

# Frameless Stereotactic Radiosurgery of the Brain

*Elisa Mangarin, RN, BSN, OCN*

*Therese Porzio-Kwiecek, RN, BSN, OCN*

## Introduction

Frameless stereotactic radiosurgery is used to target a small area in the brain. The normal tissues near the tumor receive a very low dose of radiation. This booklet tells you more about the treatment and how to prepare for it.

## Preparation for the Treatment

You will be scheduled for a special MRI called a brain lab. It is used to help plan your treatment.

You will need to see a dentist at Memorial. We will schedule the appointment for you. The dental department will make a bite plate for you. This plate is used to assist in positioning you during simulation and treatment.

## Simulation

Before you begin treatment you will go through simulation and treatment planning. These are done to ensure that:

- The treatment site is mapped out,
- You get the right dose of radiation, and
- The dose to nearby tissue is minimized.

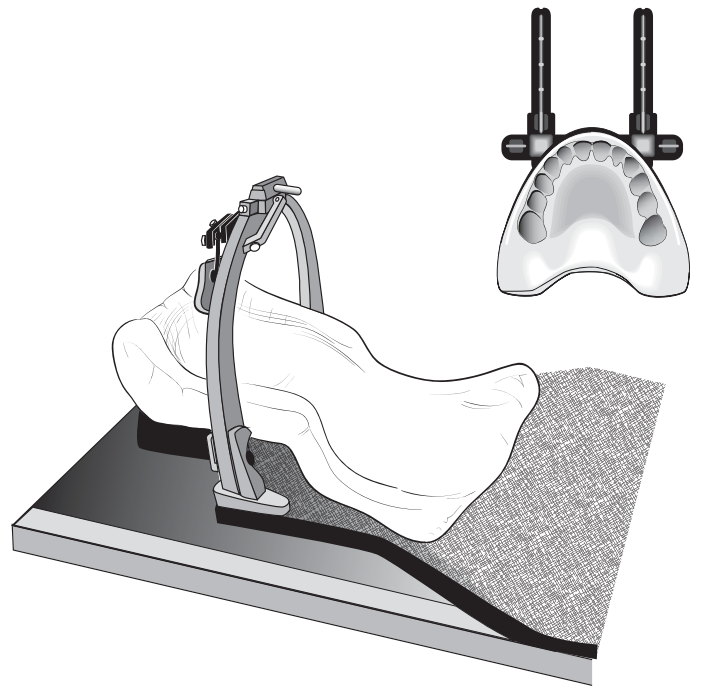
The simulation can take up to two hours.

## Preparation Before the Simulation

No special preparation is required before simulation. It is recommended that you eat lightly beforehand. Wear comfortable clothes, including a shirt with no collar. Do not wear earrings or necklaces that day. You will be lying in one position for a long time. If this will be uncomfortable, take Tylenol® or your usual pain medicine about an hour before your appointment. If you are concerned that you may get anxious during the procedure, speak with your doctor before the simulation about medicine that may be helpful.

## Simulation Day

When you arrive for your appointment, the radiation therapist will greet you and take a photograph of your face. This picture will be used to identify you throughout your treatment. It is a standard safety measure. The therapist will explain the simulation to you. If you have not already signed a consent form, your doctor will review everything with you. You will then sign the consent.



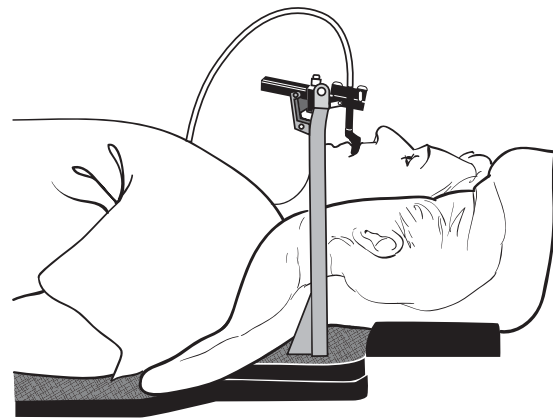
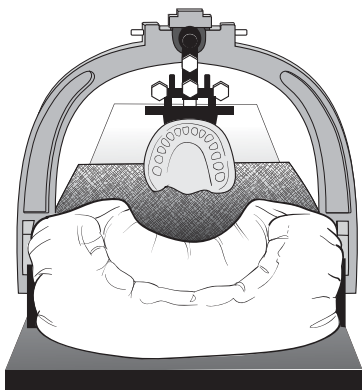
## Once the Simulation Begins

You will not need to undress for the simulation. If you wear a wig, turban, or cap, you will have to remove it. The therapists will help you lie on a table on your back. Although the simulation table will have a sheet on it, the table is hard and has no cushioning. If you have not taken pain medicine and think you may need it, tell the therapist before the simulation begins. The temperature in the room is usually cool. If you become uncomfortable, let the therapists know. Throughout simulation, you will feel the table move to different positions. The lights in the room will be turned on and off and you will see red laser lights on each wall. Do not look directly into the red beam; it could harm your eyes if you looked into it for a long time. The therapists use these laser lights as guides when they position you on the table.

Although the therapists will walk in and out of the room during the procedure, there will always be someone who can see you and hear you. During the simulation, you will hear the therapists speaking to each other as they work. They will explain what they are doing, but we ask you not to speak once they begin, as it may alter your position. The only exception is if you are uncomfortable or need assistance. To help pass the time, music can be played throughout the procedure. If you would like, ask the radiation therapist to play a CD for you. You may bring one of your own from home.

## Positioning and Molds

During simulation, a special mold will be made of your head. This mold along with the bite plate will be used for your treatment. There will also be a special suction catheter attached to the bite plate. While you are lying on the table, the therapist(s) will assist in positioning your head in a special cradle. There is a plastic-like bag filled with a warm liquid that you will lay your head on. It will shape around your head and hardens as it cools. This mold and biteplate will assure that you are in the same position for your treatment(s). This procedure takes about 45 minutes.



## X-ray Images

These are done with a CT scan machine called a Simulator. When you are having your CT scan, a nurse will likely start an intravenous (IV) line so that contrast, or dye, can be given to you before the scan to help us get clear images of the area to be treated. These CT scans are used only to map your treatment plan. They are not used for diagnosis or to find other tumors.

You will hear the x-ray machines as they are turned on and off. Even if the noise seems loud, the therapists will be able to hear you if you need to speak with them. The x-rays on the CT scan take about 45 minutes.

## Skin Markings (Tattoos)

You may need to have your skin marked. The therapists will draw on your skin in the area being treated with a felt marker. Then they will make some permanent skin markings called tattoos, with a small needle and a drop of ink. This feels like a pinprick. The tattoo marks are no bigger than the head of a pin. After the tattoos are made, the

therapists will take several photographs of you in the simulation position. The photographs and tattoo marks will be used to position you correctly on the table each day for a treatment. The felt marking can be washed off after simulation. The tattoos are permanent and will not wash off.

## **Treatment Schedule**

Frameless SRS may be given in several different schedules. Your schedule is based on what your doctor recommends

- A single treatment, generally given on the same day as your setup or beam films.
- Multiple treatments given daily for one week or every other day over 2 weeks.

## **Treatment Administration**

After you check in at the reception desk, you will have a seat in the waiting room. When you are called in for treatment, the therapists will position you as you were the day of the initial setup. They will then leave the room, close the door, and begin the treatment. You will not see or feel the radiation, although you may hear the machine as it is turned on and off and moves around you.

Although you are alone during the treatment, the therapists can see you on a monitor. They can hear you through an intercom at all times. Breathe normally during the treatment, but do not move. If you are very uncomfortable and need help, speak to the therapists. They can turn the machine off and come in to see you at any time, if necessary.

## **Weekly Visits During Treatment (“Status Checks”)**

Your radiation oncologist oversees your entire treatment. He or she will see you each week with your nurse to evaluate your response to treatment. This visit will be either before or after your treatment each \_\_\_\_\_. Expect to be here about one extra hour that day. This visit is a good time to ask questions and discuss any concerns you have. If you need to speak with your doctor or nurse any time between these weekly visits, ask the support staff or therapists to contact them when you come in for treatment.

If you are receiving only one treatment, your radiation oncologist and nurse will see you either before or after that treatment.

Many patients ask about vitamins. You may take a daily multivitamin if you wish. Do not take more than the recommended daily allowance of any vitamin. Do not take any supplements unless your doctor approves them. This includes both nutritional and herbal.

## **Side Effects**

Some people develop side effects from treatment. The type and how severe they are depend on many factors. These include the dose of radiation, the number of treatments, and your general state of health. Side effects may be worse if you are also having chemotherapy. Below are the most common side effects of radiation therapy to the brain. You may have all, some, or none of these.

### **Swelling of the Brain**

Radiation to the brain may cause swelling. If you had neurological symptoms before you began treatment, they could return. You might have new symptoms, such as:

- headache
- nausea
- vomiting
- blurry vision
- difficulty walking
- confusion

If you have **any** new or increased symptoms, call your doctor or nurse immediately. They will want to evaluate you. Medicine(s) can be prescribed if needed. These include:

- **Steroids**, such as Decadron® (dexamethasone). They reduce swelling of the brain from the tumor itself or from the effects of the radiation. Your dose may be changed as needed during treatment. It will be reduced when your doctor decides it is safe. You will then be given a schedule to gradually reduce the dose of drug. Take this medicine only as directed by your doctor. **Do not stop taking Decadron unless instructed.**
  - Decadron can cause stomach pain so always take it with food. You may be given a medicine to reduce the risk of stomach irritation.
  - Decadron can increase the risk of certain lung infections. You may be given Bactrim® to reduce this risk. It is an antibiotic.
- **Antiseizure medicines**, such as Dilantin®, Tegretol®, Luminal®, or Depakene®. They may be given to control seizures. If you are taking any of these medicines, you will need blood tests to make sure you are receiving the right dose. Speak with your doctor about whether or not you should drive.

### **Hair Loss**

Two to three weeks after radiation therapy begins, you will probably lose a small amount of the hair on your scalp. Depending on the area to be treated, you may have patches or partial hair loss. Ask your doctor or nurse what you can expect. For most patients, the hair grows back after radiation is completed. This can take anywhere from two months to a year.

### **Skin Reaction**

You will see changes in your skin and scalp in the area being treated. Each person reacts differently, ask your nurse to point out the areas of your skin and scalp that will be affected.

Below are guidelines to care for your skin during therapy. Continue these until the skin reaction resolves. These guidelines refer to the skin **only in the area being treated.**

#### ***Keep Your Skin Clean***

- Wash the skin daily using warm water and a mild unscented soap. Examples of soaps you may use include Dove®, Basis®, and Cetaphil®. Rinse the skin well, and pat dry with a soft towel.
- Wash your hair daily with your usual shampoo, unless it is medicated.
- When washing and shampooing, be gentle with the skin and scalp. Do not use a washcloth or a scrubbing cloth or brush.
- If you have them, the tattoo marks are permanent and will not wash off. You may get other markings during treatment, for example a purple felt-tipped marker outline of your treatment area. You can use mineral oil to remove these lines. Do not use alcohol or alcohol pads on the skin in the area being treated.

#### ***Moisturize Your Skin***

- If you are likely to get a skin reaction, your nurse will recommend that you start using a moisturizer. You should start using it the first day of treatment to minimize the reaction. If you are not likely to develop a skin reaction, a moisturizer is not needed unless your skin becomes dry or itchy. Your nurse will instruct you. If you are not certain whether you should use a moisturizer, please ask your nurse.
- There are many moisturizers you may use. Some can be purchased over-the-counter, and some require a prescription. There is no evidence that any one moisturizer is best. Over-the-counter moisturizers you may use are Vaseline, Aquaphor®, Eucerin®, or a pure Aloe Vera gel. We do not recommend using Aloe Vera directly from the

plant as it may cause an allergic reaction. Moisturizers your doctor may prescribe are Biafine® Topical Emulsion or a product with hyaluronic acid. Let your doctor or nurse know if you do not like the feel of the moisturizer they have recommended so you can select another product to try. If you are using a moisturizer, apply it two times a day.

– If you are treated in the morning, apply it:

- After your treatment.
- Before you go to bed.

– If you are treated in the afternoon, apply it:

- In the morning, at least 4 hours before your treatment.
- Before you go to bed.

– On the weekends, apply it:

- In the morning.
- Before you go to bed.

- Do not wash off the moisturizer before your treatment. It could irritate your skin.

### ***Avoid Irritating the Skin in the Area Being Treated***

- Do not wear tight caps or turbans that will cause friction against your skin.
- Do not use any other moisturizers, creams, or lotions in the area being treated unless your doctor or nurse recommends them.
- Do not use make-up, perfumes, or powders in the area being treated.
- Do not shave the treated skin. If you must shave, use only an electric razor and stop shaving if the skin becomes irritated.
- Do not use any tape on treated skin.
- Avoid applying extreme heat or cold to the treated skin. This includes hot tubs, water bottles, heating pads, and ice packs.
- If your skin or scalp is itchy, don't scratch it. Apply a sprinkling of cornstarch to your scalp, or if your hair has fallen out, apply extra moisturizer. If these measures do not relieve the itching, tell your nurse so that he or she can make other recommendations.
- If you have no skin reaction, you may swim in a chlorinated pool. However, be sure to rinse off the chlorine immediately after leaving the pool.
- Avoid tanning or burning your skin during treatment and for the rest of your life. If you are going to be in the sun, use a PABA-free sunblock with an SPF of 15 or higher, and wear a hat and clothing that covers the treated area as much as possible.
- If you develop a skin rash at any time during your treatment, please notify your doctor or nurse so it can be evaluated.

### **Fatigue**

A few people develop fatigue after two or three weeks of treatment. People commonly describe their fatigue as:

- Tiredness.
- Weariness.

- Lack of energy.
- Weakness.
- Being unable to concentrate

This gradually goes away after your treatment is done, but it may last several months.

There are a number of reasons people develop fatigue during treatment:

- The effects of radiation on the tissues
- Making trips for treatment each day
- Not having enough restful sleep each night
- Not eating enough protein and calories
- Having pain or other symptoms
- Feeling anxious or depressed

Some people find that their fatigue is worse at certain times of the day and that they have more energy at other times. Below are suggestions to help you manage your fatigue.

- If you are working and are feeling well, we encourage you to keep working during treatment if possible. However, you may find that working shorter hours will help you feel less tired.
- Plan your daily activities. Pick those things that are necessary and most important to you, and do them when you have the most energy.
- Plan time to rest or nap for short periods during the day, especially when you feel more tired. You may also find it helpful to go to sleep earlier at night and get up later in the morning.
- Ask family and friends to help you with things such as shopping, cooking, and cleaning.
- Some people find exercise increases their energy level. Ask your doctor if you can do light exercise, such as walking.
- Eat foods high in protein and calories.
- Ask your doctor or nurse for help with other symptoms you may have. Some people have pain or nausea, feel depressed or anxious, or cannot sleep well.

### **Other Possible Side Effects**

The direction of the radiation beam is based on the area being treated. The beam may pass through other parts of the body. This may cause other side effects, for example, a sore throat. Ask your doctor about other side effects you might have from your treatment.

### **Sexual Issues**

- There is nothing radioactive inside your body. You do not need to avoid close contact with other people.
- You may be sexually active during your treatment unless your doctor tells you otherwise. However, if you are in the childbearing years, you must use contraception so you will not get pregnant during your treatment.

## Emotional Concerns

Having cancer is likely to cause you and the people who care about you to react in many ways. You may feel:

- Anxious
- Worried
- Numb
- Nervous
- Afraid
- Ambivalent
- Down
- Alone
- Angry
- Depressed

All these feelings are expected if you or someone you love has a serious illness.

You may also worry about telling your employer that you have cancer or about paying your medical bills. You may worry about how your family relationships may change, about the effect of cancer or treatment on your body, and if you will continue to be sexually attractive. You may worry that the cancer will come back. When people try to protect each other by hiding their feelings, they can feel very alone. It might help to talk about your feelings. Talking can help the people around you know what you are thinking. It can bring you closer at a time when support is so needed.

Each of us has our own way of responding to difficult situations. Generally we use whatever has worked for us in the past. However, sometimes this is not enough. We encourage you to speak with your doctor, nurse, and social worker about your concerns. You can also contact the Counseling Center at 646-888-0100.

## After You Complete Your Treatment

After your treatment is completed, it is important that you keep your follow-up appointments. These may be with your radiation oncologist, medical oncologist, neurologist, and/or neurosurgeon. These visits let us evaluate your response to treatment. Blood tests, x-rays, and scans may also be ordered during these visits. Before coming for your visit, write down any questions and concerns you have. Bring this list and a list of all your medicines. If you are running low on any medicine, let your doctor know before you run out. You can also call your doctor or nurse at any time if you have any questions or problems.

## Conclusion

We hope this booklet has been helpful. If you have any questions, please speak with your radiation oncologist or nurse. Below are important telephone numbers.

Monday to Friday 9 AM to 5 PM

Radiation Oncologist \_\_\_\_\_

Telephone \_\_\_\_\_

Radiation Nurse \_\_\_\_\_

Telephone \_\_\_\_\_

If you have any problems that must be addressed in the evenings or over the weekend, please call \_\_\_\_\_ and ask for the **radiation oncologist on call**.



Memorial Sloan-Kettering  
Cancer Center

©2011 Memorial Sloan-Kettering Cancer Center  
1275 York Avenue, New York, New York 10065