Treating Pituitary Tumors

Nearly all pituitary tumors are adenomas (benign tumors). Treatment of a pituitary adenoma depends on whether or not it makes excess hormones and, if it does, which hormone it makes. Treatment also depends on whether it is a microadenoma (smaller than 1 centimeter across) or a macroadenoma (1 centimeter across or larger).

Treatment for pituitary tumors may include:

- **Surgery**
- **Radiation therapy**
- **Medicines that block tumor hormone secretion or block the symptoms caused by these hormones**

Sometimes a combination of treatments is used. For example, surgery may be done to remove some of the tumor, while drugs can be used to relieve symptoms and sometimes shrink the remaining tumor.

Your doctor will discuss treatment options with you. It’s important to take time and think about your choices, weighing the benefits of each option against the possible risks and side effects. It’s also important to ask questions if there is anything you’re not sure about. You can find some good questions to ask in [What Should You Ask Your Doctor About Pituitary Tumors?](#)

No matter what treatment you decide on, it should be done by doctors who have experience treating pituitary tumors. Pituitary tumors often require care from a team of doctors. Doctors on your team may include:

- **Neurosurgeon**: a doctor who uses surgery to treat brain and pituitary tumors
- **Endocrinologist**: a doctor who treats diseases in glands that secrete hormones
- **Neurologist**: a doctor who diagnoses and treats brain and nervous system diseases
- **Radiation oncologist**: a doctor who uses radiation to treat cancers and other tumors
- **Medical oncologist**: a doctor who uses chemotherapy and other medicines to treat
cancers and other tumors

Many other specialists might be part of your treatment team as well, including physician assistants, nurse practitioners, nurses, psychologists, social workers, rehabilitation specialists, and other health professionals. See Health Professionals Associated With Cancer Care for more on this.

The next few sections describe the types of treatments used for pituitary tumors. This is followed by a description of the most common approaches based on the type of tumor (functional tumors, non-functional tumors, and carcinomas).

Getting a second opinion

Because pituitary tumors are uncommon, not many doctors have much experience with them. You may also want to get a second opinion. This can give you more information and help you feel more certain about the treatment plan you choose. Many people find it helpful to get a second opinion about the best treatment options based on their situation, especially if they have several choices.

Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-the-art cancer treatment. Sometimes they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they are not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials. You can also call our clinical trials matching service at 1-800-303-5691 for a list of studies that meet your medical needs, or see Clinical Trials to learn more.

Considering complementary and alternative methods

You may hear about alternative or complementary treatment methods that your doctor hasn’t mentioned. These methods can include vitamins, herbs, special diets, or other methods such as acupuncture or massage, to name a few.

Complementary methods refer to treatments that are used along with your regular medical care. Alternative treatments are used instead of a doctor’s medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you
feel better, many have not been proven to work. Some might even be dangerous.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision.

**Choosing to stop treatment or choosing no treatment at all**

For some people, when treatments have been tried and are no longer controlling the cancer, it is often helpful to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life. Learn more in [If Cancer Treatments Stop Working](https://www.cancer.org/cancer/cancer-basics/understanding-cancer/treatments/benefits-and-risks-of-continuing-treatment.html).

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it’s important to talk this through with your doctors before you make this decision. Remember that even if you choose not to treat the cancer, you can still get [supportive care](https://www.cancer.org/cancer/treatment/supportive-care.html) to help with pain or other symptoms.

**Help getting through treatment**

Your cancer care team will be your first source of information and support, but there are other resources for help when you need it. Hospital- or clinic-based support services are an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab services, or spiritual help.

The American Cancer Society also has [programs and services](https://www.cancer.org/services-support.html) – including rides to treatment, lodging, support groups, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists on call 24 hours a day, every day.

*The treatment information here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.*
Surgery for Pituitary Tumors

The main treatment for many pituitary tumors is surgery. How well the surgery works depends on the type of tumor, its exact location, its size, and whether it has spread into nearby structures.

**Transsphenoidal surgery**: This is the most common way to remove pituitary tumors. Transsphenoidal means that the surgery is done through the sphenoid sinus, a hollow space in the skull behind the nasal passages and below the brain. The back wall of the sinus covers the pituitary gland.

For this approach, the neurosurgeon makes a small incision along the nasal septum (the cartilage between the 2 sides of the nose) or under the upper lip (above the upper teeth). To reach the pituitary, the surgeon opens the boney walls of the sphenoid sinus with small surgical chisels, drills, or other instruments depending on the thickness of the bone and sinus. A newer approach is to use an endoscope, a thin fiber-optic tube with a
tiny camera lens at the tip. In this approach, the incision under the upper lip or the front part of the nasal septum is not needed, because the endoscope allows the surgeon to see well through a small incision that is made in the back of the nasal septum. The surgeon passes instruments through normal nasal passages and opens the sphenoid sinus to reach the pituitary gland and remove the tumor. The use of this technique is limited by the tumor’s position and the shape of the sphenoid sinus.

The transsphenoidal approach has many advantages. First, no part of the brain is touched during the surgery, so the chance of damage to the brain is very low. There is also no visible scar. But it’s hard to remove large tumors this way. When the surgery is done by an experienced neurosurgeon and the tumor is a microadenoma, the cure rates are high (greater than 80%). If the tumor is large or has grown into the nearby structures (such as nerves, brain tissue, or the tissues covering the brain) the chances for a cure are lower and the chance of damaging nearby brain tissue, nerves, and blood vessels is higher.

**Craniotomy:** For larger or more complicated pituitary tumors, a craniotomy may be needed. In this approach the surgeon operates through an opening in the front and side of the skull. The surgeon has to work carefully beneath and between the lobes of the brain to reach the tumor. Although the craniotomy has a higher chance of brain injury than transsphenoidal surgery for small lesions, it’s actually safer for large and complex lesions because the surgeon is better able to see and reach the tumor and nearby nerves and blood vessels.

For both transsphenoidal surgery and craniotomies, the doctor may use image-guidance with MRI or CT scans before surgery to help plan the best surgical approach. Some centers also use intraoperative MRI (where MRI scans are done in the operating room one or more times during the surgery), but many doctors still consider this to be experimental.

As a general rule, smaller pituitary tumors are easier to treat with surgery. The larger and more invasive the tumor, the less likely the tumor can be cured by surgery.

**Possible side effects of surgery**

Surgery on the pituitary gland is a serious operation, and surgeons are very careful to try to limit any problems either during or after surgery. Complications during or after surgery such as bleeding, infections, or reactions to anesthesia are rare, but they can happen. Most people who have transsphenoidal surgery will have a sinus headache and congestion for up to a week or 2 after surgery.
If surgery causes damage to large arteries, to nearby brain tissue, or to nerves near the pituitary, in rare cases it can result in brain damage, a stroke, or blindness.

When doctors use the transsphenoidal approach to operate on the pituitary gland, they create a temporary pathway between the nasal sinuses and airways and the brain. Until this heals, a person can get meningitis, which is infection and inflammation of the meninges (the thin protective layers covering the brain). Damage to the meninges can also lead to leakage of cerebrospinal fluid (the fluid that bathes and cushions the brain) out of the nose.

Diabetes insipidus (discussed in Signs and Symptoms of Pituitary Tumors) may occur right after surgery, but it usually improves on its own within 1 to 2 weeks after surgery. If it is permanent, it can be treated with a desmopressin nasal spray.

Damage to the rest of the pituitary can lead to other symptoms from a lack of pituitary hormones. This is rare after surgery for small tumors, but it may be unavoidable when treating some larger macroadenomas. If pituitary hormone levels are low after surgery, this can be treated with medicine to replace certain hormones normally made by the pituitary and other glands.

For more general information about surgery as a treatment for tumors, see Cancer Surgery.

References
See all references for Pituitary Tumors

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Radiation Therapy for Pituitary Tumors

Radiation therapy uses high energy x-rays or particles to kill tumor cells. This type of treatment is given by a doctor called a radiation oncologist. Radiation is directed at the tumor from a source outside the body.

Radiation therapy may be recommended if surgery is not an option, if a pituitary tumor
remains or comes back after surgery, or if the tumor causes symptoms that aren’t relieved by medicines.

Radiation therapy is much like getting an x-ray, although the doses of radiation used are much higher. Before your treatments start, the radiation team will get imaging tests such as MRI scans to define the exact size and shape of the tumor. This is used to determine the correct angles for aiming the radiation beams, the shape of the beams, and the proper dose of radiation.

Conventional radiation is usually given in a series of treatments 5 times a week over 4 to 6 weeks. At each session, you lie on a special table while a machine delivers the radiation from precise angles. The treatment is not painful. Each session lasts about 15 to 30 minutes. Much of that time is spent making sure the radiation is aimed correctly. The actual treatment time each day is much shorter.

This therapy can be very effective, but it also has some drawbacks:

- It works slowly, so it can take months or years before the tumor growth and/or excess hormone production is fully controlled.
- It can damage the remaining normal pituitary. In most cases, normal pituitary function will be lost over time, requiring treatment with hormones.
- It may damage some normal brain tissue, particularly near the pituitary gland, which could affect mental function years later.
- The optic nerves may be damaged, resulting in impaired vision.
- The radiation may increase the risk of developing a brain tumor later in life, although this risk is still likely to be low.

These risks are likely to be lower with the use of newer techniques that focus the radiation more precisely on the pituitary, such as intensity modulated radiation therapy (IMRT), stereotactic radiation, and proton beam therapy. The use of these techniques might be limited for some tumors that are very close to the optic nerves.

**Intensity modulated radiation therapy (IMRT)**

IMRT is an advanced form of three-dimensional radiation therapy. It uses a computer-driven machine that actually moves around the patient as it delivers the radiation. IMRT lets the doctor shape the radiation beams and aim them at the tumor from several angles. The intensity (strength) of the beams can also be adjusted to limit the dose reaching the most sensitive nearby normal tissues. This may result in fewer side effects. Many major hospitals and cancer centers now use IMRT.
Stereotactic radiosurgery/stereotactic radiation therapy

This type of treatment delivers a large, precise radiation dose to the tumor area in a single session (radiosurgery) or in a few sessions (radiotherapy). It targets the tumor more precisely than standard radiation, causing less harm to the remaining normal pituitary gland and limiting the radiation exposure to the rest of the brain.

For this treatment, a lightweight metal frame is often attached to the head with small pins or screws to help aim the radiation beams very precisely. (The areas on the scalp where the frame is attached are numbed first.) Sometimes a face mask is used to hold the head in place instead of a frame. Once the exact location of the tumor is known from CT or MRI scans, radiation is focused at the tumor from many different angles. This can be done in 2 ways:

- In one approach, thin radiation beams from a machine are focused at the tumor from hundreds of different angles for a short period of time. Each beam alone is weak, but they all converge at the tumor to give a higher dose of radiation. An example of such a machine is the Gamma Knife.
- Another approach uses a movable linear accelerator (a machine that creates radiation) that is controlled by a computer. Instead of delivering many beams at once, this machine moves around the head to deliver radiation to the tumor from different angles. Several machines do stereotactic radiosurgery in this way, with names such as X-Knife, CyberKnife, and Clinac.

Stereotactic radiosurgery typically delivers the whole radiation dose in a single session, though it may be repeated if needed. (There is no actual surgery involved in this treatment.) Sometimes doctors give the radiation in several treatments to deliver the same or a slightly higher dose. This is called fractionated radiosurgery or stereotactic radiotherapy.

The benefit of stereotactic radiation is usually seen a bit sooner than with other forms of radiation therapy, although it can still take months to be fully effective.

Unfortunately, this therapy can’t be used for tumors that are very close to the optic nerves. It also might not be helpful for tumors that have an unusual shape.

Proton beam radiation therapy

This form of treatment uses a beam of protons rather than x-rays to kill cancer cells. Protons are positive parts of atoms. X-rays release their energy both before and after they hit their target, which can damage nearby healthy tissues. Protons, on the other
hand, cause little damage to tissues they pass through and only release their energy after traveling a certain distance. Doctors can use this property to deliver more radiation to the tumor with less damage to nearby normal tissues. Like stereotactic radiation, it has the advantage of focusing the radiation more precisely on the pituitary tumor.

But proton beam radiation therapy requires highly specialized equipment and is not widely available – there are only a handful of proton beam centers in the United States at this time. It is not a standard treatment for pituitary tumors. Studies are still needed to see if it is safer or more effective than stereotactic radiosurgery or stereotactic radiotherapy.

For more general information about radiation therapy, see the Radiation Therapy section of our website.

- References
  See all references for Pituitary Tumors

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Medicines to Treat Pituitary Tumors

Several medicines can be used to treat pituitary tumors that are making hormones.

Drugs for prolactin-secreting tumors (prolactinomas)

Drugs called dopamine agonists, such as cabergoline and bromocriptine (Parlodel®), can often both stop prolactinomas from making too much prolactin and shrink these tumors. Both drugs work well, although cabergoline seems to work better and lasts longer than bromocriptine, so it doesn’t need to be taken as often.

Most people with prolactinomas can control their prolactin levels with these medicines. The drugs also shrink most prolactin-secreting macroadenomas. In fact, these drugs work so well that surgery usually isn’t needed for prolactinomas. Only about 1 out of 5 of these tumors doesn’t shrink with treatment. Even if the tumor doesn’t shrink, these drugs often can keep prolactinomas from growing larger. If successful, the drug
treatment may be continued for life.

Possible side effects of these drugs include drowsiness, dizziness, nausea, vomiting, diarrhea or constipation, confusion, and depression. For women whose high prolactin levels had been causing infertility, these drugs may restore fertility. Cabergoline may cause fewer side effects than bromocriptine, but it might also increase the risk of heart valve problems. However, this is rare when taking this drug for prolactinomas.

**Drugs for growth hormone-secreting tumors**

These tumors can cause acromegaly in adults and gigantism in children (discussed in *Signs and Symptoms of Pituitary Tumors*). Medicines are often not as effective for these tumors as they are for prolactinomas, so they’re not usually the first treatment used.

**Somatostatin analogs:** Drugs such as octreotide (Sandostatin®), lanreotide (Somatuline® Depot), and pasireotide (Signifor® LAR) are man-made forms of the natural hormone somatostatin. Somatostatin, which is made in the pituitary and other glands, blocks growth hormone (somatotropin) production by adenomas and returns insulin-like growth factor-1 (IGF-1) to normal levels in about two thirds of patients.

Octreotide is first given as an injection under the skin 3 times per day. A longer acting form is available, which can be given as a monthly injection. Lanreotide and pasireotide are given as an injection about once a month. Doctors measure how well these drugs are working by testing blood growth hormone and IGF-1 levels. Tumors tend to shrink very slowly with these drugs.

These drugs can have side effects, such as a slowed heart rate, nausea, vomiting, diarrhea, stomach pain, dizziness, headache, and pain at the site of injection. Many of these side effects improve or even go away with time. They can also cause gallstones and may cause diabetes or worsen it if a person already has it.

**Growth hormone antagonists:** Pegvisomant (Somavert®) is a newer drug that works by blocking the action of growth hormone on other cells. It is very effective in lowering blood IGF-1 levels, but it doesn’t block growth hormone secretion by the pituitary gland or shrink pituitary tumors. It has few side effects, although it can lower blood sugar levels and cause mild liver damage in some people. It is given by daily injection under the skin.

**Dopamine agonists:** Drugs such as cabergoline or bromocriptine can reduce growth hormone levels in about 1 out of 5 patients. Unfortunately, higher doses are needed for these tumors than for prolactinomas, and some patients have trouble with the side
effects they can cause (discussed above). An advantage of these drugs is that they can be taken as a pill.

**Drugs for corticotropin (ACTH)-secreting tumors**

These tumors cause the adrenal glands to make excess steroid hormones such as cortisol, which leads to Cushing’s disease (discussed in [Signs and Symptoms of Pituitary Tumors](#)). Medicines are not usually part of the treatment of these tumors unless surgery and radiation therapy don’t work (or if the effects of radiation have not yet been felt).

Several different kinds of drugs can be used, although medicines aren’t always as effective in ACTH-secreting tumors as they are in some other types of pituitary tumors.

- **Pasireotide (Signifor®)** is a newer somatostatin analog. This drug can help some people who have Cushing’s disease from ACTH-secreting tumors when surgery is not an option or has not been effective. Along with side effects such as nausea, vomiting, and diarrhea, this drug can cause high blood sugar levels and gallstones.
- **Cyproheptadine (Periactin®)** is an antihistamine drug that can suppress ACTH production in some of these tumors.
- Drugs called **steroidogenesis inhibitors** can be used to keep the adrenal gland from making cortisol, although they don’t affect the pituitary tumor itself. These include ketoconazole, aminoglutethimide, etomidate, metyrapone, and mitotane. These drugs can sometimes be helpful after surgery or radiation (or if surgery is not an option), but they can be hard to take because of side effects.
- **Mifepristone (Korlym®)** is a type of drug called a **cortisol receptor blocker**. It limits the effects of cortisol on other tissues in the body. This drug can help treat high blood sugar levels in people with Cushing’s disease, although it doesn’t affect the pituitary tumor itself. It can have serious side effects and requires close monitoring.
- Dopamine agonists such as cabergoline or bromocriptine can also be tried if other drugs are not effective.

**Drugs to treat thyrotropin (TSH)-secreting tumors**

For these tumors, somatostatin analogs such as octreotide and lanreotide can usually reduce the amount of TSH that is produced. Dopamine agonists such as cabergoline or bromocriptine can also be used. These drugs are discussed in more detail above.

- **References**
Treatment of Functional (Hormone-Making) Pituitary Tumors

The treatment of functional pituitary tumors depends on which type of hormone they make.

Treatment of prolactin-secreting adenomas (prolactinomas)

Unlike most other pituitary tumors, surgery is usually not the first treatment for these tumors. Instead, medicines that block the production of prolactin (cabergoline or bromocriptine) are used first (see Medicines to Treat Pituitary Tumors). They work so well that surgery is usually not needed. Although both of these drugs are effective, cabergoline seems to work better and may have fewer side effects. It also lasts longer, so it does not need to be taken as often as bromocriptine.

Most patients can control their prolactin levels with these medicines. The drugs also shrink most prolactin-secreting macroadenomas. Only about 1 out of 5 of these tumors doesn’t shrink after treatment. Even when the tumors don’t shrink, these drugs usually keep them from growing larger.

Within 3 months of starting treatment, the blood prolactin level is measured again and an MRI scan of the pituitary is done to check if the medicine is working. If so, treatment may be continued for the rest of the patient’s life. In some people, if treatment with these medicines has been successful and MRI scans show a prolonged period with no tumor remaining, the treatment may be stopped. These people will need to have regular MRIs to see if the tumor comes back. On the other hand, if after 6 months the tumor hasn’t responded well enough to treatment, or if serious side effects occur, then surgery is considered.

Some doctors recommend surgery in special situations such as in men whose tumors
are at an advanced stage, or in women who want to become pregnant (the drugs must be stopped during pregnancy, and pregnancy might cause the tumor to grow quickly). Surgery can also be used to treat very large tumors after first shrinking them with drug treatment.

Radiation may be used if drug treatment and surgery are not successful.

### Treatment of growth hormone-secreting adenomas

Adults with these tumors often have acromegaly, while children have gigantism.

Surgery is usually the first treatment for these adenomas, although often it can’t remove all of the tumor. If growth hormone and insulin-like growth factor-1 (IGF-1) levels remain high after surgery, many experts recommend treating with medicine first. Radiation therapy is another option, although it is used most often when drug treatment doesn’t work. This is because radiation is very slow to act and over time it can lead to lowered levels of other pituitary hormones.

Octreotide (Sandostatin), lanreotide (Somatuline Depot), and pasireotide (Signifor LAR) are man-made forms of the natural hormone somatostatin that return IGF-1 to normal levels in about two thirds of patients. They are taken as injections, usually about once a month. The dose of these drugs may need to be adjusted based on blood IGF-1 levels.

Because these drugs work well and only need to be given monthly, doctors have started to question whether surgery should always be the first treatment for people with growth hormone-secreting adenomas. In those who might have problems with surgery, such as people with other major health problems, these drugs might be a good choice as the first treatment.

Sometimes, drug treatment may be given for a short time before surgery. This may cause the tumor to shrink, which could improve the chance that the surgery will remove all of the tumor, but doctors can’t be certain before trying that this will help.

Another drug, pegvisomant, works by blocking the action of growth hormone. It can be used if somatostatin analogs (octreotide, lanreotide, or pasireotide) aren’t doing enough to block growth hormone production.

Drugs such as cabergoline or bromocriptine can reduce growth hormone levels in about 1 out of 5 patients. Unfortunately, some patients have trouble tolerating the high doses often needed for these drugs to be effective. The main advantage of these drugs is that they are in pill form.
If surgery and drug treatments don’t work, then radiation therapy may be used.

**Treatment of corticotropin (ACTH)-secreting adenomas**

These tumors cause the adrenal glands to make too much of the steroid hormone cortisol, which leads to Cushing’s disease (discussed in **Signs and Symptoms of Pituitary Tumors**).

**Surgery** is usually the main treatment. If the surgery doesn’t remove the tumor completely or if it grows back, the 2 main options are a second surgery or radiation therapy. Radiation can often take months or years to work, so medicines may be given to help control cortisol levels in the meantime.

If surgery and radiation don’t control cortisol levels, treatment options may include using medicines or removing both of the adrenal glands (see below).

Several different types of medicines can be used to help control cortisol levels or limit the effects of this hormone in the body. (See **Medicines to Treat Pituitary Tumors**.) Unfortunately, medicines aren’t always as effective in ACTH-secreting tumors as they are in some other types of pituitary tumors, and some of these drugs can have serious side effects that make them hard to take for long periods of time.

If medicines aren’t helpful, or if the patient can’t take them because of side effects, both adrenal glands can be removed with an operation called a *bilateral adrenalectomy*. This can usually be done with laparoscopic surgery, using several small incisions in the abdomen instead of one large one. The surgeon works through these small incisions with special long, thin instruments, including one with a tiny video camera lens on the end (called a laparoscope) for looking into the abdomen. Adrenalectomy stops all cortisol production, so high cortisol levels will no longer be a problem. But after the surgery patients will need to take pills to replace the adrenal steroid hormones for the rest of their life.

If the adrenal glands are to be removed, the pituitary gland will first be treated with radiation. If this isn’t done, removing the adrenals can cause the pituitary tumor to get larger and even start growing into the structures near the pituitary. This is known as *Nelson syndrome*. When the adenoma gets large, it can damage the normal parts of the pituitary gland, causing problems from hormone deficiency. It can also lead to high levels of ACTH. Because ACTH is similar to the hormone that causes tanning of the skin, the high ACTH levels make the skin darker.

**Treatment of thyrotropin (TSH)-secreting adenomas**
The treatment of choice for these tumors is usually surgery, sometimes along with radiation therapy. Radiation is not always helpful, and medicines may be needed to control the tumor’s hormone production. Some of the drugs that can be helpful include octreotide, lanreotide, cabergoline, and bromocriptine. These are used only if other treatments have failed to control the tumor.

It’s important to treat the pituitary tumor to prevent it from damaging nearby structures. Drugs that stop the thyroid gland from making thyroid hormone can actually make things worse because reducing thyroid hormone production may cause the TSH-secreting pituitary tumor to grow.

**Treatment of gonadotropin (FSH/LH)-secreting adenomas**

The hormones made by these tumors rarely cause major symptoms, so these tumors are often not found until they are large (macroadenomas) and pressing on nearby structures.

Treatment of these tumors is similar to that used for non-functional adenomas. Surgery is often the best option because it works right away. Radiation may be given after surgery.

Follow up with frequent MRI scans will show if the tumor is growing back. If it is, options include radiation (if it hasn’t been given already) or medicines such as dopamine agonists (cabergoline, bromocriptine) or somatostatin analogs (octreotide, lanreotide).

- References

See all references for Pituitary Tumors

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Not all pituitary tumors need to be treated right away, especially if they’re not growing or causing symptoms. But larger tumors and those that are clearly growing typically require treatment.

**Large tumors**

Large tumors (macroadenomas) that are causing symptoms are often treated with surgery. This helps get rid of the symptoms and danger to nearby vital structures quickly. As with gonadotropin-secreting tumors, frequent MRI scans are done early after treatment. If there is re-growth of the adenoma, further surgery or radiation therapy may be used. Drug treatment is usually not helpful in treating these tumors, but doctors have reported some success using the chemotherapy drug temozolomide for fast-growing tumors.

**Incidentalomas**

These are small pituitary tumors (microadenomas) that are detected on MRI or CT scans done for other reasons. They usually don’t cause symptoms because they’re not large enough to press on nearby structures and they don’t secrete high levels of any hormone.

Most doctors recommend just watching these tumors, with regular physical exams and repeat MRI scans to see if they are growing. Hormone levels may be checked at least once as well. If the tumor starts growing or causing symptoms, it can then be treated. But the important point is that people with incidentalomas shouldn’t get unnecessary tests or treatments.

- References

  See all references for Pituitary Tumors

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**Treatment of Pituitary Carcinomas**
Pituitary carcinomas are rare tumors that have already spread to other parts of the body when they are found. Surgery and radiation therapy are the main forms of treatment and may slow tumor growth and prevent or relieve symptoms. But in general, these tumors are very hard to control.

Chemotherapy and newer targeted therapy drugs may be tried, but it’s not clear if these treatments can improve survival. Because pituitary carcinoma affects so few patients, it’s hard to study which treatments might be effective. Taking part in a clinical trial of a new treatment may be a good option.

- References

See all references for Pituitary Tumors

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