Long-term results of posterior non-instrumented fusion in very young children with congenital hemivertebra.

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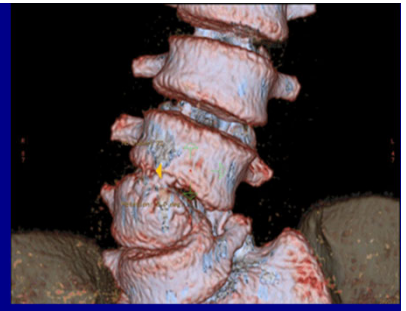
Disclosures

M.Repko	Kspine – clinical study
M.Filipovic	no relationship
M.Leznar	no relationship
J.Pesek	no relationship
O.Vlach	no relationship

Hemivertebra

the most common spinal congenital failure



fully segmented

semisegmented

nonsegmented

Risk of severe scoliosis

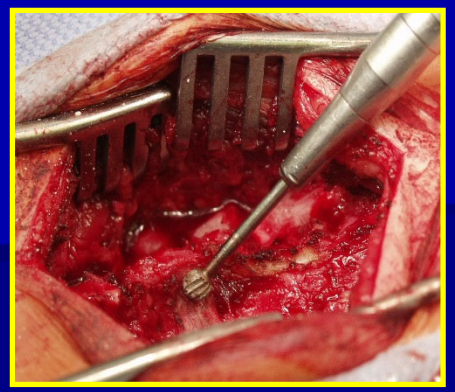
2 main used surgical techniques

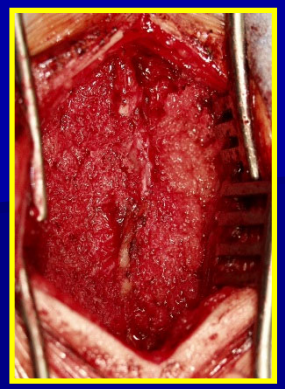
Simple bony fusion

Arrest of curve progression

(without direct correction)

-in small curves
-in early detection



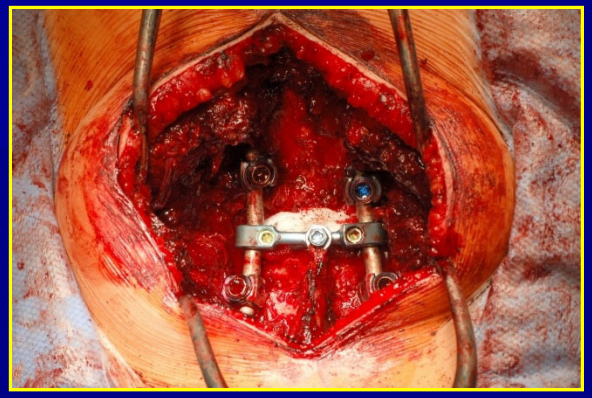


Hemivertebrectomy

with instrumentation

Correction of scoliotic curve

-in greater curves
-in supposed curve progression



Simple bony fusion

Indication:

- hemivertebra without kyphosis
- short curvature with <5 vertebrae
- curvature < 50°

Technique:

- bilateral bone desis
- unilateral bone desis – hemiepiphyseodesis
- posterior, anterior or combined

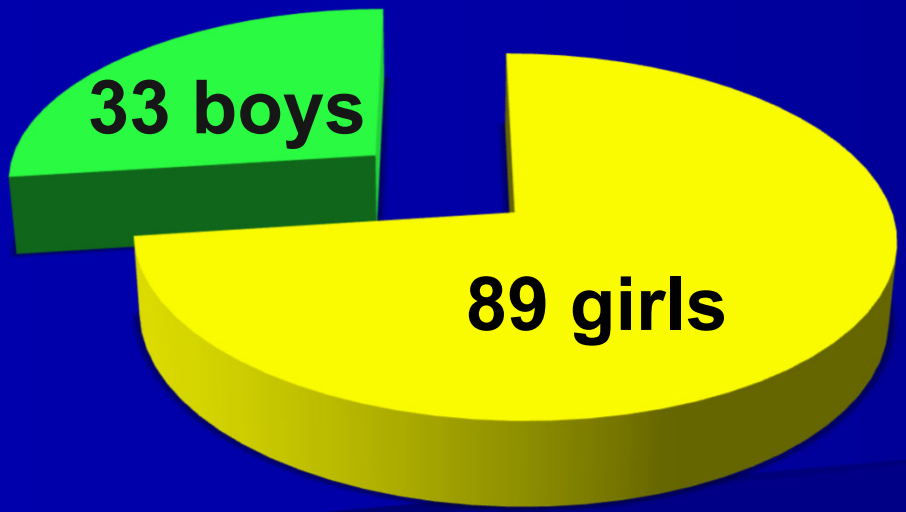
Postoperative care

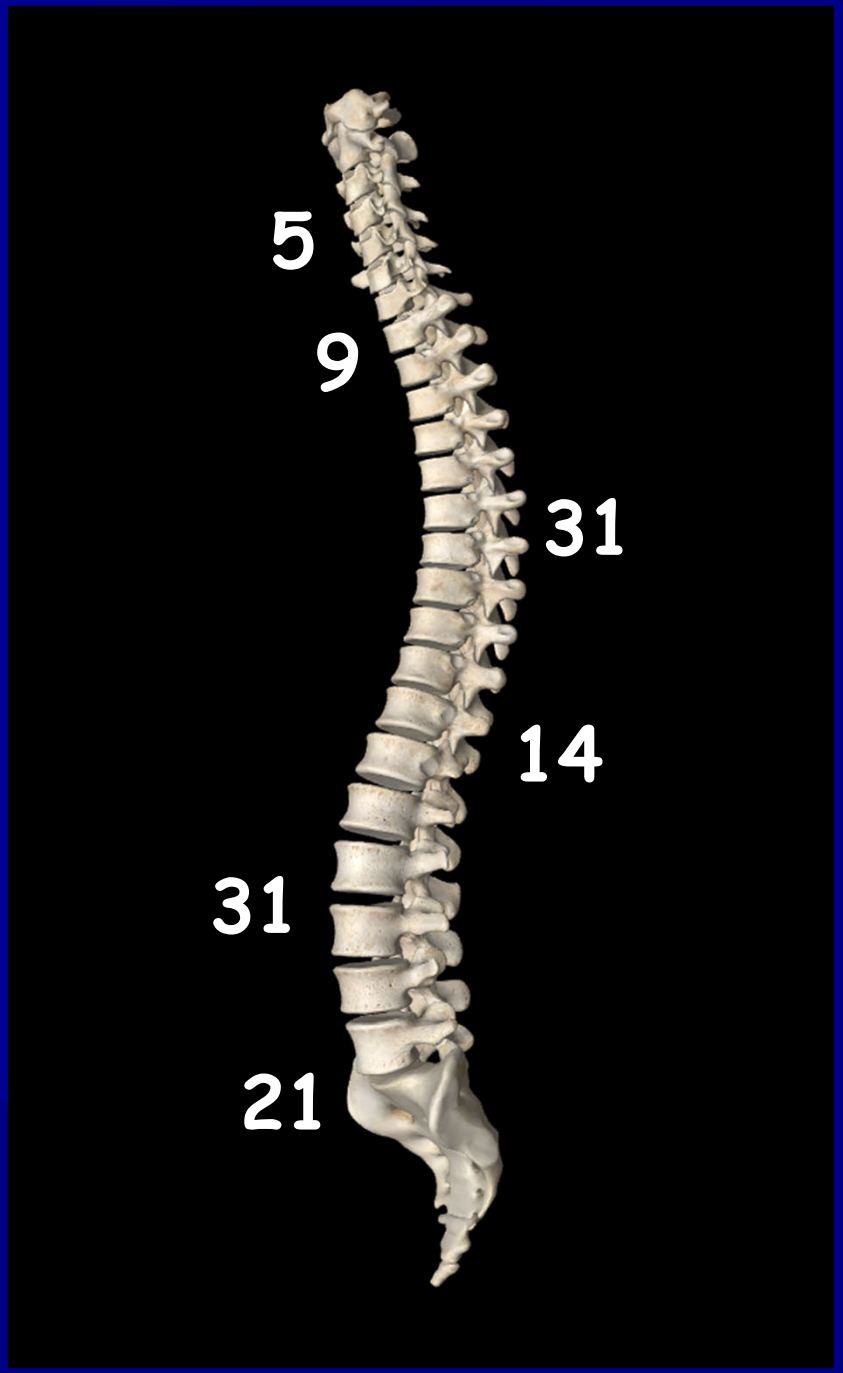
Plaster cast:
first 6-12 month

Bracing:
till the growth ending

Procedure: - clinical examination every half year
- follow-up x-ray once per year up to growth completition

Material





Material

Retrospective analysis 1976–2012

710 pts.

Group A-conserv. treatment 352 (49%)

Group B-simple bone fusion 122 (17%)

Group C-posterior instrum. 145 (20%)

Group D-combined a/p surgery 91 (14%)

- D1-posterior instr.+strut graft 27 (30%)
- D2-ant. osteotomy+post.instr. 33 (36%)
- D3-hemivertebrectomy+post.instr. 31 (34%)

Material

122 patients
with congenital hemivertebra

parameter	value	range
An average age in time of detection	**1y. + 7m.**	0 – 8,3
An average age in time of surgery	**6y. + 6m.**	1,1 – 13,7
An average age in time of last control	**15y.+5m.**	14,5 – 21,3
An average follow up	**16y.+5m.**	36,2 – 2,4

Results

122 patients
with congenital hemivertebra

parameter	value	range
An average preop. curve value (Cobb angle)	**44,2**	14 - 62
An average postop. curve value (Cobb angle)	**34**	12 - 60
The mean correction	**9,1 %**	
The correction loss at last FU (Cobb angle)	**3,9**	36,2 – 2,4

Results

	Group A conservative	Group B bone fusion	Group C post.instr.	Group D1 PIF+strut graft	Group D2 ant.OT+PIF	Group D3 hemivertebrekt.
Number of patients	321	102	145	27	33	22
age in detection time (y.)	6,5	1,7	4,2	3,2	3,5	3,4
grades in detection time	35,7	44,1	59,2	54,4	58,1	46,4
grades preop.	-	44,2	65,5	65,6	65	51,3
age in surgery (y.)	-	6,6	8.6	11,8	9,9	10,2
grades postop.	-	34,4	39,9	38,6	37	20,3
surgical correction	-	9%	38%	40%	43%	61%
grades in last control	39,8	38,4	45,1	39,2	41,1	21,4
final result (grades)	+4,1 (+11%)	-9,8 (-22%)	-25,6 (-38%)	-27 (-40%)	-28 (-43%)	-31,3 (-61%)
follow up (y.)	13,7	16,5	18,9	19,5	18,3	8,1

Simple bony fusion - Discussion

	No.of pts	av.age in surgery (y.)	final correction	FU (y.)
Walhout	10	4,5	-7%	5
Uzumcugil	28	2,5	9%	3,4
our group	64	6,6	9%	16,5

- Walhout RJ, van Rhijn LW, Pruijs JE.: Hemi-epiphysiodesis for unclassified congenital scoliosis: immediate results and mid-term follow-up. Eur Spine J. 2002 Dec;11(6):543-9. Epub 2002 Sep 25.
- Uzumcugil A, Cil A, Yazici M, Acaroglu E, Alanay A, Aksoy C, Surat A.: Convex growth arrest in the treatment of congenital spinal deformities. J Pediatr Orthop. 2004 Nov-Dec;24(6):658-66.

Complications

122 patients
with congenital hemivertebra

type	No.
Total No.	8 (6,5%)
Pressure sores	2
Infects	6
Neurological complications	0

Complications

	Group A conservative	Group B bone fusion	Group C post.instr.	Group D1 PIF+strut graft	Group D2 ant.OT+PIF	Group D3 hemivertebrekt.
number of patients	321	122	145	27	33	22
number of compl.	17 (5,3%)	8 (6,5%)	38 (26,2%)	10 (37%)	7 (21,2%)	2 (9,1%)
neurologic	2	0	4	3	1	0
surface wound infection	-	5	6	1	1	1
deep wound infection	-	2	3	2	1	0
decubital ulcer	15	7	12	2	1	1
instrument. failure	-	-	5	1	1	0
pseudoarthrosis	-	2	8	1	2	0

Conclusions

The early detection of a deformity and simple bony fusion in low-magnitude curves can prevent progression of scoliosis and allows for maintenance of a compensated spine.

Conclusions

The non-instrumented technique seems to be still very safe and successful technique for treatment of congenital deformities in young children.

Thank you for your attention

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Univerzitní centrum pro léčbu skolióz a dalších deformit páteře