

Answer to the Letter to the Editor of Masashi Neo concerning “Surgical treatment for atlantooccipital osteoarthritis: a case report of two patients” by H. Yoshihara et al. (2010) Eur Spine J [Epub ahead of print]

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We would like to thank Dr. Neo for commenting on our article: “Surgical treatment for atlantooccipital osteoarthritis: a case report of two patients” [1].

Dr. Neo mentions that we failed to demonstrate that some of the pain in both patients came from the atlantooccipital (O-C1) joint. Fluoroscopy-guided intra-articular injections of the O-C1 and atlantoaxial (C1-2) joints separately may determine which joint is the main pain generator. This injection, however, is not commonly performed and requires significant technical skill. As he mentions, O-C1 fusion alone may have alleviated the patient's pain, especially in Case 1. We, however, could not overlook osteoarthritis of the O-C1 joint, considering the possibility of residual pain and future risk of the adjacent segment degeneration of this already arthritic joint.

Few studies have been done examining the O-C1 joint. Dreyfuss et al. [2] reported that perceived pain/sensation was greater with the O-C1 joint injections, and the referral pain patterns were broader with the O-C1 joint injections. These results suggest that the O-C1 joints are capable of both more intense and diffuse pain than the C1-2 joints [2]. The O-C1 joint permits passive flexion and extension of about 10° and 25°, respectively, while the C1-2 joint permits flexion and extension of about 5° and 10°, respectively, with lateral rotation of about 70° on either side [3]. Pain provocation by neck motion can be a clinical

diagnosis. If pain is triggered mainly by neck rotation we may choose only to do a C1-2 fusion. If pain is triggered by flexion and extension of the neck, we may need to include the O-C1 joint in the fusion. In Case 1 the patient had pain with extension of the neck.

Dr. Neo showed an image of a very narrow O-C1 joint of a patient who underwent C1-2 fusion and whose pain disappeared after the surgery. We believe this shows an O-C1 fusion, especially at the anterior cortex.

Ideally, if both patients had osteoarthritis at only the O-C1 joint, pain would be alleviated by an O-C1 fusion alone. We believe the O-C1 joint is often overlooked in evaluation of neck pain. The main purpose of our article is to call attention to O-C1 osteoarthritis. We hope that future studies would demonstrate the improvement of pain after O-C1 fusion in patients with only O-C1 osteoarthritis or demonstrate that a C1-2 fusion alone relieves pain in patients with both O-C1 and C1-2 osteoarthritis. Moreover, larger studies are required in the future to determine the relative contributions of O-C1 and C1-C2 joints to axial neck pain in patients with cervical osteoarthritis.

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