Functional and Radiological Outcome Analysis of Anterior Cervical Discectomy and Fusion in Cervical Spondylotic Myeloradiculopathy

A Saravanan¹, N Deen Muhammed Ismail², S Mohan Kumar³, E Rajarajan³, Heber Anandan⁴

¹Senior Assistant Professor, Department of Orthopaedics, Institute of Orthopaedics and Traumatology, Madras Medical College, Chennai, Tamil Nadu, India, ²Director and Professor, Department of Orthopaedics, Institute of Orthopaedics and Traumatology, Madras Medical College, Chennai, Tamil Nadu, India, ³Junior Resident, Department of Orthopaedics, Institute of Orthopaedics and Traumatology, Madras Medical College, Chennai, Tamil Nadu, India, ⁴Senior Clinical Scientist, Department of Clinical Research, Dr. Agarwal’s Healthcare Limited, Chennai, Tamil Nadu, India

Abstract

Introduction: Anterior cervical fusion is commonly performed for cervical compression myeloradiculopathy.

Aim: To analyze the functional and radiological outcome analysis of anterior cervical discectomy and fusion in cervical spondylotic myeloradiculopathy.

Methods: Retrospective analysis of 30 patients who underwent single/double level discectomy and anterior cervical fusion by auto graft and stabilization by plate and screws were included. Functional outcome was analyzed by Modified Odom’s Criteria.

Results: Outcome was satisfactory in 29 patients with one patient with fair result in the series who had signal changes in pre-operative magnetic resonance imaging and no patients required further surgery in the same level. Average period of fusion was 4 months except for one patient who got delayed fusion due to superficial infection. Commonly fused levels were C5-C6 7 patients at C6-C7 4 patients remove. There were no major complications.

Conclusion: We conclude that discectomy and anterior cervical fusion by bone graft and stabilization by H plate and screws is an excellent procedure in case of cervical degenerative spondylotic myeloradiculopathy.

Key words: Cervical spondylotic myeloradiculopathy, Spine, Spondylosis

INTRODUCTION

Cervical spondylotic myeloradiculopathy is a spinal cord dysfunction accompanying typical age related degeneration of the cervical spine.¹ Spondylosis degenerative process that leads to decreased disc height, annular bulge/tear of disc material producing pressure effect over cord and nerve root.² Clinical features vary from neck pain, radiating pain in the upper limb to numbness and weakness of the upper limb.³ The majority of patients with symptoms respond well to conservative treatment in the form of analgesics and physiotherapy. Patients with deterioration of symptoms presence of sensory deficit, motor weakness and not responding to conservative management for more than 3 months, are taken up for surgical treatment using anterior cervical discectomy with removal of posterior osteophytic complex with autologous iliac crest bone graft ensuring spinal stabilization by fusion and addition of locking H plate fixation to prevent graft migration and collapse.⁴

Aim

To analyze the functional and radiological outcome analysis of anterior cervical discectomy and fusion in cervical spondylotic myeloradiculopathy.

MATERIALS AND METHODS

This retrospective study was conducted in Institute of Orthopaedics and Traumatology, Madras Medical College.
30 patients who underwent single/double level discectomy and anterior cervical fusion by auto graft and stabilization by plate and screws were included.

**Inclusion Criteria**
Symptoms and signs of Cervical Compressive myelopathy, Persistent radicular pain not responding to conservative management for 3 months, and Compressive Cervical radiculopathy with progressive neurological symptoms.

**Exclusion Criteria**
Cervical spine Trauma, listhesis, and tumor infectious etiology. Data collected: Visual Analog Scale scoring for neck pain and radiculopathy pre- and post-operative, Clinical and neurological charting, Plain X-ray cervical spine anteroposterior and lateral with follow-up X-rays, computed tomography cervical spine if ossification of the posterior longitudinal ligament is suspected, and cervical spine magnetic resonance imaging (MRI). Follow-up: Radiographic determination of union and osseous incorporation based on the continuation of trabeculae and complete osseous union of the graft/bone interface.

### RESULTS
About 26 males and 4 females’ patients were included in our study, and the average age was 50.2 years (32-73 years of age). In our study, among 30 patients 86.7% males are affected by cervical disease. Only 13.3% females are affected by cervical disease. The average duration of symptom was 8 months. The most of our cases were single level disc with posterior osteophyte complex disease with most common level was C5-C6 level, and 2 patients had two level disc decompression (Table 1 and Figure 1). The average period of fusion was 4 months except for one patient who got delayed fusion probably due to superficial infection. The clinical outcome (sensory, motor, and reflex) by the clinical tests and overall functional outcome with Modified Odom’s criteria (Table 2). Outcome was excellent in 23 patients, good in 5 patients, and fair in 2 patients (Table 3). One patient did not show good neurological improvement in the series who had signal changes in pre-operative MRI and no patients required further surgery in the same level. There are no complications such as donor site morbidity, dysphonia, pseudoarthrosis, and neurological deterioration (Table 4). There were no graft related complications like graft dislodgement. There was no plate breakage, screw migration or cerebrospinal fluid leakage.

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<tr>
<th>Table 1: Distribution of level of fusion</th>
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<tr>
<td>Fusion</td>
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<td>C3-C4</td>
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<td>C3-C4-C5</td>
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<td>C5-C6-C7</td>
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DISCUSSION

The natural history of Cervical Spondylotic Myeloradiculopathy has not been thoroughly defined and documented. Almost all patients worsen if left untreated and most studies report significant numbers (over 50%) of patients progressing to severe disability. Indications for instrumentation in these patients are less clear, but the excellent outcome of rigid internal fixation and theoretical advantages of decreasing graft migration have made plating an attractive (Figure 2). The demographic variables of this series were comparable to Ali et al., where male patients were predominant and C5/6 level was the most common involved site. The significant clinical improvement (neck pain, arm pain, motor, sensory, and reflex) improvement was comparable to Wang et al.

Connolly et al. reported fusion rates with auto graft ranging from 87% to 97%, and Emery et al. reported 20-27% of pseudoarthrosis. The risk of pseudoarthrosis increases with each additional level of surgery. Although we had 100% fusion and no pseudoarthrosis, the results might have varied with longer follow-up and larger study population.

CONCLUSION

One or two level anterior cervical discectomy and fusion with or without anterior plating for cervical spondylotic radiculopathy and myelopathy is a safe and effective procedure which provides excellent early return to activity with minimal complication rate.

REFERENCES


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