Is the Acetabular Coverage Of Femoral Head Associated With the Extent of Hip Distraction?

Hao-Che Tang, CGMH, Taiwan
Michael Dienst, OCM, Germany

Disclosure

We have NO financial disclosure or conflicts of interest with the presented materials in this presentation

Introduction

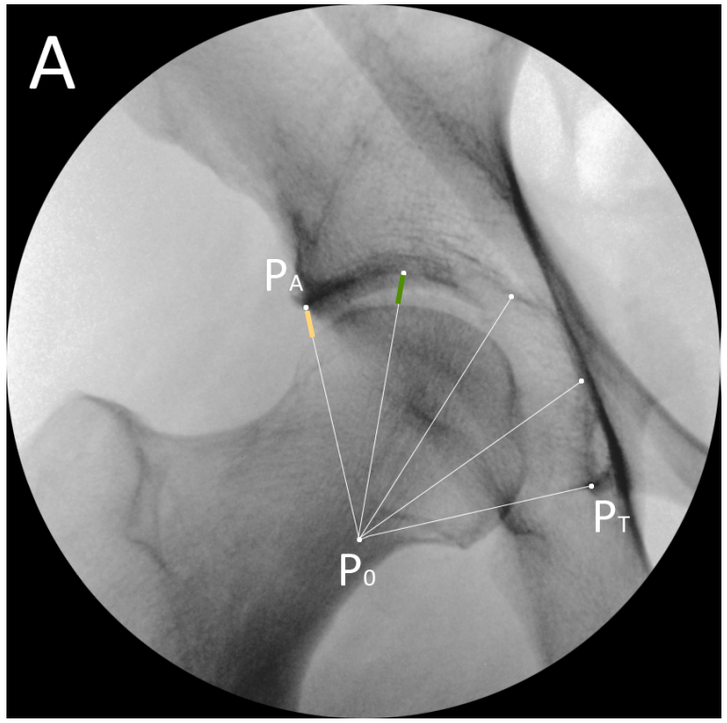
- Hip joint laxity can be assessed by fluoroscopy with application of traction under general anesthesia[1]
- Acetabular dysplasia is one of the etiologies of hip microinstability[2]
- Is the acetabular coverage associated with the extent of hip distraction?

Methods

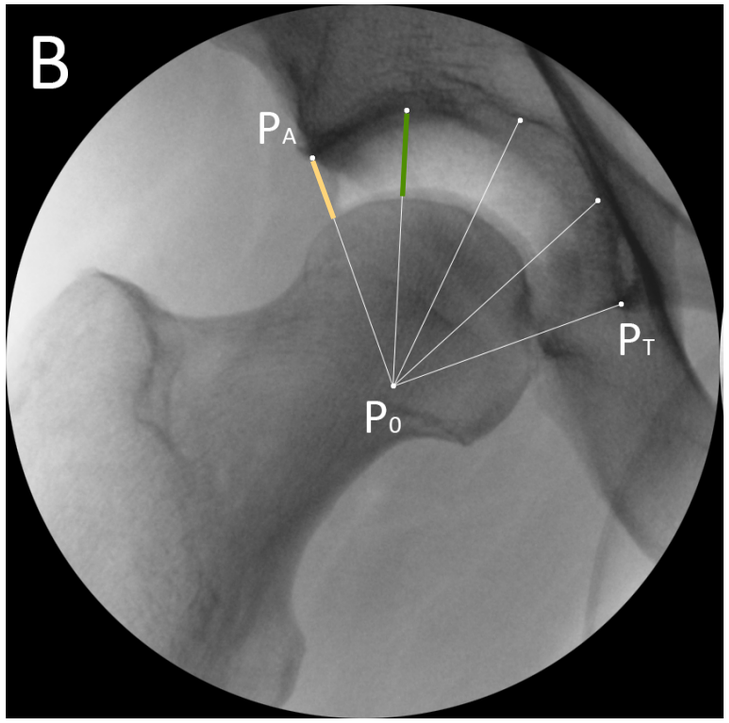
- Patients receiving hip arthroscopy between 2018-2019 were prospectively enrolled
- Patients were excluded for inappropriate/missing images or previous operation history of the same hip
- The extent of distraction was evaluated under general anesthesia before operation

Methods

No traction



Maximal traction



Lateral distraction extent = $Gap_{max.\ distraction}/Gap_{no\ distraction}$

Central distraction extent = $Gap_{max.\ distraction}/Gap_{no\ distraction}$

Methods

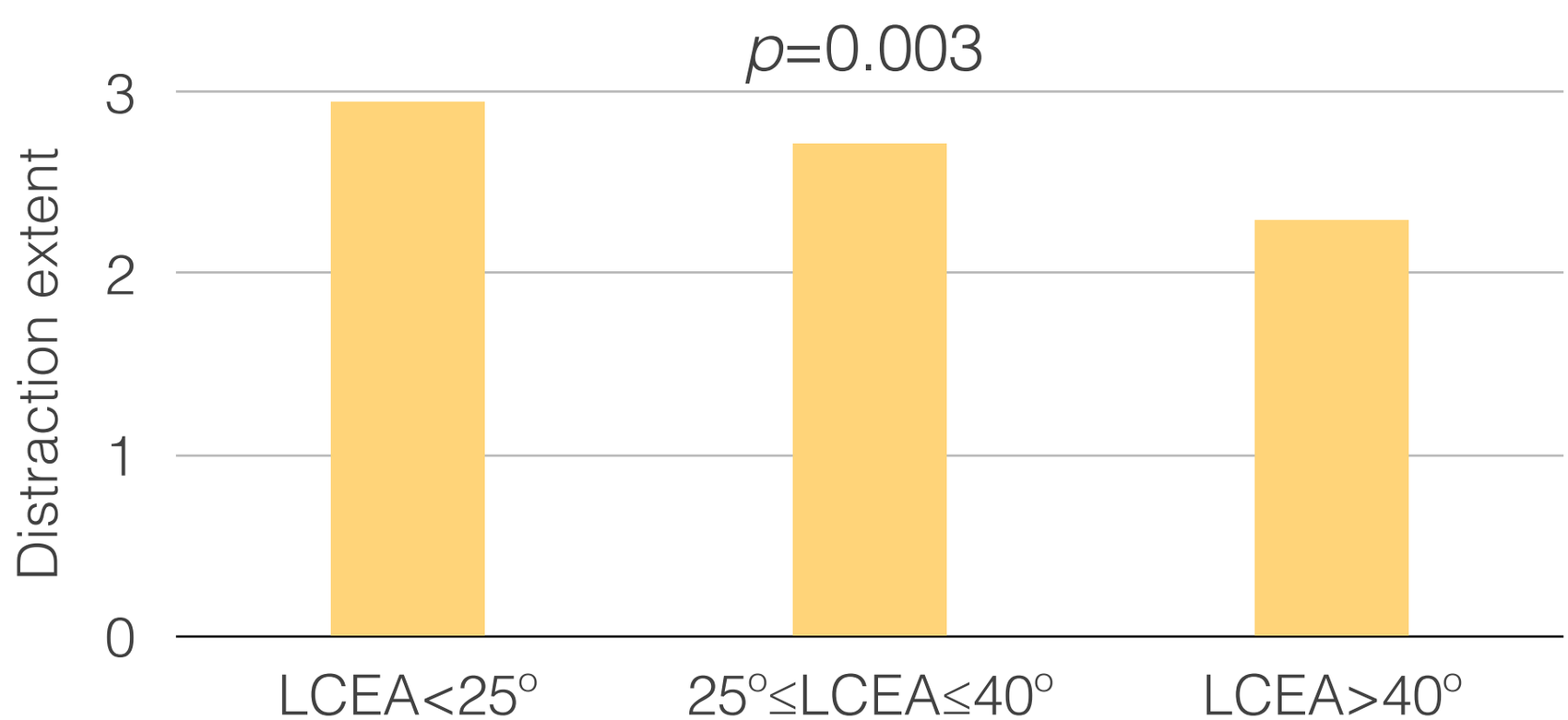
- 211 patients were included (127 males, 84 females), mean age was 34.2 ±11.4 years (range 16-64 years)
- The acetabular coverage was evaluated by lateral center-edge angle (LCEA), anterior wall index (AWI), posterior wall index (PWI)

Methods

- Evaluated association between LCEA, AWI, PWI and lateral/central distraction extent
- Compared lateral/central distraction extent between LCEA<25°, 25°≤LCEA≤40°, LCEA>40°
- Other potential predictors of distraction extent, age, sex, Tönnis grade, alpha angle and chondrolabrum stability, were evaluated as well
- Variables with p-value<0.1 in the univariate analysis were then included in the multivariate analysis

Results

- Significant variables in lateral distraction extent
  - univariate analysis: LCEA (r=-0.242, p<0.001)
  - multivariate analysis: LCEA (β=-0.22, p=0.002)



Results

- Significant variables in central distraction extent
  - univariate analysis: alpha angle on AP & Lauenstein views ($r=-0.249$, $p<0.001$; $r=-0.298$, $p<0.001$)
  - multivariate analysis: alpha angle on Lauenstein view ($\beta=-0.239$, $p=0.002$), age ($\beta=-0.177$, $p=0.007$)
- No difference between LCEA<25°, 25°≤LCEA≤40°, LCEA>40°

Discussion

- Lower LCEA was significantly associated with greater lateral distraction extent
- LCEA was not associated with central distraction extent
- Greater lateral distraction in lower LCEA was likely secondary to incongruence between lateral femoral head and lateral acetabulum
- Lower LCEA could not be considered as being easily distracted

Discussion

- Greater alpha angle and age were significantly associated with lower central distraction extent
- Hip was more difficult to be distracted in a significant cam-type FAI or older patient
- It might be secondary to a tighter capsule

Conclusion

- Lateral acetabular coverage significantly affected lateral distraction, but not central distraction
- Anterior or posterior acetabular coverage was not associated with central or lateral distraction

References

1. Khanduja V, Darby N, O'Donnell J, Bonin N, Safran MR, International Microinstability Expert P. Diagnosing Hip Microinstability: an international consensus study using the Delphi methodology. Knee Surg Sports Traumatol Arthrosc. 2023;31(1):40-49.

2. Kalisvaart MM, Safran MR. Microinstability of the hip-it does exist: etiology, diagnosis and treatment. J Hip Preserv Surg. 2015;2(2):123-135.