EFFECT OF AN ANTERIOR CERVICAL LOCKING PLATE ON FUSION RATE FOLLOWING MULTI LEVEL DECOMPRESSION

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INTRODUCTION: The success rate for spine fusion declines as the number of attempted fusion levels increases. Strategies to enhance cervical fusion rates have included halo immobilization, anterior and posterior fusions, as well as anterior instrumentation. The purpose of this study was to evaluate the effectiveness of an anterior cervical locking plate on fusion rates after multi level decompression.

METHODS: The results of anterior cervical decompression and fusion with instrumentation of three or more levels were reviewed. Clinical and radiographic results were evaluated. Radiographic fusion was defined as lack of motion on flexion-extension radiographs and bridging trabeculae at each graft-host junction. Radiographs were also reviewed for any evidence of plate instability. Diagnoses included 8 patients with cervical spinal stenosis and instability, 3 patients with central and/or foraminal stenosis and 4 patients with cervical spondylotic myelopathy. Each patient underwent fusion with iliac crest autograft and stabilization with an anterior cervical locking plate. In addition to proximal and distal screw fixation of the plate, at least two intervening screws were placed in each patient.

RESULTS: Fifteen patients were included in the study. Average age was 54 years (range, 36 to 69 years). Average follow up was 30 months (range, 24 to 60 months). Thirteen patients (87%) fused at an average of five months postoperatively (range, 3 to 7 months). All patients with radiographic union had resolution of neck and arm pain without persistent neurologic deficits. Two patients had a nonunion at a single level. One of these patient was noted intraoperatively to have osteonecrosis of the cephalad vertebral body and went on to a nonunion at this level. Both patients with nonunions were subsequently stabilized posteriorly. Six patients (43%) complained of dysphagia which resolved spontaneously at an average of four months postoperatively. There were no neurologic, vascular, or wound complications.

CONCLUSION: We have shown that fusion after multi level anterior cervical decompression can be safely obtained in the majority of patients with the use of iliac crest autograft and an anterior cervical locking plate. A fusion rate of 87% is similar to that previously reported after single level anterior cervical fusion. We feel that the use of intervening screws increases the stability of the
reconstruction which may have enhanced the fusion rate. This technique obviates the use of a halo. The most significant complication was dysphagia which spontaneously resolved in all patients. It does not appear that subsequent plate removal is required.