



Overcoming the limitations of subxiphoid uniportal video-assisted thoracoscopic surgery and future concerns

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There is no doubt that video-assisted thoracoscopic surgery (VATS) has been a safe and effective alternative to open surgery with the same or even superior results regarding safety and oncological efficacy in addition to the advantage of being a minimally invasive approach (1). Reduction of ports number up to only one port in a trial to minimize tissue trauma and consequently the postoperative pain has been developed over the past few years either through the intercostal or subxiphoid VATS (SVATS) approaches (2,3).

From that point, we extremely appreciate the editorial commentary published by Bertolaccini *et al.* (4) on the published paper of Abdellateef *et al.* (5). Primarily, trials to avoid intercostal incision through the subxiphoid approach was to further lessen postoperative pain. Then, the literature started gradually to report other advantages for subxiphoid approach like faster postoperative mobilization with lesser incidence of chest infection and thromboembolism (6). In addition, SVATS has been considered as an efficient approach to mediastinal masses and thymectomy with good visualization of both phrenic nerves bilaterally, faster and ideal approach for bilateral lesions or concomitant pulmonary and mediastinal approach through single incision without need to intraoperative change of patient's position (7). Furthermore, it offers easier angle for passage of dissectors and staplers around blood vessels and bronchus during major pulmonary resection (5).

As any newly developed technique, SVATS has had some limitations like the need for dedicated training and relatively stepwise learning curve due to different angle of instrumentation and axis of visualization rather than the familiar intercostal view and instrumentation. However, we can have a look on the rapidly growing literature delivering the different implications of subxiphoid approach starting from simple bullectomy passing by more complex procedures as thymectomy, lobectomy, segmentectomy and other complex bilateral pulmonary resections (5-8). That may indicate that the matter of accommodation on the different view and way of instrumentation has been just time factor and has been overcome with the progressing learning curve.

Risk of arrhythmia specially on left sided operations, need for wide subcostal angle and more difficult approach to posterior thoracic structures arose the necessity of patient and lesion selection criteria like avoidance of obese patients, patients with cardiac problems and posteriorly located lesions. But, the increasing number of adopting surgeons for SVATS increased the interest to develop specially designed long curved instruments which facilitated the technique, lessened the compression on the heart and eased the reach to posterior thoracic structures. Also, by the growing experience, many tips and tricks have arisen and published to guide surgeons to safer and easier subxiphoid technique (9).

In conclusion, difficulty and limitations of SVATS

are being overcome by the growing surgeons' expertise. Concerns regarding long term follow up, proving the oncological efficacy and actual effect on quality of life should be the goals of future research through multicenter and randomized studies.

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