Title: Quantitative Analysis of Tissue Injury Markers After Adolescent Idiopathic Scoliosis (AIS) Correction: A Prospective Study of Open vs. Minimally Invasive Surgery

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1. Grants/Research Support
2. Stock/Shareholder
3. Board Member
4. Royalties
5. Patent

Background

- Minimally invasive surgery (MIS) offers a potentially less morbid treatment option for patients requiring stabilization of adolescent idiopathic scoliosis (AIS)

- MIS aims to preserve the midline spinal musculature and decrease both estimated blood loss and hospital length of stay

Purpose

- To compare the tissue injury markers in AIS cohorts matched for Lenke type curve that had undergone either open or MIS

Study Design

Prospective analysis

Methods

- 39 patients (MIS or open corrections) were enrolled
- MIS and open approached were surgeon selected based on:
  - Curve magnitude
  - Location
  - Flexibility on bending films
  - Patient's body habitus

Methods (cont'd)

- Inclusion criteria:
  - Age>10 years and <30 years
  - Lenke type: 1 2, or 5
  - Cobb angle ranged 35˚~70˚
  - Caudal levels for open and MIS were L2 or above and L3 or above, respectively

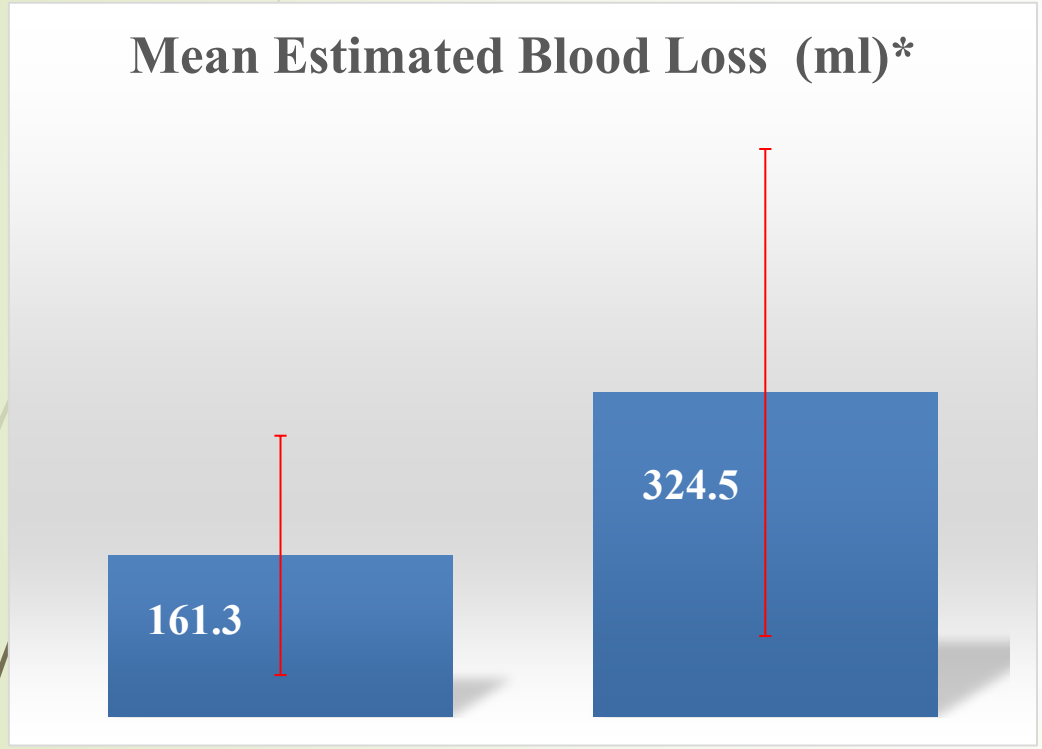
- Open approach included posterior spinal instrumentation and fusion with posterior column osteotomy
- MIS technique was uniform in all patients using two or three para-midline incisions
- Creatine kinase and aldolase were analyzed on the day before surgery and days 1, 2, 3, 4, discharge, 3 weeks, 3 months and 6 months postoperatively

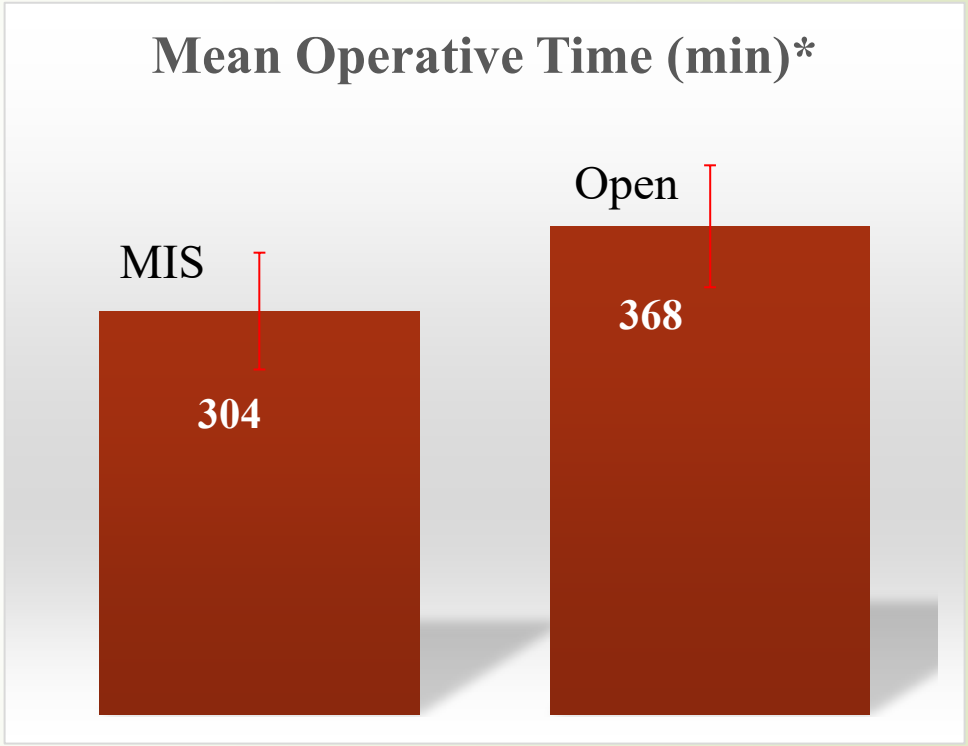
Results

	MIS	Open
N	19	20
F:M	18:1	19:1
BMI	21.2	23.7
Age (years)	16	15
Lenke	Type 1=17; 5C=1, 1C=1	Type 2=11; 1B=1; 1C=1;1=7
Cobb Angle (˚)	52.8	60.5
# Spinal levels treated	8.9	10.8
Length of hospital stay (days)	3.33	4.2

**statistically significant ($p<0.05$)*

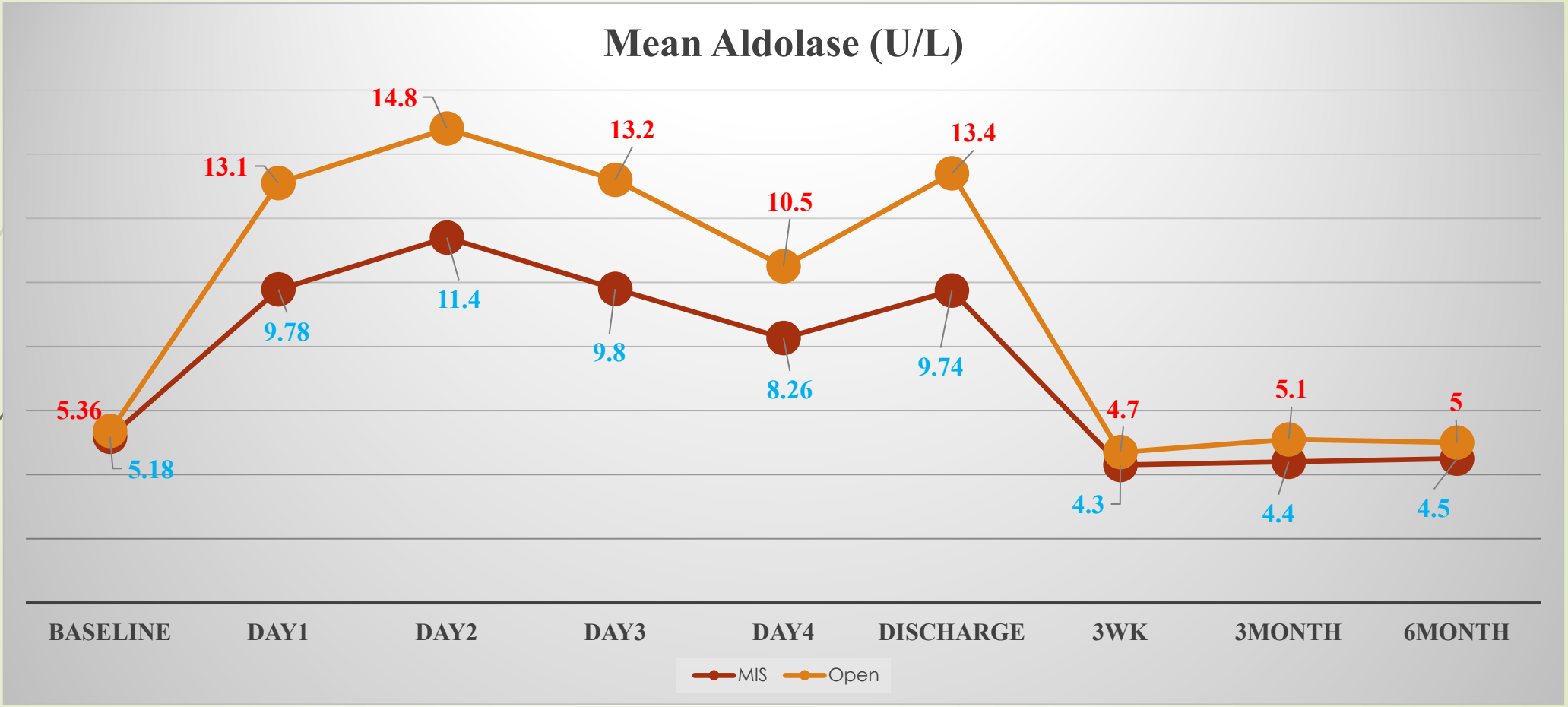
Results (cont'd)





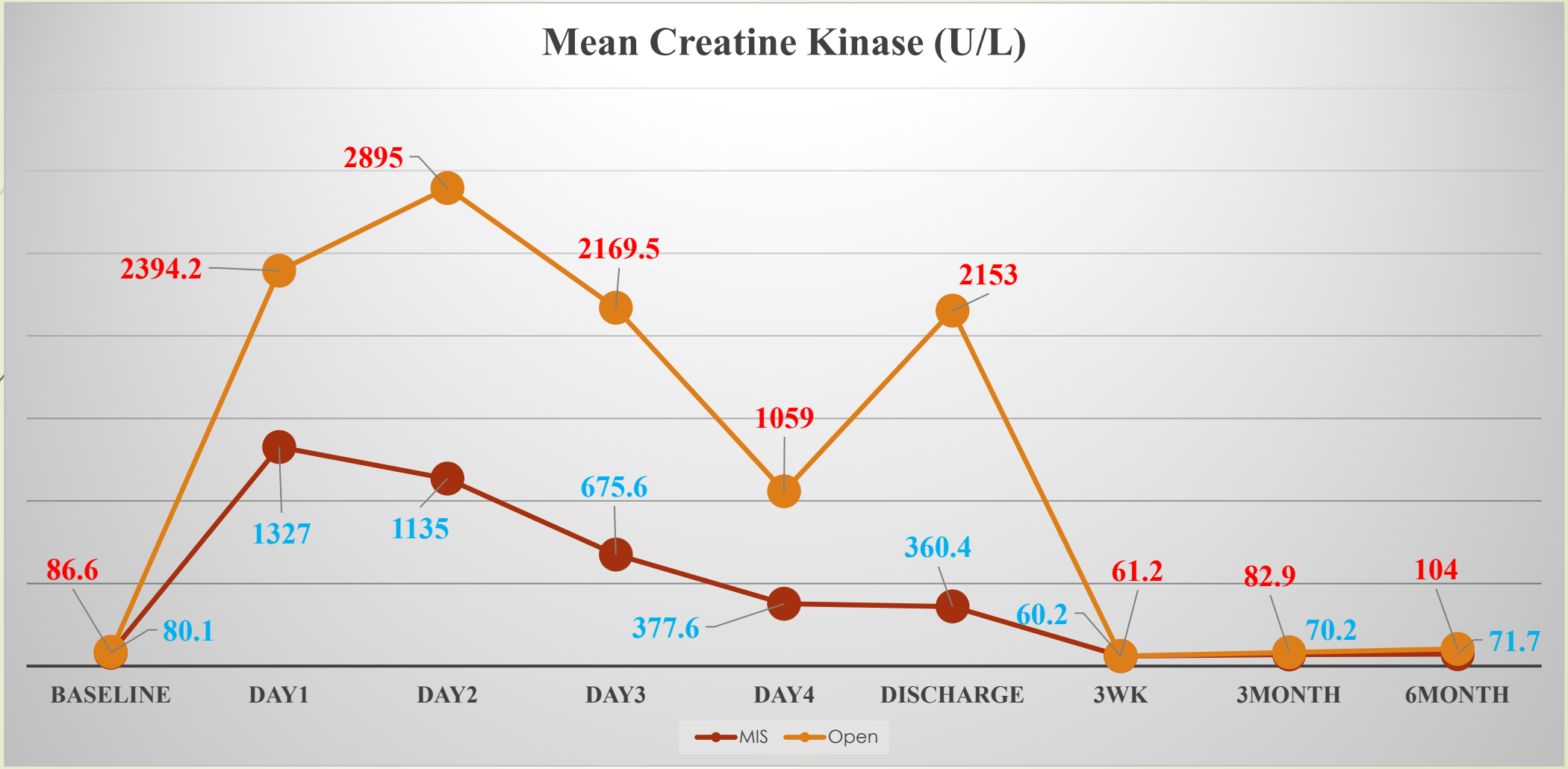
**statistically significant ($p<0.05$)*

Results (cont'd)



Statistically significant at day 1 post op ($p<0.05$)

Results (cont'd)



Statistically significant at days 1, 2, 3, 4 and discharge($p<0.05$)

Results (cont'd)

- Patient-reported pain and disability scores were similar
- Both groups reported one complications each which resolved with interventions (MIS: wound drainage; open: CSF leak and lumbar drain)

Conclusions

- MIS technique for scoliosis correction is a viable option and may significantly reduce muscle injury during the acute post-op period
- MIS technique may limit post-operative surgical morbidity

Thank you!