

Uniportal lobectomy in Jordan—the journey continues

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Abstract: Report of the first uniportal video-assisted thoracic surgery (VATS) lobectomy live surgeries course in Jordan. Live surgeries were performed in collaboration between Dr. Diego Gonzalez-Rivas and our Thoracic/Pulmonary Team at Istishari Hospital in Jordan. Such experience will pave the way for more thoracic surgeons to embrace the newest of the less-invasive thoracic surgical techniques in Jordan.

Keywords: Video-assisted thoracic surgery (VATS); uniportal; lobectomy; lymphadenectomy

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Introduction

The specialty of thoracic surgery has witnessed; in the past few years, an increasing number of innovations and extensive use of less invasive surgical techniques (1,2). The use of video-assisted thoracic surgery (VATS) is becoming the standard surgical method when managing pulmonary pathologies in many medical centers around the world (3-5). The continuous pursuit of less-invasive surgical procedures led to the development and advancement of uniportal VATS, which was pioneered by Diego Gonzalez-Rivas, MD from Spain. Uniportal VATS is currently being used to surgically treat much thoracic pathologies, notably the oncologic resections (lobectomies, pneumonectomies, sleeve resections, and lymphadenectomies) (6). Dr. Gonzalez has been visiting various hospitals and healthcare systems around the world showcasing and teaching his technique of uniportal VATS lobectomy.

In February 2016, Dr. Gonzalez collaborated with the multi-disciplinary thoracic-pulmonary team from Istishari Hospital in Jordan during the Jordanian Uniportal VATS live surgeries course (Figure 1).

Our specialized team currently utilizes VATS technique in 95% of all thoracic surgical cases, and we have the largest cohort and expertise in the world in using VATS for

treating thoracic trauma patients and removing metallic foreign bodies and shrapnels from the chest cavity. Our team began performing uniportal VATS early 2015 after attending the Shanghai Uniportal Course in Shanghai, one of the biggest courses in the world in this field, where we were exposed to various uniportal VATS live surgeries and slide presentations.

Patient selection and workup

Case 1, was a 39-year-old male patient who had a 3.5 cm right upper lobe lesion (adenocarcinoma). The patient underwent neoadjuvant chemotherapy and was sent for surgical intervention. PET/CT scan showed ipsilateral PET avid mediastinal lymph nodes, which proved to be adenocarcinoma by mediastinoscopy lymphadenectomy. No other PET avid lesions were present (Figure 2).

Case 2, was a 19-year-old male patient with a 3-cm right lower lobe lesion (neuroendocrine tumor—typical type). The patient was referred for surgery (Figures 3,4).

Both patients had routine preoperative workup, which included complete blood count, kidney function test, liver function test, prothrombin time, chest X-ray, chest CT scan/PET, and a pulmonary function test.



Figure 1 The uniportal VATS in Jordan Team (from left to right: Dr. Baha Shihadeh: assistant surgeon; Dr. Hamdi Abu Ali: thoracic surgeon; Dr. Diego Gonzalez-Rivas: thoracic surgeon; Dr. Nada Abdulbaqi: assistant surgeon; Rama Swiss: thoracic surgery clinic coordinator).



Figure 2 During a uniportal right upper lobectomy.



Figure 3 The team during a uniportal right lower lobectomy.



Figure 4 Uniportal VATS right lower lobectomy for a typical neuroendocrine tumor (7). VATS, video-assisted thoracic surgery. Available online: <http://www.asvide.com/articles/972>

Equipment

The setup we used at our hospital includes a state of the art dual monitor thoracoscopic system with a 10 mm 30 degrees HD camera (Stryker®). We used double articulating long-shafted thoracoscopic instruments (Scanlan®). We utilized powered Vascular Staplers (PVS), powered tissue stapler, GST stapling loads, and Harmonic energy source (Ethicon®).

Procedure

The following procedural steps were used for each patient:

- All the necessary preoperative monitoring lines were inserted. A double lumen endotracheal tube was used with general anesthesia. The right lung was deflated. The patient was put in left lateral decubitus position with the right side up. Axillary roll was put underneath the left axilla. An underlying loin support was utilized to further spread the rib cages apart. A pillow was inserted between both legs;
- A multilevel intercostal nerve block was done;
- A 2-inch single (uniport) incision was created over the fourth intercostal space along the anterior axillary line;
- A uniportal VATS lobectomy and lymphadenectomy was done for each patient;
- A single chest tube (size 28f) was introduced into the pleural cavity via the uniport incision.

Postoperative management

Patients were extubated in the operative room and

transferred to a step down unit. Chest tube was removed on postoperative day number two. Neither patient required any blood transfusion. Both patients had very good pain control using oral simple analgesia.

Role of team members

- Dr. Diego Gonzalez-Rivas: surgeon;
- Dr. Hamdi Abu Ali: surgeon;
- Dr. Khaled Al-Asad: pulmonologist;
- Dr. Osama Al-Bdour: pulmonologist;
- Dr. Sakher Alkhaderi: radiologist;
- Dr. Baha Shihadeh: assistant surgeon;
- Dr. Nada AbdulBaqi: assistant surgeon.

Discussion

Uniportal VATS technique is considered by many (including our team) to be the next level in performing less-invasive thoracic surgery procedures. Istishari Hospital in Jordan is an ultra-modern private hospital with excellent minimally invasive surgical setup for thoracic, bariatric, hepatobiliary and colorectal surgeries. Our multidisciplinary Thoracic/Pulmonary Team consists of a pulmonologist, a thoracic surgeon, a thoracic surgery super fellow, an ENT surgeon, a conventional radiologist, an interventional radiologist, a pathologist, and an oncologist. Our team receives referrals for complex thoracic surgeries from the Middle East and North Africa region. Ninety-five percent of all our surgical procedures are done via minimally invasive VATS techniques. In addition, our team recently presented the largest series in the world using VATS to retrieve metallic foreign bodies and shrapnels from the chest cavity secondary to war injuries (mention the meeting's name). Our team members were introduced to Dr. Diego Gonzalez-Rivas during various international courses in addition to participating in the Shanghai Uniportal VATS course in Shanghai, which was directed by Dr. Gonzalez.

Less-invasive surgeries in general and uniportal VATS thoracic surgeries represent the latest advancement in the field of thoracic surgery, and there are several emerging reports that highlight the benefits of uniportal surgery when compared to even the typical multiport VATS surgery. Less morbidity, less pain and less duration of stay are the expected outcomes with VATS surgeries compared to open procedures, and these favorable outcomes are even more noticeable using the uniportal method.

Tips and tricks

Over the course of the past year, we relied on several tricks and tips that enabled us to embrace the uniportal VATS technique and establish a successful minimally invasive thoracic surgery service. Here we discuss a few of them.

A multidisciplinary team is a cornerstone for success. The presence of a dedicated minimally invasive operating suite with modern equipment typically includes 30 degree HD cameras, double articulating surgical instruments, advanced stapling technologies including powered devices, and an advanced energy source for tissue dissection and sealing. In addition, a formal uniportal VATS training can be carried out in step-wise fashion. Our team started the uniportal service after attending international wet-labs with Dr. Diego Gonzalez-Rivas, followed by a mini-fellowship in Shanghai Pulmonary Hospital, which is the largest pulmonary hospital in terms of volume with an average operating load of 40 major thoracic cases per day. Then we started performing the more straightforward cases via uniportal method (wedge resections, lung biopsies, pleurectomies, lymph node dissections, decortications). Lastly, we had an official live surgery uniportal VATS in our hospital with live cases to demonstrate the practicality and applicability of uniportal VATS.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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