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Wolters Kluwer

Patient education: Minimally invasive surgery (The Basics)

Written by the doctors and editors at UpToDate

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What is minimally invasive surgery?

Minimally invasive surgery is a way to do surgery with less damage than in "open" surgery.

In open surgery, doctors make 1 large cut, or "incision," in the skin. This lets them see directly into the body. During minimally invasive surgery, instead of making 1 large incision, doctors make 1 or a few smaller incisions. In some cases, they do not need to make any incisions at all. Then, they use special tools to see and work inside the body.

Minimally invasive surgery does less damage to the body than open surgery. In many cases, this makes it easier and faster for people to recover.

This article is about minimally invasive surgery that is done with a "scope." A scope is a long, flexible tube with a tiny camera and a light on the end. It allows the doctor to see inside the body. The camera sends pictures to a screen that the doctor can see. There are other types of minimally invasive surgery that do not involve a scope.

What are the different types of minimally invasive surgery?

There are many types. The names of specific surgeries are based on the Greek words for the body parts that are involved. The scopes used for the different types of surgery are named that way, too. Types of minimally invasive surgery include:

- **Thoracoscopic** – This can be used to remove pieces of lung or do certain types of heart surgery. The scope used for this is called a "thoracoscope." ("Thorax" means chest.)

- **Laparoscopic** – This can be used to remove the gallbladder, appendix, or uterus, or do lots of other different procedures in and around the belly. The scope used for this is called a "laparoscope." ("Lapara" means the space between the bottom of the rib cage and the hips.)
- **Hysteroscopic** – This can be used to remove abnormal growths in the uterus, or do other procedures on the uterus and vagina. The scope used for this is called a "hysteroscope." ("Hystera" means uterus.) Because the scope goes in through the vagina, no incisions are needed for this type of surgery.
- **Cystoscopic** – This can be used to check or remove abnormal growths in the bladder, or to remove an enlarged prostate gland. The scope used for this is called a "cystoscope." ("Kystis" means bladder.) Because the scope is inserted through the urethra, no incisions are needed for this type of surgery.
- **Arthroscopic** – This can be used to repair or rebuild joints in the knee, shoulder, or hip. The scope used for this is called an "arthroscope." ("Arthron" means joint.)

Other procedures, like colonoscopy, also involve a scope. But these are not usually considered surgery.

How is minimally invasive surgery done?

It depends on the type of surgery. For many types of minimally invasive surgery, the doctor will:

- Make a small incision in the skin
- Push the scope through this first incision so they can see inside the body
- Make other small incisions on the body
- Pass special long, thin tools through these incisions, then use these tools to work inside the body
- Open up the space inside the body using either gas or fluid, so there is more room to work

Some minimally invasive surgeries are done with a machine called a surgical robot. The doctor moves the robot's arms using special controls. Using the robot allows the doctor to be even more exact with their movements. Surgery done with a robot is called "robot-assisted minimally invasive surgery" or "robotic surgery."

How is minimally invasive surgery different than open surgery?

It is usually easier to recover from minimally invasive surgery than open surgery. That's because:

- There are usually a few small incisions, rather than 1 big incision.
- The organs don't get moved around as much.

But people who have minimally invasive surgery can still experience pain, often need stitches, and have risks, just like with open surgery.

Can I always choose to have minimally invasive surgery?

No. The type of surgery you can have will depend on:

- Whether there is a doctor who can do the type of minimally invasive surgery that you need
- Why you need surgery – For example, people who need surgery to remove very large cancers might need to have open surgery.
- What other health problems you have – For example, people who have serious heart or lung problems might not be able to have minimally invasive surgery.

What else do I need to know?

Sometimes, doctors need to switch to open surgery after a minimally invasive surgery has been started. For example, this might happen if the doctor finds something unexpected. This doesn't mean that the doctor has done anything wrong. It is usually done to keep you safe during your surgery.

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