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Tuberculosis of the spine – Prospective neurological and patient reported outcome study

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ABSTRACT

Objective: To prospectively investigate the rate of neurological recovery and patient reported outcome of tuberculosis (TB) spine patients following surgery at a tertiary referral hospital.

TB spine remains a major cause of neurological impairment in the developing world fuelled by poor socio-economic conditions and HIV co-infection. Although numerous retrospective studies are available, there is a paucity of prospective data regarding rate of neurological improvement and patient reported outcome.

Methods: Twenty adult patients were prospectively recruited. The average age was 44.5 years. Half had co-existent HIV infection.

All patients underwent decompressive surgery utilising a variety of anterior and posterior procedures. All received a minimum of 9 months TB medication.

They were followed up at 4, 8, 12, 26 and 52 weeks post operatively. Neurological status was monitored by Nurick, mJOA and ASIA systems. Patient reported outcome was monitored by SF36 questionnaires at all-time points.

Results: All patients improved neurologically including 4 ASIA A's. By last follow up, 17 could walk as opposed to 5 pre-op. The Nurick average score improved from 5.5 to 1.9 and the mJOA lower limb score 1.8–5.5.

The SF36 improved from 31 to 62 over the year with the biggest gains occurring after 3 months. This was confirmed in all domains except pain and social, which improved earlier.

Conclusions: There is a positive prognosis for neurological outcome in TB spine following a variety of surgical decompressive procedures and medical therapy. The majority of the recovery occurs after the 3 months post-operative mark.

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Tuberculosis (TB) remains a major global health problem with 8.6 million people contracting it and 1.3 million dying in 2012 [12]. Although South African has one of the highest incidences at around 1%, the biggest volume of cases are in India and China due to their massive populations [13]. With population migration the disease is being increasingly managed in the developed world [3].

Although primarily a pulmonary disease, extra-pulmonary infection occurs in 10–15% with skeletal manifestations contributing to half. The incidence of spine involvement, also termed "Pott's disease" is in the order of 1–2% [8].

Most cases of spine TB can be managed with medical therapy alone following confirmatory biopsy. Due to the poor populations it effects, combined with the vague symptomatology and insidious onset, delayed presentation often occurs. Thus there is often associated advanced vertebral destruction, collapse into kyphosis and neurological compromise [11]. Surgery may be indicated in severe anterior column involvement with kyphosis, instability, profound neurological deficit with failure of medical care. Surgical options are many and are largely determined by local resource. Simple costotransversectomy is useful in cases with minimal deformity and predominantly a paraspinal abscess present whereas anterior debridement and reconstruction may be required in severe cases, where kyphosis and bone and disc debris are the causes of kyphosis and bony/disc debris the cause of cord compression.

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Table 1
Demographic data and treatment for each case included in the study.

Patient	Age	Sex	HIV status	Pre op mobility/disability	Living status	Onset of symptoms	Level	Procedure
1	72	F	Negative	Wheelchair	At home with family	3	T10	Costotransversectomy
2	32	M	Positive	Wheelchair	At home with family	1	T7/8	Corpectomy, strut, instr fusion
3	59	M	Negative	Wheelchair	At home with carer	4	T10	Anterior corpectomy and posterior instr fusion
4	36	F	Positive	Wheelchair	At home with carer	6	T11–L2	Post decompression and fusion
5	18	M	Negative	Wheelchair	At home with family	12	T9–L2	Post onlay fusion allo
6	59	M	Positive	Wheelchair	At home with family	2	T10–12	Costotransversectomy
7	44	F	Positive	No aid	At home with family	6	C1–2	Post instrumentation
8	45	M	Positive	Wheelchair	At home with family	2	T9–L1	Post decompression & biopsy
9	48	F	Positive	Wheelchair	At home with family	1	T8–12	Ant corpectomy, strut, instr fusion
10	50	F	N/A	Wheelchair	At home with carer	11	T6–T9	Anterior corpectomy and fusion
11	28	F	Positive	No aid	At home with carer	5	T4–8	Corpectomy, strut fusion
12	49	M	Positive	No aid	At home with family	6	T11–L3	Posterior VCR, pedicle screws post and strut graft
13	24	M	Positive	Wheelchair	At home with family	7	T8–T11	Anterior corpectomy and fusion
14	44	M	Positive	Abnormal gait	At home with family	2	T3–T8	Post drain autograft instr fusion
15	40	F	Negative	General weakness	At home with carer	12	T6–T7	Anterior corpectomy and fusion
16	39	M	N/A	Abnormal gait	At home with family	12	T8–12	Ant corpect instr fusion allograft
17	61	F	N/A	Weakness	Nursing home	3	T8–T9	Anterior corpectomy & fusion
18	67	F	Negative	Wheelchair	At home with family	16	T10–T11	Retroperitoneal corpectomy and fusion
19	39	F	N/A	Wheelchair	At home with family	4	T10–L1	Anter corpectomy and fusion strut graft
20	36	M	Positive	General weakness	At home with family	4	T6–T9	Anterior corpectomy, strut graft & fusion

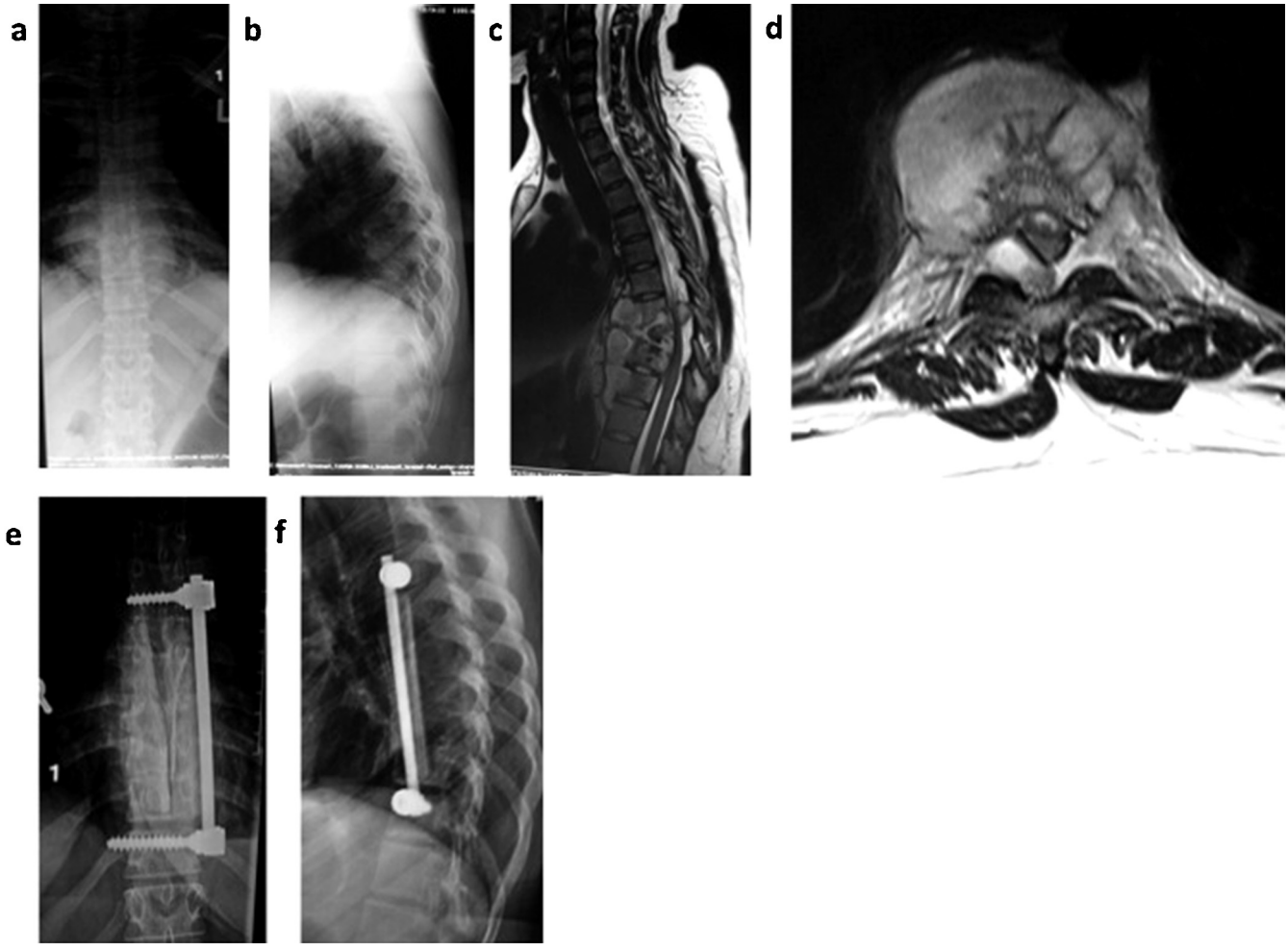

Fig. 1. Patient 11, anterior corpectomy, strut graft and instrumentation. (a and b) Plain X-rays showing bony destruction at the mid-thoracic level. (c and d) MRI showing large abscess formation, compromise of the chord is visible in the saggital and axial views. (e and f) Post-operative images.

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