Safety and Efficacy of Anterior Cervical Foraminotomy with Uncinate Process Resection in Conjunction with Anterior Discectomy and Fusion for Treatment of Cervical Radiculopathy

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Disclosure Slide

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Introduction

Anterior cervical discectomy and fusion (ACDF) is often combined with anterior cervical foraminotomy and uncovertebral joint resection in the senior author’s practice to treat cervical radiculopathy with and without myelopathy.

Clinical outcomes of direct anterior nerve root decompression via resection of uncovertebral joint is not yet well documented in the existing literature.

We aim to investigate the safety and efficacy of direct nerve root decompression via uncinate process resection in patients undergoing ACDF.
Methods

Medical records were screened from November 2017 to January 2019 for ACDF patients with at least 6 weeks of follow-up.

Pre- and post-operative motor and sensory examination findings along with NDI, EQ5D, and VAS scores were compared.

Uncinate process resection technique utilizes a matchstick burr to remove the uncinate while leaving a thin rim of bone laterally to protect the vertebral artery. (Fig 1).
Results

Patient Demographics and Presenting Characteristics

The studied cohort consisted of 52 patients, including 23 males and 29 females with an average age of 58.4 ± 10.9 years.

Surgical Characteristics and Complications

A total of 152 foraminotomies were performed across 52 patients with specific levels.

One patient experienced transient vocal cord paralysis which resolved at the 6-month follow-up visit.

One additional patient experienced C5 palsy which resolved at the 6-month follow-up visit. Cerebrospinal fluid (CSF) leaks and vertebral artery injury (VAI) were not observed.
Results: Pain and Quality of Life Scores

All patients had pain as a part of their presenting symptoms.

The mean and standard error of the mean (SEM) are displayed in all figures. A) Perioperative NDI trends. B) Perioperative EQ5D trends. C) VASneck trends. D) VASarm trends.

* Number of significant figures
Results: Motor Strength

**Forty** patients presented with radicular motor impairment and **89** foraminotomies were associated with pre-operative weakness.

“Resolved/Improved” foraminotomies were those in which the patient demonstrated either complete or gross improvement of motor strength at the 6 weeks post-operatively.
Results: Numbness

Twenty-nine had numbness as part of the presenting symptoms and 66 foraminotomies were performed at levels with dermatome-associated numbness.

Overall, 86.4% of foraminotomies resulted in either improved or resolved numbness.
Discussion

Vertebral artery injury did not occur while performing the uncinate process dissection technique.

We observed a non-significant decrease in pre-operative and post-operative NDI scores.

Favorable outcomes were observed in motor strength recovery across all myotomes. We observed one patient (1.9%) with a C5 palsy.

Indications for ACF to treat numbness-associated radiculopathy depends on the dermatome. Favorable outcomes were observed following uncinate resections at C4/5, C5/6, C6/7; however, only one foraminotomy was successful at C7/T1.

Demonstration of improved long-term outcomes following ACDF with ACF and uncinate process resection compared to ACDF alone still warranted.
Summary Points

Anterior cervical foraminotomy with uncinate process resection is a safe and effective method to treat cervical radiculopathy.

Vertebral artery injury can be completely avoided with meticulous operative technique.