Soft Tissue Sarcoma: Radiation Therapy

What is radiation?

Radiation uses high-energy beams from X-rays or particles to kill cancer cells.

When might radiation be used?

Radiation is often part of the treatment for soft tissue sarcoma cancer. Your healthcare provider may advise radiation therapy:

- **Before surgery** to try to shrink the cancer . Radiation may be used as the first treatment to try to shrink the tumor. This can make it easier to remove and can result in fewer long-term radiation side effects than radiation delivered after surgery. It can be helpful for tumors that might otherwise be too large to remove with surgery. Sometimes shrinking the tumor can allow the surgeon to do a less extensive operation. When radiation is used before surgery, it's called a neoadjuvant therapy.
- **After surgery** to try to kill any cancer cells left. When radiation is used after surgery, it's called an adjuvant therapy. This may be used if your healthcare provider isn't sure all the cancer cells were removed.
- **During surgery** to focus radiation directly at the cancer. This treatment is called intraoperative radiation therapy.
- **Instead of surgery** as the main treatment if surgery is not an ideal choice. Surgery may not be the best choice depending on a person's medical condition, overall health, or the size and location of the cancer.
- **As supportive (palliative) care** to help ease symptoms caused by tumors that can't be treated by other methods like chemotherapy or surgery. Or it may help ease symptoms from cancers that have spread to other organs.
- **As chemoradiation** to treat aggressive sarcomas. For this, chemotherapy and radiation therapy are given at the same time. This is usually given after surgery.

To plan your whole treatment strategy, you'll meet with a team of cancer specialists. This might include a surgeon, radiation oncologist, and medical oncologist.

What happens during radiation

There are two main types of radiation to treat soft tissue sarcomas. They include:

- **External beam radiation therapy).** The most common way to receive radiation for soft tissue sarcoma is from a machine outside your body, a type of X-ray machine. It focuses beams of radiation at the cancer often from different angles. This is called external radiation. Special types of external radiation, such as intensity-modulated radiation therapy or stereotactic body radiation therapy, are often used to try to limit the doses of radiation reaching nearby normal cells.
- **Internal radiation (brachytherapy).** In this approach, long, thin tubes called catheters are surgically placed into or near the tumor. Small radioactive pellets (seeds) are then put into the catheters to give the radiation. Or a remote-controlled radiation seed (source) is programmed to move in and out of each of the catheters. The radiation travels only a short distance, so it affects mainly just cancer cells.

A healthcare provider who specializes in cancer and radiation therapy is called a **radiation oncologist.** This healthcare provider works with you to figure out the kind of radiation you need. They also decide the dose and how long you need the treatment.

External radiation

You can often get external radiation on an outpatient basis in a hospital or a clinic. The standard treatment for external radiation is 5 days a week, Monday through Friday, for several weeks.

Preparing for radiation

Before your first treatment, you'll have a session to find exactly where on your body the radiation beam needs to be directed. The process is called simulation. This session may take up to 2 hours. During this session, you may have imaging tests, such as CT, MRI, or PET scans, to help healthcare providers know the exact spot of your tumor to better aim the radiation. Also at this session, you may have body molds made to help keep you from moving during the treatment. Then, you'll lie still on a table while a radiation therapist uses a machine to define your treatment field. The field is the exact place on your body where the radiation will be aimed. Sometimes it's called your port. The therapist may mark your skin with tiny dots of semipermanent ink. This is so the radiation will be aimed at the exact same place each time.

On the days you get radiation

On the days you get radiation, you'll lie on a table while the machine is placed over you. You may have to wear a hospital gown. It's like getting an X-ray, only longer. It takes about 15 to 30 minutes to complete. You should, though, plan on being there for about an hour.

At the start of the treatment, a radiation therapist may place blocks or special shields to protect parts of your body that don't need to be exposed to radiation. The therapist then lines up the machine so that radiation is directed to the spot that was marked during the simulation. When you're ready, the therapist leaves the room and turns the machine on. You may hear whirring or clicking noises, like the sounds of a vacuum cleaner, while the radiation is being given. During the session, you'll be able to talk to the therapist over an intercom. You can't feel radiation, so the process will be painless. Also, you won't be radioactive afterward.

Internal radiation (brachytherapy)

Preparing for radiation

To prepare for internal radiation, you may have an appointment for some imaging tests, such as a CT or MRI scan. This can help your healthcare provider see your tumor and the surrounding area. That way, they can map out exactly where the radiation needs to be placed. Usually the catheters, which will hold the radiation source, are put in place during surgery. But at this point, they don't contain radiation.

On the days you get radiation

This treatment can be given either in a hospital or in an outpatient setting (where you go home the same day). Your healthcare provider carefully guides the radiation source down the catheters and near the cancer. This allows them to give the radiation. The treatment may be given over several minutes, which might then be repeated at a later time. Or the radiation may be left in place for several days. In this case, you'll need to stay in the hospital. At the end of treatment, the radiation sources are removed.

What to expect after radiation

Because radiation attacks normal cells as well as cancer cells, you may have some side effects. The side effects from radiation tend to be limited to the area being treated. Some people have few or no side effects. But if you have very severe side effects, your healthcare provider may change your treatments. Or they may stop treatment until the side effects are cleared up. Be sure to tell your healthcare provider about all side effects. Make sure you know what short and long-term side effects to expect.

Side effects

These are some of the more common side effects:

- Skin irritation or skin changes in areas that get radiation, including blistering, peeling, or redness
- Tiredness
- Mouth or throat sores, or pain when swallowing and eating. This is from radiation to your head and neck area.
- Trouble breathing or a cough. This is from radiation to your chest.
- Nausea, vomiting, diarrhea, and change in appetite. This is from radiation to your abdomen.
- Weakened bones. This might lead to fractures, especially after a fall.
- Stiffness, swelling, or decreased range of motion of a joint.
- Hair loss in the area treated.

If you have any of these side effects, talk with your healthcare provider about how to deal with them, how to know when they become serious, and when to report them. Most side effects go away a few weeks after you stop getting treatment.