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# WHAT ASPECTS OF THE SCOLIOSIS CORRECTION ARE MOST IMPORTANT TO THE TEENAGER WHO HAS KEYHOLE SCOLIOSIS SURGERY?

## A prospective series of 100 patients.

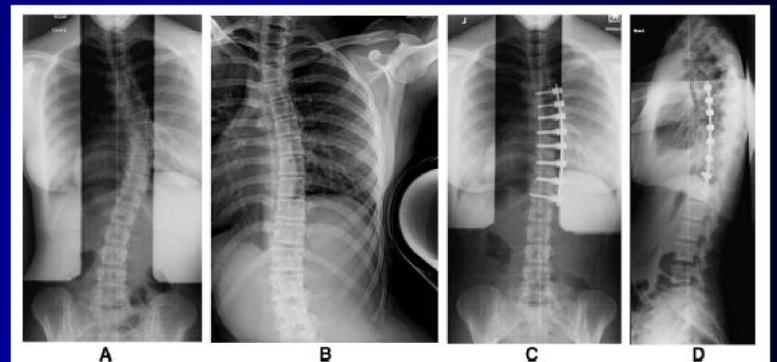


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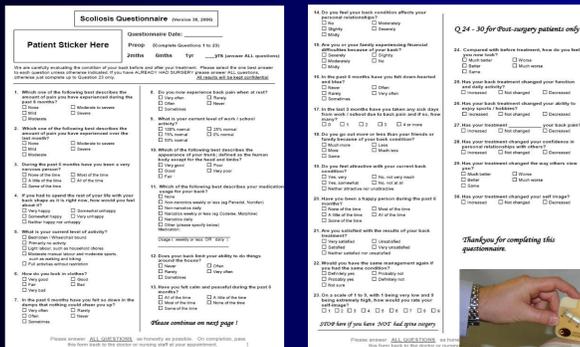
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### Introduction

Surgical treatment of scoliosis is assessed in the spine clinic by the surgeon making numerous measurements on X-Rays as well as the rib hump. But it is important to understand which of these measures correlate with self-reported improvements in patients' quality of life following surgery. The objective of this study was to examine the relationship between patient satisfaction after thoracoscopic (keyhole) anterior scoliosis surgery and standard deformity correction measures using the Scoliosis Research Society (SRS) questionnaire. The questionnaire is a validated instrument for self assessment of quality of life after adolescent idiopathic scoliosis surgery (1-3).



Typical pre and postoperative radiographs for keyhole scoliosis correction surgery. A - PA X-Ray, B - Fulcrum bending X-Ray to assess flexibility, C - Postop PA X-Ray, D - Postop Lateral X-Ray.



Above - SRS questionnaire. Right - A rib hump measured using a Scoliometer in the forward bending position, where the rotational component of scoliosis in the thoracic spine is most easily seen.



### Methods.

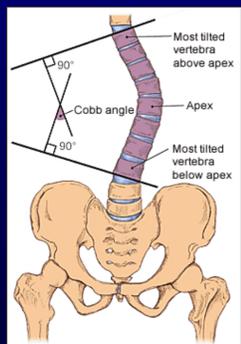
A series of 100 consecutive adolescent idiopathic scoliosis patients received a single anterior rod via a keyhole (thoracoscopic) approach at the Mater Children's Hospital, Brisbane. This minimally invasive procedure is only suitable for selected scoliosis cases, where the spine deformity is primarily in the thoracic spine in an otherwise healthy patient. Patients completed SRS outcomes questionnaires before surgery and again at 24 months after surgery. Patients had full length PA and Lateral X-Rays taken and had any rib hump measured using a Scoliometer. Multiple regression and t-tests were used to investigate the relationship between SRS scores and deformity correction achieved after surgery.

### Results.

There were 94 females and 6 males with a mean age of 16.1 years. The mean Cobb angle improved from 52° pre-operatively to 21° for the instrumented levels post-operatively (59% correction) and the mean rib hump improved from 16° to 8° (51% correction). The mean total SRS score for the cohort was 99.4/120 which indicated a high level of satisfaction with the results of their scoliosis surgery. None of the deformity related parameters in the multiple regressions were significant. However, the twenty patients with the smallest Cobb angles after surgery reported significantly higher SRS scores than the twenty patients with the largest Cobb angles after surgery, but there was no difference on the basis of rib hump correction.

### Discussion.

Patients undergoing thoracoscopic (keyhole) anterior scoliosis correction surgery report good SRS scores which are comparable to those in previous studies. We suggest that the absence of any statistically significant difference in SRS scores between patients with and without rod or screw complications is because these complications are not associated with any clinically significant loss of correction in our patient group. The Cobb angle after surgery was the only significant predictor of patient satisfaction when comparing subgroups of patients with the largest and smallest Cobb angles after surgery.



Cobb method of measuring angle of scoliosis.



Standing photos of a keyhole scoliosis surgery patient before surgery (left and top right) and 1 year after surgery (middle and bottom right)



Scars visible after keyhole scoliosis surgery at 8 weeks (left) and at 1 year (right) after surgery.

### References

1. Haheer TR, Gorup JM, Shin TM et al. Results of the Scoliosis Research Society instrument for evaluation of surgical outcome in adolescent idiopathic scoliosis. Spine 24: 1435-40, 1999.
2. Asher MA, Lai SM, Burton DC. Further development and validation of the scoliosis research society (SRS) outcomes instrument. Spine 25: 2381-6, 2000.
3. Asher MA, Lai SM, Burton DC et al. The reliability and concurrent validity of the scoliosis research society-22 patient questionnaire for idiopathic scoliosis. Spine 28: 63-9, 2003.