

Adrenalectomy

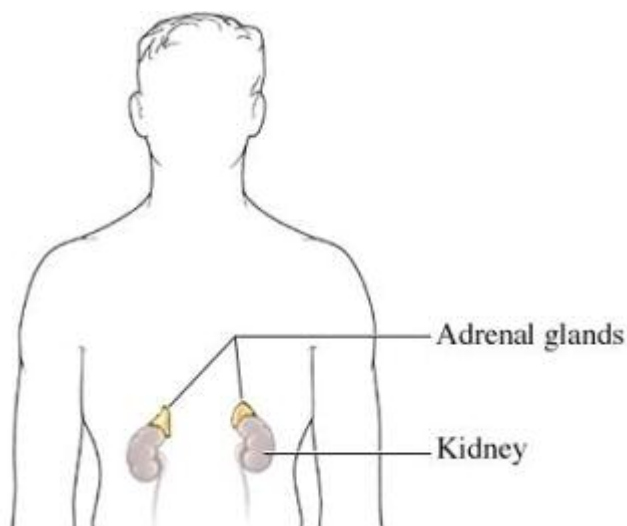
by EditorialStaffAndContributors

EnEspañol(SpanishVersion)

Definition

Adrenalectomy is the removal of one or both of the adrenal glands. There is one gland on top of each kidney. They help to regulate the production and balance of hormones.

Adrenal Glands



©2008 Nucleus Medical Art, Inc.

Parts of the Body Involved

- Adrenal gland(s)
- Abdomen
- Chest

Reasons for Procedure

Your adrenal gland may be removed if you have any of the following:

- Malignant adrenal tumors
- Benign adrenal tumors, such as pheochromocytoma
- Enlargement or abnormalities of the adrenal gland resulting in symptoms and complications from excess hormone production (eg Cushing's syndrome)
- A large non-functioning adrenal mass
- An adrenal mass that cannot be identified with a needle biopsy

Risk Factors for Complications During the Procedure

- Age: 60 or older
- Obesity
- Smoking
- Excess stress
- Malnutrition
- Recent or chronic illness
- Heart or lung problems
- Alcoholism
- Use of certain medications (eg blood pressure pills, muscle relaxants, tranquilizers, sleeping pills, insulin, steroids, sedatives, and hypnotic agents)
- Use of street drugs (eg LSD, hallucinogens, marijuana, and cocaine)

What to Expect

Prior to Procedure

Your doctor will likely do some or all of the following:

- Physical exam
- Blood tests
- Urine tests
- Abdominal ultrasound — a test that uses sound waves to find specific areas in the abdomen
- CT scan of the abdomen — a type of x-ray that uses a computer to make pictures of the kidneys and/or adrenal glands
- MRI scan — a test that uses magnetic waves to make pictures of the kidneys and/or adrenal glands
- CT scan of the head — to examine the pituitary gland (this gland controls the adrenal glands)
- Nuclear scan (MIBG or NP-59) — a test in which a small amount of radioactive material is injected, and then pictures are taken of the inside of the body to determine if the tumor is benign or malignant
- Give certain drugs to determine why the adrenal gland is not working correctly

If your doctor diagnoses a hormone imbalance, high blood pressure, or low blood potassium, you may be given medications in the weeks prior to your operation.

In the days leading up to your procedure:

- Arrange for a ride to and from the procedure
- Arrange for help at home after returning
- The night before, eat a light meal, do not eat or drink anything after midnight
- You may be given laxatives and/or an enema to clean out your intestines

Your doctors may need to admit you to the hospital before your planned procedure if your blood pressure has not been well controlled with medications. This will allow more aggressive treatment to stabilize your blood pressure. It will also ensure that you have enough fluid in your body to prevent blood pressure problems once the tumor is removed.

Anesthesia

General anesthesia

Description of the Procedure

You will be given IV fluids, antibiotics, and steroids. There are two main types of adrenalectomy:

Classic Open Abdominal Adrenalectomy:

The adrenal glands can be removed through an incision just under the rib cage or in the abdomen. The adrenal gland is carefully separated from the kidney and removed.

Small tumors, usually benign, are typically removed from the back or with a laparoscopic approach (see below). Large masses that may be malignant are usually removed from the front. This is done so that the mass can easily be removed and the rest of the abdomen can be examined.

The surgeon may choose to place a tiny, flexible tube into the area where the gland was removed. This tube will drain any fluids that may build up after surgery. It will be removed within one week after your operation. The incision is closed with either stitches or staples, and covered with a sterile dressing.

Laparoscopic Adrenalectomy:

The surgeon makes 3-4 small incisions in the abdomen. A tiny camera is passed through one of these openings to provide a view of the inside. To allow a better view, the abdomen is filled with gas. Other tube-like instruments are used to separate the adrenal gland from the kidney and to pull the removed gland back out. The incisions are often small enough to be closed with just a couple of stitches or staples, and covered with small bandages.

After Procedure

The adrenal gland(s) are examined by a pathologist.

How Long Will It Take?

1½ hours - 3½ hours

Will It Hurt?

Anesthesia prevents pain during surgery. Pain or soreness during recovery will be managed with pain medication.

Possible Complications

During laparoscopic surgery, the surgeon may need to switch to a classic open abdominal adrenalectomy. This may happen in these cases:

- Excess scarring from previous surgeries
- The adrenal tumor or the adrenal size is larger than anticipated
- The surgeon is unable to appropriately visualize the structures in the abdomen

Other possible complications include:

- Nelson's syndrome— a pre-existing pituitary tumor begins to grow at an extremely fast rate, resulting in abnormal blood hormone levels and extreme discoloration of the skin
- Improper hormone balance
- Changes in blood pressure
- Slow wound healing
- Retained fluid
- Bleeding
- Infection
- Blood clots in the legs
- Pneumonia and other risks of general anesthesia
- Injury to nearby organs or structures
- Adverse reaction to anesthesia

Average Hospital Stay

- Classic open abdominal adrenalectomy: 4-5 days
- Laparoscopic adrenalectomy: 2-3 days

Postoperative Care

- You might require pain medications. Patients who have had open surgery require stronger pain medications for a longer period of time than those who undergo the laparoscopic procedure.
- You may be nauseated for a few hours after surgery. Your surgeon may have placed a nasogastric tube through your nose and into your stomach to drain fluids and stomach acid. You won't be able to eat or drink until this is removed and you're no longer nauseated. In this case, you will continue to receive fluids and sugar through an IV. Once you begin eating, you may need to eat a lighter, bland diet than usual.
- You may be given special compression stockings to decrease the possibility of blood clots forming in your legs.
- Your body may be making substantially less natural steroid hormones. Your doctor may start you on steroid medications immediately after surgery.

Outcome

Recovery time after a classic open abdominal adrenalectomy may be as long as 4-6 weeks. Recovery time after laparoscopic adrenalectomy may be as short as 7-10 days.

You'll need to be carefully monitored to see that your body is producing the right quantity of steroid hormones, or to verify that you're taking the correct dose of steroid medication.

You may be asked to weigh yourself daily and to report any weight gain of two or more pounds over 24 hours. Such weight gain may indicate that you are retaining fluid. You may be asked to monitor your blood pressure regularly at home as well.

Try to increase your physical activity according to your doctor's instructions. This will help you avoid respiratory complications from the general anesthesia and improve recovery of your digestive system.

Call Your Doctor If Any of the Following Occurs

- Signs of infection, including fever and chills
- Redness, swelling, increasing pain, excessive bleeding, or discharge from the incision site
- Nausea and/or vomiting that you can't control with the medications you were given, or which persist for more than two days after discharge from the hospital
- Cough, shortness of breath, chest pain, or severe nausea or vomiting
- Pain, burning, urgency, or frequency of urination, or persistent bleeding in the urine
- Worsening pain and/or swelling in your feet, calves, or legs

RESOURCES:

American Urological Association
<http://www.urologyhealth.org/>

National Institute of Diabetes and Digestive and Kidney Diseases
<http://www.niddk.nih.gov/>

CANADIAN RESOURCES:

Canadian Urological Association
<http://www.cua.org/>

The Kidney Foundation of Canada: British Columbia Branch
<http://www.kidney.bc.ca/>

REFERENCES:

- Agha A, von Breitenbuch P, Gahli N, et al. Retroperitoneoscopic adrenalectomy: lateral versus dorsal approach. *J Surg Oncol*. 2008;97:90-3.
- Gallagher SF, Wahi M, Haines KL, et al. Trends in adrenalectomy rates, indications, and physician volume: A statewide analysis of 1816 adrenalectomies. *Surgery*. 2007;142:1011-21.
- Hanssen WE, Kuhry E, Casseres YA. Safety and efficacy of endoscopic retroperitoneal adrenalectomy. *Br J Surg*. 2006;93:715-9.
- Jossart GH, Burpee SE, Gagner M. Surgery of the adrenal glands. *Endocrinol Metab Clin North Am*. 2000;29:57-68.
- Munver R, De Pizzo JJ, Sosa RE. Adrenal-preserving minimally invasive surgery: the role of laparoscopic partial adrenalectomy, cryosurgery, and radiofrequency ablation of the adrenal gland. *Curr Urol Rep*. 2003;4:87-92.
- Pamaby CN. The role of laparoscopic adrenalectomy for adrenal tumours of 6 cm or greater. *Surg Endosc*. 2008;22:617-21.
- Rakel RE, Conn HF. *Conn's Current Therapy 2000*. Houston, TX: WB Saunders Co.; 1999.
- Thompson SK, Hayman AV, Ludlam WH, et al. Improved quality of life after bilateral laparoscopic adrenalectomy for Cushing's disease: a 10-year experience. *Ann Surg*. 2007;245:790-94.
- Townsend C, Beauchamp DR, et al. *Sabiston Textbook of Surgery*. 16th ed. WB Saunders; 2001.

Last reviewed March 2008 by David Juan, MD

All EBSCO Publishing proprietary, consumer health and medical information found on this site is accredited by URAC. URAC's Health Web Site Accreditation Program requires compliance with 53 rigorous standards of quality and accountability, verified by independent audits.
To send comments or feedback to our Editorial Team regarding the content please email us at HLEditorialTeam@ebscohost.com.