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**The minimally invasive retropleural approach to the thoracic and thoracolumbar spine – Technical considerations and clinical experience with 58 cases**

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**Objective:** To evaluate the minimally invasive (mini-open) retropleural approach for ventral reconstruction of the thoracic and thoracolumbar spine.

**Methods:** In 58 patients with neoplastic or inflammatory destruction of the thoracic or thoracolumbar spine, reconstruction was achieved by vertebral body replacement with distractable cages (Synex or Obelisc) and ventral plating systems (TeleFix or Vantage) implanted via retropleural or combined retropleural/retroperitoneal approaches using a frame retractor system (SynFrame) specifically designed for minimally invasive procedures. OR-time, intraoperative handling properties, reduction of kyphosis, postoperative pain (VAS) and blood loss, as well as clinical results (mean follow-up: 9.5 months) were evaluated as compared to standard open transpleural technique.

**Results:** In all patients, ventral reconstruction (with adequate reduction of kyphosis) and stabilization was carried out successfully without conversion to a conventional open approach. Mean OR-time for single-level surgery (3.2h) remained stable compared to conventional open surgery, while mean blood loss ( $\leq 130$ ml) and postoperative pain were reduced significantly. With the retropleural approach, no single-lung-ventilation or postoperative chest tube was necessary. The Obelisc VBR-device and Vantage plating system displayed handling and assembly properties specifically suited for the mini-open ventral approach. No significant loss of correction or implant failure was observed during follow-up.

**Conclusions:** Reconstruction of the thoracic and thoracolumbar spine via a mini-open retropleural approach is greatly facilitated by the use of specifically designed access systems and instrumentation. It may be performed safely with excellent postoperative results, less blood loss and less postoperative chest pain as compared to the standard transpleural technique.

