A mid- to long-term follow-up study of cervical disc arthroplasty for noncontiguous cervical spondylosis

Objective:

To investigate the mid-to long-term clinical and radiographic outcomes of cervical disc arthroplasty (CDA) for the treatment of noncontiguous cervical spondylosis and to explore whether the intermediate segment degenerated faster after CDA than that of other non-operative adjacent segments.

Methods:

From January 2008 to December 2019, patients with noncontiguous cervical spondylosis who underwent CDA in our department were retrospectively analyzed. Clinical outcomes were evaluated using Japanese orthopaedic association (JOA) score, neck disability index (NDI), and visual analogue scale (VAS). Radiographic outcomes were evaluated including cervical lordosis, C2-C7 range of motion (ROM), segmental ROM, disc angle (DA) at the arthroplasty level, DH at the arthroplasty levels. Prosthesis subsidence, heterotopic ossification (HO) at the arthroplasty levels, adjacent segment degeneration (ASDeg) was also evaluated.

Results:

Sixty-four patients (31 in CDA group vs. 33 in hybrid surgery (HS) group) with 97 Prestige-LP discs completed the at least 48 months follow-up. The C4/5 and C5/6 were the most involved intermediate segment, which accounted for 69% and 28%, respectively. The value of JOA, NDI, and VAS was significantly improved after surgery. The ROM of the intermediated segment in the HS group was significantly increased at the last follow-up ($P<0.05$), while the value in the CDA group was

found similar to preoperative levels. At the last follow-up, 20.6% superior adjacent segment, 22.7% intermediated segment and 21.9% inferior adjacent segment developed ASDeg.

Conclusion:

CDA treat noncontiguous cervical spondylosis can achieve satisfactory mid-to-long-term clinical and radiographic outcomes. The incidence of ASDeg is similar among non-surgical segments after CDA.

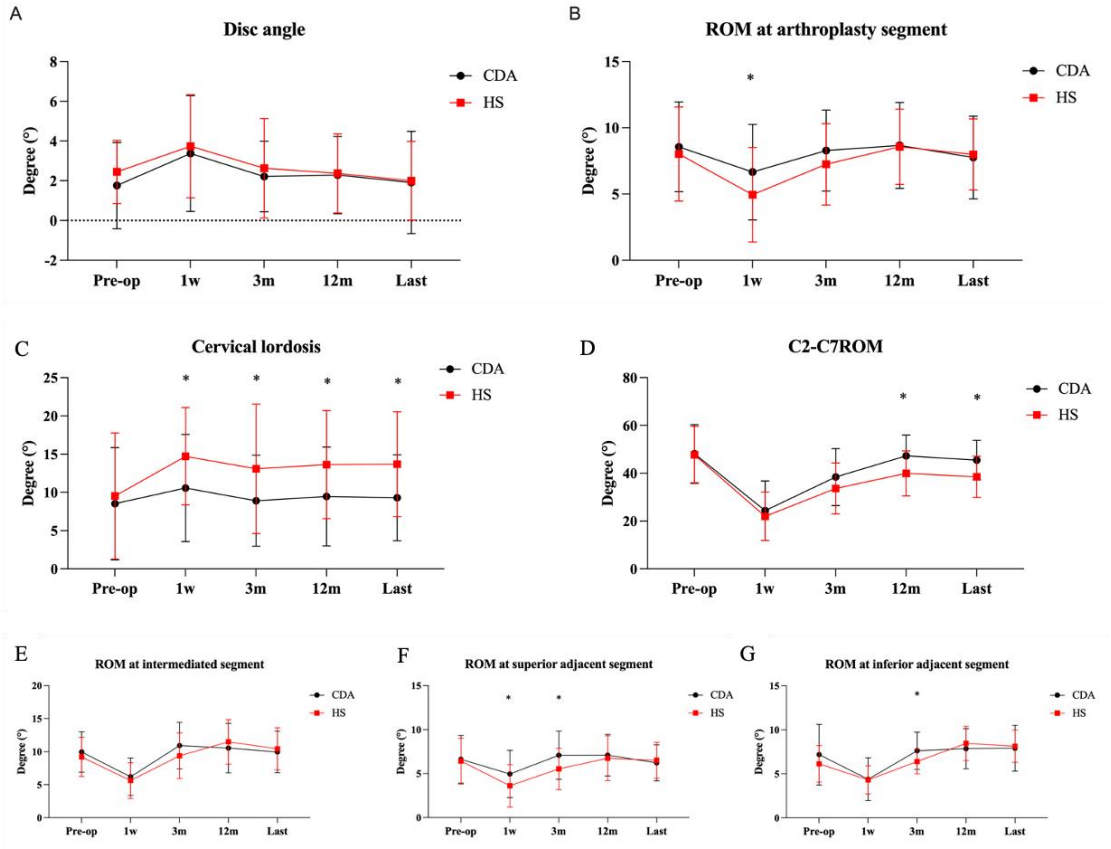

Fig.1 The results of the radiographic outcomes of the whole spine and the intermediated segment.