Neck pain and proprioception deficit influence the cervical motion assessed by instantaneous axis of rotation

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Dear Editor,

The study by Chi Heonis Kim et al. entitled “Changes in cervical motion after cervical spinal motion preservation surgery” is well designed and written with strong methodology [5]. It seems the conclusion suggested a new alternative (posterior percutaneous endoscopic foraminotomy and discectomy, PECF) for cervical motion preservation surgeries.

Cervical motion reflected by instantaneous axis of rotation (IAR) was maintained in the study after total disc replacement (TDR) and PECF surgeries, while attenuated after posterior cervical foraminotomy (PCF). Cervical dynamic motion is a resultant interaction of the cervical spine stability and mobility [4]. The cervical spine stability and mobility is fundamentally supported by complete anatomical structures and normal proprioception. However, the structures and the proprioception were damaged despite of otherwise successful clinical outcomes, to some extent, by different surgical approaches and procedures [1]. In addition, it is impossible to expect the degree of neck proprioceptive deficit to be similar or proportional after different surgeries. Thus, the cervical motion is influenced by disproportional damage of cervical anatomical structures and proprioception, which may also influence the quality of motion IAR. Moreover, there is one previous study demonstrating the proprioception deficit exists after surgery and is completely restored by 1 year after surgery [6]. Hence, the results of a 6-month follow-up in this study are not sufficient for reflecting the IAR since the proprioception might not be completely recovered.

Previous studies have demonstrated a clear relationship between neck pain and abnormal motion patterns of IAR [2, 3]. The clinical symptoms especially for neck pain were significantly improved by all the three surgeries in the study. However, the postoperative median neck pain score after PCF was almost twice as high as that of the other two surgeries, though the authors stated there is no significant difference of it among the three surgical interventions (VAS 1.6 0.8 and 0.9 for PCF, PECF and TDR, respectively, Table 2). Thus, the postoperative neck pain somehow influenced the motion pattern of IAR in this study, but to what extent it is unknown.

Therefore, the two issues regarding the effects of proprioception deficit and postoperative neck pain on cervical quality of motion IAR might be included in the discussions of the study.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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