

Identifying The Best Treatment in Adult Spinal Deformity: A Decision Analysis Approach

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Disclosures

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Introduction

- Adult Spinal Deformity (ASD)
 - major public health problem
 - treatment alternatives
 - Non-surgical
 - Less risk and potential complication involved
 - Surgical
 - Better chance for clinical improvement?

Purpose

- To identify the best (optimum) treatment in ASD
- Using a statistical “decision analysis” model
- Hypotheses:
 - Surgery may yield better overall clinical results
 - Surgery is associated with more complications and overall burden

Patients and Methods

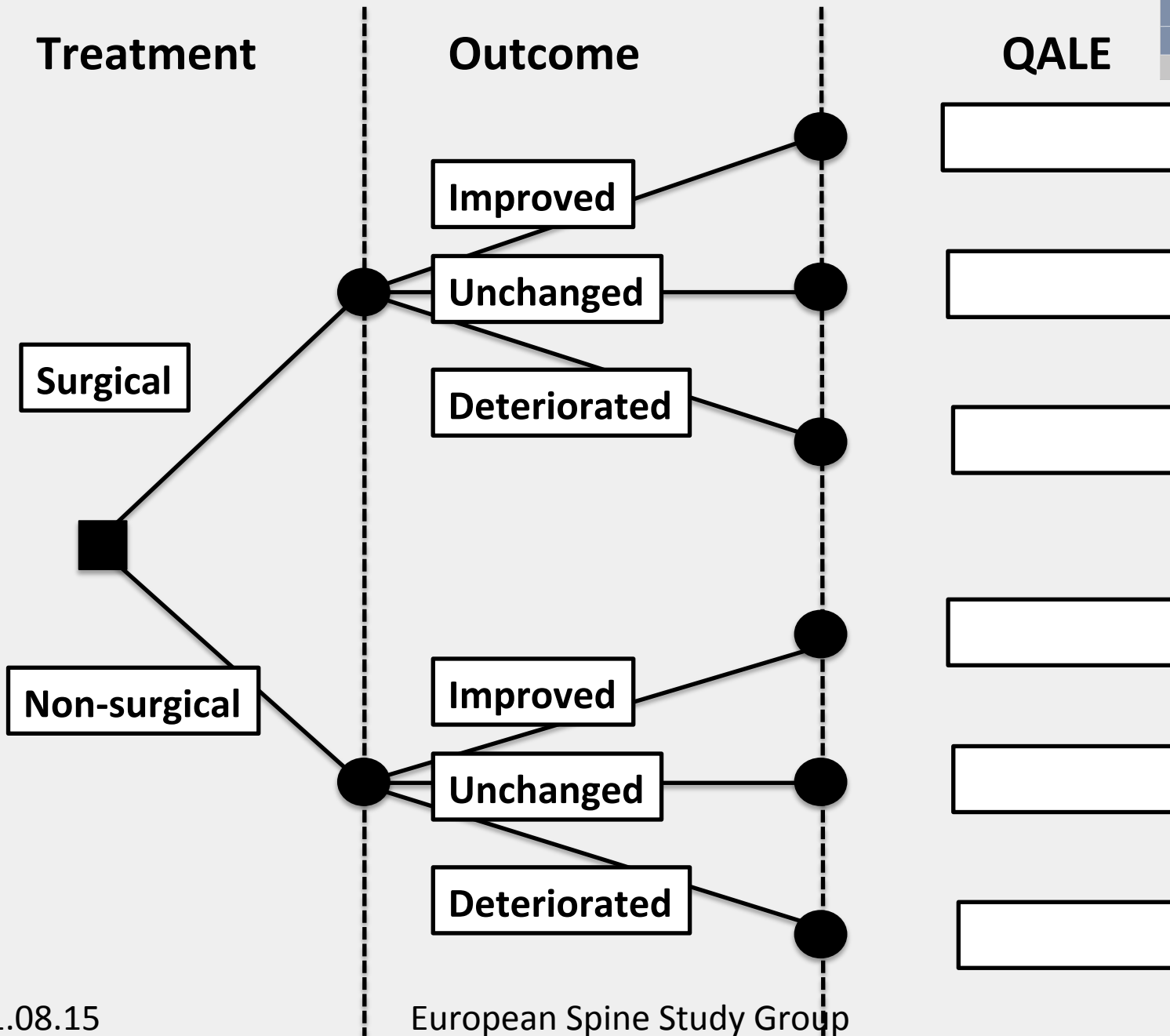
- International multicentre prospective database
- ASD Patients
 - Overall n=968
 - Included n=535 (1 year f-up)
 - non-surgical (NS): 371
 - surgical (S): 164

Patients and Methods

- Decision Analysis
 - Baseline
 - Outcome probabilities
 - » improvement (\downarrow in ODI $>$ 8pts)
 - » no change
 - » deterioration (\uparrow in ODI $>$ 8pts)
 - » Death / complete paralysis
- } No improvement
- The values of preference – utilities
 - Combine information and assign quality adjusted life expectancy (QALE)

Patients and Methods

- Utilities
 - Outcome parameters
 - VAS
 - Time trade off
 - SF36 mapping
- QALE
 - LE X utility
 - 100 years X utility



Results

- Demographical Characteristics; Baseline and Follow-up ODI data

	Conservative	Surgical	Total
N of patients in database	630	338	968
N of patients with 1 year FU	371	164	535
Etiology of patients			
Degenerative	46	44	90
Idiopathic	283	73	356
Gender			
Females	315 (85 %)	123 (75 %)	438 (82%)
Males	56	41	97
Type of surgery			
Instrumentation and fusion		164 (9 A+P, 1 A only)	
Additional decompression		42	
Additional osteotomy		72	
Mean Baseline ODI	23.77	39.10	
Mean 1 year ODI	25.42	29.56	
N of patients with baseline and 1 year ODI	309	123	432

Results

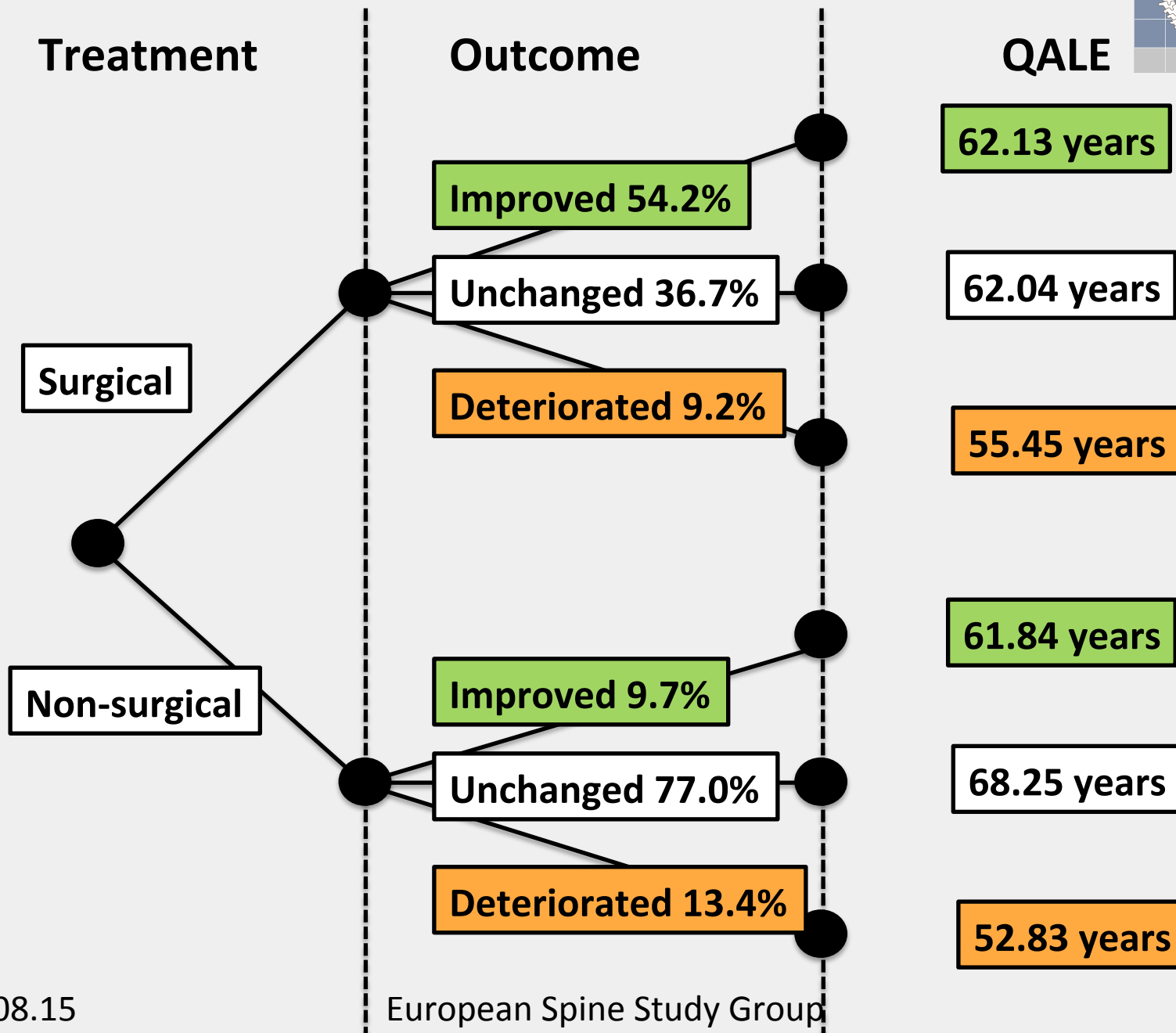
- Pooled outcome probabilities of patients (n=472)

Treatment	N	Deterioration	No change	Improvement
Surgical	161	11 (9.2%)	44 (36.7%)	65 (54.2%)
Non-surgical	311	54 (13.4%)	311 (77.0%)	39 (9.7%)

Results

- Baseline and final utilities; QALE of patients

Treatment (all)	Baseline Utility	Final Utility	p (baseline vs. final)	Life Expectancy (default)	QALE (healthy years)
Surgery	0.56	0.60	<0.0001	100	60
Non-Surgical	0.65	0.65	0.2692	100	65
p	<0.0001	0.0038			0.0038



Conclusions

- No single best treatment
- Conservative treatment
 - Higher QALE (up to 6%)
 - Secondary to higher baseline QALE
- Surgical treatment
 - Significantly higher increase in QALE
 - Chances of improvement at first year significantly better than non-surgical

Thank you...

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