Subcostal uniportal robotic anatomic lung resection: A pilot trial

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ABSTRACT

Objective: Robot-assisted thoracoscopic surgery typically necessitates the use of multiple ports. The new single-port robotic system (da Vinci SP system) platform is designed to perform uniportal surgery. The purpose of this clinical trial is to evaluate the feasibility, efficacy, and safety of the da Vinci SP system when used for anatomical lung resection.

Methods: Patients diagnosed with clinical stage I lung cancer requiring anatomical lung resections were considered eligible for this trial. The primary outcome measure was the rate of conversion, whereas the secondary objective focused on assessing the incidence of perioperative complications.

Results: The study included 35 patients with a median age of 63 years (range, 48-74 years). Of these, 30 underwent lobectomy and 5 received segmentectomy. All surgeries were successfully performed using a subcostal approach, except for 1 patient, who required a thoracotomy conversion due to bleeding (conversion rate: 2.9%). The median docking time was 2 minutes (range, 1-8 minutes). For the 34 patients who completed uniportal surgery, the median total operating time was 194 minutes (range, 63-405 minutes), whereas the console time was 153 minutes (range, 93–267 minutes). The median number of harvested nodes was 13 (range, 5-37), while the median number of nodal stations was 6 (rang, 4-8). There were no in-hospital fatalities, and the median postoperative stay was 3 days (range, 2-12 days).

Conclusions: This study demonstrates the feasibility and safety of using the da Vinci SP system for anatomical lung resection through a subcostal approach.

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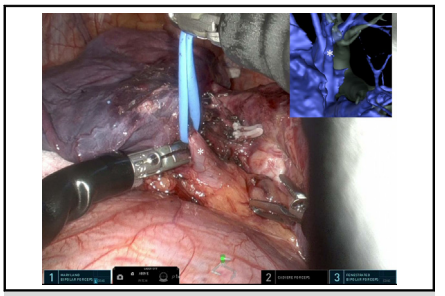

Single-port robotic procedure applied in left lingual pulmonary vein dissection and stapling.

CENTRAL MESSAGE

Our trial yields preliminary evidence that supports the safe and effective implementation of anatomical lung resections using single-port robotic platforms via a subcostal approach.

PERSPECTIVE

Our pilot trial demonstrates that using the da Vinci SP system for lobectomy and segmentectomy is not only safe and feasible but also exhibits an acceptable conversion rate and promising perioperative outcomes.

Video clip is available online.

To view the AATS Annual Meeting Webcast, see the URL next to the webcast thumbnail.

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Abbreviations and Acronyms
RATS = robot-assisted thoracic surgery
URATS = uniportal robot-assisted thoracic surgery

One of the most significant advancements in lung cancer surgery in recent times has been the shift from open thoracotomy to minimally invasive procedures such as video-assisted thoracic surgery or robot-assisted thoracic surgery (RATS).[1-3] These techniques have greatly reduced surgical trauma. However, in pursuit of further minimizing invasiveness, there has been a growing interest in reduced port surgery.[4]

Uniportal video-assisted thoracic surgery for anatomical lung resection was initially reported in 2011 and has gained popularity in certain countries.[5] Although RATS typically necessitates the use of 3 to 4 ports along with 1 to 2 supplementary access incisions, the advent of the da Vinci SP system (Intuitive Surgical Inc)—a robotic single-port platform with 3 flexible instruments and a stereoscopic binocular wristed camera—has the potential to enable uniportal robot-assisted thoracic surgery (URATS).[6,7] Nonetheless, the da Vinci SP system has only been officially approved for use in urology and transoral otolaryngology procedures by the United States Food and Drug Administration.[8-10] Its application in the field of thoracic surgery is still under consideration for formal authorization.

In this report, we present the findings of a pilot clinical trial that focused on patients who underwent anatomical lung resection using the da Vinci SP platform. All URATS procedures were performed by a single surgeon, and the study's primary objective was to assess the viability, safety, and short-term outcomes of this potentially groundbreaking procedure.

METHODS

Study Design

This study was conducted as a prospective clinical trial, following the ethical guidelines set forth by the Declaration of Helsinki. The research protocol received approval on October 12, 2021, by the institutional review board and local regulatory authorities at the Chang Gung Memorial Hospital-Linkou, Taiwan (reference number: CGMH-IRB 202101423A0) on October 12, 2021.

Furthermore, the study was registered on ClinicalTrials.gov (identifier: NCT05535712). All participants provided written informed consent for the publication of their study data, and the inclusion and exclusion criteria are presented in Table 1.

TABLE 1. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
1. Age between 20 and 75 y 2. Ability and willingness to provide informed consent 3. American Society of Anesthesiologists score of 3 or less 4. Meeting the following criteria: diagnosis of clinical stage I lung cancer, with a primary tumor diameter less than or equal to 4 cm and at least 2 cm away from the origin of the associated lobar bronchus 5. Preoperative platelet count ranging from 150 to 400 ($\times 1000/\mu L$)	1. Congestive heart failure (New York Heart Association functional classification >II) 2. Known bleeding or clotting disorder 3. Active therapeutic dose anticoagulation or antiplatelet medications at the time of operation 4. Under immunomodulatory or immunosuppressive regimen (eg, transplanted patients, steroid requirement) within 30 d before the planned surgery 5. Pulmonary hypertension 6. Requirement of extended resection (eg, chest wall, carina, major vessel, bilobectomy) and reconstruction (eg, sleeve resection, bronchoplasty, angioplasty) 7. History of ipsilateral thoracic surgery or sternotomy 8. Presence of an uncontrolled illness within the 6 mo leading up to the planned surgical procedure, including, but not limited to, ongoing or active infections, symptomatic congestive heart failure, unstable angina pectoris, cardiac arrhythmia, or any psychiatric illnesses or social circumstances that could potentially hinder compliance with the study's requirements 9. Previous neoadjuvant medical and/or radiation therapy 10. Contraindication for general anesthesia or surgery 11. Life expectancy of less than 6 mo 12. Anatomy determined intraoperatively to be unsuitable for minimally invasive surgery 13. Belonging to vulnerable populations (eg, pregnant or breastfeeding women) 14. International normalized ratio greater than 1.4 15. Activated partial thromboplastin time greater than 35

Surgical Procedures

All URATS procedures were exclusively conducted by a single surgeon (Y.K.C.). His proficiency in the system was honed through training at Intuitive Surgical Inc, where he used human cadavers during the training session.[6] Before initiating the trial, he previously conducted more than 500 multiportal RATS using both the Si and Xi systems. Furthermore, he had performed 10 URATS, all of which were subxiphoid anterior mediastinal mass resections, using the SP system.

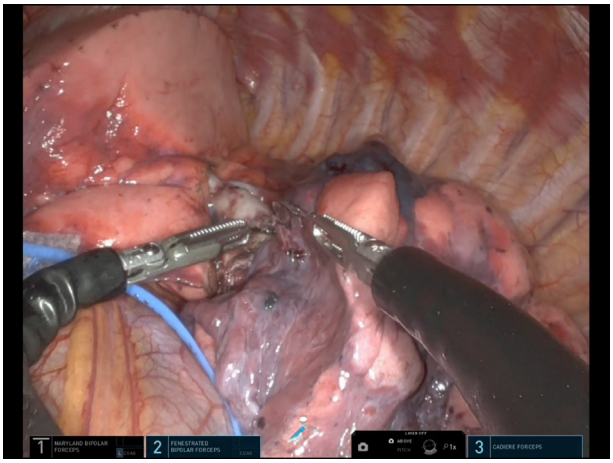
Video 1 provides a comprehensive demonstration of the crucial steps involved in the da Vinci SP lung surgery. To begin, the patient was positioned in a lateral decubitus position under general anesthesia. Port placement is depicted in Figure 1. First, a 10-mm incision was made at the intersection between the fourth intercostal space and the anterior axillary line to allow for the insertion of a thoracoscope. Next, a 4-cm incision was created at the meeting point between the subcostal arch and the midclavicular line. The subcutaneous tissue and oblique muscles were carefully incised until the transverse abdominis fascia became visible. The pleural space was then accessed by tunneling using finger blunt dissection and electrocauterization below the costal cartilage and above the diaphragm, all while guided by thoracoscopic assistance. As a preemptive measure, the cut edge of the diaphragmatic parietal pleura was sutured to the transverse abdominis fascia using 2-0 PROLENE (Figure 2). Afterward, a uniportal access device (da Vinci SP Access Port Kit, large incision) was carefully inserted. Once it was in place and connected to an insufflator, the large SP Access Port was docked to the da Vinci SP patient-side cart arm, enabling the seamless execution of the subsequent procedure. The operations were conducted by replicating the steps of the console surgeon's approach for lung resection using the multi-arm robotic platform. Dissection was performed using various tools such as a monopolar curved scissor, Maryland bipolar forceps, fenestrated bipolar forceps, and Cadiere forceps. The hilar structures and mediastinal lymph nodes were meticulously dissected (Figure 3). To encircle the target pulmonary vessels, a vessel loop was used. A thorough dissection along the vessels was carried out to create enough space for the safe introduction of the stapler. Subsequently, the handheld endovascular stapling instrument was inserted through the assistant port of the da Vinci SP Access Port Kit from the subcostal incision (Figure 4). After completing the procedure, the diaphragm edge was reconnected to the transverse abdominis fascia by tying the surgical ropes that were placed during the initial skin incision. Finally, a curved chest tube was inserted through the subcostal incision, and the remaining wound was closed.

Study End Points

The primary end points of the study focused on conversion rates, which were determined by any change in surgical management. This included transitioning to open surgery, video-assisted thoracic surgery, multiport robotic surgery, or any other approach that required undocking of the da Vinci SP Surgical System. The use of an observation port was not deemed a conversion. The secondary end points encompassed the evaluation of the procedure's safety, including the occurrence of perioperative complications within a 30-day time frame. We recorded perioperative data such as operating time, docking time, console time, anesthesia time, blood loss, and intraoperative complications. The Clavien–Dindo classification system was employed to categorize perioperative complications, which included both intraoperative complications and those that arise during hospitalization and within 30 days after discharge. Major complications were defined as those falling under grade III or greater in severity.

Definition of Outcomes

The procedural steps were delineated as follows: Figure E1, *A*, represents the phase of skin incision, Figure E1, *B*, signifies the completion of subcostal port creation and the beginning of docking, Figure E1, *C*, marks the end of the docking process, Figure E1, *D*, stands for the termination of the robotic procedure, and finally, and Figure E1, *E*, denotes the skin-closure phase. The time intervals between each step were defined as follows. First, the total operating time, which encompassed the time frame from stage A to stage E. Second, the subcostal access creation time, representing the period from stage A to stage B. Third, the docking time, indicative of the time lapse from stage B to stage C. Lastly, the robotic console time, reflecting the time span from stage C to stage D. Pain assessments were conducted using the painDETECT questionnaire[11,12] on



VIDEO 1. This video offers a detailed, step-by-step walkthrough of a da Vinci SP lung surgical procedure, specifically a left anterior basal segmentectomy. The surgery commenced with the application of general anesthesia and intubation using a double-lumen endotracheal tube, with the patient subsequently positioned in a lateral decubitus position. A 10-mm observation port was initially established at the meeting point of the fourth intercostal space and the anterior axillary line and connected to a CO_2 insufflator using a hand-made glove balloon. Subsequently, a 4-cm skin incision was made at the convergence of the subcostal arch and the midclavicular line. The subcutaneous tissue and oblique muscles were dissected until the transverse abdominis fascia was exposed. Access to the pleural space was achieved through tunneling with a finger blunt dissection and electrocauterization beneath the costal cartilage and above the diaphragm, guided by thoracoscopy. To assist the insertion of a uniportal access device, the incised edge of the diaphragmatic parietal pleura was preemptively sutured to the transverse abdominis fascia. After the uniportal access device was inserted and connected to an insufflator, pressure was set at 8 mm Hg, facilitating the docking of a Large SP Access Port to the da Vinci SP patient-side cart arm. The procedure then progressed with the dissection of the inferior pulmonary ligament and posterior mediastinum. At this juncture, mediastinal lymph nodes were carefully harvested. As the surgery proceeded, the interlobar fissure was meticulously dissected. The anterior basal segmental pulmonary artery was gently separated and encircled with a vessel loop. Following this, a handheld endovascular stapling instrument was introduced, enabling the division of the vessel. After the vascular dissection, the anterior basal segmental bronchus was systematically dissected and divided. The intersegmental border was identified using the inflation-deflation method and subsequently divided using a mechanical staple. Upon the successful conclusion of the procedure, a 28 Fr curved chest tube was inserted. Video available at: https://www.jtcvs.org/article/S2666-2507(24)00052-X/fulltext.

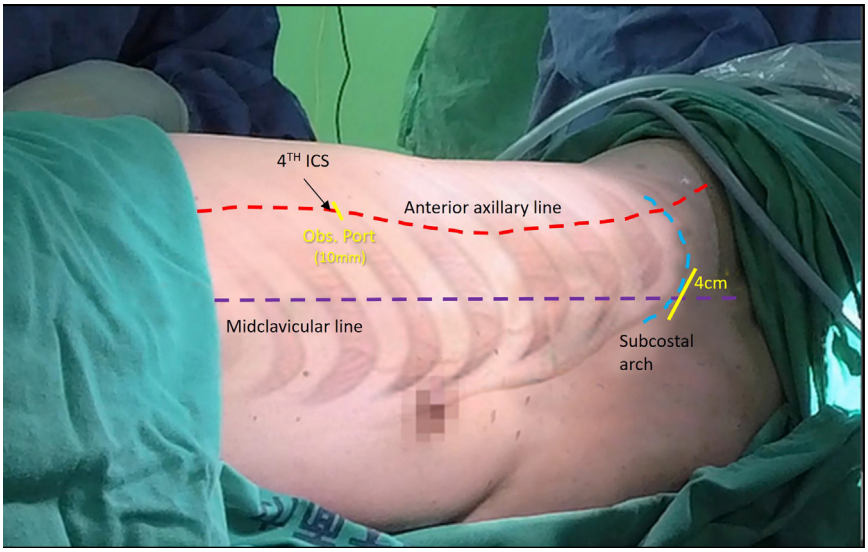


FIGURE 1. The patient was placed in a lateral decubitus position, with the table tilted at a 10° leg-down angle. An observation port was strategically positioned at the juncture of the fourth intercostal space (*ICS*) and the anterior axillary line. A 4-cm subcostal port was made to accommodate a Large SP Access Port, which was positioned at the intersection of the subcostal arch and the midclavicular line.

the first and second postoperative days, as well as on the day of discharge. The standard pain-management protocol for all patients included the administration of ropivacaine (200 mg) as a local anesthetic directly to the surgical wound during closure, routine oral analgesics comprising acetaminophen and ibuprofen until discharge, and intravenous parecoxib every 12 hours as needed postoperatively until the removal of the chest tube.

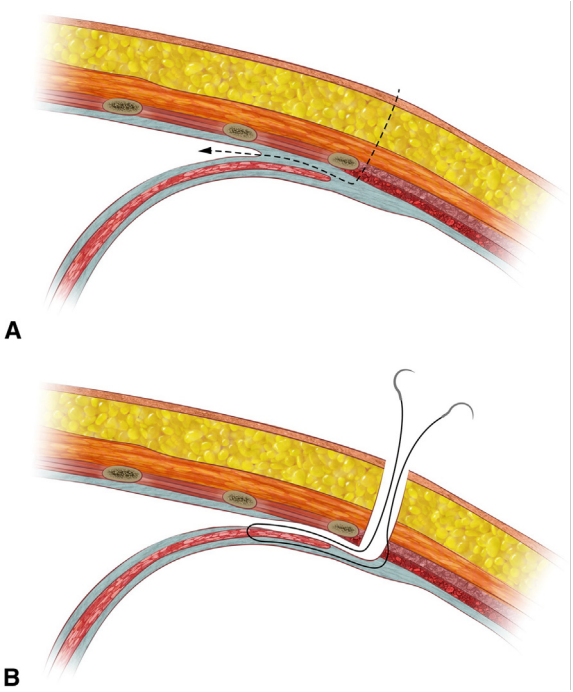


FIGURE 2. The creation of the subcostal incision is depicted in (A), where the initial step involves an incision through the subcutaneous tissue and oblique muscles until the transverse abdominis layer is reached. Subsequently, a tunnel is formed beneath the costal cartilage and above the diaphragm to access the pleural space. To prevent complications, the cut edge of the diaphragmatic parietal pleura is carefully sutured to the transverse abdominis fascia using 2-0 PROLENE (B).

Data Analysis

Categorical data are reported as frequencies and percentages, whereas continuous variables are summarized using medians and ranges. All analyses were conducted using the SPSS software, version 20.0 (IBM Corp).

RESULTS

Patient Characteristics

Table 2 summarizes the general characteristics of the study participants. Between November 2022 and May 2023, we enrolled 35 consecutive patients, comprising 9 men and 26 women. The median age of the participants was 63 years, with an age range of 48 to 74 years. The median body mass index was 23.67 kg/m^2, with values ranging from 16.01 to 34.11 kg/m^2. Preoperative computed tomography scans revealed that the median tumor size was 1.7 cm, with a size range of 0.6 to 3.5 cm. Tumors were predominantly located on the right side (26 right-sided and 9 left-sided).

Perioperative Outcomes

The surgical details and perioperative outcomes are reported in Table 3. Of the total patient cohort, 30 underwent a preplanned lobectomy, whereas the remaining 5 were scheduled for segmentectomy. Notably, no patients required a conversion from segmentectomy to lobectomy. All surgeries were initiated using a subcostal approach and were successfully completed in all cases, except for one

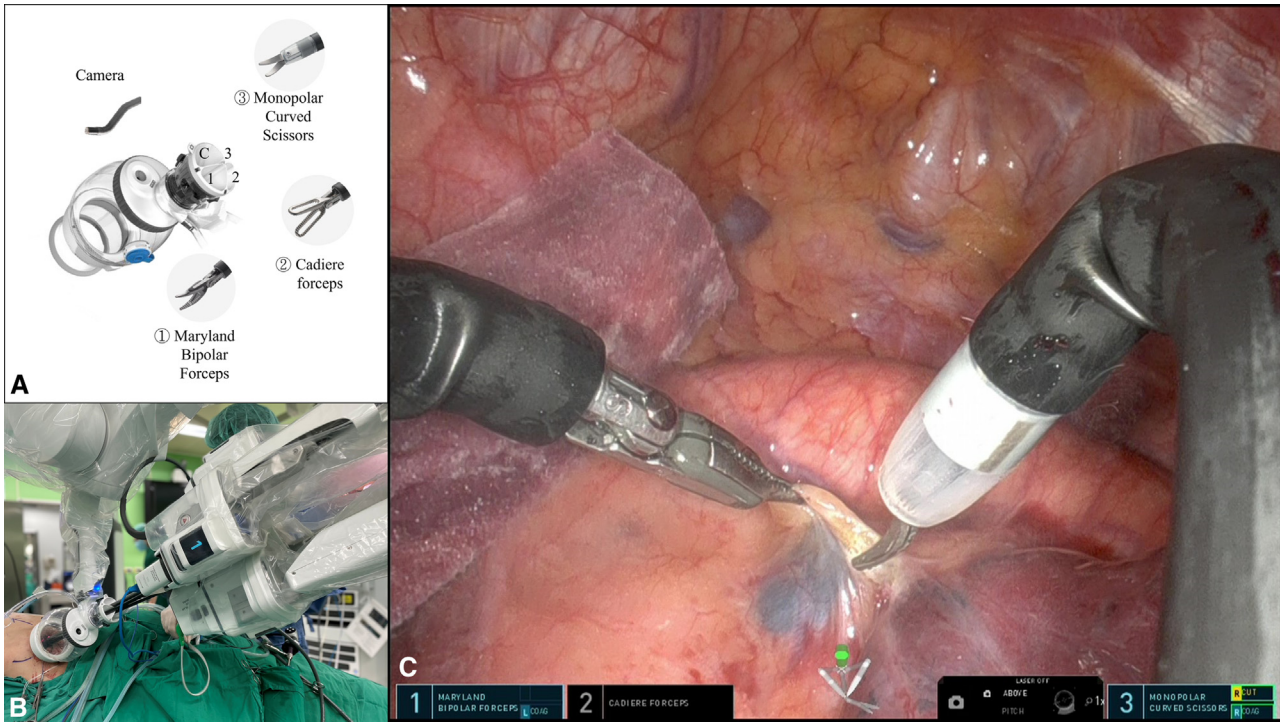


FIGURE 3. URAT procedure for dissecting the mediastinal lymph nodes during a left-sided surgery. A, An instrument configuration diagram; B, external view of the instrument arm. C, Internal view. The camera was positioned at the upper quadrate of the entry guide of the SP access port kit. For dissection, the Maryland bipolar forceps (arm #1) and the monopolar curved scissors (arm #3) were used, located on both sides. In addition, the Cadiere forceps was employed to create a surgical field by applying downward traction on the left upper lobe. *URAT*, Uniportal robot-assisted thoracic surgery.

patient, who required a thoracotomy conversion due to intraoperative pulmonary artery bleeding (conversion rate: 2.9%). The complication arose from a laceration to the lingual branch of the pulmonary artery during an encircling attempt. Initial bleeding control was achieved with direct gauze compression via the observational port, followed by an open thoracotomy for suture repair. The affected patient was discharged on the fourth postoperative day without further complications. The median docking time was 2 minutes (range, 1-8 minutes). For the 34 patients undergoing URATS, the median total operating time was 194 minutes (range, 63-405 minutes), whereas the median console time was 153 minutes (range, 93-267 minutes).

In terms of postoperative course, a total of 6 patients encountered at least 1 postoperative complication, with 2 of them classified as major. One patient experienced hemoptysis due to an incorrect division of the aberrant right posterior branch of the segmental pulmonary vein. He underwent reoperation for a wedge resection of the congested lung segment. Another patient had pleural effusion and required readmission for drainage. Regarding nonmajor complications, there were a total of 3 cases reported. Two patients (5.7%) experienced postoperative chylothorax, whereas 1 patient (2.9%) had a subcostal wound infection. Both cases of chylothorax exhibited effusions of less than 1000 mL/day and were successfully managed conservatively. They were discharged on postoperative day 8 and day 11, respectively. The patient with a subcostal wound infection underwent management through readmission for bedside wound dressing changes. The median duration for chest tube drainage was 2 days, with a range of 1 to 11 days. The median length of postoperative hospital stay was 3 days (range, 2-12 days). Regarding postoperative pain, the median scores were recorded as 3 (range, 0-8), 2 (range, 0-8), and 1 (range, 0-4) on the first, second, and discharge days, respectively.

The pathologic analysis demonstrated that the majority of patients (n = 32; 91.4%) had adenocarcinoma, with 31 cases falling under pathological stage I and 2 case categorized as stage IIIA. The median number of harvested lymph nodes was 13 (range, 5; 37), whereas the median number of nodal stations was 6 (range, 4; 8).

DISCUSSION

Previous research has focused on assessing the feasibility of anatomical lung resection using the da Vinci SP system, but these investigations were conducted on human cadavers.[6,13] The current study pioneers the first clinical trial

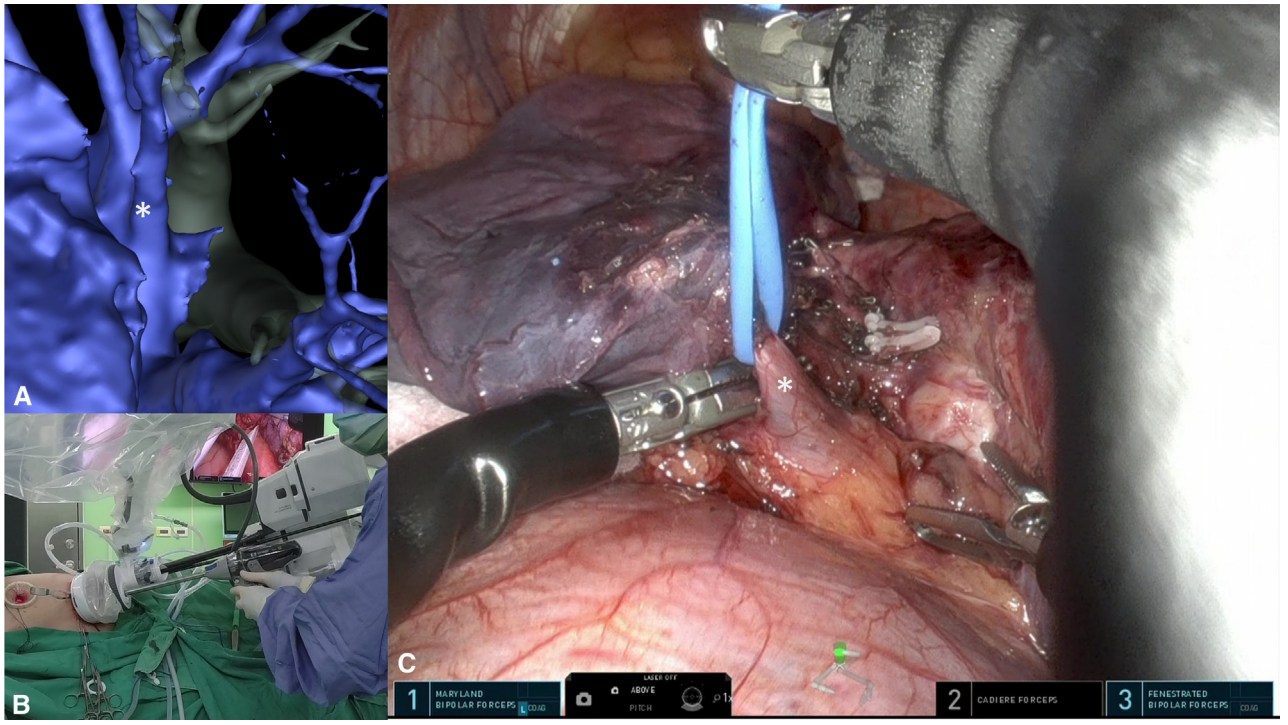


FIGURE 4. URAT procedure applied in vessel dissection and stapling during a left upper lobe lingualectomy. A, 3-dimensional reconstruction image of the targeted vessel, with the lingual branch of the left upper pulmonary vein highlighted with a *white asterisk*. B, Internal view where the lingual branch of the left pulmonary vein was meticulously encircled using a vessel loop and pulled back by a fenestrated bipolar forceps (arm #3). Simultaneously, arm #2 retracted the left lower lobe, creating a clear surgical field. A careful dissection was executed with Maryland bipolar forceps (arm #1), ensuring ample space for a vascular staple's introduction. Finally, an endovascular stapling device, which was handheld, was introduced through the subcostal incision via the assistant port of the da Vinci SP Access Port Kit (C). *URAT*, Uniportal robot-assisted thoracic surgery.

specifically dedicated to exploring the potential usefulness of the da Vinci SP system for anatomical lung resection in patients.[7] Figure 5 shows a graphical abstract of this study. Our findings indicate that employing the SP system for lobectomy and segmentectomy is not only safe and feasible but also demonstrates a satisfactory conversion rate of 2.9%. This is comparable with the data obtained using multiport robotic surgery, which ranges from 0% to 10.8%.[14,15] Furthermore, the perioperative outcomes associated with the SP system were overall promising.

It is important to highlight that, although the console designs of the SP and Xi systems bear a significant resemblance, transitioning from a multiport robot to the SP system necessitates a shift in both thought process and surgical approach. First, the limited width of human intercostal spaces poses a significant obstacle for the insertion of the 2.5-cm SP cannula.[16,17] Consequently, we opted for subcostal access as a more feasible approach.[18-20]

Although blind dissection can enable the creation of subcostal access, incorrect entry into the abdominal cavity could potentially occur in individuals with an elevated diaphragm. To mitigate this risk, we have now made it standard practice to use a thoracoscope for guidance, inserted through an intercostal observation port. Furthermore, the establishment of an intercostal port may provide the additional advantage of facilitating rapid hilar control in the event of bleeding. Second, in the conventional multiport robotic system, the arms are widely spaced, necessitating only wristed instrumentation. However, with the SP system, all instruments pass through a single port. To fully deploy the instrument arms in a triangular configuration, the instrumentation requires not just wristed but also elbow functionality. This necessitates a larger working space. In addition, it is essential to verify that each instrument has ample space for movement and does not collide with any vital structures. Specifically, during procedures on the left side, it is crucial to ensure the path of instrument movement is directed away from the beating heart before initiating dissection. Contact between the beating heart and the instrument shaft could cause movement instability, making dissection hazardous. We believe this was the primary factor leading to the single pulmonary artery bleeding conversion observed in our study. Third, the intricacies involved in

TABLE 2. Characteristics of patients and lesions

Variable	Value
Age, y, median (range)	63 (48-74)
Sex, n (%)	
Men	9 (25.7%)
Women	26 (74.3%)
Body mass index, kg/m^2, median (range)	23.67 (16.01-34.11)
Charlson Comorbidity Index, n (%)	
0	27 (77.1%)
1	5 (14.3%)
≥2	3 (8.6%)
Comorbidities, n (%)	
Diabetes mellitus	5 (14.3%)
Hypertension	4 (11.4%)
Chronic obstructive pulmonary disease	1 (2.9%)
Secondary cancer	2 (5.7%)
Preoperative FEV1, liters, median (range)	2.06 (1.29-3.73)
Preoperative FEV1, percentage, median (range)	100 (69-132)
Tumor location, n (%)	
Right upper lobe	10 (28.6%)
Right middle lobe	8 (22.9%)
Right lower lobe	8 (22.9%)
Left upper lobe	3 (8.6%)
Left lower lobe	6 (17.1%)
Tumor size,* cm, median (range)	1.7 (0.6-3.5)

FEV1, Forced expiratory volume in 1 second. *Tumor size was ascertained using computed tomography scans.

TABLE 3. Surgical results and outcomes

Variable	Value
Type of surgery, n (%)	
Lobectomy	30 (85.7%)
Segmentectomy	5 (14.3%)
Total operating time, min, median (range)	194 (63-405)
Subcostal port creation time, min, median (range)	17 (10-40)
Docking time, min, median (range)	2 (1-8)
Robotic console time, min, median (range)	153 (93-267)
Intraoperative conversion, n (%)	1 (2.9%)
Total postoperative complications, n (%)	6 (17.1%)
None	29 (82.8%)
I	2 (5.7%)
II	2 (5.7%)
IIIa	1 (2.9%)
IIIb	1 (2.9%)
IV/V	0
Chest tube drainage, d, median (range)	2 (1-11)
Postoperative length of stay, d, median (range)	3 (2-12)
Pain scale (0-10), median (range)	
First postoperative day	3 (0-8)
Second postoperative day	2 (0-8)
Day of discharge	1 (0-4)
Pathologic diagnosis, n (%)	
Adenocarcinoma	32 (91.4%)
Carcinoid	2 (5.7%)
Sclerosing pneumocytoma	1 (2.9%)
Pathologic stage, n (%)*	
0	3 (8.6%)
I	31 (88.5%)
II	0
III	1 (2.9%)
Total number of harvested lymph nodes, median (range)	13 (5-37)
Total number of harvested nodal stations, median (range)	6 (4-8)

*Pathologic staging was assigned as per the guidelines outlined in the American Joint Committee on Cancer Staging Manual, Eighth Edition.

stapling posed a significant learning challenge for SP URATS. Given that the current da Vinci SP system lacks stapling equipment, assistants must manually operate the handheld stapler via the subcostal port, a task that can be daunting. In our study, we found that for safe introduction of staples, access through the assistant port was required in 11 cases. To mitigate these challenges, we developed several strategies based on our practical experiences. Temporarily removing one robotic arm during stapling, particularly the one nearest to the assistant, proved beneficial. In addition, using staples attached to an elongated instrument shaft, coupled with a judicious choice of curve-tipped staplers are effective measures. These tactics help to ensure a secure procedure, free from equipment collisions. Importantly, after implementing these techniques, there was no need for stapling through the assistant port beyond patient #22. It should be also noted that, in the present study, chylothorax developed in 2 patients, representing an incidence of 5.7%. This rate appears slightly greater than that reported in previous multiport series.[21,22] However, neither patient required surgical intervention. Given the limited sample size in our study, it is not possible to definitively establish a correlation between the occurrence of chylothorax and SP surgery.

The results of this pilot trial should be interpreted within the context of certain limitations. First, it is crucial to exercise caution when generalizing our findings, as this study is based on a single surgeon's experience. Second, the trial only encompassed a small sample size, specifically in terms of left-sided procedures, which are deemed more complex when executed through a subcostal approach due to the operational challenges presented by a beating heart. Consequently, there is a need for additional research involving larger sample sizes and comparative studies with multiarm robotic systems to assess postoperative pain and chronic neuralgia. Third, our routine use of an intercostal incision to facilitate subcostal SP port creation and stapling in initial cases warrants

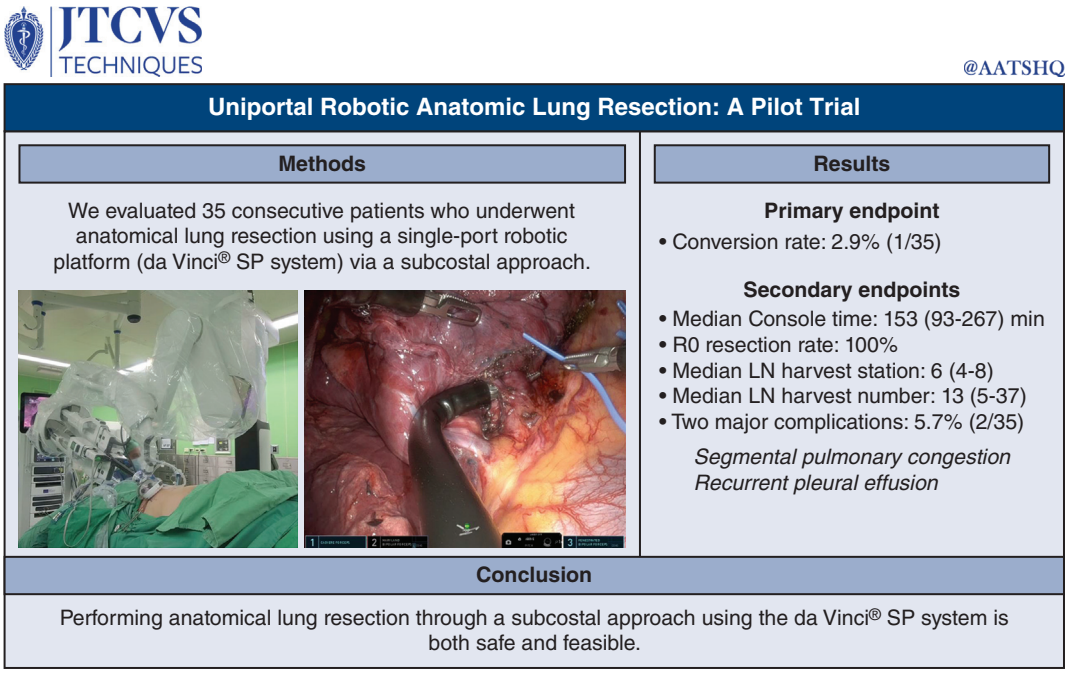


FIGURE 5. Graphical abstract demonstrates that utilizing the da Vinci SP system for anatomical lung resection is not only safe and feasible, but also exhibits an acceptable conversion rate and promising perioperative outcomes. *LN*, Lymph node.

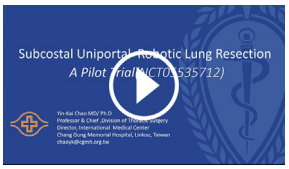
further evaluation to determine whether URATS can be performed without the need for an assistant port. Despite these limitations, our results offer initial evidence supporting the safe and effective implementation of anatomical lung resections using single-port robotic platforms through a subcostal approach.

CONCLUSIONS

This study demonstrates the feasibility and acceptable safety of using the da Vinci SP system for anatomical lung resection through a subcostal approach.

Webcast

You can watch a Webcast of this AATS meeting presentation by going to: https://www.aats.org/resources/subcostal-uniportal-robotic-lu-7570#video.



Conflict of Interest Statement

Y.K.C. has received honoraria for speaking engagements and single-port surgical training from Intuitive Surgical Sarl, Taiwan Branch. C.-F.W. has received single-port surgical training from Intuitive Surgical Sarl, Taiwan Branch. Y.Y.H. is an employee of Intuitive Surgical Sarl, Taiwan Branch, and holds ownership of Intuitive Surgical stocks. All other authors reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

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Key Words: single-port, robot-assisted thoracic surgery, lung cancer, lobectomy, segmentectomy

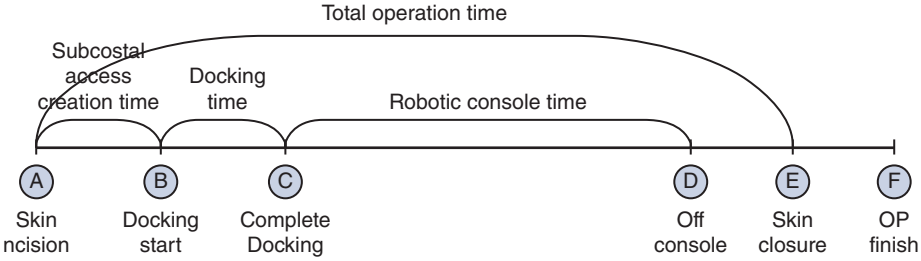

FIGURE E1. Stages of procedural time. A, Skin incision; B, docking initiation; C, docking completion; D, off console; E, skin closure; F, surgery (*OP*) finished. This video offers a detailed, step-by-step walkthrough of a da Vinci SP lung surgical procedure, specifically a left anterior basal segmentectomy. The surgery commenced with the application of general anesthesia and intubation using a double-lumen endotracheal tube, with the patient subsequently positioned in a lateral decubitus position. A 10-mm observation port was initially established at the meeting point of the fourth intercostal space and the anterior axillary line and connected to a CO_2 insufflator using a hand-made glove balloon. Subsequently, a 4-cm skin incision was made at the convergence of the subcostal arch and the midclavicular line. The subcutaneous tissue and oblique muscles were dissected until the transverse abdominis fascia was exposed. Access to the pleural space was achieved through tunneling with a finger blunt dissection and electrocauterization beneath the costal cartilage and above the diaphragm, guided by thoracoscopy. To assist the insertion of a uniportal access device, the incised edge of the diaphragmatic parietal pleura was preemptively sutured to the transverse abdominis fascia. After the uniportal access device was inserted and connected to an insufflator, pressure was set at 8 mm Hg, facilitating the docking of a Large SP Access Port to the da Vinci SP patient-side cart arm. The procedure then progressed with the dissection of the inferior pulmonary ligament and posterior mediastinum. At this juncture, mediastinal lymph nodes were carefully harvested. As the surgery proceeded, the interlobar fissure was meticulously dissected. The anterior basal segmental pulmonary artery was gently separated and encircled with a vessel loop. Following this, a handheld endovascular stapling instrument was introduced, enabling the division of the vessel. After the vascular dissection, the anterior basal segmental bronchus was systematically dissected and divided. The intersegmental border was identified using the inflation-deflation method and subsequently divided using a mechanical staple. Upon the successful conclusion of the procedure, a 28-Fr curved chest tube was inserted.