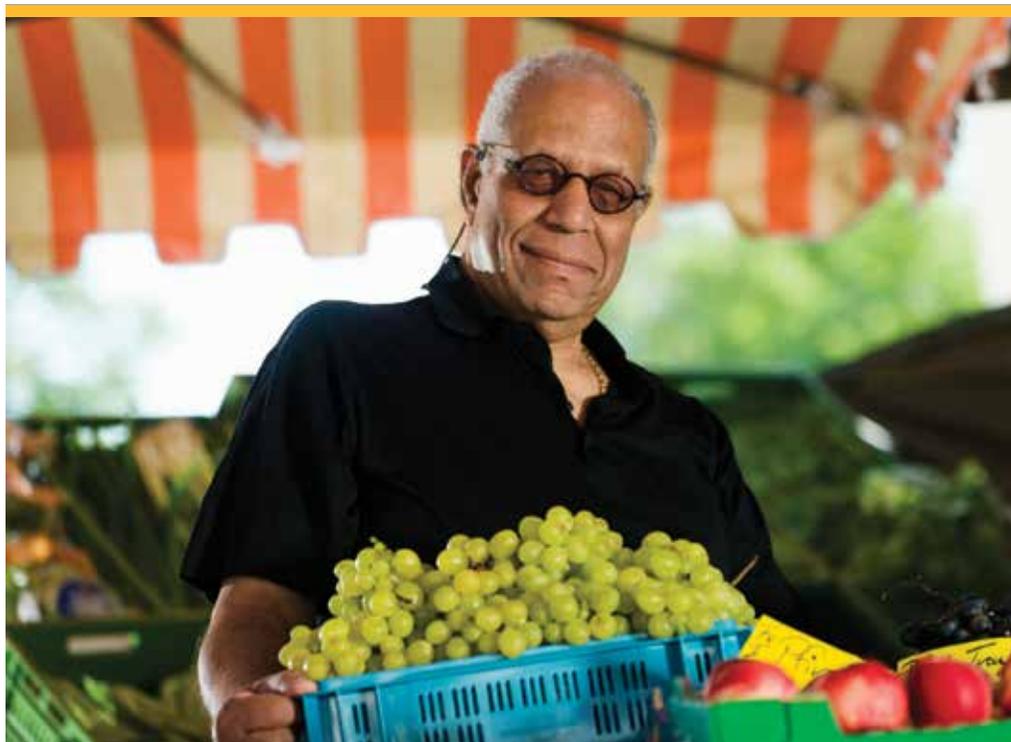


Brachytherapy is effective in treating a variety of cancers



Brachytherapy is a cancer treatment in which a radiation source is placed directly into the targeted tissue; it is used to treat tumors in almost any part in the body. High Dose Rate (HDR) brachytherapy is an advanced technology in which the radiation source is temporarily inserted under robotic computer control. A treatment device is programmed to deliver a calculated dose by inserting the radiation source into hollow brachytherapy applicators that have previously been implanted at the treatment site. The radiation distribution can be finely adjusted by controlling where the radiation source comes to rest within the applicator tube and how long it dwells at each location within the targeted treatment area. Precision management of the radiation source enables physicians to maximize disease control and to avoid radiation of adjacent normal tissue and organs.

HDR is a convenient and efficient radiation treatment for patients. Side effects typically come and go quickly and there is no residual radiation between sessions or after treatment is completed. Multiple treatments can be given on the same day, usually on an outpatient basis, though hospitalization may be required to manage the applicator implants in some cases.

Four steps of HDR brachytherapy

Applicator insertion. Small, hollow applicators — like little straws — are inserted into the target. This is usually done through the skin without the need to make an incision, though the procedure is sometimes done in conjunction with surgery.

3-D image acquisition. CT, MRI or 3-D ultrasound images of the implanted region are obtained.

Virtual-image computer planning. Imaging data is used to create a virtual image of the anatomy and applicators, which is used to calculate the best pattern of source insertion and how much time the source should stay at each dwell position.

HDR treatment delivery. A computerized robotic delivery device called a “remote afterloader” inserts the single radiation source according to the calculated plan. Along with the physician, trained brachytherapy specialists, medical physicists and brachytherapy nurses administer the treatment and monitor the patient. There is no radiation exposure to medical personnel or family members. Treatments are often divided into multiple sessions to further minimize damage to normal tissue.

UCLA is one of the few centers in the U.S. with an image-guided brachytherapy (IGBT) program. Guidance for brachytherapy uses advanced medical imaging such as ultrasound, fluoroscopy and endoscopy for the accurate placement of the applicators. High-resolution images are then acquired using ultrasound, CT or MRI to determine anatomic relationships and to create virtual-image computer dose calculations. UCLA is one of the few centers in the world with an open CT scanner, which allows complex implants to be done under direct 3-D image guidance. Advanced imaging makes it possible to do brachytherapy deeper into the body where surgery might not be indicated. For example, we use CT, MRI and ultrasound to safely place brachytherapy applicators in the liver, lungs, abdomen and pelvis.

Indications for brachytherapy

HDR is a principal treatment for cervical and certain other gynecologic cancers and is very effective in treating cancers of the head and neck. Data shows that it is one of the best alternatives for prostate cancer and it is often used with breast-conserving surgery in the early treatment of breast cancer to reduce radiation exposure to surrounding normal tissue. Skin cancers are usually cured with brachytherapy. Other cancers where brachytherapy may be used include ocular melanoma; soft-tissue sarcoma; lung cancer and esophageal, bile-duct, anal and rectal cancer. Brachytherapy can also be used when the cancer has spread to major organs such as the lung or liver.

HDR is used alone in some cases, but it is often used in combination with other treatments, such as surgery, chemotherapy and external-beam radiation. It can be used to treat previously irradiated tissues or as “focal” therapy to treat small areas of an organ. Brachytherapy can be combined with surgery to deliver radiation at the surgical margin safely and effectively.

HDR Brachytherapy at UCLA

UCLA Radiation Oncology houses a state-of-the-art brachytherapy suite with the latest equipment and a highly experience team of brachytherapy professionals.

UCLA's brachytherapy team is among the most experienced in the nation. We have performed virtually every kind of brachytherapy from the simple to the most complex and we have safely delivered over 25,000 HDR treatments.

UCLA offers a range of brachytherapy services, including one of the nation's busiest eye-plaque-seed brachytherapy programs for ocular melanoma and electronically generated brachytherapy for intraoperative radiation therapy (IORT) for breast cancer. Seeds can also be implanted permanently in tissues for treating prostate, head and neck and other cancers.

Benefits of HDR brachytherapy include:

- Can be used alone or with surgery, external radiation or chemotherapy
- Treatment completed in one to two weeks
- Relatively few side effects
- Accurate and precise tumor-specific radiation
- Preservation of normal organ structure and function
- No radiation exposure to other persons

Brachytherapy Team

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