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CORRECTION OF CONGENITAL SCOLIOSIS BY EXCISION OF ONE HALF OF A CLEFT VERTEBRA

Report of a Case

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Formerly, it was a wide-spread belief that congenital scoliosis does not become worse with growth. However, in recent years the great variations in prognosis in this group of scolioses has been emphasized by several authors (*Blount, De N. Hough, Roaf, Moe* and others).

The literature dealing with the possibilities of correction of congenital scoliosis by excision of hemivertebrae is scanty (*Compere, von Lackum & De F. Smith*). In 1951 *Wiles*, on the basis of experience from two of his own cases, warned against attempts at the resection of dorsal vertebrae in congenital scoliosis. *Mantle* (1959) stressed that the presence of spina bifida in congenital scoliosis is a sign of poor prognosis. Recently (1965) *Hodgson* reported examples of successful correction of fixed spinal curves by surgery.

The individual variations in the pathological anatomy in cases of multiple congenital anomalies of the spine are very great. As a consequence of this fact every progressing scoliotic curve in this group of cases presents an individual therapeutic problem. Unpredictable growth factors may be brought into play by surgical intervention in the growing spine, which was stressed by *Wiles*. Therefore indications for operation must be considered with continence.

CASE REPORT

M. J., a girl, born April 29, 1949. At birth it was noticed that the left lower extremity was weaker than the right. The child was admitted to the Orthopaedic Hospital of the Invalid Foundation for the first time on July 19, 1950. The left

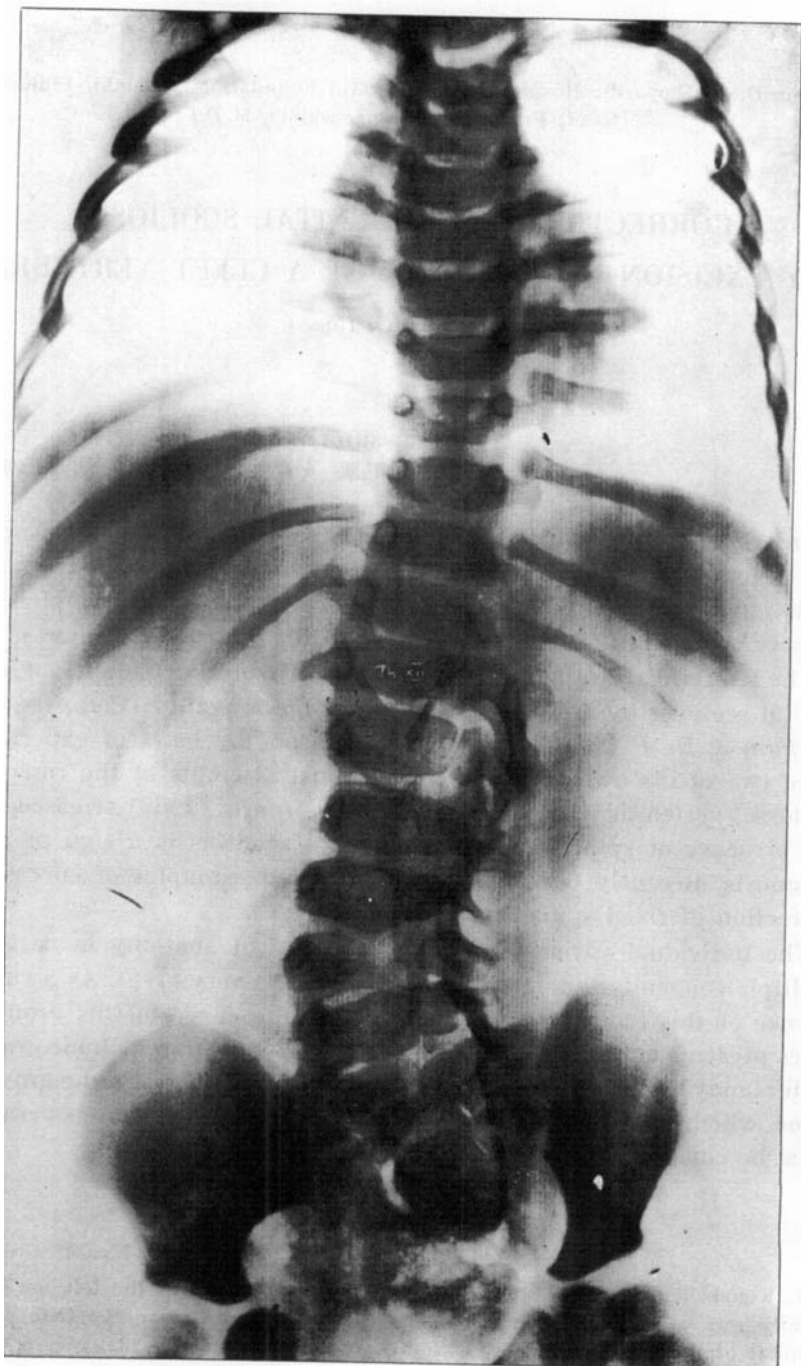


Figure 1.

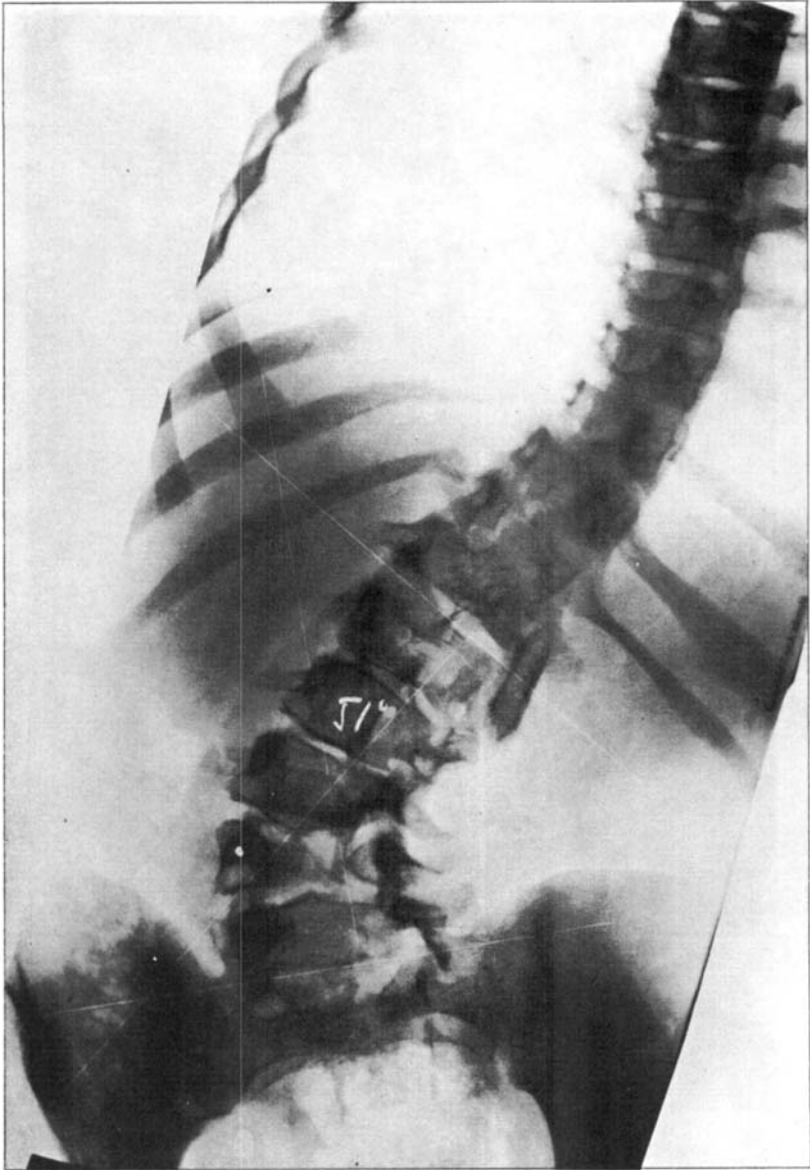


Figure 2. Age ten years. Marked lumbar scoliosis. Severe deviation of the trunk. Radiograph taken in a recumbent position.

Figure 1. Radiograph of the spine of a girl aged one year and two months. Multiple anomalies of the lumbar spine. The fourth lumbar vertebra is a cleft vertebra. Slight scoliosis. The other Figures in this article are pictures taken of the same patient.

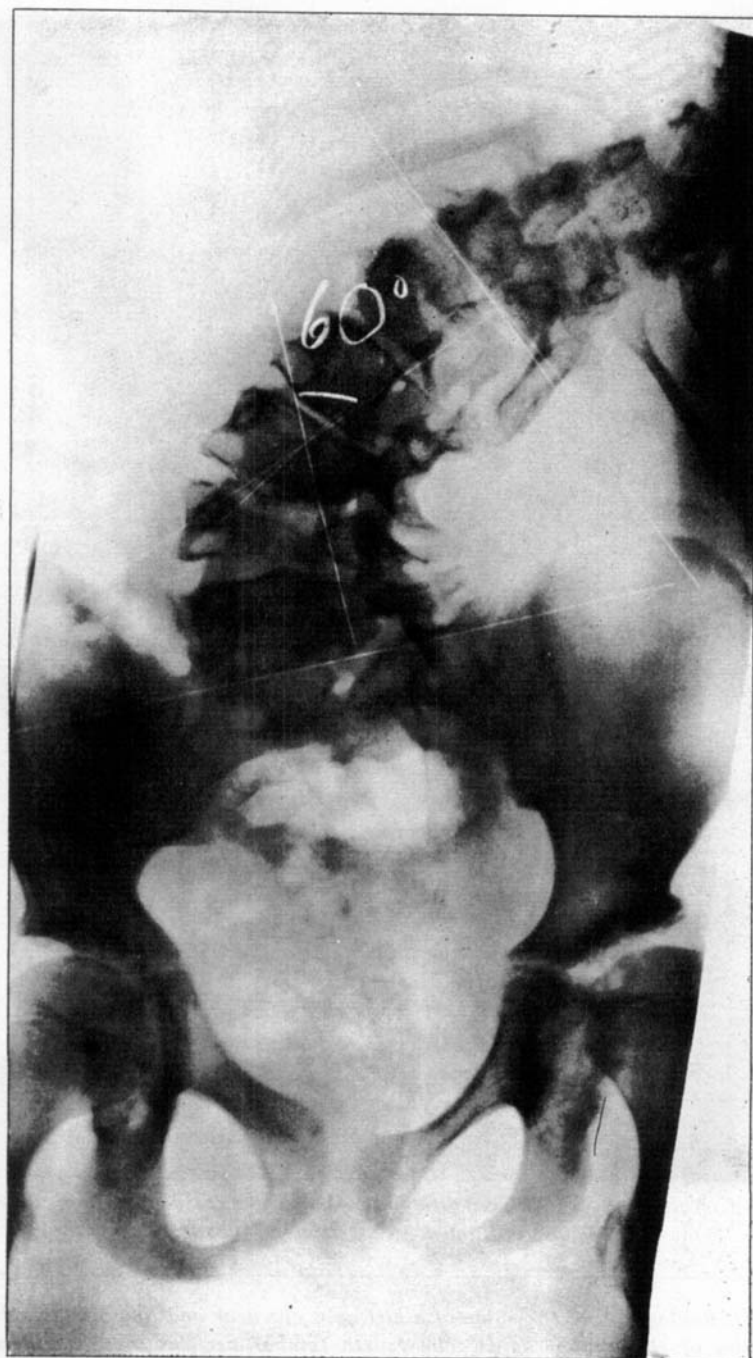


Figure 3.



Figure 4. Two antero-posterior tomographs of the lumbar spine. The distance between the planes was one centimeter.

foot was in a calcaneo-valgus position and the left lower limb was one centimeter shorter than the right. The foot deformity was treated conservatively. The hips were radiographically normal. There was a slight scoliosis of the lumbar spine which showed multiple anomalies (Figure 1).

In 1959 the scoliosis was found to be rapidly progressing (Figure 2). In January 1960, at the age of ten years and nine months the patient started to wear a Milwaukee brace. There was severe scoliosis and deviation of the trunk (Figure 3). Tomography of the lumbar spine in two planes showed the anatomical details of the fourth lumbar cleft vertebra ("butterfly vertebra"). The right part of it was much greater than the left (Figure 4). Systematic muscle testing showed considerable weakness of all muscles of the left lower limb and around the left hip. The left hip was subluxated.

On the basis of the X-ray findings it was decided to excise the right part of the cleft fourth vertebra. On March 3, 1960 the author excised the right part of the body of the vertebra by a right lumbar muscle splitting incision. The nucleus pulposus and the cartilage tissue situated between the two parts of the cleft verte-

Figure 3. Age ten years and seven months. The lumbar curve and the deviation of the trunk have progressed. Radiograph taken in a standing position.

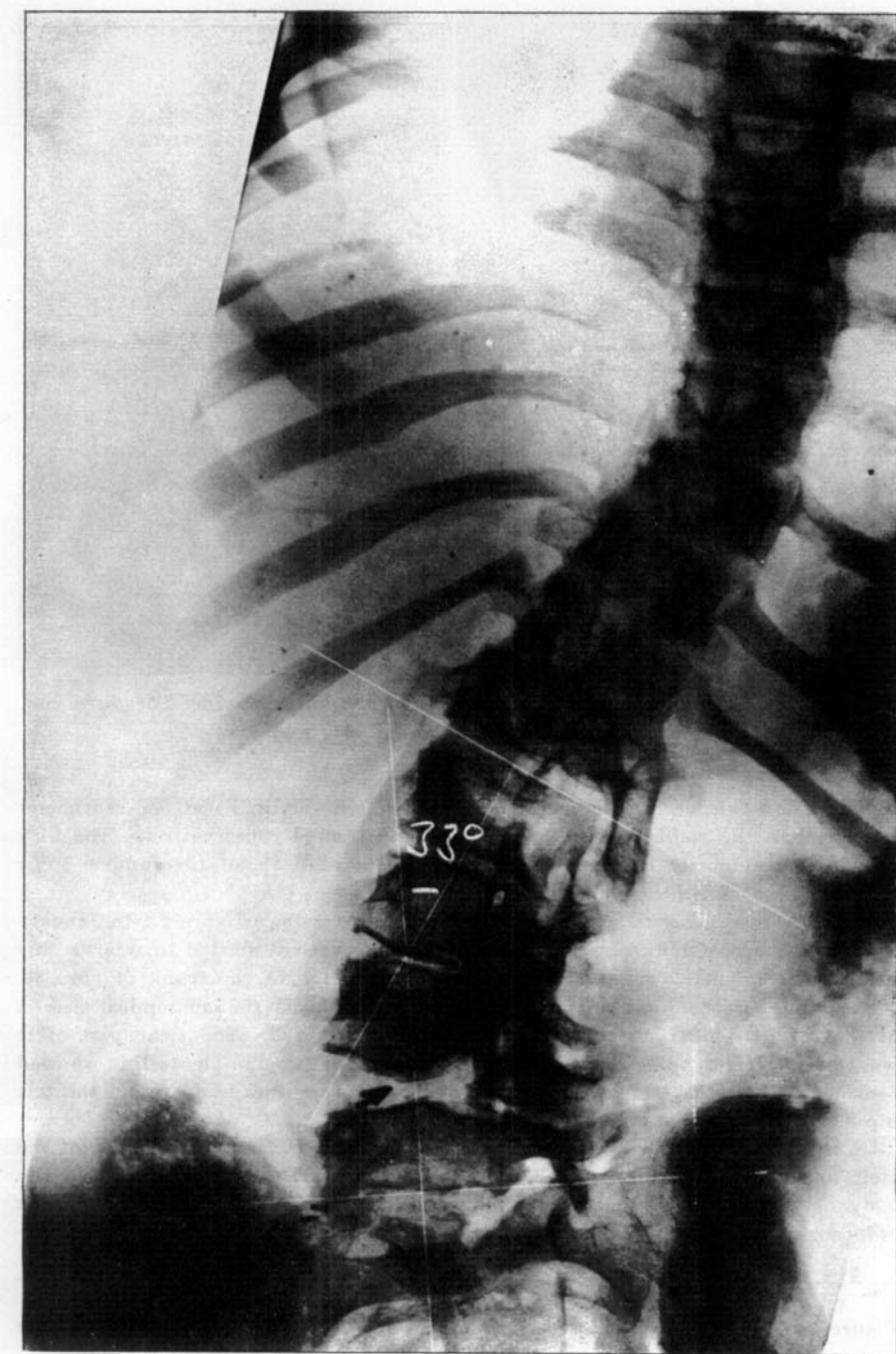


Figure 5.

bral body were also removed. The anterior surface of the spinal dura was exposed over a distance of two centimeters.

On April 20, 1960 the right part of the lamina of the fourth lumbar vertebra, the right lower articular process of the third vertebra and the right upper articular process of the fifth vertebra were removed by a posterior incision.

A week after the second operation, muscle testing showed no change in the muscle power of the left lower extremity compared to the condition prior to the operations. Three weeks after the hemilaminectomy the patient was allowed out of bed in her Milwaukee brace.

Figure 5 shows a radiograph of the spine five months after the operations on the cleft vertebra. Figure 6 gives an idea of the degree of correction obtained by the operations.

For the congenital palsy and for the shortening of the left lower limb, an extra-articular arthrodesis of the left subtalar joint, a Phemister epiphyseodesis of the right tibia and fibula and a Schanz osteotomy of the left hip were carried out at later stages.

Figure 8 shows the spine of the patient after the period of growth.

DISCUSSION

The main factor which was considered to justify an attempt to correct the scoliosis in this case by excision of a part of a cleft vertebra was the severe deviation of the trunk. Keeping the patient lying on the side opposite to the operation after the procedures and the use of a Milwaukee brace resulted in a correction of 25-30 degrees which was enough to bring the spine into balance (Figure 7). Today we might prefer, in a similar situation, to ensure this result by interbody fusion, as suggested by *Hodgson*.

In this case, as in subsequently treated cases of congenital scoliosis, tomography of the anomalous part of the spine in two planes made an exact mapping of the details of the anomalies of the vertebrae possible. This is of decisive importance in the planning of the operations in these very varying conditions.

SUMMARY

In a girl with multiple anomalies of the lumbar spine, asymmetrical growth of the cleft fourth lumbar vertebra caused progressing scoliosis with severe deviation of the trunk (Figure 3). Excision of one part

Figure 5. Marked reduction of the lumbar curve after removal of the right half of the cleft L IV vertebra.

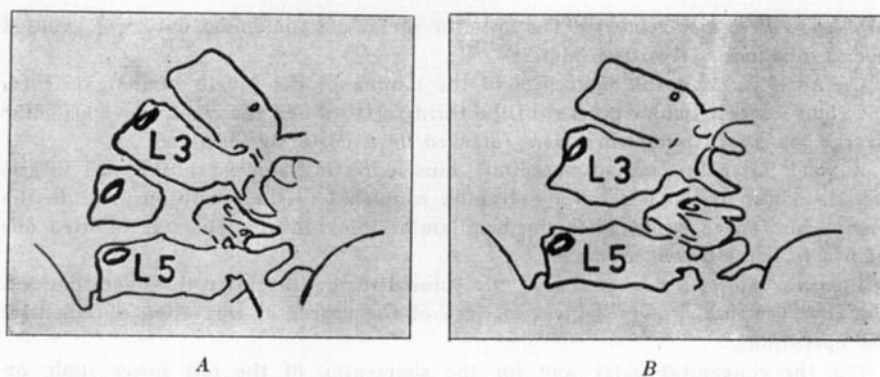


Figure 6. A. Contour drawing of the lumbar spine as seen in Figure 3.
B. Contour drawing of the lumbar spine as seen in Figure 5.

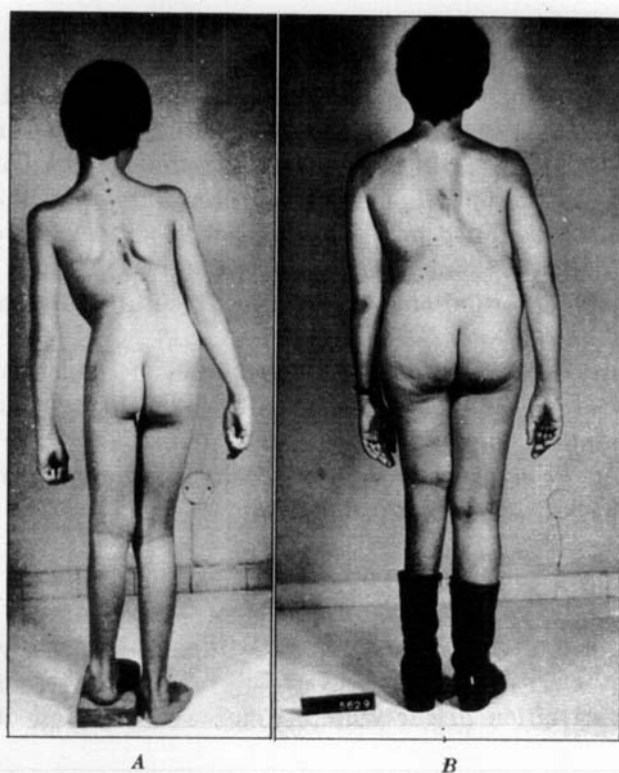


Figure 7. A. Photograph of the patient before the operations on the cleft vertebra.
B. Photograph taken six and a half years after operation.

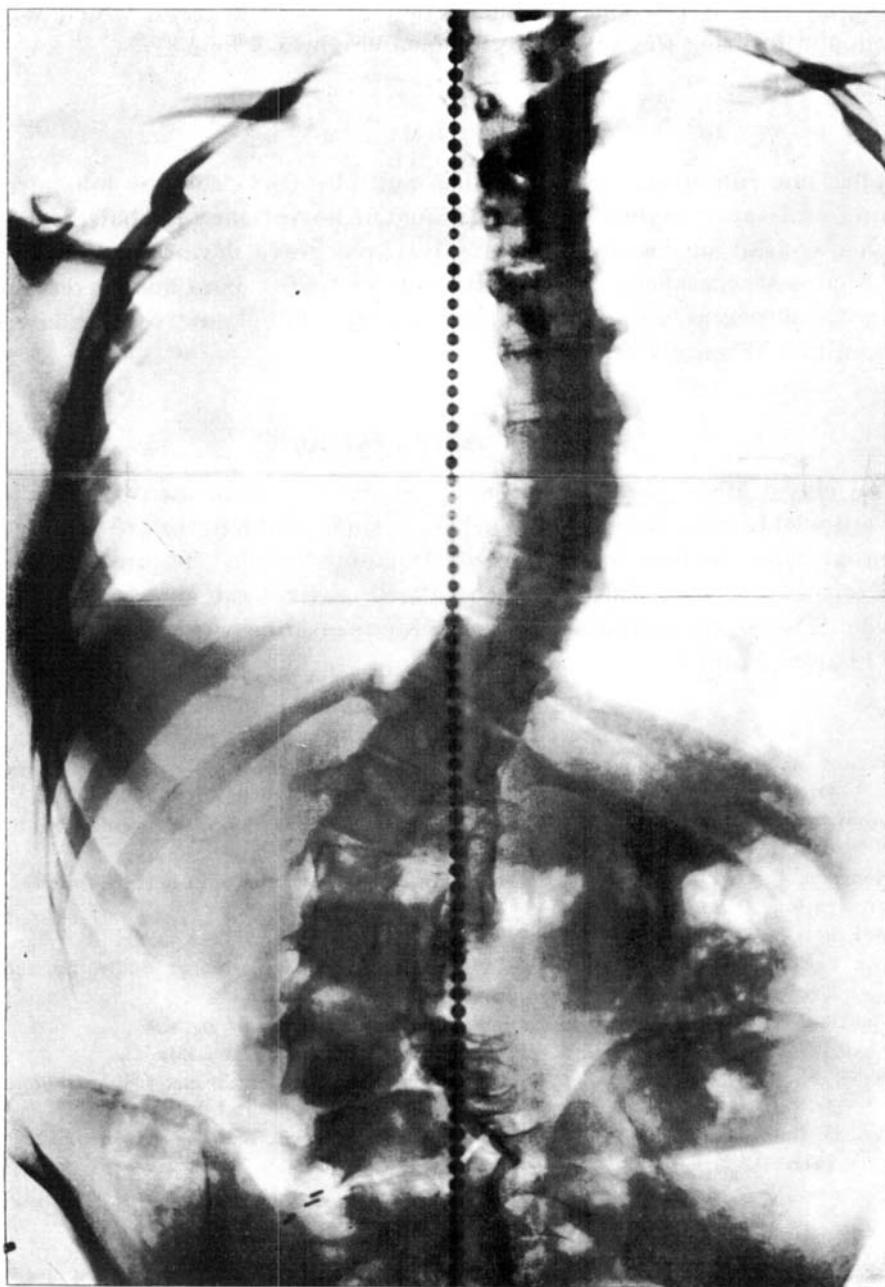


Figure 8. Radiograph of the spine taken in a standing position six and a half years after operations on the cleft vertebra.

of the cleft vertebra gave a correction of 25–30 degrees, which was enough to bring the spine into balance (Figures 7 and 8).

RESUME

Chez une fille ayant des anomalies multiples de la colonne lombaire, une croissance asymétrique de la quatrième vertèbre lombaire fourchée causait une scoliose progressive avec grave déviation du tronc (Figure 3). L'excision d'une partie de la vertèbre donna une correction de 25–30 degrés, ce qui suffit pour remettre la colonne vertébrale en équilibre (Figure 7 et 8).

ZUSAMMENFASSUNG

Bei einem Mädchen mit multiplen Anomalien der Lendenwirbelsäule verursachte asymmetrisches Wachstum einer Schmetterlingwirbel eine progressive Skoliose mit schwerer Dekompensation (Figure 3). Die Excision der einen Hälfte der Schmetterlingwirbel gab eine Korrektur von 25°–30°, die genug war um eine Kompensation wiederherzustellen (Figures 7 und 8).

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