ORIGINAL ARTICLE

Outcome of Instrumentation in Caries Spine

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ABSTRACT

Objectives: We aimed to determine the efficacy of instrumentation in caries spine and to present the long term clinical results of the patients treated with the help of this protocol.
Study design: Retrospective cross sectional study
Study setting: Department of Orthopedic Surgery Unit II, Mayo Hospital Lahore, Pakistan
Duration: From 2008 to 2010
Material and Methods: 37 patients (22 females, 15 males) with a mean age of 32 years were operated for the management of caries spine. Debridement of the affected site of the spine was done followed by instrumentation and fusion in all the patients. The indications for surgery were no response to medical treatment for three months, persistent pain and instability, progressive neurological deficit and angular deformity of the spine. Anti-tuberculous therapy was continued postoperatively for one year. All the patients were telephonically approached through the contact numbers given at the time of their admission and patients were called to the hospital for evaluation. 31 patients responded to our call and therefore 31 patients were included in the study. Oswestry Disability Index (ODI) was calculated for individual patient after 24 months of surgery.
Results: Out of the total 31, 2 patients (6.6%) had no disability according to the Oswestry Disability Index. 23 patients (73.3%) had mild disability whereas 4 patients (13.3%) had moderate disability. Only 1 patient (3.3%) had severe disability and 1 patient was completely disabled
Conclusion: Spinal instrumentation in tuberculous spondylitis has good long term functional outcome.

Key words: Caries spine, Instrumentation, Disability

INTRODUCTION

Tuberculosis spondylitis is extremely common in Pakistan. It constitutes 50-60% of all osteoarticular involvements[1]. The lesion is a combination of a form of tuberculous osteomyelitis and arthritis that usually affects more than one vertebrae and may spread to the adjacent intervertebral discs. Mechanical support capability of the spine may decrease parallel to the severity of the disease and the extension of the involved spinal structures.

Treatment of musculoskeletal tuberculosis is primarily medical. However, conservative management with chemotherapy has not been completely satisfactory even with the availability of new drugs in certain situations. Tuberculous Kyphous is a major problem among patients managed conservatively with chemotherapy, rest and braces or plaster jackets. Site of infection, number of vertebrae and age of the patient determine the progression of kyphosis .[2]

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The severity of the deformity is higher in childhood disease and in multilevel affections.[3] Loss of sagittal balance resulting from vertebral affection and appearance of the kyphotic deformity is a major reason which has led surgeons to restore or prevent kyphosis with surgical treatment alternatives.[4] (Fig.1)

Surgical intervention along with the medical treatment has been shown to be very effective way of management of the problem.[2,5] The vertebral lesion is approached and all the devitalized tissue and debris is removed, abscess is drained and tissue can be taken for histopathology. The dead space can be filled with autogenous bone graft. Strut graft can help correct or stabilize the angular deformity. Debridement can enhance the efficacy of medical management as the barrier formed by the fibrous tissue for the penetration of antibiotics is removed.[6]

However, even after such radical anterior surgery and using rib or iliac crest graft, the residual kyphosis keeps the risk of neurological complications high. Management of the residual kyphosis even after the complete cure of the infection remains a challenge to the surgeon. It

was concluded by Moon et al[7] that only anterior strut grafting for the prevention of vertebral collapse is not reliable and posterior stabilization along with anterior radical surgery should be done. This not only augments the stability but also helps in early incorporation of the graft.

Stabilization with metallic implants decreases the need of postoperative immobilization and even in the active stages of the disease their usage has been shown not to increase the risk of prolonged infection.

Fig.1: Tuberculous osteomyelitis leading to loss of sagittal balance

MATERIALS AND METHODS

37 patients (22 females, 15 males) with a mean age of 36 years were operated for the management of caries spine in the department of Orthopedic of King Edward Medical University/ Mayo Hospital Lahore from 2008 to 2010. Out of 37 patients, 31 patients (**N=31**) were included in the study as 4 patients were either lost in the follow up or their contact numbers had changed. 2 patients had expired after being discharged from hospital.

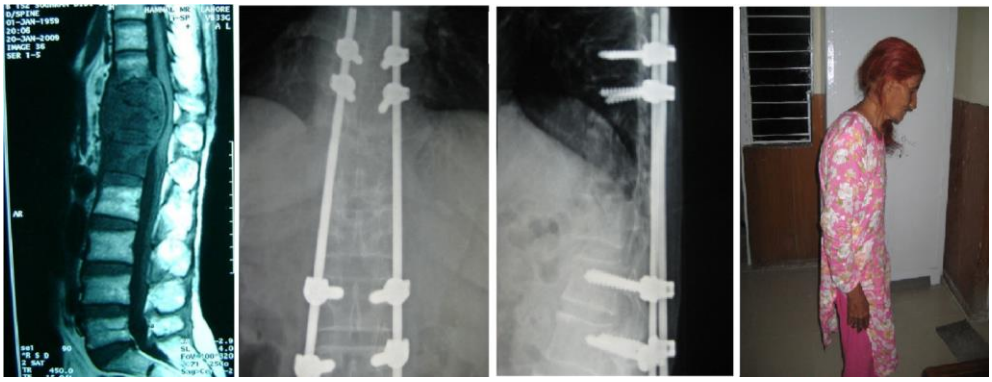
Debridement of the affected site of the spine was done followed by instrumentation and fusion in all the patients. The indications for surgery were no response to medical treatment for three months, persistent pain and instability, progressive neurological deficit and angular deformity of the spine.

Regional Distribution (table 1) showed that the majority of the patients presented with tuberculous lesions in the thoracic vertebrae (Fig.2). Anterior lesion was found in almost all the cases.

Table 1: Regional distribution of affected area of the spine of patients included in the study

Number of cases	Regional distribution
3	Cervical spine
12	Thoracic spine
7	Thoracolumbar junction
2	Lumbar spine
4	Lumbosacral junction
3	more than one level

All the patients were telephonically approached through the contact numbers given at the time of their admission and patients were called to the hospital for evaluation. Oswestry Disability Index[8] (ODI) was calculated for individual patient after 24 months of surgery.



A **B** **C** **D**

Fig.2 : Instrumentation (Transpadicular screw fixation) with debridement and anterior strut graft done in Tuberculous Osteomyelitis of D11-L1

The Oswestry Disability Index is an outcome assessment tool that has been shown to be an efficient instrument to measure patient's quality of life and grade the disability. It is comprised of questions which are based on various daily activities like personal care, lifting , walking, sitting, standing, sleeping, sex life (if applicable), social life and travelling. It also asks the respondent about the intensity of pain. The 'best answer' given by the patient that describes his/her pain or limitation is scored accordingly. For each section the total possible score is 5. The sum of scores obtained from each section determined the level of disability which was graded as follows: None 0-4, Mild 5-14, Moderate 15-24, Severe 25-34, Complete >35.

20 patients were treated with anterior decompression and cage fixation and 8 patients were treated with transpedicular screw fixation and 3 patients were treated with Anterior decompression and plate fixation. Out of 37 patients operated between 2008 and 2010, 31 patients (N=31) were included in the study as 4 patients were either lost in the follow up or their contact numbers had changed. 2 patients had expired after being discharged from hospital**.**

A -Pre-operative MRI of the lesion, B&C-Post-operative images, D-picture taken at 2 year follow-up

RESULTS

Out of the total of 31, 2 patients (6.6%) had no disability according to the Oswestry Disability Index. 23 patients (73.3%) had mild disability whereas 4 patients (13.3%) had moderate disability. Only 1 patient (3.3%) had severe disability and 1 patient was completely disabled. (Fig.3)

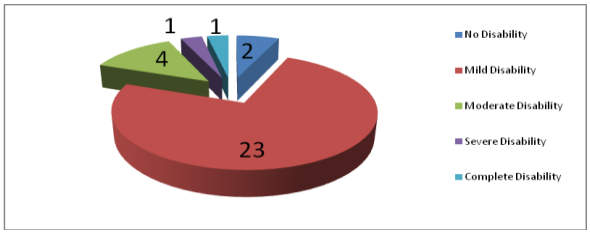


Fig.3 : Number of patients with different grades of disability after 12 months of surgery

DISCUSSION

Despite of a high incidence of tuberculous spondylitis, there still exists a controversy regarding its medical or surgical treatment.[9] However, patients having abscess, neurological deficit and kyphous deformity require radical surgery. In our experience, patients having severe pain not responding to the medical treatment also gave excellent results when managed operatively.

We analyzed the results of our tuberculous patients managed surgically by the Oswestry Disability Index which is a time-tested outcome assessment instrument that is used to measure a patient's level of disability in various daily activities and therefore, quality of life can be graded. In the management of spinal disorders it is one of the principal condition-specific outcome measures used.[10] The original version of the ODI has been revised since its original development. The most recent revision was published in 2000.[8]

To determine the long term outcome of instrumentation done in the management of caries spine we approached our patients who were operated at least one year back. A few patients could not be traced and were lost in follow up. They were not included in the study.

80% of patients in our study are leading good quality of life after one year of surgery. They can cope with most of the daily activities of life and no further treatment is indicated apart from advice on lifting, sitting and exercise. 4 patients (13.3%) experience more pain and difficulty with sitting, lifting and standing. Travel and social life is more difficult and they may be disabled from work. Personal care sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means.

Only 1 patient has severe disability. Pain is the main problem and activities of daily living are affected. This patient requires a detailed investigation and active management subsequently. One patient has back pain impinging on all aspects of the patient's life. Some intervention is required but patient is having multiple co morbidities making her unfit for further surgeries

CONCLUSION

In properly selected patients, spinal instrumentation is justified because of its safety and efficacy and having good long term functional outcome.

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