

## Major pulmonary resections by exclusive VTS. A first in Tunisia

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Exérèses pulmonaires majeures par VTS exclusive. Une première en Tunisie

Major pulmonary resections by exclusive VTS. A first in Tunisia

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### R É S U M É

Bien que la chirurgie thoroscopique ait été introduite en Tunisie depuis 1993, il n'y avait pas eu de résections anatomiques réalisées de cette façon. Nous rapportons ici les 3 premiers cas de lobectomie effectuées par vidéo-thoroscopie exclusive. Trois patientes présentant une dilatation des bronches (2 cas) et une malformation adénomatoïde kystique (1 cas) ont eu une lobectomie par voie thoroscopique avec des résultats différents.

### S U M M A R Y

Although thoroscopic surgery had been introduced in Tunisia since 1993, there were no anatomical resections performed that way. We report herein the first 3 cases of lobectomy performed by exclusive video-thoroscopic surgery (VTS). Three female patients presenting with bronchiectasis (2 cases) and cystic adenomatoid malformation (1 case) have underwent a thoroscopic lobectomy with different outcomes.

### M o t s - c l é s

Thoroscopie; résection anatomique; poumon; VTC

### K e y - w o r d s

Thoracoscopy; anatomical resection; lung; VTS.

During the last two decades, the use of thoracoscopic surgery had spread rapidly worldwide and its indications had rapidly extended to anatomical resection for both benign and malignant causes. Although thoracoscopic surgery had been introduced in Tunisia since 1993, there were no anatomical resections performed that way.

We report herein the first 3 cases of lobectomy performed by exclusive VTS. Three female patients presenting with bronchiectasis (2 cases) and cystic adenomatoid malformation (1 case) have underwent a thoracoscopic lobectomy with different outcomes.

### CASE SERIES

Our patients were aged respectively 25, 15 and 51-years old. All of them had a past history of recurrent broncho-pulmonary infections treated with anti-biotics and complained from bronchorrhea. Chest-X ray showed images suggestive of dilated bronchi (Figure1). CT-scan confirmed the diagnosis of bronchiectasis in two cases and revealed a cystic adenomatoid malformation in the other (Figure 2). The lesions were located in the right lower lobe in two cases and in the left lower lobe in the other. The three patients were referred to our surgery department for lung resection. Thoracoscopic lobectomy was decided for the three patients under general anesthesia, using selective intubation, the patient being in the lateral supine position.

**Figure 1:** Chest X-ray showing dilated bronchi in the left lower lobe.



A camera port was placed in the posterior axillary line in the 7 or the 8th intercostal space through a 10.5 mm trocar. An exploratory thoracoscopy was performed. It showed pleural

adherences between the diaphragm and the lower pathologic lobe in the two first cases and widespread adherences between the right lung and the parietal pleura in the third case. A quadrangular thoracoscopy was then performed as follows: a-3.5 mm posterior port, adjacent to the scapula, an anterior 5.5 mm port between the latissimus dorsi and pectoralis major muscles in the 4th or 5th intercostal space and a-15 mm port in the anterior axillary line in the 6th space which was enlarged to a 3.5 cm access incision to remove the lobectomy specimen.

**Figure 2:** CT-scan showing a destroyed left lower lobe.



The lung was freed from the pleural adherences carefully to avoid parenchyma lacerations. Then, the fissure was opened with coagulator scissors. The pulmonary artery was hardly dissected in the fissure due to inflammatory adherent lymph nodes in the three cases. Its branches were identified, dissected using an endoscopic stapling device (Endo-GIA 30-2.5). The vein and its branches were identified and dissected using an Endo-GIA 45-2.5. In the same way, the lower lobe bronchus was dissected, individualized and sectioned with automatic articulated stapler (Endo GIA 45- 4.8). The resected lobe was extracted in an endoscopic bag via the trocar 15mm which was enlarged with 25 mm. After the checking of hemostasis and air leakage the chest was closed on a single suction drain No. 28, implemented through the trocar 10.5 mm in two cases and a double suction drain in one case due to widespread adherences (figure 3). All the three procedures were uneventful. The post-operative course was unremarkable in two patients which were discharged at the 5th post-operative day (figure 4). The third patient, in which widespread adherences were found intra-operatively, underwent a redo surgery by a VATS approach due to post-operative hemothorax with a good outcome post-operatively.

**Figure 3:** Post-operative photograph showing the placement of the trocars and the chest tube (note the enlarged incision for the extraction of the left lower lobe).



**Figure 4:** Post-operative chest X-ray after chest tube removal.



## DISCUSSION

Since 1990, video-thoroscopic surgery (VTS) has benefitted from the major technological improvements [1]. Thus its indications had extended from pleural biopsies, nodule diagnosis and cysts, to anatomical resection both for benign and malignant causes. Many series advocated that thoracoscopic

lobectomy is a safe and efficient approach, with results comparable to thoracotomy [2]. Thoracoscopic lobectomy has many advantages compared with the classical open approach: decreased blood loss, no rib spreading, reduced post-operative pain, reduced air leakage, shorter hospital stay, preserved post-operative function and as a result an early return to full activities [2]. However, despite the advantages of the VTS lobectomy approach, the procedure was considered dicey due to the high risk of uncontrollable bleeding and was slowly adopted due to its demanding learning curve [3]. From the worldwide initial experience, Inderbitzi and Grillet [4] reported 3.6% of complications and 0.3% of mortality associated with VTS, no matter the underlying treated disease and the first series reported a high conversion rate. Although VTS is a revolutionary procedure, it is restricted by many factors, such as thick dense adhesions and incomplete fissure [3]. These cases have to be managed by well experienced surgeons in VTS with a perfect knowledge of the anatomical vessels varieties and the different open approaches [3]. In addition, past history of tuberculosis or untreated infectious diseases of the chest contraindicate VTS procedures. Tunisia is an endemic country for TB and in our everyday practice; most of our patients have a history of recurrent untreated broncho-pulmonary infections. These facts make the majority of our patients unsuitable for an exclusive VTS approach. The cases which may benefit from a VTS procedure being scarce, the number of recruited patients was restricted and the learning curve very slow.

The patients of our series were carefully selected. All of them had no associated comorbidities, no past history of TB and well treated episodes of broncho-pulmonary infections. Since our experience has newly started we can't yet judge objectively the outcomes of our patients, but we can stipulate that the VTS approach has shortened their hospital stay, decreased their post-operative pain and allowed them a rapid return to everyday activities.

## CONCLUSION

Our experience with VTS lobectomy has just started and the future is promising for the development of this procedure in Tunisia with the developed endoscopic tools used and experienced surgeons.

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