



# Current endoscopic surgical approaches for mediastinal resection

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This paper reports on surgical mediastinal tumor resection at a single facility by means of single-port, video-assisted, thoracoscopic surgery (VATS) using a lateral intercostal approach together with initial outcomes (1). The approach reported by the authors resulted in commendable initial outcomes including mortality and morbidity.

Current endoscopic surgical approaches include the cervical, lateral intercostal, and subxiphoid approaches for anterior mediastinal tumors, with a lateral intercostal approach primarily taken for middle and posterior mediastinal tumors. The cervical approach for anterior mediastinal tumors was reported as transcervical thymectomy by Cooper *et al.* in 1988 (2). This approach offers the major advantage of minimal pain. However, it is not favored for cosmetic reasons due to potential neck incision. Surgical technique limitations have also prevented this approach from becoming widespread. The lateral intercostal approach was the result of the thoracoscopic resection of an anterior mediastinal tumor by Landreneau *et al.* in 1992 (3) and is currently the most widely used approach at medical facilities. However, the lateral intercostal approach makes it difficult to secure an adequate surgical field of vision for the neck, and the unilateral intercostal approach makes it difficult to confirm the location of the contralateral phrenic nerve. Therefore, extended thymectomy from one side becomes challenging when all of the adipose tissue in front of the contralateral phrenic nerve is being resected. Another major drawback of the lateral intercostal approach is inevitable postoperative numbness and pain due to intercostal nerve damage caused by port insertion, which can lead to permanent post-thoracotomy pain syndrome (4). The subxiphoid approach was first used by Kido *et al.* in 1999 (5). The field of vision

looking up from the midline of the body makes it easy to confirm the location of the bilateral phrenic nerves and to secure the field of vision of the neck. Drawbacks include limitations in securing the surgical field and operability; however, the development of techniques involving CO<sub>2</sub> insufflation and new surgical instruments has improved operability and enabled surgery to be performed using a single port (6). Single-port thymectomy via the subxiphoid approach does not cause postoperative intercostal nerve damage, is the least invasive approach, and has excellent cosmetic outcomes (7). However, this approach requires familiarity with the surgical technique and is limited in its operability. Therefore, it is crucial to choose or combine appropriate approaches on a case-by-case basis with full understanding of the advantages and drawbacks of each.

The authors employed single-port surgery using a lateral intercostal approach. One drawback of the lateral intercostal approach is the aforementioned intercostal nerve damage. However, unlike multi-port VATS, single-port VATS only involves insertion of a port via one intercostal space, which can reduce postoperative pain. Furthermore, in single-port surgery, selective paravertebral or intercostal nerve block to the intercostal space results in easier pain control immediately after surgery. Further evaluation and investigation by the authors of postoperative pain following this approach is awaited. Single-port VATS mediastinal tumor resection using a lateral intercostal approach can be extremely beneficial for patients because, as demonstrated in this paper, it is both safe to perform and offers excellent cosmetic outcomes.

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