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Conservative or Surgical Treatment? Developing a Parent-Centered Decision Tool with Conjoint Analysis in Low-Grade Pediatric Spondylolisthesis

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Introduction and Objective

- Pediatric spondylolisthesis involves forward vertebral slippage due to congenital, traumatic, or degenerative causes.
- Graded 1–4 by slip severity; typically, high grade is treated surgically while low grade can be treated surgically or conservatively.
- Conjoint analysis is widely used to study patient preferences in orthopedics but has not been applied to low-grade pediatric spondylolisthesis.
- Objective is to quantify parent preferences for surgical vs. non-surgical treatment using conjoint analysis to identify key factors in shared decision-making.



Results

Attributes	1	2	3
Likelihood of surgery (3 days in hospital, 1 week out of school)	15%	60%	100%
Risk of treatment failure necessitating later surgery and second recovery period (1 week out of school, 6 months out of sports)	<5%	10%	15%
Risk of serious surgical complication potentially requiring another operation (eg infection, incomplete healing, or pain)	<1%	2.5%	5%

(Rumalla, 2018), (Klein, 2009)

Discussion and Limitations

- Purpose: Determine attribute preferences for parents with a child with low-grade spondylolisthesis.
- Hypothesis: Risk of requiring surgery after initial treatment will be the most important factor for parents.
- Limitations: Variable time between symptom onset and clinical presentation

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Methods

- Online conjoint survey via Prolific to assess U.S. parents' preferences for surgical vs. non-surgical treatment of low-grade pediatric spondylolisthesis.
- Participants: Adults ≥18 with a child aged 13–17.
- Analyzed in Sawtooth Software with scenarios varying by surgical risk, treatment failure, and complications.
- Anonymous self-reported data; ~200 participants recruited.



For the remainder of this survey, please imagine that your 13-17 year-old child has this type of stress fracture. You will be presented with several scenarios and asked to choose their treatment plan.

If your child had this type of stress fracture at the bottom of their back with chronic/frequent pain, which of these 4 treatment courses would you choose?

(1 of 10)

% Likelihood of treatment course involving surgery (approximately 3 days in the hospital and 1 week out of school, post-operative pain is typically well controlled)

% Risk treatment fails, necessitating later surgery and second recovery period (eg 1 week out of school and 6 months out of sports)

% Risk of a serious surgical complication potentially requiring another operation (such as infection, incomplete healing, or pain)



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