SURGICAL COMPLICATIONS AFTER ANTERIOR CERVICAL CORPECTOMY WITH CAGE FIXATION FOR CERVICAL SPONDYLOTIC MYELOPATHY

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ABSTRACT

BACKGROUND: Cervicalspondylosis is one of the most commonand disabling neural pathology in the spine and can considerably decrease quality of life .Surgical intervention is advised in those patients of Cervicalspondylosis, who did not respond to medical therapy and/or have progressive neurological symptoms . There is a lot of debate in the surgical management of the cervical spondylotic myelopathy(CSM)in the literature, but the best surgical management remains controversial. This study was conducted to know the surgical complications after anterior cervical corpectomy with cage fixation for cervical spondylotic myelopathy.

METHODS: We analyzed the record of 36 patients who underwent anterior cervical corpectomy with cage fixation for cervicalspondyloticmyelopathy in Neurosurgery"A" Departmentof Lady Reading Hospital from January 2014 to January 2016.Patientswith congenital cervical stenosis, primary posterior pathology, not fit and not willing for surgery were excluded from the study. Patient were followed-up for six months. The demographic data,clinical,radiological and post-operative surgical complicationsof the patients were analyzedto assess the surgical complications.

RESULTS: Out of 36 patients,24 (66.6%) were male, age ranged from 35-72 years.Major clinical features were hypoesthesia(n=29, 80.5%), limbs weakness(n=21, 58.3%), gait ataxia(n=21, 58.3%), dysesthesia (n=20, 55.55%) and neck pain(n=16, 44.44%). The surgical complications included;implantscrew displacement (n=3,8.3%) and implant dislodgement (n=1, 2.8%), transient recurrent laryngeal nerve injury(n=3, 8.3%), infection (n=2, 5.5%),transient dysphagia (n=2, 5.5%), prevertebral hematoma(n=2, 5.5%)and esophageal fistula(n=1, 2.8%)were observed.

CONCLUSION: Anterior cervical corpectomy with cage fixation for cervical myelopathy less than 3 levels is beneficial to the patients if operated in expert hands in early course of disease in terms of lesser permanent neurological deficits.

KEY WORDS: Anterior Cervical Corpectomy, Cervical Spondyloticmyelopathy, Congenital Cervical Stenosis.

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INTRODUCTION

Cervicalspondylosis (CS) is one of the most commonand disabling neural pathology in the spine and can considerably decrease quality of life[1,2]. It is more widespread in older peopledue to the fact that the degeneration occurs in spine in that age[3]. Most of the times it is asymptomatic, butoccasionally sometimes present as myelopathy or radiculopathy in 10-15% of cases due to compression of the cervical spinal cord and roots respectively[4,5]. The conservative treatment comprises of analgesics, muscle relaxants, neurotonics, physiotherapy and cervical immobilization[6].

Surgical intervention is advised in those patients of CS, who did not respond to medical therapy and/or have progressive neurological symptoms[1]. There is a lot of debate in the surgical management of the cervicalspondyloticmyelopathy(CSM) in the literature, but the best surgical management remains controversial. The objectives of surgical treatment are decompression of the neural structures, like nerve roots and cervical spinal cord and additionally deformity prevention by instrumentation and other surgical prosthesis. The different surgical techniquesinvolving anterior, posterior or combined approaches to decompress the spinal cord is groundedprincipally on different parameters, like; the site of compression, the degree of the disease, sagittal configuration of the cervical spine, previous surgeries and the patient's oldness and overall healthstatus[1,7,8].

The rationale of this study was to compare post operative complications after anterior cervical corpectomy with cage fixation(ACCF) for CSM with the results of national and International literature. It will postulate us an idea to know the surgical skills and experience of our set-up neurosurgeons in operating the patients of CSM by this technique. Furthermore, this will be a standardcriterion for the patient improvement and care.

MATERIAL & METHODS

In this observational study we reviewed the record of 36 patients who

underwent ACCF for CSM in Neurosurgery "A" Department of Lady Reading Hospital, Peshawar from January 2014 to January 2016. Patient were followed-up for six months. The demographic data, clinical, radiological and post-operative surgical complications of the patients were analyzed to assess the surgical complications occurring after ACCF for CSM.

Patients with <3 levels cervical stenosis and primary anterior pathology were included in the study while patients with congenital cervical stenosis, primary posterior pathology, not fit and not willing for surgery were excluded from the study.

All the surgeries were performed by a single expert senior surgeon. After preparation, informed consent,patient was put in supine position under general anesthesia with extended neck. The skin incision is given along the medial border of Sternocleidomastoid muscle(SCM)under aseptic measures. After cutting the platysma in the same plane, dissection was done in tissue plane medial to SCM. The trachea and esophaguswere retracted medially. The carotid sheath and SCM were retracted laterally. After verification oflevel with lateral C-spine x-ray with spinal needle in the interspace,the bipolar was used on the prevertebral fascia and medial edges of the longus coli muscles longitudinallyin the midline. Self-retaining retractor blades were inserted underneath the fascia to retract the longus coli muscles laterally. The osteophyte spurs were removed with bone nibbler. The disc space is incised with a number 15 scalpel blade. The discectomy was performed with curettes and pituitary rongeurs. The desired subtotal corpectomy and canal decompression was carried out with a high-speed burr under microscope. Titanium mesh cage loaded with autograft bone from iliac crest was put in the vertebral gutter and prevertebral titanium plate was fixed with screws. Hemostasis was secured. Wound was closed after wash. All the patients were advised to put on Philadelphia cervical collar for 1.5 – 2 months.

RESULTS

In total of 36 patients with CSM, 24 (66.6%) patients were male, while 12 (33.3%)were females. Age range of the patients was 35 to72 years (mean54.2 years).The presenting Clinical features of the patients with CSM are given in Table I. The duration of the disease, of the patients of CSM, ranged from 5 months to 8 years (mean = 6.2 years). X-rays

Figure 1: Post-op X-ray after ACCF

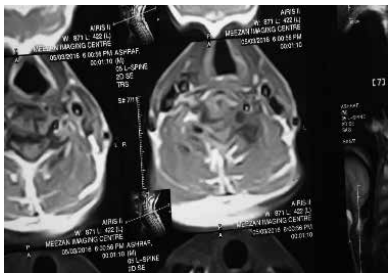

Figure 3: Axial view
(same patient as of Figure II))

Figure 2: MRI Cervical spine saggittal view (C6-C7 stenosis)

Figure 4: MR myelogram with complete block

TABLE 1: CLINICAL FEATURES

Clinical Features	No. of patients(n=36)	Percentage
Hypoesthesia	29	80.5%
Limbs weakness	21	58.5%
Gait ataxia	21	58.5%
Dysesthesia	20	55.55%
Neck pain	16	44.44%
Urinary bladder dysfunction	7	19.44%

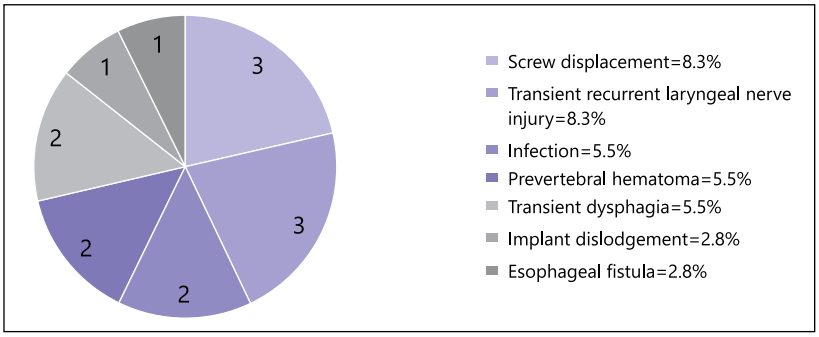

Figure 5: Surgical Complications

cervical spine antero-posterior and lateral views were performed preoperatively to know about the alignment and osteophytes of the vertebrae. Post-op. X-Ray as shown in Figure I were carried out for implant position. Magnetic resonance imaging (MRI) was also routinely performed in each and every patient pre-operatively to assess the degree of spinal cord compression, as given Figures II, III and IV.

The surgical complications in our patients after ACCF for CSM are given in figure V. The mean duration of hospital stay was 9 days. Minimum hospital stay was 5 days and maximum was 14 days. Patients were followed-up for six months. There was no mortality in this study.

DISCUSSION

In different disorders of the spinal cord, causing progressive neuro deficit, CSM is one of the most common of those. Furthermore, there is a substantial increase inthe number of cervical spineoperations for instrumental fusions carried on for CSMin the past decade or so[9]. The natural history of the CSM is altered by surgical decompression and it has the potential of altering the outcome of patients,consequently surgical management is encouraged for its treatment[10,11].

The main objective of the surgical management of CSM is to decompress the neural elements, maintain the normal cervical column height and to provide stability to the spinal column, in order to avoid further spondylotic changes at the affected level[7]. Having said that, the ideal surgical strategy for multilevel involvement in CSM remains controversial and each option has its ownpros and cons. Incident of anterior cervical spinal cord compressive pathology along with kyphosis dictate an anterior surgical technique. The advantages of an anterior surgery are very fruitful, like; direct decompression andrestoration of the inter-vertebral space height. Second important concern is that, if the anterior compressive patholgy is disc or osteophytes, an anterior technique can decompress the spinal cord directly and ina optimum manner. Usually, for patients having 1-2 level CSM or when compression ispresent anteriorly, most of the Neurosurgeons opt for an anterior technique[12,13], in this study also, it was better in terms of neuro deficits rate.

Autograft bone and/or instrument-related complications after multilevel corpectomies are very usual[14–16]. Reported complications are very high in the literature, even also when internal fixation was used[17, 18]. As the number of disease levels increases, the complication rates also increases. The fact is evident in the literature as; one researcher[19] found that the frequency of autograft bone and/or plate related complications were more in patients with a 3 level corpectomy (50%), as compared to those with 2 levels (9%). Another study[20] also documented a very high failure rate of 71%, after 3 level reconstruction, as compared to 2 level, who had only 6% failure rate.

Positioning of the graft is considered to be the most common cause of failure of surgical construct in multi-level disease. It was hypothesized that the anterior constructmarkedlyloads the graft in retroflexion[21,22]. Multilevel surgery dealwith more fixation points to hold the surgical construct in place, but on the other handsingle level surgery provide only two points of fixation. The increase number of fixation points might be the cause of highauto bone graft and/or instrument related complication rates in the anterior cervical corpectomy and cage fixation[19,20]. The developments in neurosurgical techniques have reduced the incidence of iatrogenic damage[7], as is evident in the current study.

The surgical and graft related complications rate in this study was 10.5%, this is in agreement with the data published in the literature with complications rates ranging from 6 to 9.5%[23,24]. We routinely used the operating microscope. The surgeon experience is animportant factor in reducing intraoperative damage.In this study too, however there was no permanent neurological injury. The transient hoarseness and dysphagia were treated expectantly and resolved within 3 months.

CONCLUSION

From this study we came to the conclusion that ACCF for CSM less than 3 levels is beneficial to the patients if operated in expert hands in early course of disease in terms of lesser permanent neurological deficits.

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CONFLICT OF INTEREST

None declared.

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NIL

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.