



## REVIEWS IN SPINAL SURGERY

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#### EDITOR'S CHOICE

##### Modern Surgical Management of Early Onset and Adolescent Idiopathic Scoliosis

Eduardo C. Beauchamp, Richard C. E. Anderson, Michael G. Vitale

The early principles of spinal fusion in the adolescent population focused on preventing progression while simultaneously correcting the spinal deformity. These principles have remained relatively unchanged, but improvements in imaging, instrumentation, and corrective techniques have provided new insight on this condition. Treatment options for the management of patients with early onset scoliosis have also evolved dramatically. Further knowledge on the physiology of lung development and the detrimental effects of early fusion in the early onset scoliosis population has led to the development of growth friendly implants and other surgical techniques that allow correction of the deformity while maintaining spine, lung, and chest wall development. The following is an overview of current techniques on the management of adolescent idiopathic and early onset scoliosis to help provide guidance on the available surgical alternatives to address these conditions.

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Alejandro M. Spiotta



#### On the Cover

This month's cover features art by Jeffrey Owen Hanson, a 25-year-old, visually impaired (the result of an optic chiasm glioma from Neurofibromatosis 1 and its treatment) artist, entrepreneur, and philanthropist who has raised \$4.78 million for over 200 nonprofit organizations to date. This painting,

entitled "Moondance," was inspired by the total solar eclipse of 2017, with a nod to Van Morrison. See more of Jeff's work and read about his inspiring journey throughout this issue. © Jeffrey Hanson LLC. Used with permission, all rights reserved.



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**Symptomatic Adjacent Level Disease Requiring Surgery: Analysis of 10-Year Results From a Prospective, Randomized, Clinical Trial Comparing Cervical Disc Arthroplasty to Anterior Cervical Fusion**

George M. Ghobrial, William F. Lavelle, Jeffrey E. Florman, K. Daniel Riew, Allan D. Levi

**BACKGROUND:** Ten-year follow-up data from the US FDA investigational device exemption trial comparing BRYAN® Cervical Disc (Medtronic) arthroplasty to ACDF demonstrated that disc arthroplasty maintained range of motion and improvements in overall success and neck disability.

**OBJECTIVE:** To compare the 10-yr rates of symptomatic adjacent level disease requiring surgery (SALDRS).

**METHODS:** Prospective randomized trial data were analyzed comparing BRYAN® Cervical Disc arthroplasty to ACDF for single-level cervical disc disease with concordant radiculopathy or myelopathy with clinicoradiographic analysis. Secondly, data were pooled with PRESTIGE® Cervical Disc arthroplasty (Medtronic) study data to provide overall rates of SALDRS.

**RESULTS:** Significantly greater overall success was maintained at every postoperative interval with rates of 81.3% with BRYAN® disc and 66.3% with ACDF without loss of motion preservation. Reoperation at adjacent levels was 9.7% in the arthroplasty group and 15.8% in the ACDF group. The combined data from BRYAN® and Prestige ST demonstrate that BRYAN® and Prestige disc groups had a lower rate of second surgeries at the adjacent levels compared to the combined ACDF groups.

**CONCLUSION:** Compared with ACDF, fewer patients with the BRYAN® disc required surgery for symptomatic adjacent level degeneration, but this did not achieve statistical significance. Analysis of combined study data using Bryan and Prestige discs shows significant differences in SADRSL as early as 7 yr.

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