

The Early Report of Application of Calcium Phosphate Cement on Anterior Cervical Intervertebral Fusion

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Introduction: Anterior discectomy and intervertebral fusion is a common operation for the treatment of cervical spondylotic myelopathy / radiculopathy. The bone graft is generally harvested from anterior iliac crest. This procedure may bring some donor site complications such as persistent pain, lateral femoral cutaneous nerve injury, wound infection, bleeding, fracture of the anterior superior iliac spine, etc. Many experimental and clinical studies indicated that the calcium phosphate cement (CPC) is one of the best substitutes of autologous bone graft for the fusion. There are many reports about using CPC to repair bone defect at non- or low- weight bearing site on the extremities in the literature. But in our knowledge there are no reports of application of CPC in the procedure of anterior cervical intervertebral fusion so far. Since September 2000 the pre-shaped CPC has been used in the anterior procedure and the early result will be reported here.

Method: 8 cases were included in this study with 18 segments (2 single segment and 6 double segment). There were 6 male and 2 female with a mean history of 13.5 months. The diagnosis was cervical spondylotic myelopathy (6 cases) and radiculopathy (2 cases). Shanghai Rebone Biomaterials Co., Ltd provided the pre-setted CPC. The mean density and compressive strength was between cortical and cancellous bone. During the procedure the intervertebral disc including end plate were removed and subchondral cortex were partially decorticated. The intervertebral space was distracted and the pre-setted CPC graft was inserted. A Caspar monocortical plate fixation system was implanted. Patients were kept in bed for 1-2 days and were discharged 5 days after the operation. They were asked to wear a hard collar for 6weeks.

Result: The mean follow-up was 11.2 months (7-14 months). Patients were reviewed and their X-Ray films were evaluated in 3, 6, 9, 12 months time. The density of CPC graft on the X-Ray film reduced initially at 6 months after operation. The shade of CPC reduced in half and was very close to vertebral body in density at 9 and 12 months respectively. There was no loosening of implant and any break or shift of CPC graft. We did not find any shorting in height on all the segments involved during the study.

Conclusion: The CPC was a very good artificial material as a substitute of autologous bone graft for the anterior cervical intervertebral fusion.