How to Transect the C2 Root for C1 lateral Mass Screw Placement: An under-appreciated variable in outcome

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BACKGROUND Placing C1 lateral mass screws is a modern approach and C2 neuropathy is a complication of concern. The sacrifice of the C2 nerve is an accepted adjunct and often favored, however the impact of the specific surgical technique of cutting the C2 nerve is not adequately addressed in the literature.

OBJECTIVE The aim of this study was to evaluate the clinical outcomes from a series of roots sacrificed during C1-2 fusions performed for trauma.

METHODS Data were collected from patients who underwent C2 nerve transection through the dorsal root ganglion at the mid-portion of the C1-2 articulation during C1 screw fixation for atlantoaxial fusions. Chart review was performed and outcome assessed through telephone surveys to patients who were at least 6 months post-operative. The questionnaire assessed quality of life, C2 nerve function, neck pain and head pain.

RESULTS Sixty-six roots were divided in a total of 35 patients. There were no cases of occipital neuralgia at routine 3 month follow. Delayed telephone surveys were completed in 17 patients and this exposed 4 cases of severe head/neck pain but no descriptions were consistent with occipital neuralgia.

CONCLUSIONS C2 neuralgia is rare when sharply dividing the C2 root with the aid of bipolar electrocautery at the mid-portion of the ganglion where it overlies the C1-2 joint. The C2 sacrificing method is an under-appreciated and potentially significant modifiable factor in outcome. In future reports, description of root transection technique is imperative and trials comparing techniques should be considered.