Revision Surgery following Cervical Laminoplasty: Etiology & Treatment Strategies

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INTRODUCTION: Few articles have addressed the etiologies for requiring revision surgery after cervical laminoplasty. Our aim is to identify etiologies and surgical strategies for revising patients who require a second cervical surgery after an open-door laminoplasty.

METHODS: All patients who had undergone a revision surgery after an open-door cervical laminoplasty were evaluated retrospectively by independent spine surgeons. Clinical data, method of surgical revision, time interval between surgeries, Nurick score, radiological parameters and complications were recorded. Risk of surgical revision from “disease progression” using Kaplan-Meier survival analysis was obtained.

RESULTS: Over a 10 year period, 130 patients underwent a cervical laminoplasty by a single surgeon. Of these, 12 patients underwent repeat surgery. Average patient age for the initial laminoplasty and subsequent revision surgery was 50.7 (34-67) & 51 (35-70) years respectively. Mean duration of symptoms before the index laminoplasty, and prior to its subsequent revision surgery, were 7.3 (2-17) & 6.6 (1-14) months. Time interval between laminoplasty to revision surgery was 16.6 (4-43) months. Average Nurick grade before and after laminoplasty and revision surgery were 2.3 (0-5) & 0.9 (0-4) and 1.3(0-5) & 0.9(0-5). Among the revised patients, 5 had global lordosis of <10°, 4 developed local kyphosis > 13° and 2 had increased degenerative listhesis. Non-myelopathic causes resulted in 50% of the revision surgery. 3(25% of revisions) repeat surgeries were performed secondary to laminoplasty closure (suture anchors were used), 1 (8%) from “inadequate decompression” and 8 (66%) from “disease progression” (e.g., adjacent level degeneration, new disc herniation, increased OPLL) which had a surgical revision risk of 4±2.2% & 21±7.7% at 1st & 4th year after laminoplasty. Laminoplasty closures were treated by posterior cervical approaches. “Inadequate treatment “or “disease progression” related pathologies were treated via anterior approach. Circumferential fusion was used in patients with spinal deformity or at risk of non-union. One patient had a dural tear and lamina fracture off the hinge during revision laminoplasty. One patient developed pseudoarthrosis and another had a C5 motor palsy following anterior revision surgery, which resolved.

CONCLUSION: We found that 9% of our cervical laminaplasties required additional operations over a 10 year period. “Disease progression” accounted for the largest group of revised patients, followed by closure of laminoplasty when suture anchors were used.

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