

MSK Journal Club 2015



Slipped Capital Femoral Epiphysis (SCFE)

Is it worth the risk and cost not to offer prophylactic fixation of the contralateral hip?



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A decorative graphic on the left side of the slide consists of several hexagons of varying shades of blue and cyan. Some hexagons contain icons: a lightbulb, a thumbs-up, a smartphone, a magnifying glass, and a gear. There is also a network-like icon with a central node and several smaller nodes connected by lines. A large, solid cyan hexagon is positioned in the center of this graphic area.

Outline of Presentation

- Background
- Study Design
- Methods
- Statistics
- Outcome
- Conclusion

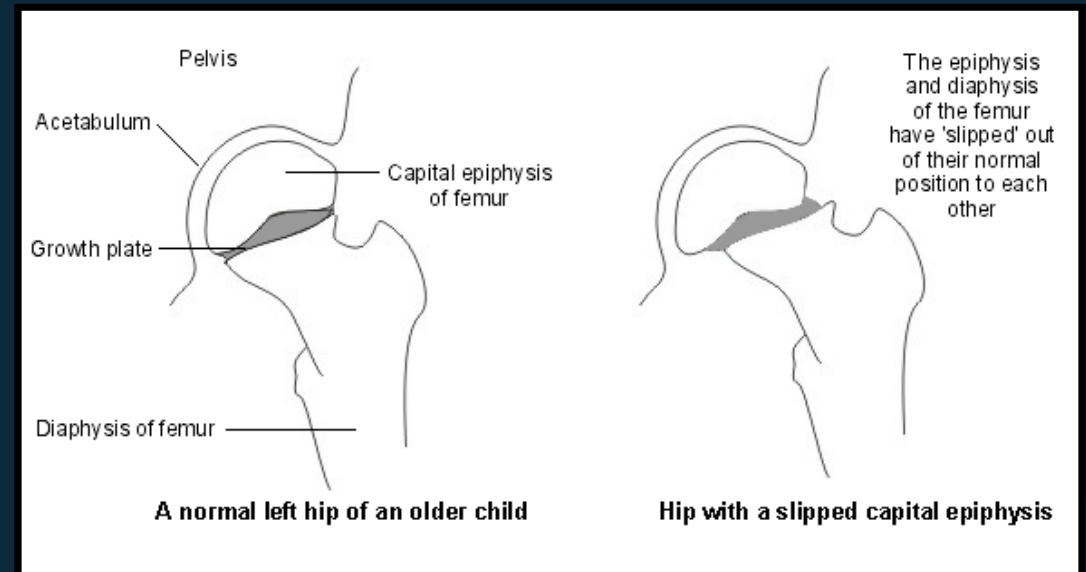
What is SCFE?

Epidemiology

- Most commonly it occurs in boys of 10-17 years of age.
- Most common hip disorder of adolescents

Risk factors

- Repetitive minor trauma
- Obesity
- Endocrine disorders
- Renal failure
- Previous radiotherapy



Problem

Is it worth the risk and cost not to offer prophylactic fixation of the contralateral hip?

Unilateral?



OR

Bilateral?



Study Centre

- The Department of Orthopaedics and Trauma, Royal Hospital of Sick Children. Edinburgh, United Kingdom

Aims

Primary Aim

- In patients presented with unilateral SCFE →

Prophylactic
fixation

NO Prophylactic
fixation

1. Complication rate
2. Functional status
3. Radiographical assessment

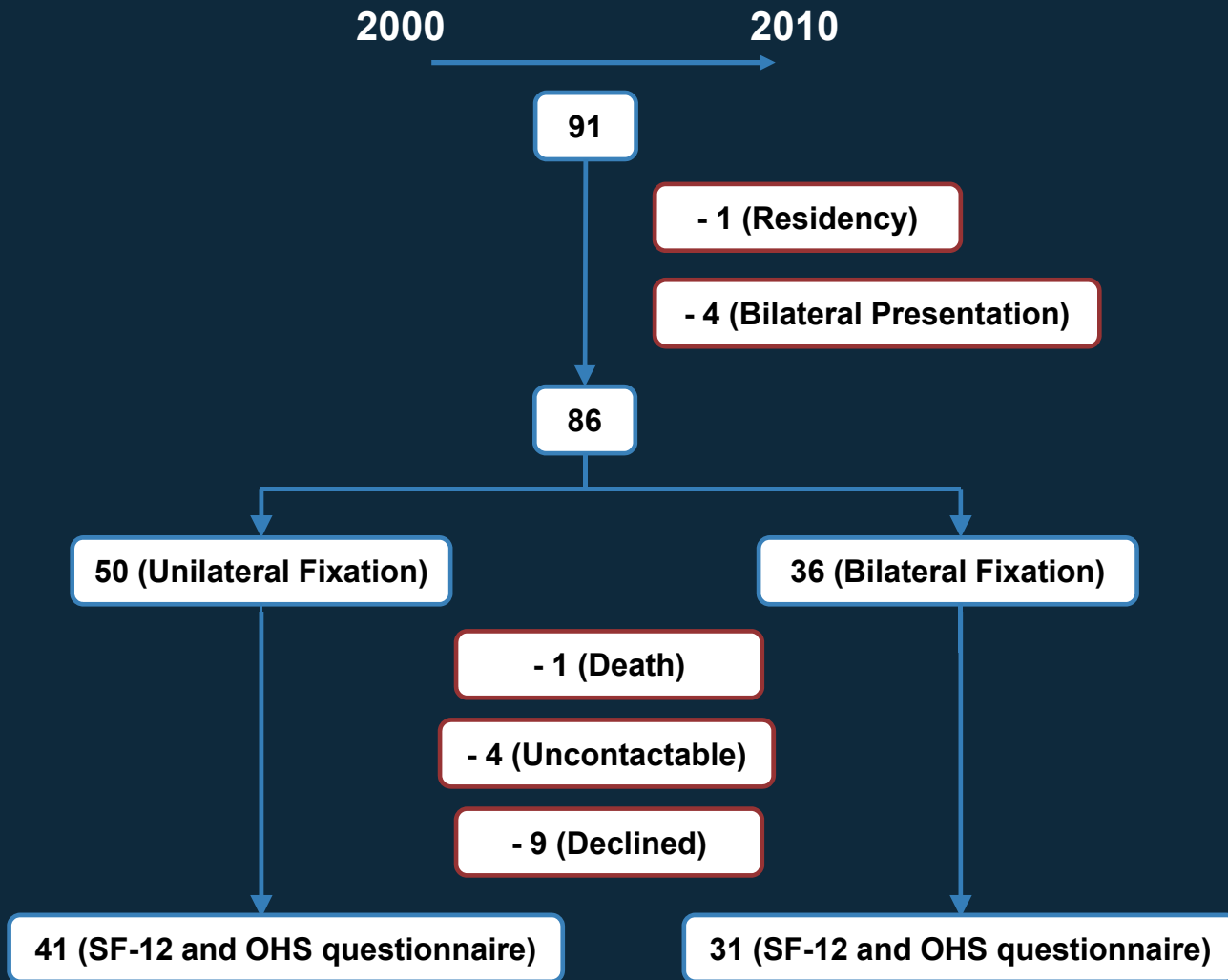
Secondary Aim

- Cost analysis of prophylactic fixation

Study Type

Retrospective Cohort Study

- 2000 - 2010



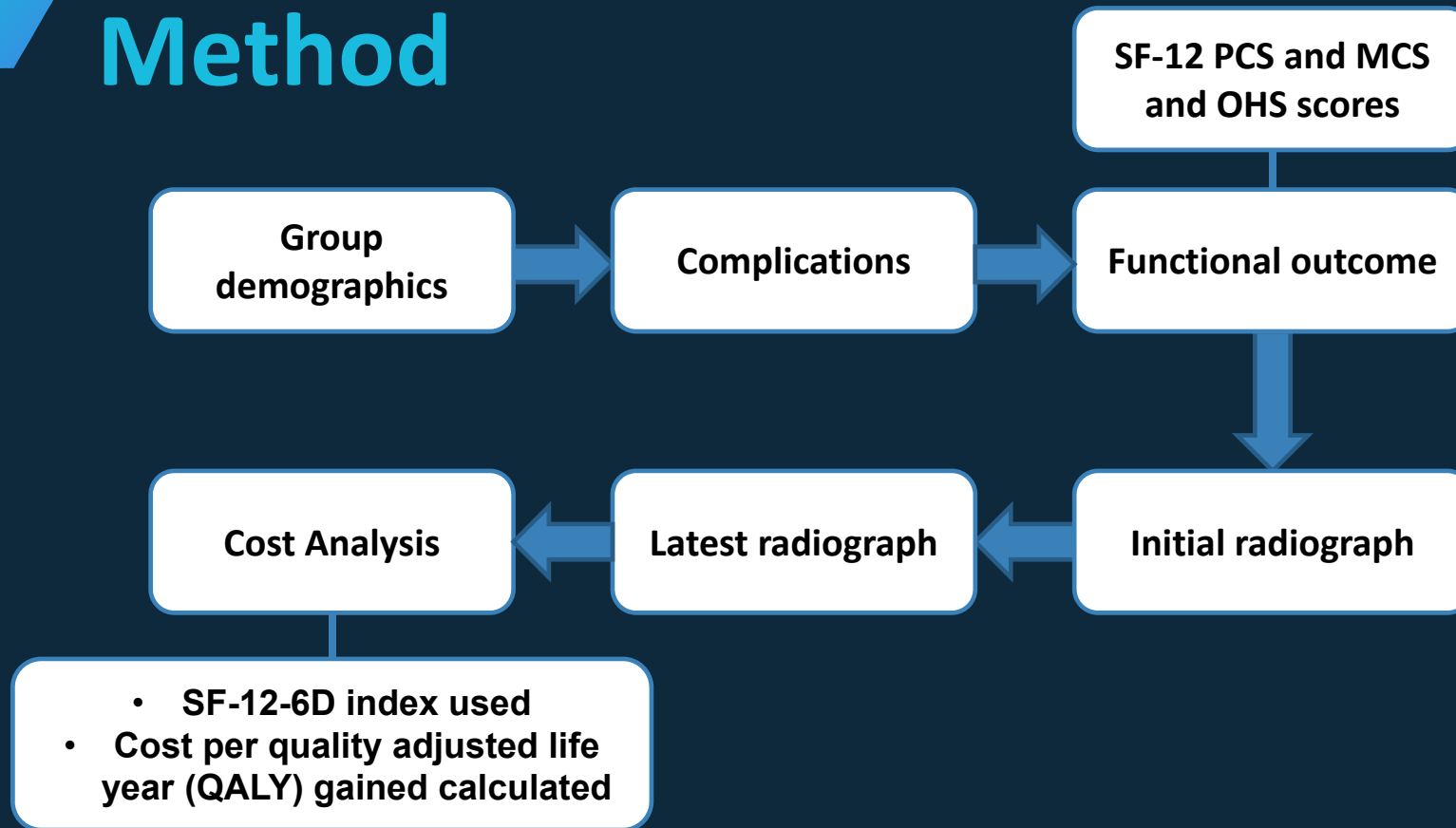
Inclusion Criteria

- SCFE between 2000 – 2010 treated at study center
- Reside within catchment area
- Min. 3 year follow up

Exclusion Criteria

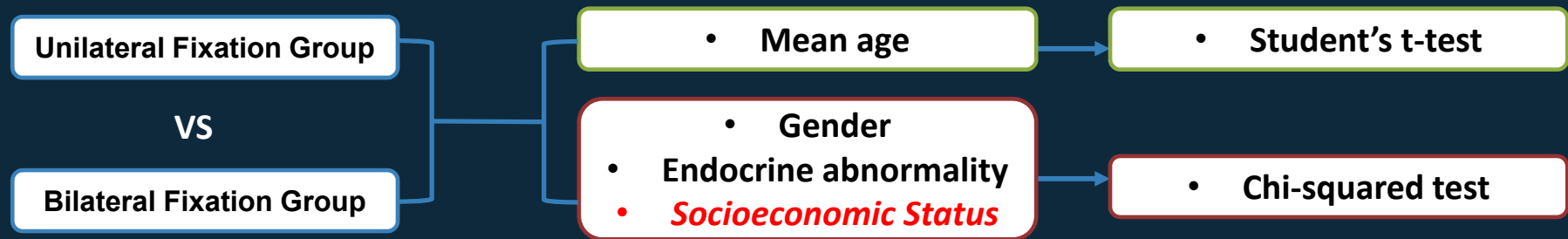
- Present with Bilateral SCFE
- Decision whether contralateral hip was to be prophylactically fixed was at the discretion of consultant in charge.
- All prophylactic fixation was fixed in the same operation.

Method



Statistics

- The Student's *t*-test and the Mann–Whitney U test were used to compare linear variables between groups.
- Dichotomous variables were assessed using odds ratios (OR) and a chi-squared test



Inclusion of other risk factors (e.g. BMI)?



Primary Aim Results

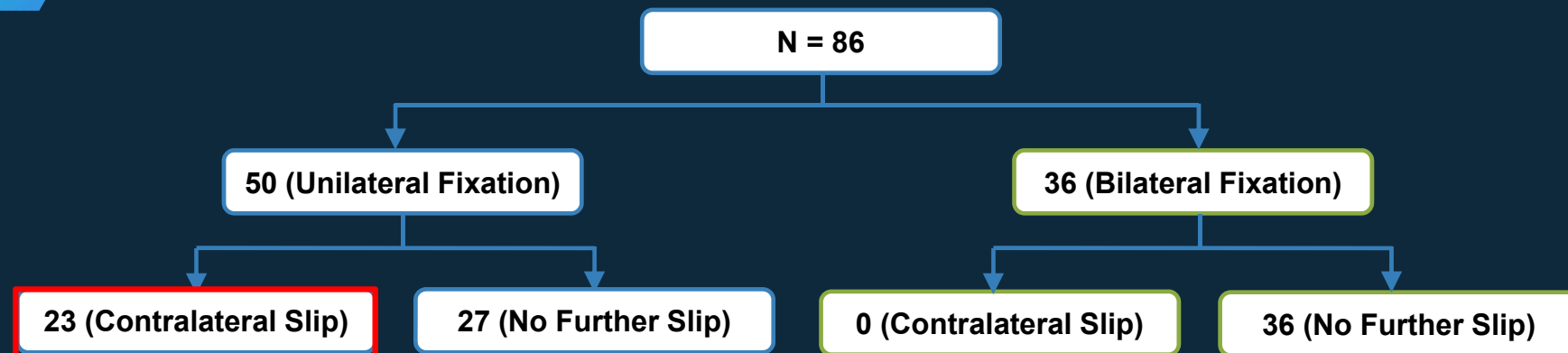
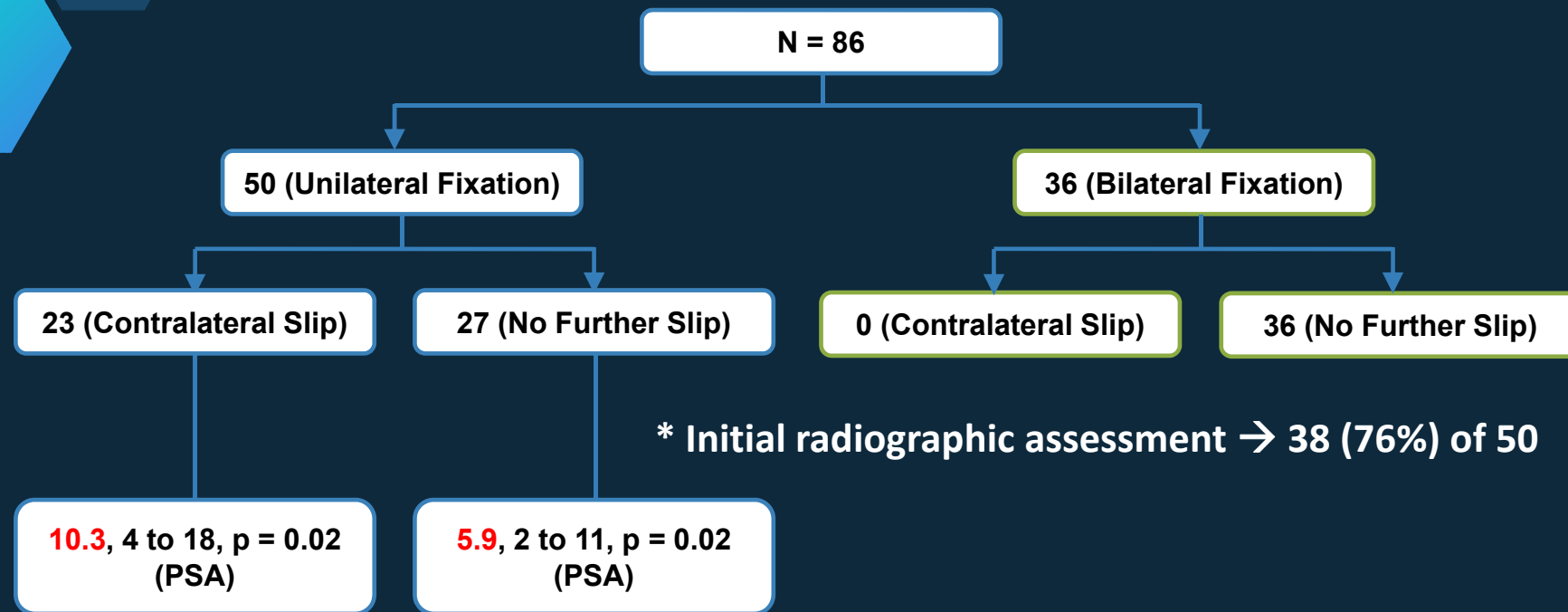


Table I. Functional outcome measures for those who had unilateral fixation and those who underwent prophylactic fixation

PROMs	Unilateral (n = 41)	Prophylactic (n = 31)	Difference (95% CI)	p-value
Median Oxford hip score (IQR)	44 (40 to 48)	47 (45 to 48)	3 (-0.8 to 5.2)	0.09*
Mean SF-12 PCS (physical) (SD)	48.2 (10.2)	54.9 (11.9)	6.7 (3.4 to 10.0)	< 0.001 [†]
Mean SF-12 MCS (mental) (SD)	52.3 (9.8)	55.8 (8.7)	3.4 (0.8 to 6.0)	0.004 [†]

There were significantly greater SF-12 PCS and MCS and a trend towards a greater OHS for patients who underwent prophylactic fixation

Outcome



Some authors suggest that patients with a posterior slope angle (PSA) of the physis of $> 12^\circ$ on an axial radiograph of the contralateral hip are at an increased risk of a subsequent slip, and recommend prophylactic fixation.



Secondary Aim Results

Table II. Calculation of the total surgical costs for unilateral fixation *versus* prophylactic fixation for the contralateral hip, with the quality adjusted life years (QALYs) gained during the study period and a cost per QALY calculation

	Unilateral (n = 50)	Prophylactic (n = 36)	Difference
Costs			
Procedure cost	£4791 × 50 = £239 550	£7882 × 36 = £283 752	
Contralateral capital femoral epiphysiodesis	£4791 × 23 = £110 193	0	
Osteotomy	£8153 × 1 = £8153	0	
Removal of screw	£2078 × 2 = £4156	0 (no screws removed)	
Total cost per group	£362 052	£283 752	
Mean cost per patient	£7241	£7882	£641
QALYs			
SF-12-6D			
Mean score	0.870	0.926	0.056
Mean score × 8*	6.960	7.408	0.448
Cost per QALY for prophylactic fixation = £641/0.448			£1431

* Mean QALYs gained per patient for each group, which was estimated by multiplying the mean score by the follow-up period of the cohort (median eight years)³⁰

Conclusion

Limitations of study

- Retrospective design
- Patients were not randomized to each group (consultant discretion)
- Inclusion of more factors in comparison between groups (e.g. BMI, involvement in sports?)
- Genetic Bias?

Strengths of study

- High rate of follow up
- Patient oriented outcomes

“This study does not offer a definitive answer whether prophylactic fixation should be performed in all patients. A prospective multicenter randomized controlled trial is required.”





Thank you!
Any questions?

