Fibular Strut Complications of Multi-Level, Non-Instrumented Cervical Corpectomy and Fusion: A Consecutive Series of 209 Patients
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INTRODUCTION: Anterior cervical corpectomy and fusion has been shown to be an effective treatment for myeloradiculopathy resulting from spondylotic changes. Long-term outcomes studies have shown that corpectomy and fusion improves or at least halts progression of the patient’s neurological condition. Despite its clinical success, there are known graft complications associated with this procedure including graft dislodgement, displacement and fracture. Although very little data has been published addressing these complications, studies have reported graft complication rates for multi-level fusions ranging from 7.8% to 50%. (1-5)

The purpose of the study was to evaluate early graft complications following multi-level cervical corpectomy and fusion using autogenous fibular strut graft.

METHODS: In this retrospective study, we reviewed 209 consecutive patients who underwent 2 level (115 patients [55%]), 3 level (92 patients [44%]) or 4 level (2 patients [1%]) anterior cervical corpectomy and fusion with non-instrumented autogenous fibular strut grafting. Pre-operative diagnosis included degenerative spondylosis (172 patients [82%]), recurrent stenosis or symptomatic nonunion from prior anterior cervical surgery (36 patients [17%]), post-laminectomy kyphosis (2 patients) and infection (1 patient). Exclusion criteria included one level corpectomy, combined anterior and posterior fusion or use of allograft bone. All procedures were performed by one surgeon. No instrumentation was used to secure the fibular bone graft. All patients had at least 3 month follow-up (range 3 months to 90 months) to evaluate for peri-operative graft complications including graft dislodgement, displacement and fracture.

RESULTS: Of the 209 patients, there were a total of 5 graft complications (2.4%). There was one complete dislodgement of a four-level fibular strut graft that required revision surgery and extension of the fusion mass superiorly one additional level and placement of halo immobilization. This patient had a pre-operative diagnosis of post-laminectomy kyphosis. There were 3 cases of graft displacement. Two did not require any intervention and one was treated with halo immobilization for 5 weeks. Two of these three graft displacements had associated endplate fractures that contributed to the graft displacement. All four of these graft complications occurred within 2 weeks post-operatively. Finally,
one patient, who underwent a four-level corpectomy, developed a stress fracture through the fibular strut graft at 11 months post-operatively. Both the superior and inferior margins of the strut graft had developed solid fusions. This unusual complication was treated with posterior spinal fusion. Postoperatively, a solid fusion developed posteriorly with complete healing of the stress fracture.

CONCLUSIONS: Anterior cervical corpectomy and fusion with non-instrumented fibular strut grafting provides a safe method of treatment of cervical spondylosis. Our data demonstrates a lower rate of fibular strut complications as compared to the current literature. We feel that meticulous attention to the carpentry of the fibular graft and endplates accounts for our low rates of strut graft complications and obviates the need for instrumentation. Despite the low incidence of early graft complications, close monitoring in the preoperative period is necessary in order to identify these possible complications in a timely manner.

REFERENCES: