OBJECTIVES

To review all pediatric patients who were treated surgically for symptomatic isthmic spondylolysis (ISY) that failed conservative treatment.

METHODS

We retrospectively reviewed the hospital and clinic charts of all pediatric patients (< 18 years old) who were treated surgically by one fellowship-trained pediatric orthopaedic surgeon. Patients were all treated with indirect pars repair utilizing pedicle screw fixation and laminar compression hook constructs with local spinous process autograft placement after high-speed burring and curettage of the fibrous defect. The preoperative visual analog score for pain (VAS) was compared to the final post-operative follow-up VAS score. A two-tailed t test was performed on the VAS score reduction to determine statistical significance. Preoperative and final post-operative radiographs were reviewed to evaluate healing.

RESULTS

Over the study period, 9 pediatric patients (6 females, 3 males) were treated surgically after failing conservative treatment for symptomatic ISY. There were 6 cases of bilateral L5 spondylolysis, 1 case of an isolated left L5 lysis, and 2 cases of bilateral L4 lysis. The average patient age at the time of surgery was 15.4 years, with a range of 13 years to 17 years. The average length of final follow-up was 9.6 months, with a range of 0.5 months to 24 months. Preoperative VAS averaged 5.6 points with a range of 2 to 8. Post-operative VAS averaged 0.8 with a range of 0 to 3. The VAS was reduced on average by 4.7 points with a reduction range of 0 to 8, but this did not achieve statistical significance (p = 0.99). Bony healing was noted on lateral radiographs in 5 of the 9 cases (55.6%) while 2 patients (22%) lacked healing at 12-month follow-up. The remaining 2 patients had a brief follow-up period (2 weeks) and bony healing was unable to be determined.

DISCUSSION

Patients in this series had good to excellent short term outcomes with all patients ultimately returning to their sport at their previous level. Recovery with this technique is faster than other fusion techniques used for symptomatic ISY failing non-surgical treatment. This technique seems to be effective in return to sport for gymnasts as well as competitive cheerleaders who produce high demands on hyperextension. More in depth studies could shed more light on sport specific return with this technique as compared to fusion techniques.

CONCLUSIONS

Pediatric patients treated surgically with indirect pars repair after failing conservative treatment for ISY appear to achieve satisfactory short-term outcome with a reduction in VAS scores. Further study and longer-term follow-up is needed within this patient population to determine the effectiveness of this treatment modality.

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