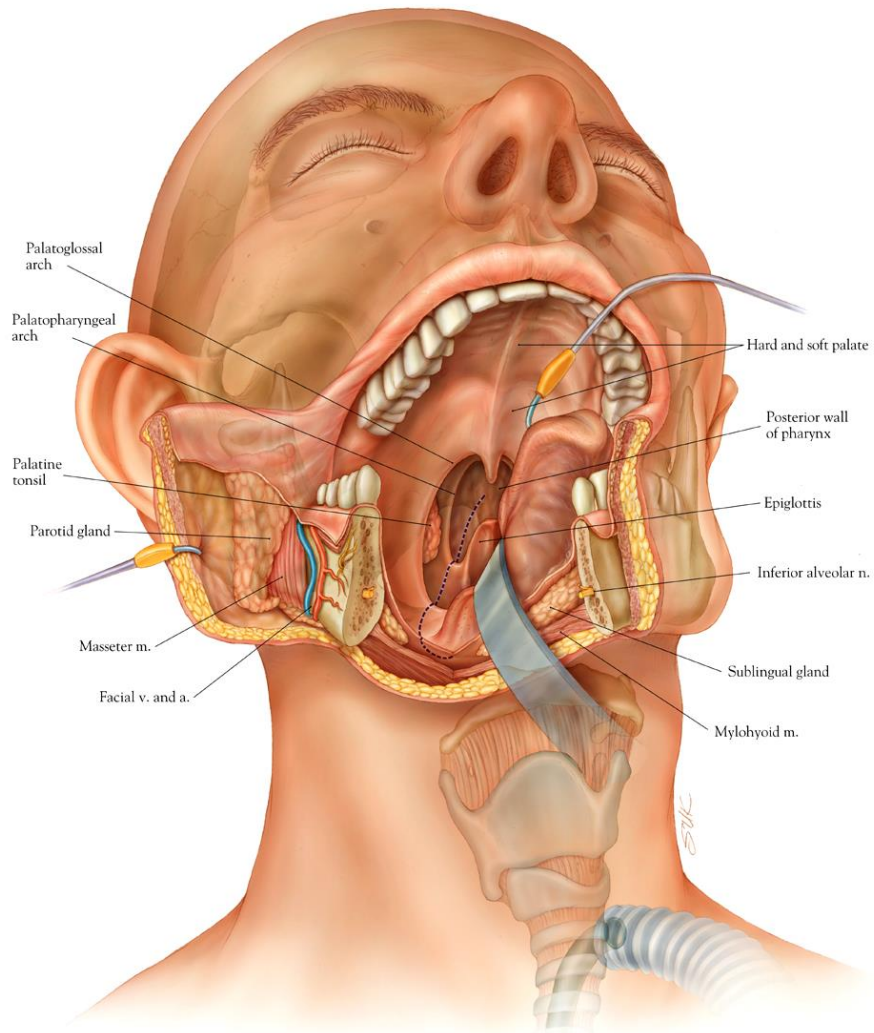


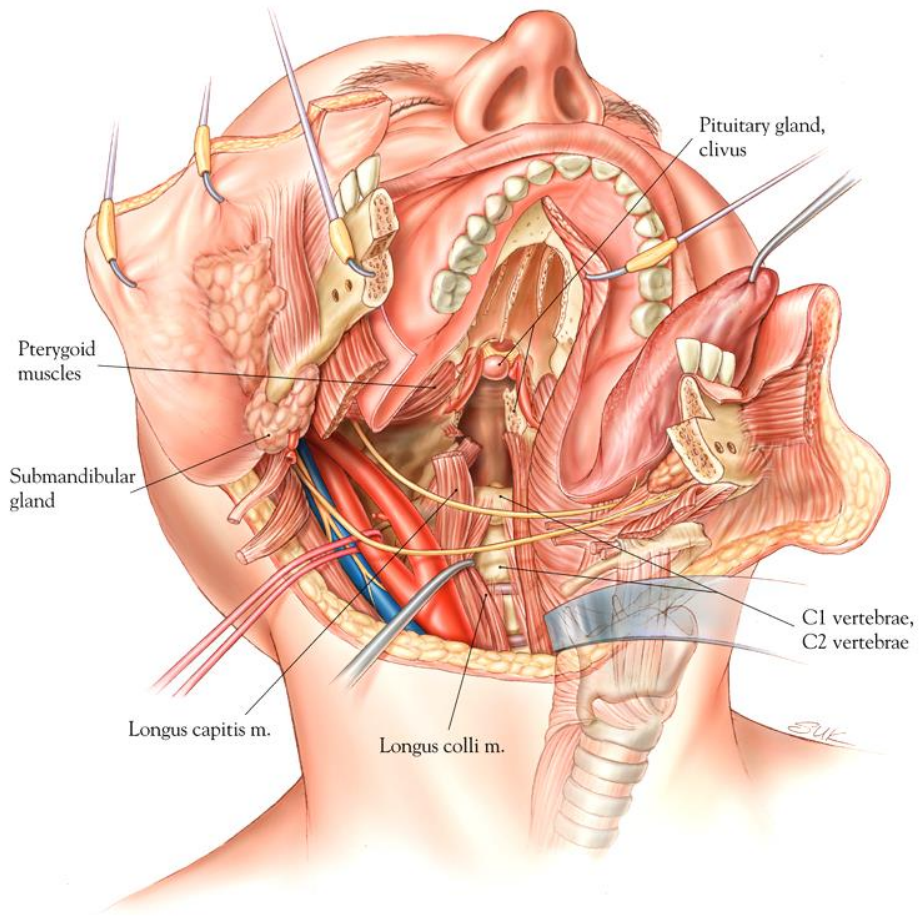
Predicting Short-Term Outcome After Surgery for Primary Spinal Tumors Based on Patient Frailty

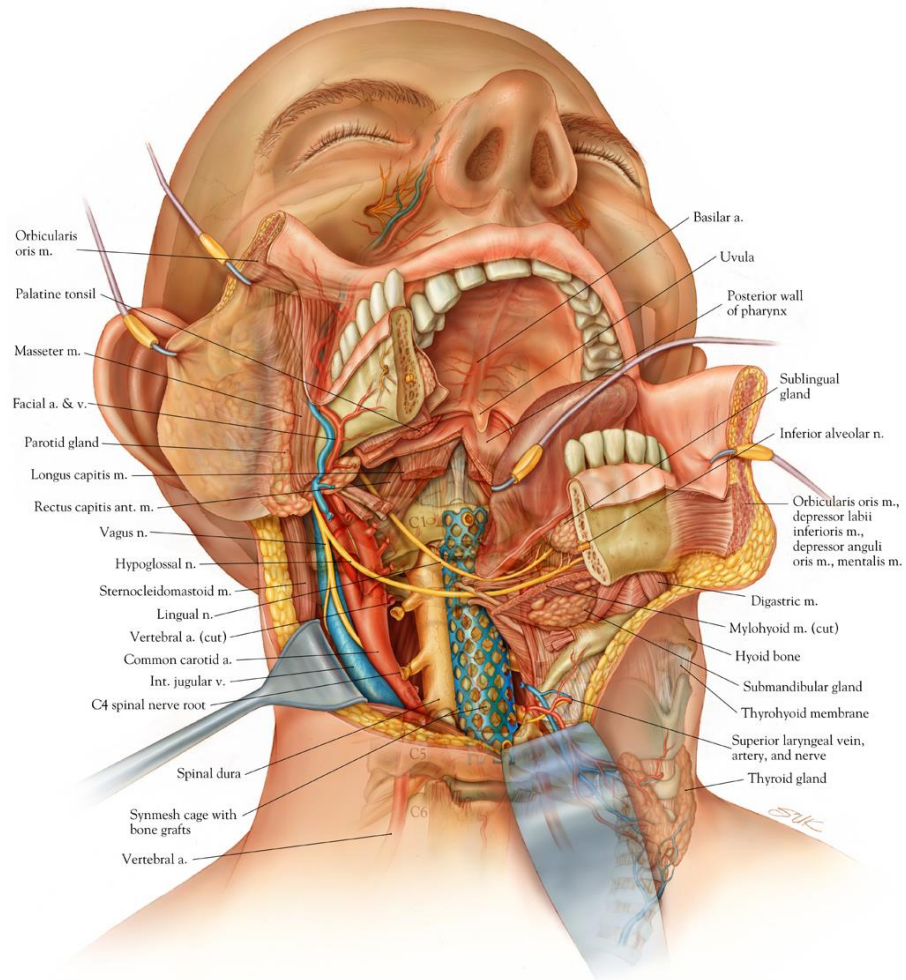
A. Karim Ahmed¹, C. Rory Goodwin², Rafael De la Garza-Ramos¹, Rachel C. Kim¹, Nancy Abu-Bonsrah¹, Risheng Xu¹, Daniel M. Sciubba¹

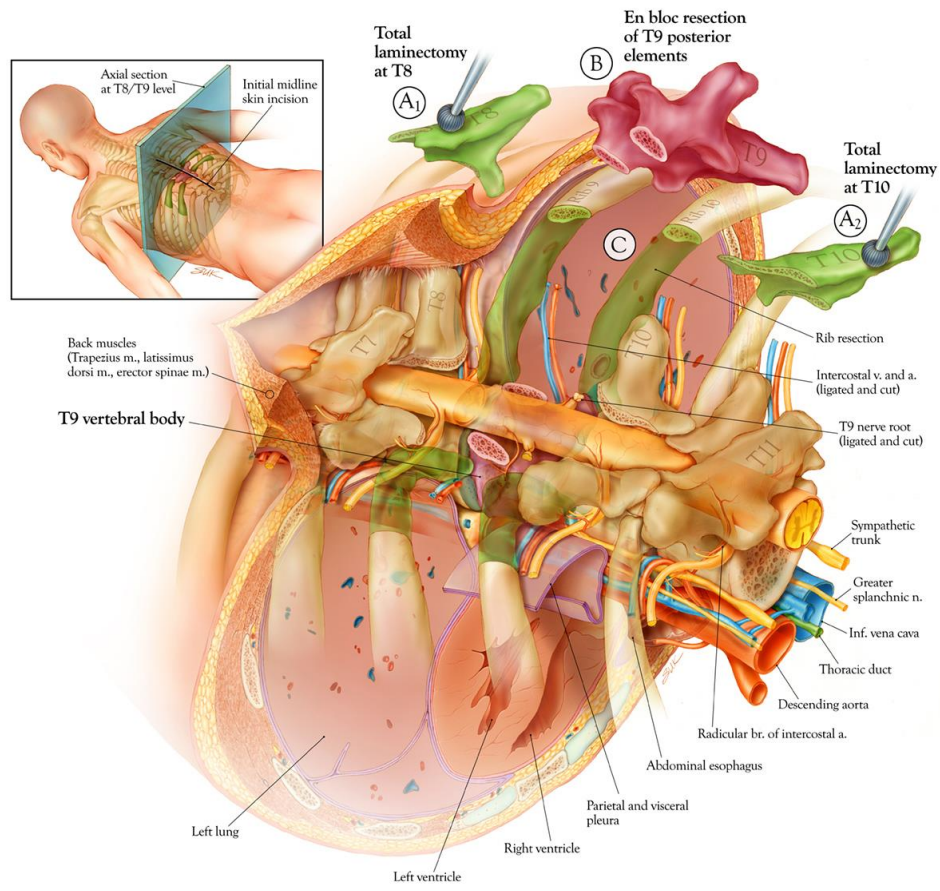
- Primary tumors represent 10% of all spine tumors
 - Benign: osteblastomas, chondromas, hemangiomas
 - Malignant: plasmacytomas, chordomas, chondrosarcomas, osteosarcomas
- En bloc surgical resection for primary spinal tumors offers the best chance for cure and long-term progression free survival
- Goal for metastatic tumors: Palliative
- Goal for primary tumors: curative/disease-free survival

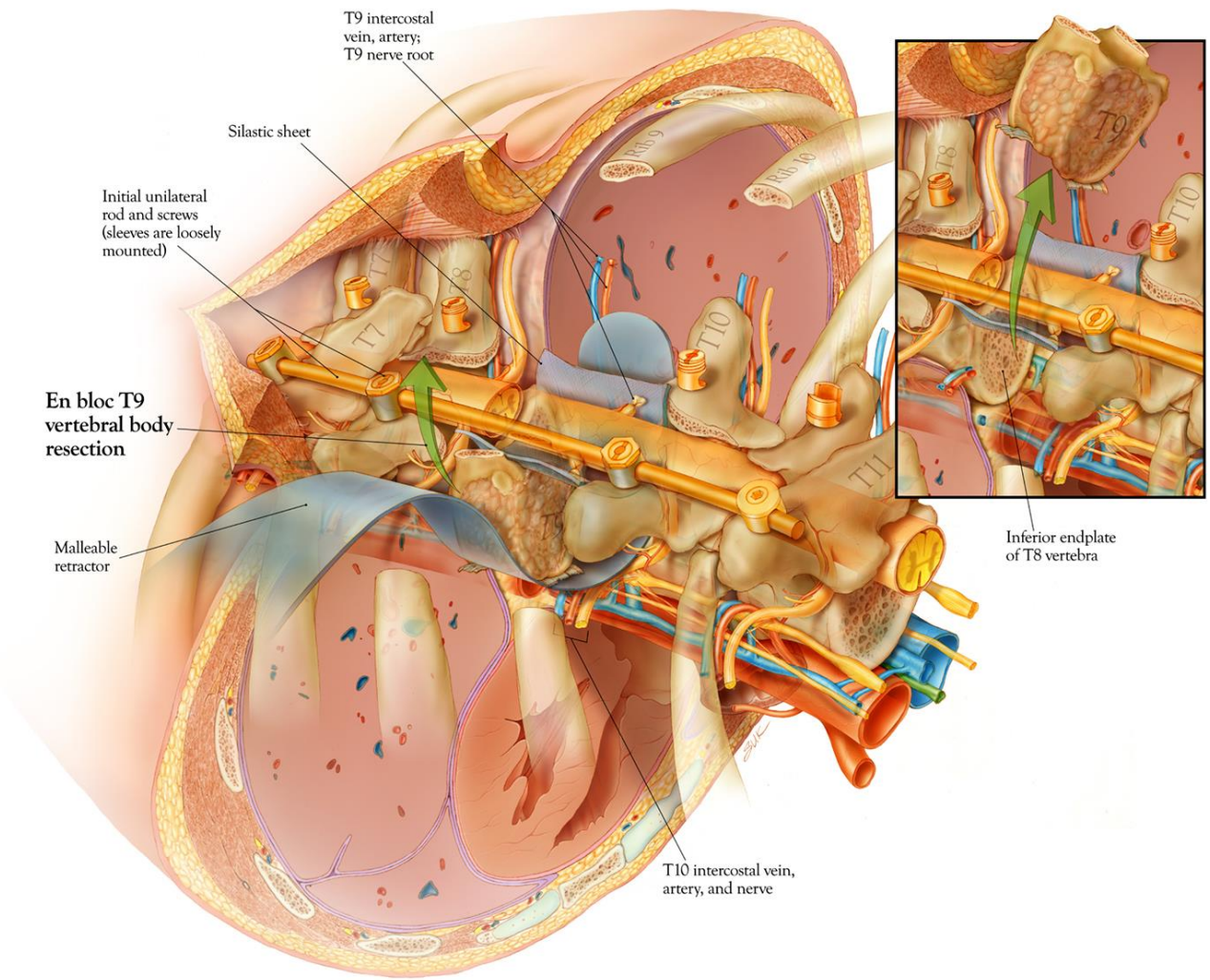


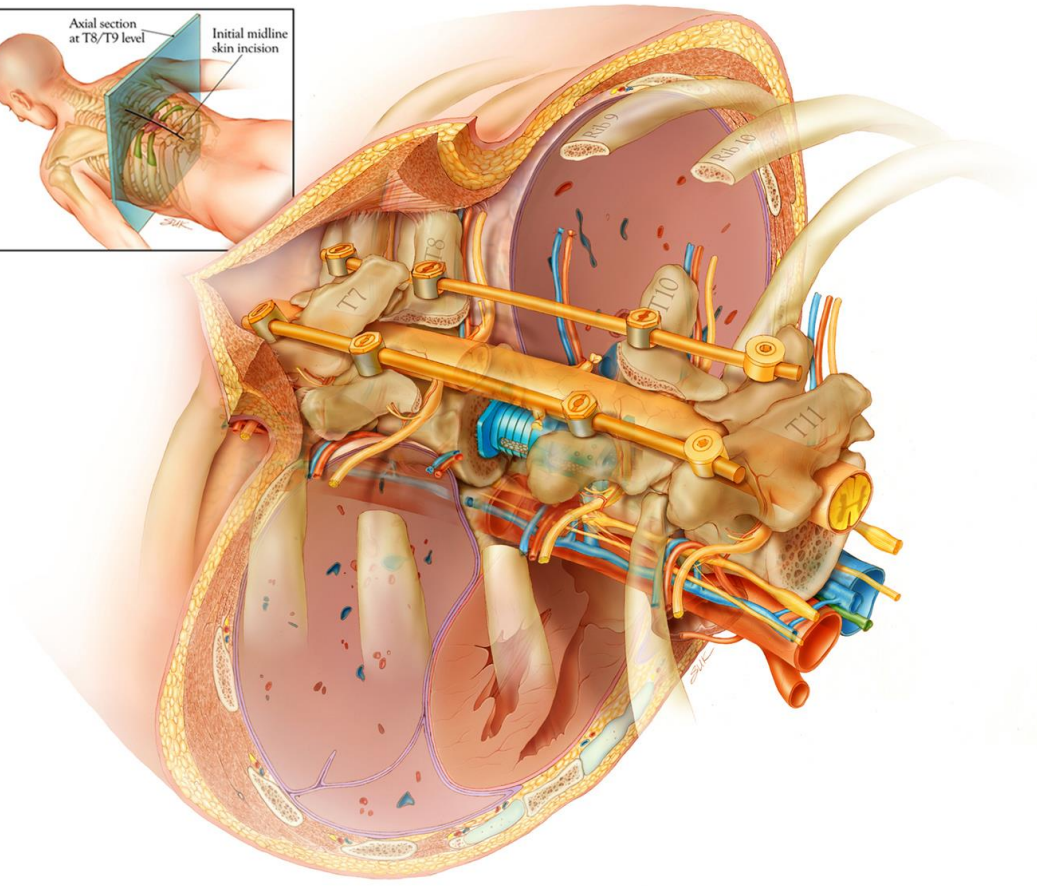
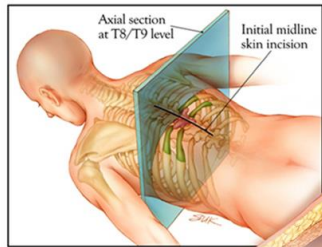










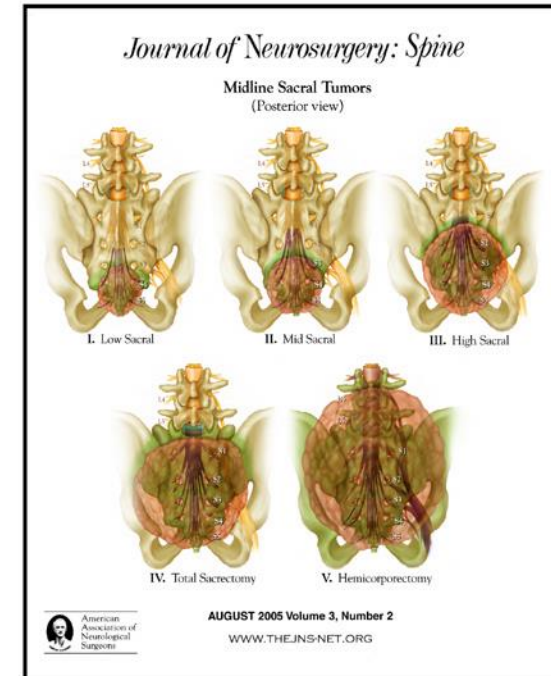


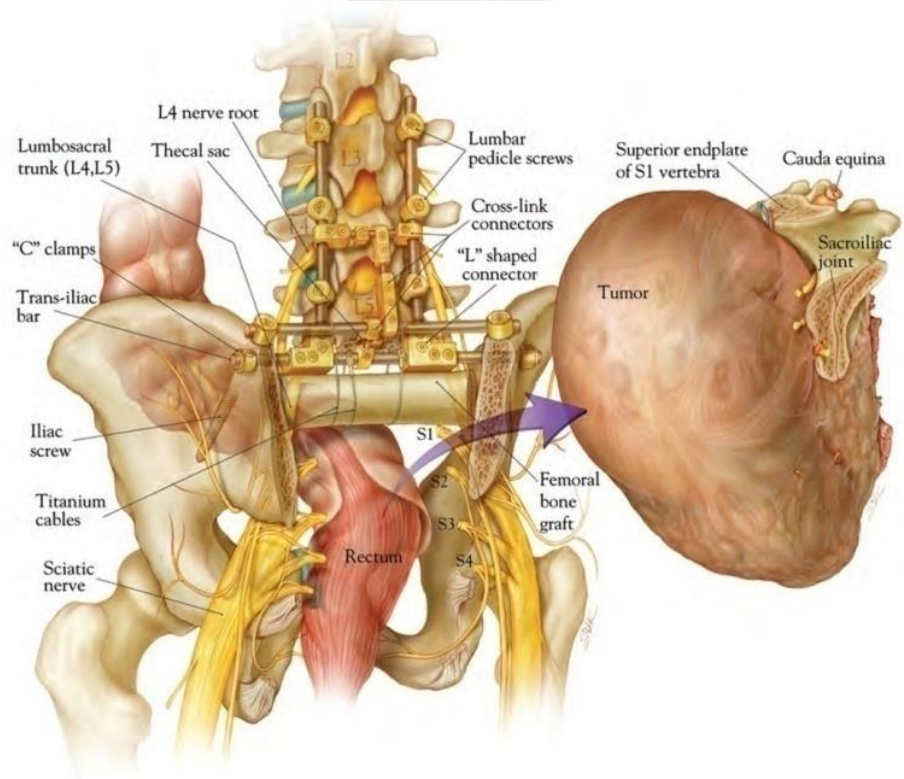
J Neurosurg: Spine 3:111–122, 2005

En bloc resection of primary sacral tumors: classification of surgical approaches and outcome

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JEAN-PAUL WOLINSKY, M.D., KRISTIN L. WEBER, M.D., DIMA SUKI, PH.D.,
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Background

- Frailty(n): decreased physiologic reserve and increased vulnerability to stressors beyond what is expected for normal aging
 - Associated with increased risk of morbidity and mortality
- Objective: to develop a preoperative frailty index (STFI) for patients undergoing surgery for primary spinal column tumors that predicts morbidity, mortality, and length of stay.

Methods

- Data obtained from 1589 patients using the Nationwide Inpatient Sample (NIS) database (2002 to 2011)
- The Spine Tumor Frailty Index (STFI) was developed using 9 criteria based on multivariate analysis:
 - (1) anemia
 - (2) CHF
 - (3) COPD
 - (4) coagulopathy
 - (5) pre-op electrolyte abnormalities
 - (6) pulmonary circulation disorders
 - (7) renal failure
 - (8) malnutrition
 - (9) pathologic fractures

Methods

- The STFI was used to classify patients as:
 - Not frail (0)
 - Mildly frail (1)
 - Moderately frail (2)
 - Severity frail (≥ 3)

Results

- COMPLICATIONS:

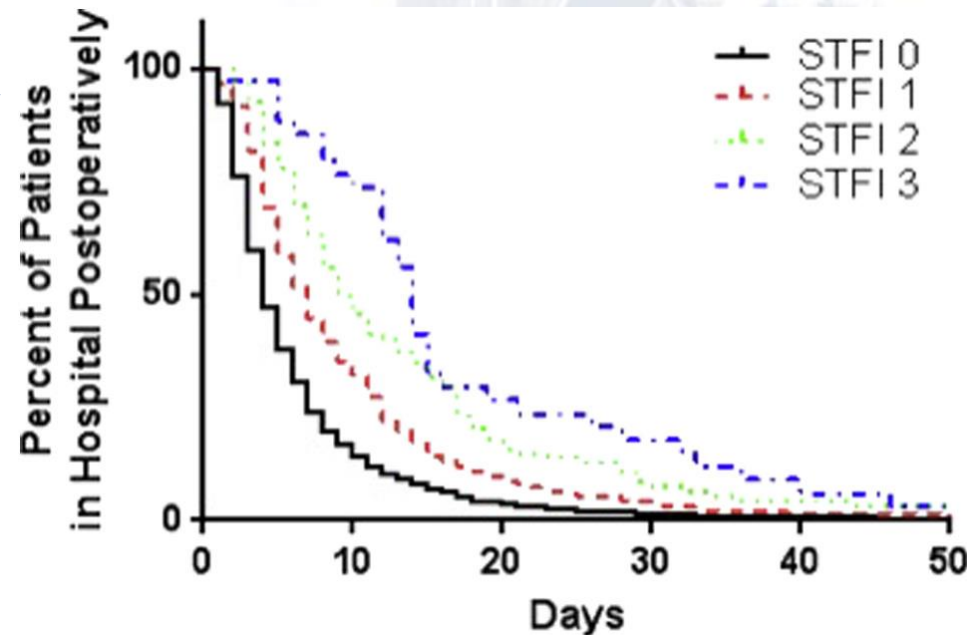
- (1) Pneumothorax, or pulmonary collapse 5.8%
- (2) Reintubation 1.4%
- (3) Pneumonia 0.9%
- (4) Acute respiratory distress syndrome 3.7%
- (5) Pulmonary embolism <0.7%
- (6) Cardiac arrest <0.7%
- (7) Myocardial infarction <0.7%
- (8) Iatrogenic stroke <0.7%
- (9) Acute renal failure 0.9%

Results

- The overall major complication rate was 10.6%
- Risk of complications was significantly higher based on the degree of frailty ($p < 0.001$):
 - **OR 3.83; 95% CI, 2.63- 5.58 with mild frailty**
 - **OR 6.80; 95% CI, 4.10- 11.3 with moderate frailty**
 - **OR 13.05; 95% CI, 6.34 - 26.87 with severe frailty**

Results

- The degree of frailty significantly impacted the mean length of post-operative hospital stay between groups ($p < 0.05$)
 - 6.4 ± 0.2 days: no frailty
 - 9.8 ± 0.6 days: mild frailty
 - 14.4 ± 1.7 days: moderate frailty
 - 18.3 ± 2.6 days: severe frailty



Conclusions

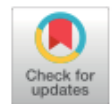
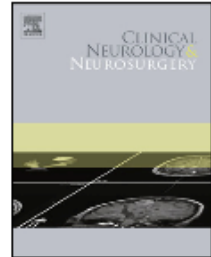
- Frail patients had significantly increased odds of developing post-operative complications and required longer hospitalizations.
- A systematic evaluation of pre-operative frailty should play a key role in decision-making for patients undergoing surgery for primary spinal tumors.



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Impact of frailty on complications in patients with thoracic and thoracolumbar spinal fracture

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Background

- Geriatric patients are at risk for serious injuries after spinal fractures.
- Frailty has been demonstrated to be a predictor of morbidity and mortality in inpatient head and neck surgery, and for surgical intervention for adult spinal deformity.
- However, the impact of frailty on complications following thoracolumbar/thoracic fractures have not been previously reported

Methods

- This was a retrospective study of the ACS National Surgical Quality Improvement database for the years 2007 through 2012 (NSQIP)
- Patients who underwent spinal decompression (+/- fusion) or an alternative intervention to stabilize thoracic or thoracolumbar fracture were identified.
- Frailty status was determined using a modified frailty index from the Canadian Study of Health and Aging Frailty Index, with frailty defined as a score ≥ 0.27 . 30-day morbidity and mortality were compared between frail and non-frail patients in each treatment group (Saxton, Ann. Surg 2011).

Results

- A total of 303 patients were included in this study.
- 38% of patients had cement augmentation
- 62% underwent surgery.
- Frail patients had an overall complication rate of 16.7%, as opposed to 4.0% in non-frail patients.
 - From the likelihood ratio (LR), the likelihood of complications was 33.3% among frail patients and 4.2% for non-frail patients ($p < 0.001$).
- Frail patients had a 16.7% 30-day mortality rate as compared to 0.6% in the non-frail group ($p = 0.001$).

Conclusions

- Frailty and surgical intervention are correlated with a higher 30-day complication rate in patients with thoracic and thoracolumbar fracture.
- This finding is an important consideration for surgical decision-making and patient counseling on treatment options.

Thank you

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