Guided Growth of the Spine

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The success of guided growth methods to correct limb angular deformity has generated interest in applying growth modification methods to correct angular deformity of the spine. The history of growth modulation dates back almost 100 years. Recent animal studies on spine growth guidance have identified the reasons for prior failure of staples and tethers to modify spine growth, and prompted new device designs to solve these problems. Preclinical animal studies also have identified the mechanism of spine growth modification at a microscopic level. Recent attempts to correct spine growth in children with scoliosis have shown some success amongst the failures. Several technical challenges remain, given that a growth modulation device in the human spine usually crosses the intravertebral joint and disc in addition to the growth plate. Recent advances in both genetic and skeletal maturity identification have improved the prediction of those children who have the highest risk of scoliosis progression and brace failure. If the technical difficulties of spine growth modification are solved, it may become the primary surgical treatment for scoliosis in a growing child or adolescent.