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Diaphragm sparing miniopen anterolateral approach for stabilising thoracolumbar fractures by an innovative procedure

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Introduction: The thoracolumbar junction (T11–L1) poses anatomical dilemma, due to diaphragm/lower rib cage while performing anterolateral approaches. A diaphragm sparing minimally invasive, lateral extracoelomic approach has been used by the author to reach thoracolumbar junction. The purpose of this study is description of the procedure and its surgical safety/efficacy in terms of amount of dural decompression, correction of kyphosis, preservation of both pulmonary functions and postoperative diaphragmatic movements.

Methods: A prospective cohort study was applied to 21 consecutive cases of thoracolumbar fracture. Single level traumatic fractures(T11, T12 & L1) with TLICS score 5 or more were included. The author's innovative miniopen thoracotomy incision(7cm) is placed diagonally behind posterior axillary line at the level of fractured vertebra. Underlying rib and one above it excised subperiostealy and mobilising the pleura extracoelomically. Fibres of external oblique was cut(when required) and Gerota's fascia and retroperitoneal structures were retracted anteriorly. After localising the fractured vertebra by fluroscopy a plane was developed between left crus of the diaphragm and medial margin of psoas, and extended subperiostealy anteriorly upto anterior longitudinal ligament. Trough was created in fractured vertebra after corpectomy and adequate decompression of the spinal cord. The construct was made using expandable cage with endplate.

Results: In this study adequate exposure was obtained by the author's diaphragm sparing technique to perform corpectomy allowing interbody grafting and fusion between the adjacent vertebrae. There were no conversion to conventional thoracotomy approach. In all the patients VAS score, pulmonary function tests, diaphragmatic movement normalised by 12th post op day.

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