

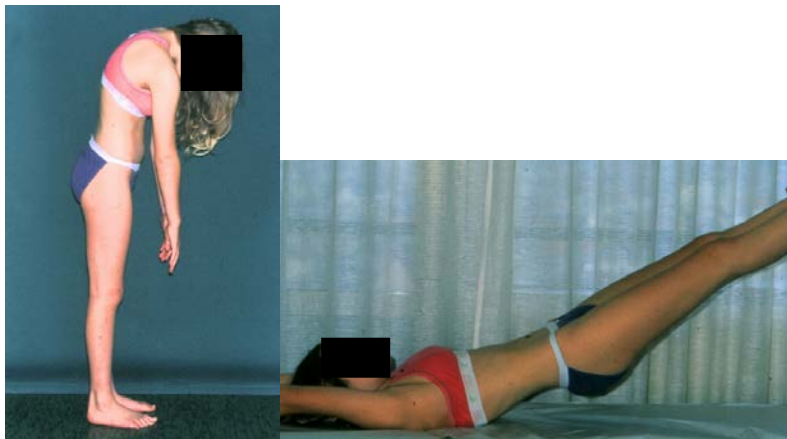
Congenital spondylolisthesis

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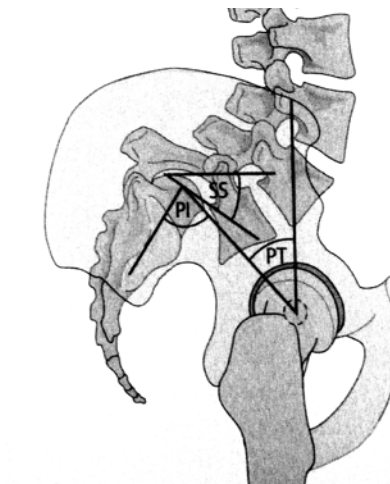
A child with low-grade dysplastic spondylolisthesis will develop a severe progression following growth with high probability!

Symptoms: often already symptomatic in childhood

step L5, prominent sacrum, lumbar hyperlordosis, often scoliosis
flexion of knees in hyperextended hips, stiffness of trunk in leg raising-test, low back pain,
pseudoradicular sciatics, radicular L5-symptoms, Cauda-symptoms
trunk-stiffness in spondyloptosis



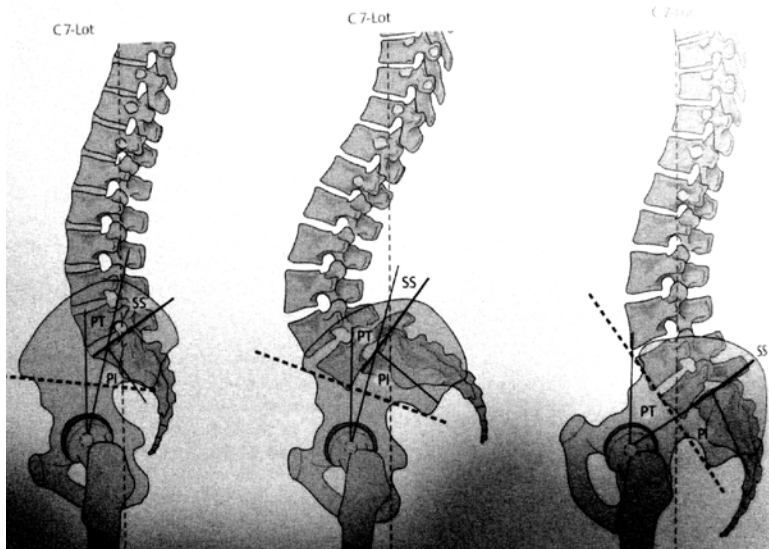
Spinopelvic parameters



changes in unbalanced spine

Pelvic Incidence significantly increased
Pelvic Tilt increased
Sacral Slope decreased

Scheme of normal spine-olisthesis balanced-olisthesis unbalanced



congenital grade 3-4 spondylolisthesis in MRI



"inverse Napoleons hat-sign"



Special signs of high-grade spondylolisthesis

trapezoid shape of L5 vertebral body, elongation of Pars interarticularis, spondylolysis, dysplastic facet-joints, Spina bifida, dome-shaped sacral plate, disturbance of enchondral ossification apophysis S1

Is reduction necessary ?

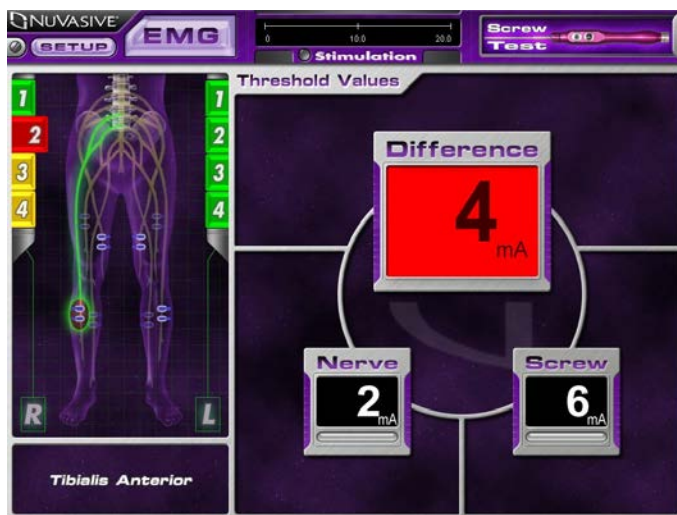
as reduction in low-grade spondylo is of less importance, it is very important to reduce high-grade slips to regain the lordosis of L5/S1 as good as possible!

Technique in reduction and stabilization from posterior approach

resection of vertebral arch L5 in toto
 reduction-pedicle-screws under Neuromonitoring- control
 pedicle-screws S1 perforate anterior cortical bone
 neurolysis L5, S1 under Neuromonitoring-control
 removing disc material totally
 reduction under distraction and Neuromonitoring
 intercorporeal support and fusion under compression (TLIF, PLIF, AxiaLIF)

principle of neurophysiologic surveillance of pedicle-screw-position and nerve-root by Neuromonitoring (neurovision-system)

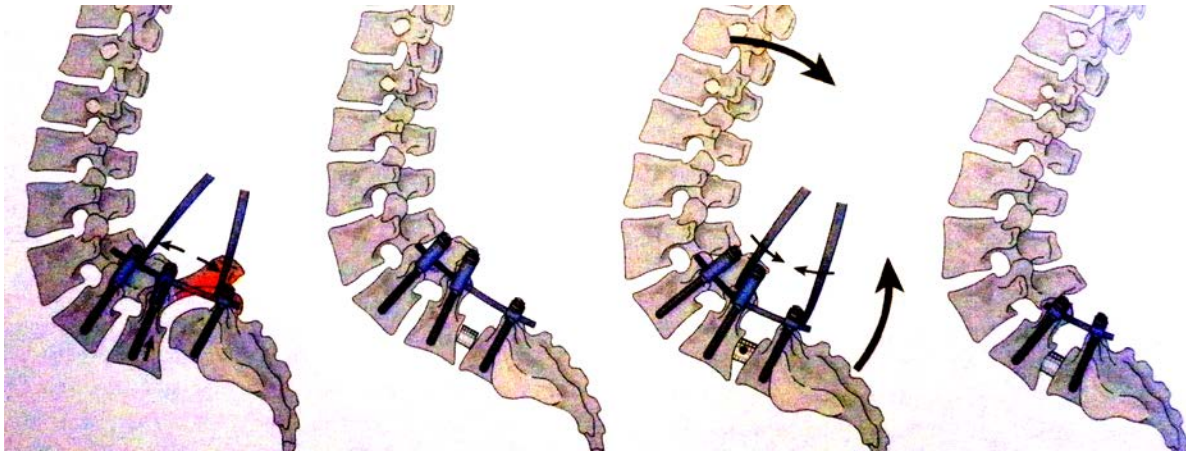
evoked EMG by a stimulus is used to find motoric changes; corresponding muscle-groups are controlled via surface-electrodes; the complex data are reported computerassisted



removing the L5 lamina in one piece

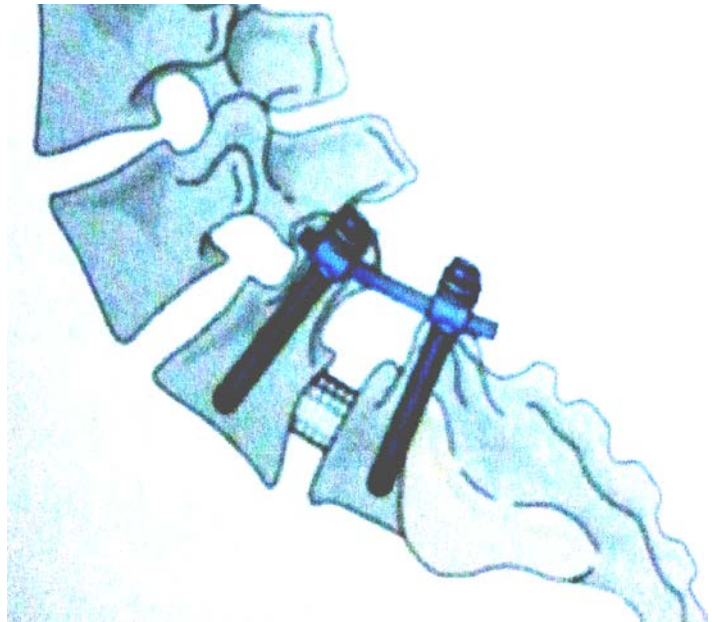
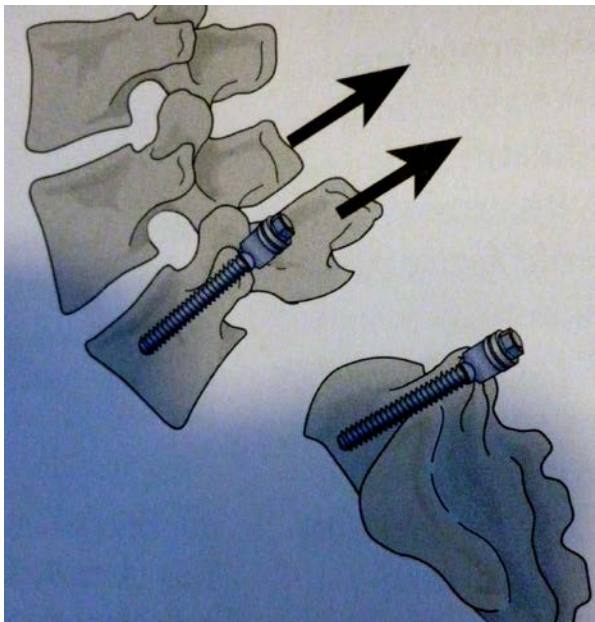


posterior decompression, reduction and fusion (Hempfung 2010)

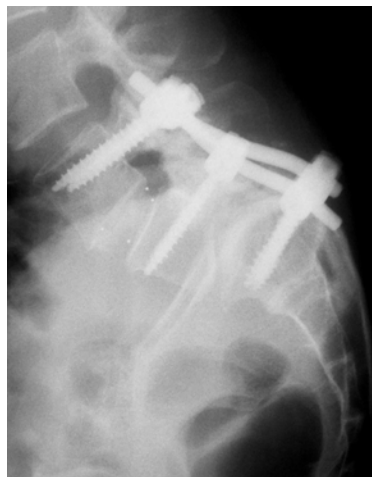


Gaines-procedure for spondyloptosis (resection of L5 and reduction of L4 to S1)

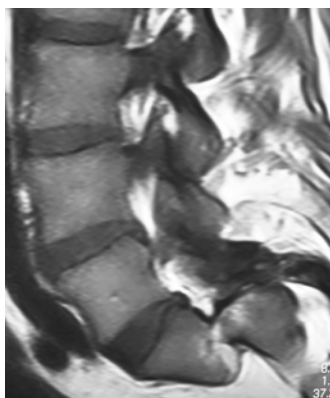
anterior/retroperitoneal approach
preparation of body L5 with cranial and caudal disc
removing discs L4/5, L5/S1
stepwise resection of body L5 with pedicles
posterior approach
removing of arch L5 L5
pedicle screws in L4, S1
reduction of L4 to S1
intercorporeal fusion (TLIF, PLIF, AxiaLIF L4/S1)
posterior compression



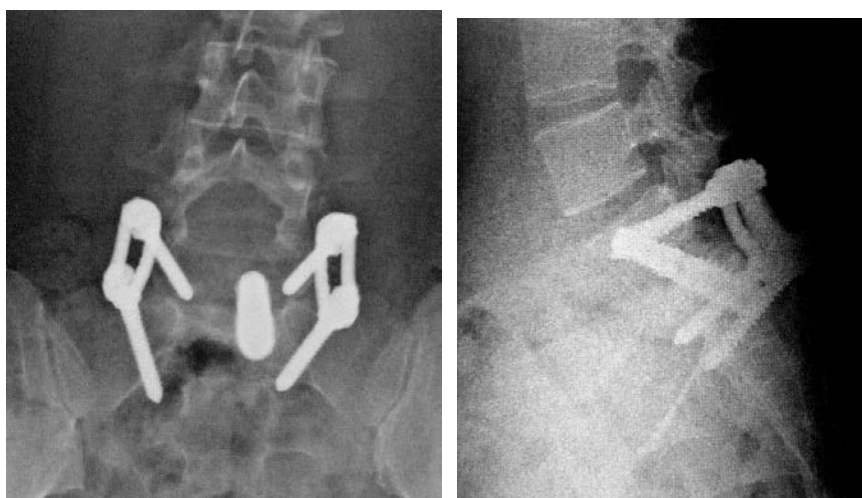
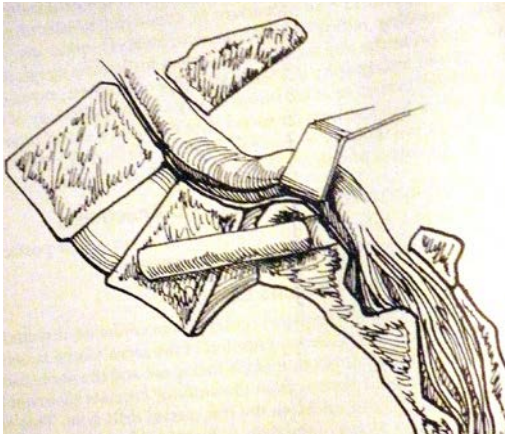
dysplastic spondylolisthesis L5 with osteoarthritis L4/5



4. grade spondylolisthesis in 18y old woman



strut graft L5/S1 from posterior



reduction, intercorporeal instrumentation and fusion by AxiaLIF