



## Vascularized Occipital Bone Graft to Supplement C1-C2 Arthrodesis in Patients with Failed Fusion

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### Introduction

Atlantoaxial pseudoarthrosis is a challenging problem, and may result from a combination of local and systemic factors. The use of a local, vascularized bone graft to supplement C1-C2 arthrodesis has not been described for patients with, or at risk for atlantoaxial pseudoarthrosis. We report the first surgical patient who received a vascularized pedicled occipital bone graft for supplementation of arthrodesis.

### Methods

We describe the technique for using a vascularized occipital bone graft in a 72-year old lady with failed C1-C2 arthrodesis after a prior fusion. The patient presented with increasing neck pain, and imaging demonstrating pseudoarthrosis at C1-C2 with bilateral C1 lateral mass screw fractures. A surgical plan was made to perform C1-C2 fixation and fusion with transarticular screws, supplemented with a vascularized occipital bone graft.

### Results

At surgery, the prior instrumentation was removed and transarticular C1-C2 screws were placed. A vascularized occipital bone graft based on the rectus capitis posterior major and minor muscles was marked. The paramedian bone graft was harvested from between the superior nuchal line and foramen magnum. The muscular attachments were preserved, and the flap was rotated into the area between C1-C2 after decortication of the C1 arch and C2 spinous process. A cross-connector between the rods at C1-C2 interspace was placed to hold the graft in place, and the wound was closed in layers. The patient was fitted with a cervical collar for 6 weeks. Postoperative CT imaging at 3 months showed a healthy graft with early fusion between C1 and C2.

### Conclusions

We demonstrate the feasibility of using a local, vascularized occipital bone graft to supplement C1-C2 arthrodesis. This graft has several inherent advantages over other common bone grafts, and represents a novel technique to treat patients with, or at risk, for failed C1-C2 arthrodesis.

### Learning Objectives

1. By the conclusion of this session, participants will be able to understand the technique for harvesting a vascularized occipital bone graft to supplement C1-C2 arthrodesis.
2. Discuss the treatment options and surgical techniques for C1-C2 pseudoarthrosis.
3. Understand the utility of local vascularized bone grafts to supplement bony fusion in the spine.