



A Case Series of Results of Anterior Cervical Plate

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ABSTRACT

The QWL approach considers people as an 'asset' to the organization rather than as 'costs'. It believes that people perform better when they are allowed to participate in managing their work and make decisions. This approach motivates people by satisfying not only their economic needs but also their social and psychological ones. To satisfy the new generation workforce, organizations need to concentrate on job designs and organization of work. In this process, organizations are coming up with new and innovative ideas to improve the quality of work and quality of work life of every individual in the organization. Various programs like flex time, alternative work schedules, compressed work weeks, telecommuting etc., are being adopted by these organizations. This paper discusses few examples of such initiatives taken by organizations in India

KEYWORDS : QWL, innovation, initiatives, performance

INTRODUCTION

Anterior cervical fusion is well recognised treatment for degenerative disease, traumatic fracture dislocation and tuberculosis. The gold standard for single level fusion degenerative cases is the Robinson (tri cortical) and cloward (dowell) techniques.^{1,2}

The combined use of bone graft and plating for fusion after decompression is an attractive option that has gained increase in popularity among surgeons.

The use of internal fixation with plates attempts to increase the fusion rate and preserve or restore segmental lordosis in diseased cervical spine segments while reducing period and extent of immobilizer demanded after surgery.^{4,5}

Donor side morbidity is a well known complication to occur after surgery. So allo grafting is option to evaluate specially recommended for multilevel fusion.

Anterior cervical plating is recommended for traumatic cervical spine even when there is disruption of posterior soft tissue.

The study was undertaken to assess the long term radiological and clinical outcome who have undergone anterior cervical plate and bone graft.

Specific area of study includes:

1. Clinical improvement
2. Graft complication and fusion rate
3. implant complication
4. Cervical spine segmental sagittal alignment.

MATERIALS AND METHODS

This is a prospective study of 31 patients with cervical plating carried out from 2011 to 2014 in Orthopaedics Department, General Hospital Ahmedabad. A complete clinical examination of patients is carried out through a standard Performa.^{7,8}

Out of 38 patient, 7 patients were excluded either due to loss of follow up or inadequate follow up, so 31 patients included for study.

Aim of study: To evaluate the results of anterior cervical plate in cervical spine.

Study design:

All patients with cervical myelopathy, cervical spine trauma and cervical tuberculosis were admitted in hospital and treated by different

surgeons.

Thorough local and neurological examination done as per Performa. .

X-rays cervical spine with lateral and AP view was taken.

M.R.I was taken in all patients.

Plan was decided according to clinical and radiological features.

Operative patient were either discharged on 5th or 6th post operative days after confirming dressing status or were sent to Rehabilitation centre for physiotherapy.

All patients were given Philadelphia cervical collar for 6 weeks with isometric neck muscle exercise.

Patient was called in follow up on 1 ½ month, 3 month, 6 month and 1 year.

Minimum follow up duration is 6 months and average follow up is 1 year.

Final outcome is assessed using neck disability index.

DISCUSSION

The anterior approach to treatment of cervical disc first described by Robinson and smith and popularised by cloward in 1950s.^{28,29} The aim of surgery remain

- 1) The adequate decompression of neural structures, whether directly or by distraction and fusion
- 2) A solid arthrodesis
- 3) Maintain or restoring normal cervical alignment
- 4) Minimization of complications due to immobilisation
- 5) Minimization of need of bracing^{32,33}

Patient is put in semirigid collar for at least 6 weeks preferred by most surgeons. there are 31 numbers of total patients in study are treated with anterior cervical plate and bone grafting and minimum period of follow up period of 6 months and maximum follow up of 46 months.^{24,28}

The modalities of cervical spine treated where as below

- 1) Cervical myelopathy
- 2) Cervical trauma

3) Cervical tuberculosis

Patient on follow up investigated with X rays and fusion of spine column segment was evaluated. Patients functional status evaluated with help of neck disability index. Disability of neck movement was described in form of percentage according to their ability to perform various works.

None of the patient have kyphotic deformity on follow up.

Patient on preoperative history assessed in form of neck movements, radicular pain and motor and sensory examination and reflexes. Preoperative evaluations done on with XRAYs and MRIs. All patients treated with bone graft iliac and fibular.

Preoperative evaluation showed in study 61% of patients were smokers and among all smokers 42% of patients have myelopathy in them.

Patient have past history in 26% hypertension and 26% diabetic and 6% hypothyroid in study.

To study fusion is the aim of study. All patients were incorporated with auto grafts.

Out of these 31 patients only three patients did not show any signs of bone graft incorporations on XRAYs. None of these patients were symptomatic in form of neck movement restriction. Only one patient in study came with screw breakage at implant site. All these data leads to inference i.e. all these patient have fibrous union.^{24,26}

Postoperative evaluation suggest with help of neck disability index about 61% of patients have excellent results and 29% patients fall in good results. Average disability of study 31%. That data suggest good functional outcome of study.

We recommend rigid internal fixation. The aims of rigid internal fixations include

- A) Increase rate of solid fusion
- B) Prevent graft complications such as collapse, subsidence and extrusion
- C) Maintain cervical spine sagittal alignment
- D) Decreases need for cumbersome bracing^{31,33}

All aims were achieved in sustained manner according to findings of this study Fusion rates were found in this study about 90%.all other 10% patients did not have any postoperative complains. Graft extrusion was not issue in any of patients.

The concern regarding use internal fixation include

- 1) chances of soft tissue injury while implant insertion
- 2) presence of plate as impediment to fusion
- 3) implant failure
- 4) acceleration of adjacent level degenerative changes due to increased rigidity^{32,34}

Complications were developed in 16% of total patients. In that complication there is hoarseness of voice due to injury to recurrent laryngeal nerve injury. Some patients developed dysphagia. Bone graft site complications in form of infection, donor site morbidity, graft rejection .none of these complication were seen only one patient have pain at donor site .implant related complications feared were plate loosening ,breakage and screw problem. Only one patient came with screw breakage without symptoms which didn't require revision surgery.^{28,29}

Traumatic patients in cervical spine require special mention. Fracture of cervical spine treated with plate remain the gold standard of management. Primary aim of surgery in these patients is not to get neurological recovery. But to get fracture reduction and fixation and early mobilisation and early starting of wheelchair activity is the prime concern. All complications due to long time bed ridden i.e. bed sore, poor pulmonary toileting avoided. There are 12 patients of cervical spine trauma out of which two have complete paraplegia. Those patients do not have neurological improvement but this patient started rehabilitation and wheelchair activity.²²

Three patients in study were tuberculosis cervical spine. All were operated under cover of anti tuberculosis drugs and one patient was developed abscess over neck and drained with posterior approach .fusion seen in all three patients. No neck mobility .

CONCLUSION

This study demonstrates the use of anterior cervical plate and bone graft in cervical spine.

Study is retrospective and includes traumatic fracture, cervical myelopathy and tuberculosis patients.

Cervical Myelopathy is common between 40 to 60 years of age and majority of the patients are presenting with numbness, weakness and clumsiness in hands with difficulty in walking and frequent fall.

Spasticity, exaggerated reflexes and *pathological reflexes, kinetic elements of hand and finger escape sign* are present in majority of patients and are useful diagn

Operative treatment is always having better outcome in all the cases of Cervicalmyelopathic patients.

The use of procedure considered gold standard for traumatic fracture. In study most of the patient showed gradual neurological recovery on follow up, those who did not show neurological improvement where able to carry rehabilitative activity due to good rate of fusion.

Patient with tuberculosis disease have showed predominantly motor involvement more than sensory in them due to compression of cord from anterior side.

Patient tuberculosis operated under cover of anti tuberculous drugs and showed excellent out come in terms of neurological recovery and fusion rate.

All three modality of etiology treated by anterior cervical plate were evaluated with help of neck disability index. This shows functional outcome of patients in term of neck movement and carry out their daily activity due to restriction of neck movement. These patients also evaluated with radiographic modality to asses fusion in them.

According to neck disability index patient of all modality showed excellent and good outcomes Study shows fusion occur in 90% of patients and serious implant complication were minimal, restoration of cervical spine lordosis and decreases need of immobilization.

No patients in study showed adjacent level degeneration. Bone graft donor site complication rate were also minimal.

Serious implant complications were minimal, prolonged follow up showed good results of fusion in all modality.

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