INTRODUCTION: Anterior surgery of the upper cervical spine is a relatively rare occurrence since the majority of cervical spine disorders affect the lower cervical spine. Also, many upper cervical disorders can be effectively managed with a posterior approach. One of the classic anterior approaches to the upper cervical spine entails transoral access and provides direct exposure for anterior decompression of the distal brain stem and upper spinal cord. Prior to this, posterior fusion was the standard technique although this procedure was limited in that cord decompression required the removal of the posterior arch of the atlas without reducing the deformity. The anterior approach allowed for cord decompression and fusion to be performed simultaneously. The transoral approach has been associated with numerous complications including high infection rate, hemorrhage, progressive laryngeal stridor and asphyxiation. The anterior retropharyngeal approach was developed to reduce the risk of infection associated with the transoral approach. This is a technically demanding procedure that allows for exposure of both the upper and lower cervical spine. There have been few reports on the efficacy of this approach. The purpose of this study was to review the outcomes and complications of this approach.

METHODS: A retrospective review was conducted of fourteen patients who underwent anterior cervical spine surgery utilizing the retropharyngeal approach. The study included six males and eight females, ranging in age from 29-78 years (mean, 51). Indications for surgery included herniated disc, severe stenosis, migrated bone graft, and a family history of a cervical medullary anomaly resulting in spinal cord compression. Visual analog scale (VAS) measurements and Oswestry disability ratings (OSW) were obtained pre- and postoperatively to assess the change in patients’ pain and functional status. Additionally, patients were closely monitored for signs of dysphasia, voice changes, infection, tongue movement and sensory changes. All exposures and closures were performed by an ENT surgeon (TWB).

RESULTS: Ten patients had no complications related to the approach. Three patients developed transient dysphasia, and one of these required the placement of a feeding tube. One patient developed an infection at the graft site but had no complications related to the approach. There was one case of keloid formation, which was scheduled to be addressed with revision surgery. One patient
developed postoperative pneumonia (unrelated to approach) that was treated medically and resolved uneventfully. One patient developed an airway obstruction requiring an emergent tracheotomy. There were no complaints of permanent voice changes, vocal cord paralysis, or nerve damage. Each of the complications (excluding the keloid formation) was completely resolved at the conclusion of the study. A paired t-test revealed the changes in VAS scores (7.18 vs. 4.82) and the 0SW scores (45.3 vs. 27.0) to be significant (p=0.01 and p=0.04 respectively).

DISCUSSION: Various techniques have been proposed to gain access to the upper cervical spine including the transoral technique, the mandible and tongue-splitting approach, the lateral retropharyngeal approach, and the anterior retropharyngeal approach. Advantages of the anterior retropharyngeal approach are the lower infection rate, its ability to visualize both the ipsilateral and the contralateral vertebral arteries and the ability to have surgical access to the lower cervical spine. While the anterior retropharyngeal approach is not subject to the high infection rates of the transoral approach, the complex regional anatomy makes this a technically demanding procedure. This study has shown the anterior retropharyngeal approach to be an effective technique to gain adequate exposure to the upper cervical spine, although there were complications. There were no cases of infection, permanent voice changes or nerve damage related to the approach. Patients should be informed of possible complications including dysphasia, voice changes, nerve damage and infection.