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Physician News

First in East Bay Area, Concord Builds Expertise with Robot-Assisted Lobectomy

The minimally invasive thoracic surgery technique for lung cancer treatment can enhance recovery time for patients.

John Muir Health is successfully employing a robotic-assisted device for lobectomy procedures, after performing the first one in the Bay Area last fall. The thoracic surgery team at the Concord medical center uses the da Vinci® surgical system for the robotic video-assisted thoracic surgery (VATS) lobectomy to remove lung tumors. The device's state-of-the-art capabilities include 3-D high-definition visualization of the chest cavity and precise, flexible surgical tools for a minimally invasive procedure, resulting in less postoperative pain and a shorter recovery for patients.

"This is a significant development in expanding the robotic surgical platform being used for minimally-invasive surgery at the Concord medical center," said Wilson Tsai, MD, co-director of the thoracic surgical program at John Muir Health. "Surgical applications of the most advanced robotic medical equipment mean better capabilities and new treatment options for patients, particularly for those with more complex cases. There is a great advantage with this additional approach in treating very complex cases, as it helps us operate safely on patients who have higher, more dangerous comorbidities. This is due to the improved access that the robot offers, as well as improved visualization and optics. Because of this, the patients tend to do better - the surgery is less invasive than open surgery, which causes more significant impact on the body."

Since the first local patient had a cancerous tumor removed via a robot-assisted lobectomy in October, the procedure has been performed in 14 more cases.

Recent studies on the effect of different surgical techniques on patient outcomes show robot-assisted lung surgery can deliver equal or better results compared with open surgery. One of these studies, Adams, et al, published in April in *The Annals of Thoracic Surgery*, concluded that robotic-assisted thoracoscopic surgery was safe and effective in a variety of settings, and that it can deliver outcomes equal to VATS and better outcomes than open thoracotomy. These better outcomes include: between two and four fewer days in the hospital, fewer blood transfusions, shorter use of a chest tube by a day or more, and fewer air leaks lasting more than five days (a persistent air leak in the lung is one risk of lung surgery).

The robotic lobectomy is a new alternative to the traditional open thoracotomy or thoracoscopic lobectomy. In a traditional surgery in the chest cavity, surgeons must cut between the ribs, or even spread the ribs, in order to access the lung, leaving patients with a large incision on the side of the chest and a long and painful post-operative recovery. A VATS approach, in contrast, is minimally invasive, with incisions that are 0.5 to 1 centimeter. A camera (which also gives a wider field of vision) and low-profile, thin tools are used for better precision and navigation of angles in and around the chest cavity. This higher level of accuracy results in decreased pain levels and recovery time for patients.

With the da Vinci surgical system, small incisions are made to insert miniaturized instruments and a high-definition camera. Through that camera the surgeon views a magnified, high-resolution 3-D image of the surgical site inside the patient's body. The tweezers-like tools scale, filter and seamlessly translate the surgeon's hand motions into precise micro-movements. The device has the precision capability to peel a grape, and nimbleness to fold an origami crane that fits on a dime. Though it is referred to as a 'robot,' the equipment is completely under the surgeon's control.

Dr. Tsai compares the dexterity and precision of this tool-- versus traditional surgery -- to the use of chopsticks versus implements that perform like a person's fingers.

When Dr. Tsai and the team performed the first procedure in October, he estimated that as a result of the minimally invasive nature of the procedure, the patient was able to leave the hospital two days earlier, and reported that he was back to performing his normal daily activities soon after the surgery.

"Robotic technology for medical treatment applications will continue to evolve, becoming even more accurate and efficient," said Tsai. "So our teams' skills and knowledge in effectively using them will always evolve in parallel, as John Muir Health is committed to using cutting-edge technologies that are shown to deliver the best outcomes for patients."

For more information contact:

Brenda Carlson
Executive Director Oncology and Specialty Services

Lynn Rodegard
Nurse Navigator

(925) 947-3322