Case Report

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TANAFFOS

Thoracoscopic Lobectomy in a Patient with Permanent Tracheostomy

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One Lung Ventilation (OLV) is the preferred method of anesthesia in the vast majority of thoracic operations, especially thoracoscopic procedures. Although double lumen endotracheal tubes are usually used to conduct OLV during thoracic operations, in patients with permanent tracheostomy, because of short trachea, keeping these tubes safe in place is usually difficult. Thus, OLV in patients with permanent tracheostomy may be challenging or even impossible. Herein, we report a patient with permanent tracheostomy who underwent successful OLV and thoracoscopic lobectomy.

Key words: One lung ventilation, Tracheostomy, Lung cancer, Thoracoscopic lobotomy

INTRODUCTION

Lung cancer is the leading cause of cancer deaths worldwide (1). For early stage non-small cell lung carcinoma (NSCLC), surgical resection remains the cornerstone of treatment. Improvements in operative techniques and equipment have led to considerable growth in performing minimally invasive procedures in the field of thoracic surgery. In comparison to open thoracotomies, video-assisted thoracoscopic surgery (VATS) as a minimally invasive surgery has many advantages including reduced post-operative pain, shorter hospital stay, lower mortality and morbidity rates and also quicker return to normal life. OLV is usually required to facilitate exposure and conduct of thoracoscopic operations. Intubation with a double-lumen endotracheal tube (DLETT) is the most commonly used method to achieve OLV. But this method might be difficult in patients with permanent tracheostomy. Shorter length of the trachea and an unusual angle at the site of tracheostomy can make intubation with DLETT impossible or unsafe (2). Here, we report a patient with permanent tracheostomy who underwent successful OLV and thoracoscopic lobectomy with the main focus on the method of lung isolation.

CASE SUMMARIES

Our patient was a 53 year-old male who had been operated for laryngeal cancer (SCC) 6 years ago. Follow up chest CT scan showed a smaller than 3cm pulmonary mass

in the posterior segment of the right upper lobe and CT guided biopsy revealed well differentiated adenocarcinoma. With the diagnosis of second primary lung cancer according to the histological report and no metastases to other organs, he was considered as a candidate for thoracoscopic lobectomy.

Although it was attempted to place DLETT, appropriate positioning of DLETT seemed to be impossible and unsafe. Considering the short length of trachea and greater extratracheal length of the tube, slipping the tube and risk of OLV impairment seemed possible during the operation. Because of shorter length and flexibility of bronchial blockers, the patient was intubated with a Univent tube size 8 (Phycon Univent - fig1) and the blocker was placed in the right main bronchus under direct vision of a fiberoptic bronchoscope.

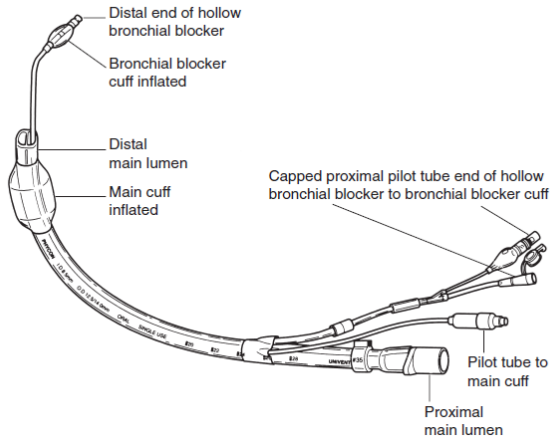

Figure 1. Phycon Univent (After Gothard J, Kelleher A. Essentials of cardiac and thoracic anesthesia. Oxford: Butterworth Heinemann; 1999)

After changing the position, location of the tracheal tube was rechecked to detect any accidental dislodgement. A 7cm utility incision and three 10mm ports were made and thoracoscopic lobectomy was uneventfully performed. OLV was conducted during the operation without any problem. The patient was discharged on the 5th postoperative day and remained well 8 months after the operation.

DISCUSSION

Two main purposes of OLV in thoracoscopic operations include making adequate exposure and isolating lungs to prevent entry of debris and blood to the contralateral lung (3). The most common method to achieve this goal is intubation using double lumen tubes but in patients with permanent tracheostomy, this might be a challenge. Shorter length of the trachea results in greater length of extratracheal part of the tube which can lead to some difficulties in fixing and keeping the tube in a correct position; however successful OLV has been performed using DLETT in patients with permanent tracheostomy (4). Although with introduction of ultra-short double lumen tubes by Rusch Company this problem was mostly solved, because of the limited need to this kind of tubes they are not available in most centers.

Another method to conduct OLV is bronchial intubation using conventional intratracheal single lumens. But there are some disadvantages including the risk of upper lobe obstruction by the fairly big cuff of the lumen which, can lead to decrease in arterial oxygen saturation (5). Also, the opposite lung does not collapse completely and this can cause some difficulties during the operation. Finally, there is the possibility of contamination of the intubated lung because the two lungs are not completely separated in this method.

Combination of single lumen tracheal tube with a blocker is another method for OLV. Blockers such as Foley catheter (6), tampon or Fogarty catheter (7), Vernon thomps (5) and Magill block (8) can be used for this purpose, but after the widespread use of DLT this method is not used any longer. The blocker should be placed under direct vision but safe fixation of the blocker and the possibility of slipping while positioning are two major problems (5). Although inside blocker has been associated with good results in some previous studies (9), there is little experience of using this method for thoracoscopic operations in the literature.

We used the Univent tube for our patient and it was placed under fiberoptic bronchoscopy guide which, is

mandatory in case of using this kind of tracheal tubes (10). In comparison to inside blockers, the Univent tubes have some advantages including the possibility of suctioning and delivering oxygen to the lung (11). In addition to the ability to conduct selective ventilation, there is no need to replace these tubes with ordinary tracheal tubes at the end of operation (11, 12). There are some disadvantages to using these tubes including the cost, difficulty in proper placing, risk of tension pneumothorax due to bronchial tearing (13), trapping the blocker in the stapler line (14) and slipping during the operation (5). Thus, when these tubes are being used especially in VATS operations, there should be full cooperation between the anesthetist and the surgeon.

CONCLUSION

As it was shown in our case, thoracoscopic surgery under OLV is possible in patients with permanent tracheostomy and it should not be considered as a contraindication or an obstacle. We believe that the Univent tubes might be more suitable for these patients and also there must be a close cooperation between the anesthesiologist and the thoracic surgeon to choose the best method of OLV.

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