The Bone & Joint Journal

Journal Club: 7 December 2015

Chairman: Mr Simon Hoskinson
Organiser: Miss Tricia Walker
Attendees: Miss Tricia Walker, Mr Steven Ross, Mr Pranab Sinha, Mr Paul Cameron, Miss Fiona Bintcliffe, Mr Jamie Buchanan, Mr Simon Hoskinson, Mr Simon Pearce, Mr Andrew Armitage, Mr Adrian Butler-Manuel, Mr Raj Thiagaraj

Trauma & Orthopaedic Department, Eastbourne Hospital, East Sussex Healthcare NHS Trust

Theme: Management of slipped capital femoral epiphysis. Should we prophylactically fix the contralateral side?

Presented papers:

1. **Loder RT.** The demographics of slipped capital femoral epiphysis. An international multicenter study. *Clin Orthop Relat Res* 1996;322:8–27.

2. **Yildirim Y, Bautista S, Davidson RS.** Chondrolysis, osteonecrosis, and slip severity in patients with subsequent contralateral slipped capital femoral epiphysis. *J Bone Joint Surg [Am]* 2008;90-A:485–492.

3. **Baghdadi YM, Larson AN, Sierra RJ, Peterson HA, Stans AA.** The fate of hips that are not prophylactically pinned after unilateral slipped capital femoral epiphysis. *Clin Orthop Relat Res* 2013;471:2124–2131.

4. **Clement ND, Vats A, Duckworth AD, Gaston MS, Murray AW.** Slipped capital femoral epiphysis: is it worth the risk & cost not to offer prophylactic fixation of the contralateral hip? *Bone Joint J* 2015;97-B:1428–34.

Reviewer: Mr Steven Ross
Loder RT. The demographics of slipped capital femoral epiphysis. An international multicenter study. *Clin Orthop Relat Res* 1996;322:8–27.

Study design:
- Large multicentre study
- 33 centers across 6 continents
- Demographics - age at diagnosis, gender, race, body weight, laterality, month of presentation, duration of symptoms

Outcomes:
- 1630 children with 1933 SUFE
- M:F 58.8% : 41:2%, Age 13.5: 12
- Race: 47.5% caucasian
- Unilateral: 77.7% bilateral 16.5%
- Acute: 14.5%
- Symptom duration between 2.5 and 52 months
- Weight: 63.2 % > 90th percentile

CRITIQUE

Strengths of the study
- Study is relevant
- Unique - only major demographic study
- Appropriate study design, statistics and tables used
- Outcomes plausible and in line with available data
- Incomplete data noted but was variable - source of error

Methodological concerns
- Age of study
- Quality of data
- Weighting of data for each race/region
- Racial groups different to UK

Reviewer: Mr Pranab Sinha
Yildirim Y, Bautista S, Davidson RS. Chondrolysis, osteonecrosis, and slip severity in patients with subsequent contralateral slipped capital femoral epiphysis. *J Bone Joint Surg [Am]* 2008;90-A:485–492.

Study design:
- Retrospective study
- Medical records reviewed between 1993 and2003 in a single hospital
- Southwick angle, acute *vs* chronic, evidence of osteonecrosis and chondrolyis

Inclusion criteria:

• Unilateral SUFE minimum 24 months follow-up

Exclusion criteria:
• Endocrine/ metabolic disease/ bilateral involvement

Outcomes:
• 227 unilateral SUFE
• 147 M: 80 F
• Subsequent contralateral slip: 82 (36%)
• Unilateral SUFE
• chronicity - acute 25%, acute on chronic 5%, chronic 70%
• severity - mild 56% , moderate 36%, severe 8%
• Subsequent contralateral slip
• chronicity - acute 28%, acute on chronic 7%, chronic 65%
• severity - mild 77%, moderate 17%, severe 6%
• 4 chondrolysis, 1 osteonecrosis

CRITIQUE

Strengths of the study
• Sound literature research on studies advocating contralateral pinning
• Utilised same surgical technique
• No change in post-operative rehabilitation

Weaknesses of the study
• Level 3 evidence
• A lot of data presented did not reach significance
• Power of study too low

Reviewer: Mr Conrad Lee
Baghdadi YM, Larson AN, Sierra RJ, Peterson HA, Stans AA. The fate of hips that are not prophylactically pinned after unilateral slipped capital femoral epiphysis. *Clin Orthop Relat Res* 2013;471:2124–2131.

Study design:
• Retrospective cohort study
• 226 consecutive SUFE (between 1965 and 2005)
• 133 eligible cases
• 93 cases excluded - 45 lost to follow-up; 16 did not have pinning as initial treatment; 1 refused consent; 6 deceased
• 22 bilateral SUFE
• 3 contralateral prophylactic pining

Outcomes
- 133 unilateral SCFE
- No contralateral slip 75% (113)
- Contralateral slip 15% (20)
- Incidence of contralateral slips in patients with unilateral SUFE 15%
- Rate of subsequent corrective surgery 11% in unilateral slip, 5% in delayed contralateral slip
- PROM: contralateral slip versus unilateral disease: no difference
- NNT = 6

CRITIQUE

Strengths of the study
- Easy to read and follow
- Appropriate time frame (40 years)
- Variety of validated PROMS (general & specific)
- Appropriate use of statistical tests

Methodological concerns
- Retrospective
- Variety of implants and fixation methods
- High loss to follow up
- Vague conclusion

Reviewer: Miss Tricia Walker
Clement ND, Vats A, Duckworth AD, Gaston MS, Murray AW. Slipped capital femoral epiphysis: Is it worth the risk & cost not to offer prophylactic fixation of the contralateral hip? *Bone Joint J* 2015;97-B:1428–34.

Study design:
- Retrospective study
- 91 patients presenting between Jan 2000 - Dec 2010 with unilateral SCFE
- Hips pinned either unilaterally or bilaterally at discretion of operating consultant
- Reviewed operative database and medical records
- SF 12 and OHS
- Radiograph of contralateral hip reviewed by 2 observers at initial presentation and last follow-up - posterior slope angle (PSA) cam lesion, grade of OA
- Cost analysis performed

Outcomes:
- 86 patients unilateral SCFE
- 50 unilateral, 36 prophylactic fixation
- No significant difference in age, gender, endocrine abnormalities, socio-economic status between groups

- Complications - 23/50 who had unilateral fixation suffered contralateral SCFE at a mean of 128 days. No deep wound infections, periprosthetic fractures or chondrolysis for any contralateral hips fixed
- Functional outcome - Significantly greater SF-12 and trend towards greater OHS for patients who underwent prophylactic fixation
- Radiographs - Significant difference in mean PSA in those undergoing unilateral fixation that had subsequent contralateral slip than those who did not have a further slip. Eight cam lesions were all in the group that did not undergo prophylactic fixation
- Economic cost - £7241 for unilateral, and £7882 for bilateral group

CRITIQUE

Strengths of the study

- Clearly constructed research question which follows PICO (population, intervention, control, outcome) format
- Well-written paper
  No patients lost to follow-up

Methodological concerns

- Retrospective
- Not randomised - patients at risk of slip may have been prophylactically fixed.