

# Risk factors for adjacent segment degeneration in patients treated with cervical total disc replacement

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## Introduction

The cervical TDR is developed to decrease the incidence of ASD through motion preservation. It is uncertain, however, whether the cervical TDR actually support a decrease in ASD or not.

## Methods

The patients underwent single-level cervical TDR with a Mobi-C® were included in the present study. The radiologic evidence of ASD was determined by previous criteria with lateral radiographs. The occurrence of heterotopic ossification (HO) was interpreted on lateral radiographs according to the McAfee classification. We also measured cervical curvature and the cervical range of motion (ROM). The visual analog scale (VAS), and neck disability index (NDI) was evaluated for clinical outcome.

## Results

Twenty-five patients (7 female and 25 male) with mean age at operation of 43.4 years were underwent the single-level cervical TDR between 2006 and 2009. The mean follow-up period was 34.1 months. The radiologic ASD was developed in 3 patients and the interval was 30.3 months. Seventeen patients developed HO: grade I in 5; grade II in 7; grade III in 3; grade IV in 2. Two patients with grade IV HO and one with grade III HO developed radiologic ASD ( $p=0.008$ ). The preoperative cervical curvature was followed: lordosis in 9, straight curve in 6, kyphosis in 9 and sigmoid curve in 1. Two patients with preoperative kyphosis and one with lordosis developed radiologic ASD ( $p=0.320$ ). While the cervical ROM was preserved between preoperation and postoperation, it was restricted in grade III and IV HO. Clinical improvement was not significantly correlated with the occurrence of radiologic ASD.

## Conclusions

Radiologic ASD was found in patients with cervical TDR and its incidence was not low as compared with the ACDF. Therefore, before performing cervical TDR, a high incidence of HO with the possibility of spontaneous fusion and development of ASD must be expected during long-term follow-up.

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### Learning Objectives

The present study is aimed to evaluate the risk factors of adjacent segment degeneration (ASD) in patients with underwent cervical total disc replacement (TDR).