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# News

STS Press Release

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## **BMI Linked With Complications After Lung Cancer Surgery**

***Underweight or very obese patients appear to have higher risks of surgical complications***

Phoenix – Body mass index (BMI) affects outcomes following lung resection (removal of part of the lung) for lung cancer. Patients with very high or very low BMIs (a measure of body mass based on height and weight) have the highest risks for complications, according to a scientific presentation at the 52nd Annual Meeting of The Society of Thoracic Surgeons.

Previous research has examined how BMI impacts the risk of complications following lung resection surgery, but many models only focus on obesity. Recent studies have demonstrated that underweight patients also experience increased risk of complications after surgery.

Trevor Williams, MD and Mark K. Ferguson, MD, from The University of Chicago, led a group of researchers who evaluated 41,446 records from the STS General Thoracic Surgery Database for patients who underwent elective lung resection for treatment of lung cancer between 2009 and 2014.

“Our study was most interested in exploring the relationship between BMI extremes and outcomes after lung resection,” said Dr. Williams. “Specifically, we looked closely at patients who were underweight or severely overweight to compare surgical outcomes with patients who had a normal BMI.”

The researchers divided the patients into groups according to their BMI (body mass index standardized by weight and height presented in  $\text{kg}/\text{m}^2$ ): underweight ( $<18.5$ ), normal (18.5-24.9), overweight (25.0-29.9), obese I (30.0-34.9), obese II (35.0-39.9), and obese III ( $\geq 40.0$ ).

### Key Points

- Body mass index (BMI) affects patient outcomes following lung resection for lung cancer, and patients with very high and very low BMIs have higher risks for complications after surgery.
- Overweight and moderately obese patients tended to have a lower risk of complications than patients with normal BMI.
- Pulmonary complication rates were higher in patients in the underweight and obese III groups. Being underweight also was associated with higher rates of infection.

Results showed that the relationship between BMI and pulmonary complications, the total number of post-operative complications, and death was “U” shaped, meaning that risk of these events was higher for patients at both extremes of BMI (underweight and obese III).

Predicted pulmonary complication rates were higher in patients in the underweight and obese III groups. Being underweight also was linked to higher post-surgical complication rates.

“BMI is associated with a patient’s overall physiology and health, but overweight people need to have more muscle to carry the extra weight around,” said Dr. Williams. “We think patients who are underweight likely are frail, which is associated with impaired strength, reduced activity, and being easily fatigued. There also may be an association with immune system impairment. All of these factors adversely affect outcomes after lung surgery.”

Further analysis showed that pulmonary and any postoperative complications were more common among underweight patients, while any major complication was more common among obese III patients. Overweight and moderately obese patients (those in obese I and obese II groups) tended to have a lower risk of complications than patients with normal BMI.

“Patients who are overweight or obese should not be fearful of lung resection because they have the best outcomes after surgery,” said Dr. Ferguson. “However, though not specifically included in our study, any increase in exercise capacity prior to surgery can only be beneficial – so keep walking!”

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View a press conference presentation of this abstract: <https://youtu.be/VpQgEPW5reY>

Note: No authors reported related disclosures.

The abstract, “Operative Risk for Major Lung Resection Increases at Extremes of Body Mass Index: Analysis of the STS General Thoracic Surgery Database,” was the 2016 Richard E. Clark Memorial Paper for General Thoracic Surgery, which means it was recognized as a high-quality analysis of data from The STS National Database.

For a copy of the abstract, contact Cassie McNulty at 312-202-5865 or [cmcnulty@sts.org](mailto:cmcnulty@sts.org).

Founded in 1964, The Society of Thoracic Surgeons is a not-for-profit organization representing more than 7,100 cardiothoracic surgeons, researchers, and allied health care professionals worldwide who are dedicated to ensuring the best possible outcomes for surgeries of the heart, lung, and esophagus, as well as other surgical procedures within the chest. The Society’s mission is to enhance the ability of cardiothoracic surgeons to provide the highest quality patient care through education, research, and advocacy.