

COMBINED ANTERIOR AND POSTERIOR SURGERY FOR SCOLIOSIS THE USE OF THE HARTSHILL SYSTEM

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From January 1984 to November 1988, 25 patients had combined anterior and posterior corrective surgery using the Hartshill Rectangle. There were 6 male and 19 female patients. The age range was 5 to 30 years (mean 13). In 17 cases the scoliosis was idiopathic, the others were due to spina bifida, hemivertebra, diastematomyelia and paraspinal tumour. 12 were done as a combined procedure, and 13 had a delayed second stage. Anterior surgery consisted of epiphyseodesis or growth arrest without internal fixation in 18, and Dwyer's instrumentation in 7.

The average preoperative curve was 79 degrees (range 38-140), and the postoperative average was 35 degrees (5-88). At latest follow up the residual curve averaged 41 degrees (5-107). Complications were few, with one superficial wound infection, one deep wound infection. In one case of spina bifida, the fixation of the rectangle on the sacrum was lost. Two cases had neurological complications, with complete recovery in one. The other was a complete lesion with little recovery at latest review.

Combined anterior and posterior surgery using the Hartshill system is reliable and successful, with good correction of deformity and an acceptably low incidence of complications.

Key Words : Scoliosis, segmental fixation, anterior surgery, neurological complications.

MATERIALS AND METHODS

The Hartshill Rectangle has been available for over 5 years, and is widely used internationally in the treatment of scoliosis. It is now our standard posterior fixation device for all types of deformity. The rectangle is available in 5mm and 6mm calibres, and we now routinely use the 6mm rectangles for most deformity work.

We have now inserted over 100 rectangles for deformity of various types, and these results have been published. It is widely accepted and posterior surgery to achieve a satisfactory correction, (2,3) and this difficult and complex surgery may carry a greater risk than simple corrective techniques.

We therefore reviewed all patients of the Stoke on Trent Spinal Service in whom we had performed combined anterior and posterior surgery for scoliosis using the Hartshill System, to assess the surgical results and identify and complications.

Close follow up of all patients operated on for deformity is maintained by the Stoke on Trent Spinal Service on a computer database.

From January 1984 to November 1988, a total of 29 patients had combined anterior and posterior surgery using the Hartshill Rectangle for major deformity. In four cases the deformity was an angular kyphosis, and these have been excluded from this study. There were therefore 25 patients who had front and back surgery for scoliosis of all aetiologies. This represents about one in four of all our scoliosis cases.

Our patients were mostly adolescents, with a mean age of 13 years. The age range was wide, however, the youngest was 5 and the oldest was 30. There were 6 male and 19 female patients. Idiopathic scoliosis accounted for 17 of our series, and the others included spina bifida 4 cases, hemivertebra 1, postpolio 1, diastematomyelia I and paraspinal tumour 1.

In the early patients in our series, the surgery was done as an elective staged procedure, with 3 weeks between the two stages. The anterior surgery was performed first, and the posterior rectangle was implanted as the second stage. More recently we have tended to do a combined anterior and posterior correction at one sitting where the patient is otherwise fit and there are no problems with the first stage. 13 Patients had a delayed second stage, and 12 had a combined procedure.

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For the anterior surgery, we did not use internal fixation in 18 cases. These had either growth arrest, convex epiphyseodesis, or in one case vertebral corpectomy. The other 7 cases Dwyer's anterior instrumentation. All cases had a Hartshill rectangle ■■■viih sublaminar wiring posteriorly.

We followed all patients until skeletal maturity, or for at least two years if already skeletally mature.

RESULTS

The range of preoperative curves was very wide. The average preoperative curve was 79 degrees with a range of 38 to 140, and the postoperative average was 35 degrees (range 5-88). At latest follow up the residual curve averaged 41 degrees (range 5-107).

Complications included one superficial wound infection which completely resolved, and one deep wound infection which became intractable. The internal fixation had to be removed to allow the infection to settle. In one case of spina bifida, which was fixed using the Galveslon technique, the fixation of the rectangle on the sacrum was lost, due to the wires cutting out of the very thin, poor quality bone. The rectangle subsequently presented through the skin and had to be trimmed. Two cases had neurological complications, with complete recovery in one. The other was a complete lesion with little recovery at latest review. This was in a complex kypho-scoliosis which required vertebral corpectomy and extensive anterior release.

DISCUSSION

Combined anterior and posterior surgery for scoliosis is difficult and complex, and anecdotal reports suggest that it carries a high complication rate, sometimes with limited benefit.

Useful correction was achieved in all our cases, and in some the correction was very dramatic. Other authors have described the tendency of the curves to deteriorate a little during follow up, (4,5) and our figures confirm this although the deterioration is not marked. There is one case in this series who presented with a very stiff 140 degree curve, and she has rather distorted the range of post-operative and follow-up curves.

Neurological complications are always a cause for concern. There have been many reports on neurological complication, (6,7) and elaborate and often expensive precautions are taken to avoid this problem 8. As far as we are aware, there have been no published reports from other centres about neurological complica-

tions following this type of combined surgery. Anecdotal evidence suggests that the incidence could be as high as 10-15 % in these complex cases. In the absence of accurate figures, it is not possible to make meaningful comments about our neurological complications, but we know from the British Scoliosis Society morbidity study (7) that 50 % of neurological complications occur in front and back cases, and indeed, these two cases described above are the only cases of post-operative neurological dysfunction seen in the Stoke on Trent Spinal Service.

We conclude that combined anterior and posterior surgery with the Hartshill System is reliable and successful, with good correction of deformity and an acceptably low incidence of complications.

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