



OUTCOME OF PARALLEL STAGE ANTERIOR AND POSTERIOR SURGERY FOR TUBERCULOUS PARAPLEGIA

Orthopaedics

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ABSTRACT

PURPOSE: To assess the neurological recovery in patients who underwent anterior debridement, fusion and posterior instrumentation and early rehabilitation. To assess the incidence of graft related complications. To study the extent of deformity correction and maintenance in these patients

METHODS: A prospective follow up of a cohort of patients who underwent combined anterior (anterior debridement and bone grafting) and posterior (posterior instrumentation and fusion) surgery was done IN LALITHA HOSPITAL GUNTUR in a period of aug 2018 to aug 2019

RESULTS. This study was done over a 1 year period from 2018 AUG- 2019 AUG. Of the 76 patients with tuberculosis of the spine 30 patients with Frankel A,B and C grade neurological deficits were included in the study. One patient had a follow up of only 2 months and thus was excluded from the post operative evaluation.

CONCLUSION: In the cohort that was studied 89.6% showed good neurological recovery, the average loss of correction was 6.98° (0.20 to 35.90°) and the complication rate was reasonable. We conclude that Single stage anterior debridement, decompression and fusion with strut grafting and posterior stabilization and fusion permits early ambulation, shortens hospital stay and allows early rehabilitation. It does not interfere with neurological recovery. It allows deformity correction and maintains this correction at long term follow up.

KEYWORDS

INTRODUCTION

Tuberculosis is a major infectious disease with an increasing morbidity and mortality forecast for the world at large. Quite unlike the popular misconception that tuberculosis is no longer a public health problem, the association of HIV AIDS and multidrug resistance has further compounded the existing situation. India has been classified along with the sub Saharan African countries into group IV countries with an annual risk of infection of 1- 2.5% 2. Spinal tuberculosis is the most common form of articular skeletal tuberculosis, in HIV-negative patients, between 3% and 5% of tuberculosis cases are skeletal, compared with 60% of cases in HIV-positive patients 3. Anti tuberculous chemotherapy since its introduction in the early 1960s has become the mainstay of management with other interventions considered supplementary to improve the final outcome. While effective chemotherapy controls the infection, it alone is insufficient to rectify the problems arising from bone destruction. Unlike early tuberculous spondylitis where conservative management may suffice, in advanced cases with cold abscesses, kyphosis and paraplegia surgical intervention has a major role to play. In developing countries where the burden of tuberculosis is the highest, surgery is considered only for absolute indications to allow an equitable distribution of scarce resources 4. In the past, neural decompression for tuberculous paraplegia has been carried out in various ways with similar rates of neurological recovery though progression of kyphosis and its attendant problems were issues that arose. An anterior arthrodesis comprising a surgical extirpation of the tuberculous focus and its replacement with a bone graft in a structurally sound position is advocated as the treatment of choice 5, 6. The theoretical advantages of this procedure were mitigated due to the need for prolonged immobilization and high incidence of graft related complications that occurred as shown in long term follow up studies 7. The use of instrumentation anterior or posterior to protect the graft is advocated in some centers to retain the advantages of an anterior arthrodesis while decreasing the rate of graft related complications and allowing the patient to be rehabilitated earlier. This study evaluates the outcome of patients with tuberculosis of the dorsal, dorsolumbar and lumbar spine with neurological complications who underwent radical anterior debridement and fusion and posterior instrumentation

INCLUSION CRITERIA

1. Definitive diagnosis of tuberculosis of the spine based on

histopathological or microbiological evidence.²⁰

2. Presence of objective motor , sensory and or autonomic deficits (Frankel A,B and C)
3. Patients who have undergone anterior debridement, fusion and posterior instrumentation in one or two stages

DATA COLLECTION

All patients with tuberculosis of the dorsal, dorsolumbar and lumbar spine with neurological deficits from 2018 – 2019 were assessed preoperatively based on retrospective records and recorded in a data sheet (sample provided in the appendix). Those with Frankel A, B, and C were included in this study. The patients were followed up after surgery and outcome was assessed objectively based on clinical examination, radiographs and subjectively to assess functional outcome.

CLINICAL PRESENTATION:

The average duration of back pain was 136.24 days (range 7- 365) days. The average duration of motor weakness was 43.17 days (range 0-150 days). The average duration of sensory deficits is 7.06 days (range 0-90 days). The average duration of bladder and bowel involvement was 11.41 days (range 0-90 days). 8.8 % (3 patients) had flexor spasms. 21 patients (56.8 %) had co morbid conditions- including diabetes mellitus, hypertension, pulmonary, disseminated tuberculosis, tuberculous abdomen, tuberculous meningitis, pleural effusion, coronary artery disease, COPD, rheumatoid arthritis, hydronephrosis, hepatotoxicity, hyperthyroidism, aortic regurgitation and pregnancy. 24 patients (68.6 %) had constitutional symptoms during presentation. 2 patients had past history of tuberculosis. All patients had a gibbus and one had a scoliosis on presentation. 6 patients had clinically evident cold abscesses.

SURGICAL PARAMETERS:

All patients had single stage anterior and posterior surgery. 1 patient had anterior surgery followed by posterior and then anterior surgery. Operative records for two patients were not available. In 45.9% (17) patients the anterior surgery was done before the posterior instrumentation. In 48.6% (18) patients the posterior surgery was done first. In 25 patients the anterior approach was through a thoracotomy Tricortical iliac crest bone graft was used in 25 patients (67.6%), fibula graft was used in 2 (5.4%), a cage with iliac graft was used in 7 (18.9%)

and local or rib graft was used in 2 (5.4%). The average length of the graft was 37.24 mm

POST OPERATIVE DEFORMITY ANGLES:

The average postoperative angle A was 16.36° (range -11 to 47.90°). The average in the thoracic region was 20.26° (-2.4 to 3347.9°), in the thoracolumbar region was 10.43° (3.10 to 20.60°) and in the lumbar region was -2.6° (-11 to 6.2°). The average local Kyphus angle was 16.39° (range -9.90 to 46.90°)

SYMPTOMS AND FUNCTIONAL RECOVERY

Data for neurological recovery was available for 29 patients. 26 out of these 29 patients were independent in activities of daily living and were able to return to previous occupation at the end of 6 months. 1 patient had significant back pain which subsided after implant removal for implant failure. No other patient had significant pain or paraesthesia. 3 patients complained of prominence of the implants without associated pain or discomfort.

RADIOGRAPHIC ASSESSMENT AT FOLLOW UP:

Local kyphus angle at follow up was an average of 22.77° (range -4° to 69°) Angle A at follow up was an average of 23.18° (range -1 to 72.50°) The mean angle A in the thoracic region is 27.10° (8 to 72.50°) The mean angle A in the thoracolumbar region is 25.50° (5.20 to 45.80°) The mean angle A in the lumbar region is 2.43° (-1.00 to 4.10°)

GRAFT COMPLICATIONS: Table 16

The graft complications were evaluated at last follow up. One patient had a graft slippage one patient had graft fracture and one had change in position on the graft without slippage. This patient did not require any intervention at 6 months follow up. The patient with graft fracture also had a symptomatic implant failure and underwent implant exit. She subsequently fused but had lost 25.20° of correction. The overall graft complication rate was 5.4%.

CONCLUSION

In the cohort that was studied 89.6% showed good neurological recovery, the average loss of correction was 6.98° (0.20 to 35.90°) and the complication rate was reasonable.

We conclude that

1. Single stage anterior debridement, decompression and fusion with strut grafting and posterior stabilization and fusion permits early ambulation, shortens hospital stay and allows early rehabilitation.
2. It decreases morbidity during the period of hospitalization and the interim period when the neurological status is recovering.
3. It does not interfere with neurological recovery.
4. It minimizes graft complications in terms of graft slippage, absorption and fractures and had minimal implant complications.
5. It allows deformity correction and maintains this correction at long term follow up.

This regime can thus be recommended for treatment of patients with tuberculous paraplegia in centers where adequate facilities are present.

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