

SURGICAL TREATMENT OF IDIOPATHIC SCOLIOSIS. COMPARISON OF TWO TECHNIQUES OF FIXATION

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A b s t r a c t

Two groups of 50 were selected from the patients surgically treated for idiopathic scoliosis in our Department in the period of 1975-1997. The groups differed in instrumentation used for correction of the spine curve, i.e., Harrington and Isola fixation systems, respectively, but were matched by age, sex, site and severity of the curve, number of vertebral segments fixed and characteristics based on the King classification. The comparison showed that the Isola system gave better results in terms of curve correction and its loss during 2 years following the surgery, duration of postoperative immobilisation and a number of complications.

Key words

idiopathic scoliosis, spine surgery, Harrington fixation, Isola instrumentation

A b b r e v i a t i o n s :

TSHR – Texas Scottish Rite Hospital, HRI – Harrington fixation

INTRODUCTION

Idiopathic scoliosis is the most common structural deformity of the spine in the frontal plane. It may develop during the growth phase in individuals whose spine was originally straight (1,2). According to our present knowledge, surgical intervention is indicated when the spinal curve is 40°; the degree of rotation and a possible thoracic hypokyphosis is also taken into consideration (4,7). The conventional surgical procedures, such as Harrington fixation, have recently been replaced by segmental fixation techniques known as Isola, TSRH, Miami, Cotrel-Dubousset's, etc. (7). Of these, we have used the Isola system most frequently and have gained enough experience to be able to compare its outcome with Harrington fixation (HRI) used previously.

MATERIALS AND METHODS

In the period of 1975-1997, 740 patients underwent surgery for idiopathic scoliosis at our Department. From these we selected 50 patients to whom Harrington fixation was applied and 50 who were operated on with the use of Isola instrumentation. The two groups were matched by age

(average, 16 years at the time of surgery), the ratio of male to female genders (HRI, 7:43; Isola, 6:44), severity of the curve (59°) and the distribution of grades by the King classification (grade I, 6%; grade II, 30%; grade III, 52%; grade IV, 6% and grade V, 6%) which is based on the site of the curve (3,6). The standard operative procedures were used in both groups (5).

RESULTS

Surgery with the use of HRI reduced the spinal curve, on the average, to 32°, i.e., correction by 27° (46%); the application of Isola instrumentation resulted in curve reduction to 26°, i.e., correction by 33° (56%). On examination a year after the operation, the loss of correction by 3° was identical in both groups. Two years after the operation, further loss of correction was very small.

Postoperatively, the HRI patients were immobilised in plaster casts for a period of 8 to 12 months. In the Isola group, immobilisation lasted 4 months; 42 patients had a plastic orthosis and 8 had a plaster cast.

Complications which developed in the HRI group were: paraparesis of the lower extremities, which was mild and responded to treatment, in one patient; upper hook luxation in two; pressure sores in four patients. In two of these four patients, the sores were treated conservatively and, in the other two, surgical treatment was used to speed up healing. Deep wound infection did not occur. In the Isola group, one patient suffered from paraparesis, three had infectious complications and one had pressure sores which healed by conservative treatment. No upper hook luxation occurred.

DISCUSSION

Our retrospective study shows that the Isola system has several advantages over HRI fixation. The application of Isola instrumentation resulted in higher correction of the spinal curve (by 6°, which is 10%) and higher stability of the corrected spine than was achieved by HRI fixation. The Isola patients were immobilised for a shorter period of time (an average of 4 against 6 months) and, in the majority of them, a lighter and less rigid plastic corset was used. In both groups, however, the immobilisation devices were permanent not removable. The loss of correction during a 2-year follow-up period was almost identical in both groups. Only a few complications occurred in each group and they differed only slightly. Neurological complications were minimal and comparable. In the Isola group, more patients had infectious complications (3 vs 1) but none suffered from upper hook luxation and fewer developed pressure sores because postoperative immobilisation was shorter. It appears that the use of the Isola system reduces the number of postoperative complications and provides the patient with greater comfort than the application of HRI. In spite of greater costs, the introduction of Isola segmental fixation has been a great contribution to the surgical treatment of idiopathic scoliosis.

SROVNÁNÍ INSTRUMENTARIA ISOLA A HRI U OPERACÍ IDIOPATICKÝCH SKOLIÓZ

S o u h r n

Z pacientů operovaných na naší klinice pro idiopatickou skoliozu jsme vytvořili soubor operovaných instrumentariem Isola a soubor operovaných HRI. Do každého souboru jsme vybrali 50 pacientů, přičemž jsme dbali na shodu souborů ve věku, pohlaví, průměrné tíže křivky, její lokalizace, počet ošetřených segmentů a zastoupení v Kingově klasifikaci. Sledovali jsme rozdíl v korekcích křivek po operaci i pozdější ztrátu korekce v průběhu 2 let po operaci, délku pooperační zevní fixace korzetem a počet komplikací.

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