

Outcome Results of Anterior Cervical Discectomy and Fusion Using Stand Alone Anchored Spacer for Fusion

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INTRODUCTION:

In 1950s Smith and Cloward initially reported anterior cervical discectomy and fusion (ACDF) which has become the classic operation in treating degenerative cervical spondylosis. The application of anterior cervical titanium plate stabilizing the cervical spine, firmly fixing the bone grafting block and promoting fusion. Yet other complications may occur, including throat discomfort, dysphagia and adjacent level degeneration reported that after anterior cervical discectomy and fusion, 2-67% of patients complained of dysphagia in the early period, which disappeared within 3 months, with most patients, but not all, recovering completely. According to reports the incidence of chronic dysphagia after ACDF is about 3-21%. Although the benefit of plating has been established with multiple-level fusions (Wright, 2007), there is disagreement regarding the necessity of a plate, especially for single-level fusions (Samartzis, 2004; Caspar, 1998). Single-level ACDF fusion rates are high without plating; plate prominence may cause dysphagia and screws can extrude (Gazzeri, 2008; Caspar, 1998). One proposed solution to graft containment and increased fusion construct rigidity may be to incorporate fixation into the graft itself. This method has been evaluated in the lumbar spine (Cain, 2005) and may hold promise in the cervical spine as well.

Methods:

A total number of 30 patients with symptomatic cervical spondylosis, who underwent anterior cervical discectomy and fusion using a PEEK PREVAIL™ Cervical Interbody Device between Januarys to August 2012, were enrolled in this retrospective study. Inclusion criteria were patients with symptomatic cervical disc compression causing either radiculopathy or myelopathy or both with failed medical treatment. All patients underwent Smith-Robison decompression, with removal and opening of the posterior longitudinal ligament, Anterior Vertebral Body Preparation once the discectomy is complete, a high-speed drill with a burr is used to carefully shape the inferior lip of the superior vertebral body and the superior lip of the inferior vertebral body to match the flanges found on both the trial and implant. (Figure). Once the decompression and anterior vertebral body preparation are completed, a Cervical Interbody Device size is determined by selecting the Rasp that provides the most satisfactory fit in the prepared disc space. Final end-plate preparation is carried out with the Rasp Once the appropriate height is identified, after insertion of the interbody cage the screw length that is most appropriate for the patient's anatomy is inserted. The screw should be inserted at an angle, perpendicular to the chamfered lip. All patients applied soft neck collar for 2 weeks all patients were evaluated clinically preoperative and postoperative using the visual analogue score for pain and the myelopathy Japanese orthopedic association score and Nurick score for myelopathic patients, preoperative MRI and dynamic x-rays were evaluated and postoperative x rays were used to evaluate the fusion and measure the cervical spine sagittal alignment (CobbC), segmental angle of the treated levels (CobbS), amount of segmental collapse. Pre and postoperative dysphagia were also reported.

Results:

The study included 30 patients (21 males and 9 females). Patient's age ranged from 29 to 68 years with a mean of 50.53 years. Single level was operated upon in 22 patients and two levels were operated upon in 8 patients with the C 5-6 being the most commonly affected level seen in 16 (53 %) patients followed by C 6-7 level that was operated upon in 11 (36.7 %) patients. The mean value for the **visual analogue score** was **9.0** (ranging 8.0 to 10.0) preoperatively and the final mean was **1.67** (ranging 1.0 to 3.0) showing a statistically significant improvement with a p value < 0.001 (using the paired sample t-test). **The Japanese orthopedic association score for myelopathy** also showed a statistically significant change (p value < 0.001) with a preoperative mean of **7.12** (ranging 2.0 to 13.0) and a postoperative mean of **14.65** (ranging 11.0 to 17.0). In addition, **the Nurick score** for myelopathic patients showed a statistically significant change (p value < 0.001) with a preoperative mean of **2.6** (ranging 1.0 to 5.0) and a postoperative mean of **0.83** (ranging 0.0 to 3.0). To assess the degree of maintenance of the operated disc (s) and vertebral body (s) heights in order to assess for the occurrence of subsidence **the height of the fused levels** was measured and documented. The mean preoperative fused levels height was **33.423** (ranging 23.5 to 56.4) while the mean postoperative final fused levels heights was **40.463** (ranging 30.1 to 60.9). This difference between preoperative and postoperative values was statistically significant with a calculated p value of < 0.001 Cobb's angle measuring the degree of lordosis and sagittal alignment preoperative and postoperative showing the following, The mean preoperative fused levels **Cobb's S** was **1.39** (ranging -5.8 to 19.9), changed postoperatively to **6.78** (ranging -0.3 to 13.1), This difference between preoperative and postoperative values was statistically significant with a calculated p value of < 0.001. While the **sagittal alignment measured by Cobb's C, (C2-C7)** the mean preoperative Cobb's C was **9.397** (ranging -11.3 to 26.7), postoperative changed to **12.753**, (ranging from 7.5 to 15.2) which is not statistically significant. In late follow up all cases showing solid fusion, we had one case of hoarsens of voice improved at 2 month postoperative follow there were no other complications related to the procedure.

Conclusion

It is clear from the above data that the assessed clinical and radiological criteria were significantly improved postoperatively particularly in the decrease of postoperative degree of cage subsidence which reflect the adjacent level disease. However, this improvement might not be implant specific and it may be instead related primarily to the standard decompression and fusion performed. This argument need to be discussed in a comparative study using different types of implants comparing it with fusion and fixation with plate specially in multiple levels anterior cervical discectomy and fusion. added to the criteria of zero profile decreasing the incidence of postoperative dysphagia

