Türk Göğüs Kalp Damar Cerrahisi Dergisi 2017;25(4):667-669
http://dx.doi.org/doi: 10.5606/tgkdc.dergisi.2017.13849

Case Report / Olgu Sunumu

A subxiphoid single-incision video-assisted thoracoscopic lobectomy: A case report

Subksifoid tek insizyon video yardımlı torakoskopik lobektomi: Olgu sunumu

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ABSTRACT

The term subxiphoid is generally referred to an incision that situated or performed below the xiphoid process. Mostly, it is used for pericardial window opening and thymectomy combined with cervical incision. Herein, we report the first case in Turkey of subxiphoid single-incision video-assisted thoracoscopic lobectomy for a middle lobe tumor.

Keywords: Minimally invasive surgery; pulmonary resection; subxiphoid incision.

ÖZ

Subksifoid terimi genellikle subksifoid çıkıntının altında olan veya altına yapılan insizyonu tarif etmek için kullanılır. Çoğunlukla, perikardiyal pencere açılması ve servikal insizyon ile birlikte timektomi amaçlı kullanılır. Bu yazıda, Türkiye'de orta lob tümörü nedeni ile subksifoid tek insizyon video yardımlı torakoskopik lobektomi yapılan ilk olgu sunuldu.

Anahtar sözcükler: Minimal invaziv cerrahi; akciğer rezeksiyonu; subksifoid insizyon.

Minimally invasive surgery has been utilized in thoracic surgery. With the recent developments in this technique, the incisions have become smaller with a reduced number of ports and, thus, uniportal video-assisted thoracoscopic surgery (VATS) has evolved dramatically over the past decade.[1] To push the boundaries of minimally invasive thoracic surgery one step further, subxiphoid incision interventions have been defined.[2] Herein, we, for the first time, report a case of subxiphoid single-incision video-assisted thoracoscopic lobectomy in a patient with a middle lobe tumor in Turkey.

CASE REPORT

A 49-year-old male patient was admitted to our clinic with a 3 cm mass in the middle lobe as assessed by thoracic computed tomography (CT) (Figure 1). Positron emission tomography/computed tomography (PET/CT) showed no locoregional or distant metastasis. Transthoracic biopsy result was reported as non-small cell lung cancer. The patient was scheduled for surgery.

A written informed consent was obtained from the patient. Under general anesthesia with double-lumen endotracheal tube intubation, the patient was positioned in a supine position with both arms 90° abducted from the neutral position. A 4 cm midline longitudinal incision was made immediately below the sternocostal triangle. The rectus abdominis was divided at the midline to expose the xiphoid process. The rectus abdominis insertion to the xiphoid process was detached by an electric knife. Subsequently, we reached the infrasternal angle, which is formed by the xiphoid process and the subcostal margin. A 10 mm and 30° rigid endoscope was used. After separating the adhesions in the chest wall and pericardium, oblique and horizontal fissures were dissected. The middle lobe vein, bronchus, and artery were divided, respectively with endostaplers (uniportal VATS). Finally, the parenchyma was divided with an endostapler and the specimen was removed inside an endobag. Additionally, No 2, 4, 7, and 10 nodal sampling was performed.

Received: August 30, 2016 *Accepted*: December 17, 2016

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Cite this article as:

Tezel Ç, Doğruyol T, Evman S, Baysungur V, Yalçınkaya İ. A subxiphoid single-incision video-assisted thoracoscopic lobectomy: A case report. Turk Gogus Kalp Dama 2017;25(4):667-9.

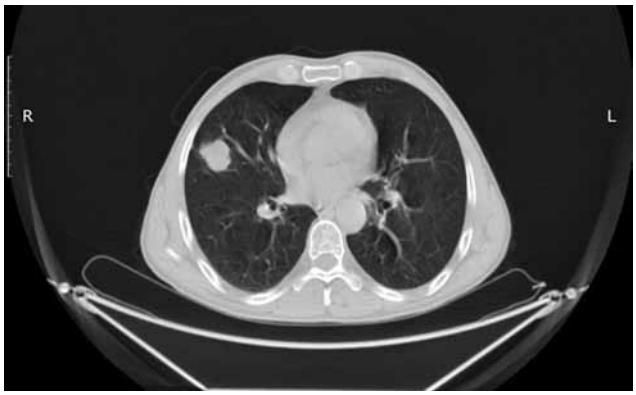

Figure 1. A computed tomography scan showing the mass in the middle lobe.

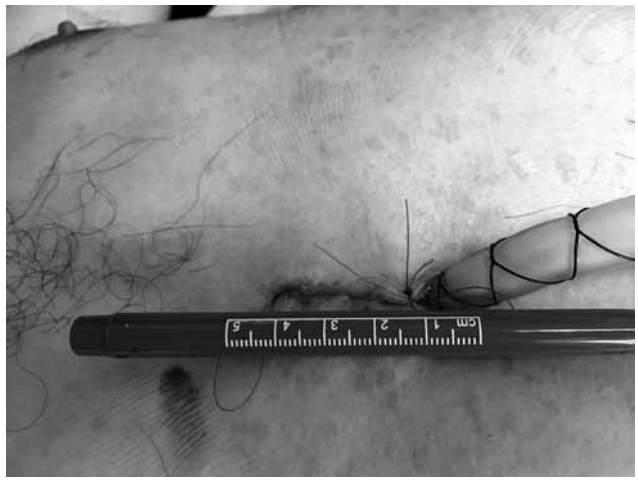

Figure 2. The appearance of the subxiphoid incision right after surgery.

Following surgery, a 24-Fr chest tube was placed via the same subxiphoid incision (Figure 2). The patient tolerated the whole procedure well without any pain. The chest tube was removed on postoperative Day 3, and the patient was discharged uneventfully. The pathology result was reported as an adenocarcinoma.

DISCUSSION

In recent years, there has been a trend toward minimally invasive approach in thoracic surgery. Video-assisted thoracoscopic surgery has become popular, particularly in the past two decades. It is clear that there is a learning curve and VATS lobectomy ratio can be increased with experience.[3] Uniportal (single-incision) VATS has been described to raise the bar to a new level.[1]

It has been reported that single-incision VATS, which has been proposed as an alternative approach for thoracic diseases since 2000, can reduce postoperative pain without compromising the main surgical steps required for treating patients.[4] During the single-incision VATS, as reported by Rocco unlike conventional, three-port VATS, the uniportal VATS enables the surgeon to bring the operative fulcrum inside the chest, when the target lung lesion is approached through a sagittal plan, owing to its articulating instruments.[5]

Uniportal thoracoscopic interventions were also reported in a large series which was described both for diagnostic and therapeutic indications.[4] This technique is described as a reliable procedure to be used in the diagnostic pathways of several intra-thoracic conditions and to resect small pulmonary nodules with either diagnostic or therapeutic purposes.[4] As such, uniportal VATS contributes to to the surgical armamentarium.[4] In the treatment of spontaneous pneumothorax, uniportal VATS appeared to be tolerable, safe, and effective. Also, postoperative pain and paraesthesia incidence were lower than three-port VATS.[6]

As an alternative approach, the subxiphoid single-incision VATS was defined to be safe and reliable for bilateral lung diseases and was reported to significantly relieve postoperative incision pain.[7] Similarly, our case experienced no pain after surgery at all.

The subxiphoid uniportal VATS lobectomy was also reported in large series as feasible and safe for early-stage lung cancer and benign diseases.[2] One of the advantages of this technique through a subxiphoid incision is that it can be used for bilateral lung diseases. In the literature, single-incision VATS via a subxiphoid route for bilateral primary spontaneous pneumothorax was reported without any major surgical problems.[8]

The potential benefit of the subxiphoid single-incision VATS technique is the decrease in the postoperative pain and avoidance of chest wall paresthesia which can be expected, since there is only one incision and the surgical site is away from the intercostal space. The injury to the intercostal nerve, thus, would be minimized using this technique.

On the other hand, the disadvantages of subxiphoid uniportal VATS lobectomy include the utilization of left-sided approaches, need for major bleeding control and complete lymphadenectomy.[2] The instrumentation over a beating heart can be problematic, particularly in left-sided procedures, and can cause arrhythmia. In case of major bleeding, an additional thoracotomy must be performed, as the extension of the subxiphoid incision is unlikely to be useful. Also, the dissection of the subcarinal lymph node can be challenging and,

in that case, it is possible to perform nodal sampling alone.[2] We believe that right upper lobectomy can be performed easily using long instruments. However, lower lobectomies can be challenging, as the lower pulmonary vein dissection may prove to be difficult.

The use of subxiphoid incision by the surgeons in the Far East is not uncommon. However, there is a limited number of reports in the literature about this approach in the Western world. We believe that intercostal nerve injury can be avoided with this approach, since, with uniportal VATS, it is possible to damage the nerves with two or more instruments located in the intercostal space due to the compression on these structures. The use of this incision, in particular to our case, seemed appropriate preoperatively, as middle lobectomy is very easy to perform using this approach and the procedure is almost pain-free.

In conclusion, subxiphoid incision can be used as an alternative to uniportal video-assisted thoracoscopic procedures, particularly in the right hemithorax, as in the present case.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

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