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3D printing motion-preserving cervical joint system implantation for treatment of Cervical Myelopathy: A first case report

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Objective: To explore the short-term clinical effect of 3D printing motion-preserving cervical joint system implantation in the treatment of 2 patients with cervical spondylotic myelopathy.

Methods: In December 2020, a self-developed 3D printing motion-preserving cervical joint system implantation technology was used to treat 2 patients with cervical spondylotic myelopathy. A total of 16 weeks were followed up at the time of submission. VAS score and JOA score were used to evaluate the patient's pain and neurological recovery at 1, 6, 12, and 16 weeks after the operation; imaging techniques such as dynamic position X-rays and three-dimensional CT were used to evaluate the position of prosthesis and the preservation of cervical spine motion function.

Results and Conclusion: At 1 week, 6 weeks, 12 weeks and 16 weeks postoperative follow-up, the patient's limb muscle strength, VAS score, and JOA score were significantly improved compared with preoperatively, and the head and neck movement function was good. X-ray examination at 6 weeks and 12 weeks after operation showed that the cervical spine physiological curvature was well restored, and the intervertebral height was maintained well; 3D-CT showed that the prosthesis components and the cervical spine bones were in good fit; the dynamic position X-ray shows that the prosthesis endplate component has a certain angle of opening and closing changes during flexion, extension and lateral flexion, and there is no cervical spine instability, indicating that the prosthesis retains part of the cervical spine motion function.

Recent Publications

- 1. Findlay C, Ayis S, Demetriades AK. Total disc replacement versus anterior cervical discectomy and fusion. Bone Joint J. 2018;100-B(8):991-1001.
- Zhao H, Duan LJ, Gao YS, et al. Comparison of the adverse events of anterior cervical disc replacement versus anterior cervical discectomy and fusion: A protocol for a systematic review and meta-analysis of prospective randomized controlled trials. Medicine (Baltimore). 2018;97(16):e0015.
- 3. Kelly MP, Eliasberg CD, Riley MS, et al. Reoperation and complications after anterior cervical discectomy and fusion and cervical disc arthroplasty: a study of 52,395 cases. Eur Spine J. 2018;27(6):1432-1439.

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