

Peer Review File

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Reviewer A

Comment: This is a very nice case report. The technique is well described. The discussion is also excellent. I think this manuscript should be accepted.

Reply: We thank for the reviewer's comments.

Reviewer B

Comment: Very nice paper. but it is too long for a case report.

Reply: We thank for the reviewer's comment. The anesthesia and surgical techniques were complicated and we wanted to describe it clearly. The manuscript was within required article length for a case report.

Reviewer C

Comment 1:

How satisfying calm state was obtained through the procedure, especially during broncho-plasty maneuvers?

How was the sputum removed?

You mention that spontaneous breathing by 60% oxygen from face, and 5L of oxygen through cross-field catheter from open end.

If the oxygenation was still insufficient, were you preparing any as the next step?

Reply 1: Satisfying calm state was achieved with the sequential use of intravenous dexmedetomidine, propofol, remifentanyl and sufentanil as described in the **Case presentation** (see page 4, line 69 to 76). The calm state was monitored with bispectral index. No physical movement or cough during the surgical maneuvers like dissecting the hilum and the bronchus was also a good sign of satisfying calm state. If physical movement or cough occurred, a bolus of 3-5µg intravenous sufentanil would be given to increase the analgesic effect and calm state. This spontaneous respiration anesthesia technique was well established in our institution and it has been applied in many minor and major thoracic surgeries.

The case we presented was diagnosed with carcinoma without any signs of infection, which was carefully evaluated before surgery. Preoperative intravenous atropine was used to reduce the glandular secretions. The airway secretion was very little since there was no endotracheal intubation induced vagus nerve stimulation. The saliva from mouth could be easily removed using the aspirator. The sputum in the distal airway could be removed through the open ends of the bronchus with surgical aspirator. Once the airway was opened, aspiration and hemostasis were immediately performed to prevent blood or sputum aspiration.

Before the airway was opened, there was continuous oxygen supply from facial mask. Once the airway was opened, it was actually much easier for the patient to breath since there was no upper airway obstruction. If hypoxemia occurred, concentration and flow rate of the oxygen could be increased. If the hypoxemia didn't improve, high-frequency jet ventilation could be applied to provide oxygenation through the bronchus end. If the oxygenation was still insufficient, the next step we could do was to clamp the opening of the airway and restart the ventilation through facial mask or laryngeal mask. The final step was to perform endotracheal intubation under general anesthesia. However, high-frequency jet ventilation was sufficient enough to solve most of this problem in tubeless cases.

Changes in the text: None.

Comment 2: Second, was the anastomosing technique same as intubated patients?

Reply 2: Yes, the anastomosing technique was the same as intubated patients.

Changes in the text: None.

Comment 3: Third, are you adopting this technique also to the patients of non-impaired lung function?

Reply 3: Yes, this tubeless anesthesia technique has been frequently used in patients of non-impaired lung function in our institution for thoracic surgeries ranging from wedge resections, lobectomies, segmentectomies and sleeve procedures.

Changes in the text: None.

Reviewer D

Comment 1: Did you use spirometry and blood gas analysis alone to assess surgical risk? Pulmonary physiological assessment is necessary in patients with poor pulmonary function undergoing major lung resection. The readers would like to know about predicted postoperative pulmonary function, diffusion capacity of the lung and exercise capacity and oxygen consumption.

Reply 1: Spirometry, blood gas analysis and cardiopulmonary exercise test were used to assess surgical risks. The blood gas analysis was within normal ranges. Cardiopulmonary exercise test was well tolerated despite the impaired pulmonary function. As the tumor resulted in stenosis and obstruction in the right upper lobe bronchus, the right upper lung could be assumed as non-functional. The predicted postoperative pulmonary function and diffusion capacity would be very similar to the preoperative spirometry results.

For COPD patients diagnosed with lung cancer, pneumonectomy may also provide the lung volume reduction effects. The preoperative assessment criteria for these patients should be distinguished from those with non-impaired lung functions. It was reported that, the incidence of postoperative complications and mortality for lung tumor resections was very low in patients with very low preoperative FEV1^[1]. Patients with mild to severe COPD could have a better postoperative pulmonary function after lobectomy than normal healthy patients^[2]. The predicted postoperative FEV1 and DLCO were not predictive of postoperative morbidity and should not be used alone as a selection criteria for these high-risk patients^[3,4]. Therefore we did not include these detailed assessments in our case report.

[1] Linden PA, Bueno R, Colson YL, *et al.* Lung resection in patients with preoperative FEV1 < 35% predicted. *Chest*, 2005,127(6):1984-1990.

[2] Baldi S, Ruffini E, Harari S, *et al.* Dose lobectomy for lung cancer in patients with chronic obstructive pulmonary disease affect lung function? A multicenter national study. *J Thorac Cardiovasc Surg*, 2005, 130 (6): 1616-1622.

[3] Brunelli A, Al Refai M, Monteverde M, *et al.* Predictors of early morbidity after major lung resection in patients with and without airflow limitation. *Ann Thorac Surg*, 2002, 74(4):999-1003.

[4] Brunelli A, Refai M, Salati M *et al.* Predicted versus observed FEV1 and DLCO after major lung resection: a prospective evaluation at different postoperative periods. *Ann Thorac Surg*, 2007, 83(3):1134-1139.

Changes in the text: None.

Comment 2: Clinical stage is an important decision-making criterion.

Reply 2: Clinical tumor staging was performed according to the preoperative examinations, and surgical pathology confirmed T2aN1M0 (stage II) for this patient after surgery. As the aim of this case report was to introduce a novel tubeless anesthesia technique and the cooperation with the operators, this detailed information of tumor staging was not included in this manuscript.

Changes in the text: None.

Comment 3: If you decided to perform uniportal VATS sleeve lobectomy under non-intubated general anesthesia to preserve pulmonary function, you should describe postoperative pulmonary function on spirometry.

Reply 3: Postoperative pulmonary function on spirometry was not tested during the hospital stay. Even if it was tested, the observed values would vary widely from the patient's real pulmonary function with the postoperative pain and drainage tube stimulation in the chest. The postoperative pulmonary function should have been valued during the follow-up, and it was the imperfection of our case report.

Changes in the text: None.