

## Evaluation of Pelvic Incidence and Lumbar Lordosis Using Supine CT

Patrick Reid MD; Martin H. Pham MD

University of Southern California

Department of Neurosurgery

Los Angeles, CA

### Learning Objectives

By the conclusion of this session, participants should be able to:

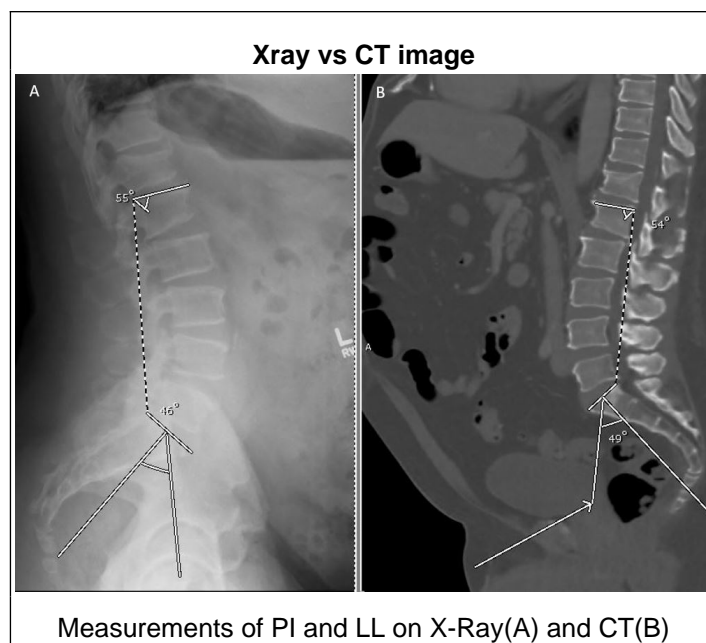
- 1) Describe a method for determining Pelvic Incidence and Lumbar lordosis on CT scans.
- 2) Compare the validity of CT-obtained measurements with those obtained from standing X-rays.
- 3) Discuss the reliability of CT-obtained measures of PI and LL compared with the reliability of intra- and inter-observer measurements obtained from standing X-rays.

### Introduction

Sagittal alignment is a key consideration in operative planning. Upright films for assessment of pelvic incidence(PI) and lumbar lordosis(LL) are not tolerated in all populations(i.e. trauma patients). Our study aims to determine the accuracy of PI and LL measured on supine CT compared with standing X-rays.

### Methods

Consecutive patients with both CT and standing X-rays suitable for measurements of PI(n=30) and LL(n=33) were collected over two years. Two independent physicians measured PI and LL on CT and X-ray to account for inter-observer reliability. Remote, repeat measurements were



### Results

The mean PI for 30 patients was  $57.8^{\circ}(\pm 10.4^{\circ})$  using X-rays and  $53.3^{\circ}(\pm 11.5^{\circ})$  on CT. Pearson's coefficients were .67 for inter-observer X-ray, .89 for inter-observer CT, .81 for intra-observer X-ray, and .95 for intra-observer CT. Mean LL for 33 patients was calculated at  $53.1^{\circ}(\pm 11.4^{\circ})$  with X-ray and  $52.2^{\circ}(\pm 11.4^{\circ})$  on CT. Correlation coefficients were .76 for inter-observer X-ray, .86 for inter-observer CT, .91 for intra-observer X-ray, and .97 for intra-observer CT. Averaged CT measurements had correlation coefficients with averaged X-rays of .94 for PI and .75 for LL.

### Conclusions

Supine CT correlates well with standing scoliosis X-rays for measurements of PI and LL.

### References

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