

Radiation Oncology Clinic

TARGET-ORIENTED EFFECTIVE IRRADIATION IN THREE-DIMENSIONAL CANCER TREATMENT: BRACHYTHERAPY



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Brachytherapy is a treatment method where radioactive sources/radiation source brought close to the tumor. It is being successfully used mainly on the treatment of gynecological cancers (uterine, cervical, vaginal), lung cancer, skin cancers. Today, brachytherapy can be applied in 3D by using imaging techniques, such as computed tomography and magnetic resonance, that are based on sectional anatomy. More broad use of 3D brachytherapy increases success rates and decreases side effects.

There are Three Main Methods of Brachytherapy:

1- Intracavitary Brachytherapy: Intracavitary brachytherapy is performed by the applicators placed inside the natural cavities (uterus, cervix, bronchi etc.) of the patient.

2- Interstitial Brachytherapy: Interstitial brachytherapy is performed by applicators inserted directly into the body tissues or by radioactive sources delivered through needles, as well as permanent insertion of radioactive sources into the tissue (permanent prostate LDR brachytherapy).

3- Contact Brachytherapy: Contact brachytherapy is applied by placing the radioactive source/radiation source in superficial tissues subcutaneous or by pushing other organs aside during the surgery as in intraoperative radiotherapy (IORT).

Three-Dimensional Brachytherapy in Gynecologic Tumors

The brachytherapy applied by placing the radioactive sources close to the area to be irradiated is very important in treatment of gynecologic cancers by physicians from different disciplines. Brachytherapy is most widely used on gynecologic cancers. Brachytherapy is the only treatment method used after the operation or together with the external radiation in patients who are not suitable for operation in uterine cancer (endometrium), cervical cancer (cervix) and vaginal cancers.

Especially in recent years, brachytherapy applications have advanced from two-dimensional methods to three-dimensional methods.

Three-dimensional brachytherapy applications, based on the information acquired from computed tomography and MRI devices, contributes greatly to the successful treatment of gynecologic cancers and enables the suitable protection of healthy surrounding tissues (bladder, rectum, sigmoid etc). This enables a treatment with lesser side effects.

Skin Brachytherapy (Leipzig Applicator)

Brachytherapy is being successfully used for the treatment of early stage skin squamous and basal cell cancers with suitable surface and depth.

Especially the cosmetic damages that may occur due to the surgical interventions applied for the tumors localized around the face are far less common with brachytherapy. Patients who have early stage skin cancers localized around the face and deemed eligible by the plastic surgeon can be treated by brachytherapy.

3-Dimensional Brachytherapy in Lung (Bronchi) Cancers

Brachytherapy can be applied via the tubes placed by the thoracic surgery team into the main respiratory ways for eligible patients who cannot undergo external radiotherapy for the lung cancer.

Applicator Types

In brachytherapy, various auxiliary instruments called “applicators” are used to approach the radioactive source to the area that will be exposed to radiation. Although the placement of these applicators are generally painless, on some cases anesthesia may be required.