

TABLE E-1 Detailed Analysis of Reported Series of Craniovertebral Junction Tuberculosis Treated Operatively and Nonoperatively

Series	Total No. of Patients	Patients with Substantial Deficit*	Treatment Protocol*	Results and Complications*
Fang et al. ²³ (1983)	6	Tetraparesis (1) and hemiparesis (1)	Transoral debridement and anterior fusion (4); transoral abscess drainage and posterior C1-C2 fusion (1); C1-C3 fusion alone (1) and ATT for 15 mo	Graft displacement (2); neurological deterioration (1); persistence of symptoms (1); AFB positive (2)
Lifeso ⁷ (1987)	12	Unable to walk (4) and tetraparesis (1)	C1-C2 fusion (2); occiput-C3 fusion (2); C1-C3 fusion (1); occiput-C2 fusion (1); cervicothoracic orthosis (3); and halo-vest immobilization (2) and ATT for 12 mo	Good results (11); death (1); AFB positive (5); culture positive for <i>Mycobacterium tuberculosis</i> (9)
Lal et al. ²⁹ (1992)	6	Progressive quadriparesis (1)	Abscess drainage and Minerva jacket (2); and fusion with posterior metal prosthesis (1); foramen magnum decompression and posterior fusion (1); excision of C1 posterior arch (1); and transoral biopsy (1)	Death (1); culture positive for <i>Mycobacterium tuberculosis</i> (2)
Krishnan et al. ³⁰ (2001)	29	Progressive weakness (3)	Clinical details and management strategies details not described (study shows retrospective review of imaging findings only)	Details not available; culture positive for <i>Mycobacterium tuberculosis</i> (4)
Arunkumar and Rajshekhar ³¹ (2002)	9	Nurick grade 4 and 5 (6)	Transoral decompression only (2); with odontoidectomy (5); with removal of diseased part	Good clinical outcome (8); transient confusion and urinary

			of C2 vertebral body (2) and posterior fusion (9) and ATT for 18 mo	incontinence (1); bone graft donor-site infection (1)
Behari et al. ³ (2003)	25	Dependent on others (10)	Conservative (14); posterior fusion (7); single stage transoral decompression and posterior fusion (4) and Minerva jacket and/or hard collar immobilization and ATT for 18 mo	Death (1); fracture of posterior arch of C1 (1); oral wound dehiscence (1); occipital pressure sore under jacket (1)
Sinha et al. ²⁴ (2003)	18	Severe quadriparesis and unable to walk (9)	Transcervical retropharyngeal neural decompression and posterior fusion (18) and Philadelphia collar for 6 wk and ATT for 18 mo	Death (1); transient dysphagia (2); reoperation due to inadequate wire-tightening (1); AFB positive (2); culture negative in all
Kotil et al. ²⁵ (2004)	10	Pyramidal signs (6); details not available	Transoral decompression (4); transoral decompression and occipitocervical fusion (5); transoral odontoidectomy with decompression (1) and hard cervical collar and ATT for 15-18 mo	Death (2); transient hemiparesis (2); bone graft donor-site infection (2); graft displacement (2); reoperation (3); pseudarthrosis (1)
Shukla et al. ¹⁶ (2005)	24	Spastic quadriparesis (16)	Transoral decompression (6); with posterior fusion (9); only posterior fusion (6); external orthosis (4) and ATT for 18 mo	Residual spasticity (9); tubercular granulation tissue obtained in 4 of 22 patients
Gupta et al. ² (2006)	51	Spastic quadriparesis (30); quadriplegia (6)	In period 1978-1986, surgery only (10); 1987-1998, surgery or conservative treatment (25); and 1999-2004, conservative treatment only (16). Treatment	Complete recovery (47); death (2); residual spasticity (2); AFB positive (7 of 44)

			included C1-C2 posterior fusion with wire (14); transoral decompression with Minerva jacket (5); transoral decompression with posterior fusion (1); C1 laminectomy (1) and ATT for 18 mo	
Teegala et al. ¹⁹ (2008)	71	Functional disability class 3 and 4 (9)	Early transoral decompression and posterior fixation (8); posterior stabilization only for reducible AAD (5); conservative treatment in rest and ATT for 18 mo and Philadelphia collar	FNAC showed AFB- positive results (20 of 44) and culture positive for <i>Mycobacterium tuberculosis</i> (4 of 44); residual neck pain (5); residual weakness (3)

*The number of patients is given in parentheses. ATT = antitubercular therapy, AFB = acid-fast bacilli, AAD = atlantoaxial dislocation, and FNAC = fine-needle aspiration cytology.

TABLE E-2 Detailed Analysis of Reported Series of Craniovertebral Junction Tuberculosis Treated with Nonoperative Methods Alone

Series	Total No. of Patients	Patients with Substantial Deficit*	Treatment Protocol*	Results and Complications*
Tuli ¹³ (1974)	25	Varying degree of neural deficit (8); detailed neurological grading not available	Rest on hard bed; skull traction; triple drug ATT (duration unknown); abscess drainage (4)	Good clinical outcome (24); residual deficit (1); persistent subluxation (2); histologic details not available
Gupta et al. ² (2006)	16†	Nurick grade 4 and 5 (10)	Traction for 2-10 days; halo brace for 3 mo; ATT for 18 mo; transoral needle aspiration or biopsy (12); lymph node biopsy (3)	Good clinical outcome (15); death (1); AFB positive (1 of 15)
Chadha et al. ¹⁴ (2007)	13	None‡	Traction for 12 wk; ATT for 18 mo; appropriate cervical brace for 12 mo	Good clinical outcome (13); failure to reduce AAD and/or lateral subluxation of dens (2)
Present series	26	Di Lorenzo grade III and IV (12)	Hospitalization. Group A (20): weakness of limbs, pyramidal signs, and/or evidence of AAD or BI: traction followed by halo vest. Group B (6): no neurological deficit, pyramidal signs, or AAD or BI: early application of halo vest; antitubercular chemotherapy (3 HRZE + 9 HRE + 6 HR)	Good clinical outcome (26); persistence of fixed AAD (6); persistence of BI (1); superficial pin-track infection (5); and sacral decubitus sore (1)

*The number of patients is given in parentheses. ATT = antitubercular therapy, AAD = atlantoaxial dislocation, BI = basilar invagination; H = isoniazid, R = rifampicin, Z = pyrazinamide, E = ethambutol, and AFB = acid-fast bacilli. †Data are given on patients treated from 1999 through 2004. ‡Only three patients had minor deficits.