Smoking, Coughing, and Surgery

Dramatic improvements have been made in surgery so that difficult operations can be performed which were once thought to be impossible. Despite this progress, it can be challenging to keep the lungs clear after an operation. In fact, the lungs are often a common cause of problems in the surgical patient. This is especially true for smokers.

The windpipe (trachea) is about as wide as a dust mop handle. As the trachea goes down to the lungs, it divides into smaller and smaller branches — eventually smaller than the lead of a pencil — until these branches reach the air sacs (the alveoli). The alveoli are lined by a thick membrane; on one side of this membrane is air and on the other side is the blood flowing in the capillaries. Through this membrane (a semi permeable membrane, because air but not blood can pass across it) fresh air that you breathe can get in the blood. Also, carbon dioxide (CO_2) in the blood can be removed as you exhale. This occurs with every breath you take.

There are two properties of the alveoli and the lung:

- The lung is elastic like a balloon. It likes to collapse, but inside the chest it cannot do that. There is a negative pressure between the lung and the chest wall that creates a vacuum. As the chest expands, the lungs must follow the chest wall and all the alveoli open up. However, if the chest does not expand enough, some of the alveoli stay collapsed.

- The air tubes of the lungs are lined by microscopic hairs (called cilia) that are always waving in one direction — toward the outside. This helps keep the lungs clean of dust and other particles we breathe in. Otherwise, the mucus would plug up these tiny tubes. If the tubes become blocked, the elastic lung tissue collapses. This condition is called atelectasis. The collapsed lung tissue is spongy to soggy and has bacteria in it that came from the air we breathe. It is the perfect place and condition for the start of an infection that can lead to pneumonia.

Patients often do not want to move or breathe deeply after an operation because it hurts. They frequently do not like to cough because coughing increases pain to their incision. One important reason for giving pain medication is to lessen the pain with coughing.

About Smoking

Smoking causes problems in several ways:

- It stimulates the lungs to make much more mucus. Also, it stunts (and sometimes cripples or even destroys) the cilia. This causes the buildup of mucus. In addition, the irritation from an anesthetic causes more mucus to form.

- Smoking can seriously reduce the blood supply getting to tissues that can be very important in certain types of operations. Smoking can impair wound healing. It significantly increases the chance of a wound infection.

- Excessive coughing from smoking can sometimes result in the tearing and breakdown of sutures and tissues.

- Heavy smokers are more likely to be placed on a ventilator (sometimes referred to as life support) after a general anesthetic.

- Smokers are more prone to developing heart attacks and strokes after surgery. They are also more likely to have hardening of the arteries, a condition known as atherosclerosis.

In some cases, additional tests may have to be performed on smokers before surgery. It may even be necessary to have a smoker be evaluated by their family doctor or a lung specialist prior to an operation.

Stopping smoking before surgery can reduce your chance of complications, particularly lung infections that can result after an operation. Smoking is an addiction. Please do not be afraid to ask for help if you need assistance in kicking this habit.

NOTE: As of June 1, 2007, the entire OSF Saint James - John W. Albrecht Medical Center campus is smoke-free.