Background: Motion preserving techniques were developed in last decades, in order to avoid some complications of anterior cervical interbody fusion (ACIF); several clinical trials investigating the existing cervical disc prostheses are currently running. However there is little information available on quantitative analysis of symptoms relief, sagittal alignment and ranges of motion with more than 2 years follow-up.

Purpose: To evaluate the 30 months clinical and radiological outcomes in patients treated by TDR with Discocerv® semi-constrained cervical mobile prosthesis.

Methods: 53 consecutive patients (31m/22w: mean age 44.8 ± 8 yrs [28-65]) with single-level cervical arthroplasty and a minimum follow-up of 2 years were included in this prospective observational study (average FU 30 months [24-46 mths]).

Outcome measures: Clinical criteria: VAS (1-100) self-reported cervical and radicular pain, Neck Disability Index (1-50 scale) and symptoms evolution (ODOM score). Radiographic evaluation: flexion-extension mobility, mean centers of rotation (MCR) for treated and adjacent levels, cervical (C1C7) and local lordosis.

Results: Clinical outcomes highlighted symptoms relief: pre- and postoperative cervical and radicular pain decreased from an average VAS value of 64.2[4-100] and respectively 67.3 [0-100] (before surgery BS) to 22.5[0-81] and 14.2[0-70] at 2 years follow-up. NDI improved from 26/50 (BS) to 7/ 50 (at 1 and 2 years FU) and results as per ODOM criteria were excellent (79%), good (25%) or unsatisfactory (4%) at 24 months. Complications were observed in 7/53 cases and 92% of patients were satisfied with their treatment.

Quantitative radiographic analysis showed an average cervical mobility at the treated levels (mostly C5C6) of 6.7±4° (0-15°) in early exams and of 8.2±4° (4-19°) at 24 months follow-up, except for 6 patients for whom ranges of motion were inferior to 3° at FU. These values are comparable to preoperative mobility of treated level i.e. 9.2[4-24] °, though inferior to the average mobility of asymptomatic subjects (12 [6-24]° for treated level). MCRs had a normal location in half of patients, most of the abnormal locations being projected on the upper plate of the prosthesis.

The adjacent level mobility was found within normal ranges post-operatively: i.e. 12.2 ± 5° [4-21] in early exams and 14.2 ± 5° [4-29] at 24 months follow-up, with mean centers of rotation normal in 90% of cases. Ten patients presented an abnormal sagittal alignment before surgery which was restored after TDR.

Lordosis was stable and within normal ranges after surgery in all cases; however, C1C7 lordosis marked a progressive increase from 48±10° before surgery to 55±10°at last follow-up which need to be further monitored in time.

Conclusions: Intermediate clinical and radiological results in TDR with Discocerv® prosthesis highlight a satisfying level of symptoms relief associated to mobility in 88% of cases and postoperatively stable sagittal alignment at 30 mths FU. However, a longer term analysis is required to validate these outcomes of cervical TDR with a semi-constrained prosthesis.