

## Surgical techniques in pediatric spine surgery

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Pediatric orthopedics is the basis of orthopedic surgery. “ortho” from the Greek word “orthos” meaning “to make straight” and “pedis” meaning “child” are the roots of the term “orthopedic”, which has gradually evolved to include treatment of the entire osteo-articular system. Pediatric surgery presents particular growth-related problems [1]. Vertebral surgery of spine deformities is a major branch of pediatric surgery and it is vital to comply with strict procedures to avoid damaging effects on patients once they have become adults [2].

Non-surgical treatments are often poorly understood or not well taught, resulting in unsuitable forms of therapy. Bracing [3] has been seen to be effective. Three-dimensional analysis using a low-dose imaging system [4] such as EOS (EOS Imaging Paris, France) provides an accurate analysis of vertebral rotations as well as predictive information as to the possible evolution of scoliosis deformities [5]. Surgical treatment of deformities in children can correct or halt any unfavorable evolution of kyphoscoliotic curvature [6] and dysplastic spondylolisthesis [6]. The high potential risk of spontaneous fusion of vertebra after surgical decompression has led to performing surgical

procedures at a distance from the vertebral axis by spine-to-rib-cage distraction in strict compliance with operating procedures [7]. It is very important to know how to use screws, hooks, and other means of laminar fixation correctly to avoid any hypercorrection and post-surgical flat-back syndrome, which causes long-term sagittal balance disorders. Early surgery during growth should take into account the risk of the crankshaft phenomenon described by Dubousset [8].

This supplement summarizes the current techniques used in pediatric spinal surgery based on the experience of teams recognized as experts in the field.

**Conflict of interest** None.

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