Brachytherapy

Accurate placement of episcleral plaque in brachytherapy of choroidal melanoma
I. Rodriguez Rodriguez¹, M. Asencio Duran², B. Manzano Muñoz², A. Escribano Uzcudum¹, E. Corredoira³, C. Huerga³, A. Mañas Rueda¹
¹ Hospital Universitario La Paz, Oncología Radioterápica, Spain
² Hospital Universitario La Paz, Oftalmología, Spain
³ Hospital Universitario La Paz, Radiofísica, Spain

Purpose/Objective. Present a case showing a technique for accurate plaque placement in episcleral brachytherapy of choroidal melanoma.

Materials and methods. The diagnosis of choroidal melanoma is based on the results of ophthalmoscopic and ultrasonographic examination and completed with metastatic workup. For dosimetric purposes, a virtual simulator of the eyeball is used for extrapolation of ultrasound and fundoscopy imaging to determine the clinical target volume (CTV) which includes a minimum margin of 2 mm around the tumor. Prescribed dose to the apex of the tumor is 85 Gy. Intraoperative trans-scleral illumination is done in the opposite side of the tumor and the tumor shade (tumor margin) is marked on the scleral surface with a surgical marker. A dummy plaque is temporally sutured to the sclera exactly in the place of the gross tumor volume (GTV). The perimeter of the plaque can be observed by reflecting the inner surface of the plaque during indirect ophthalmoscopy as a circle of light surrounding the tumor. This makes it possible to determine the exact position of the entire plaque in relation to GTV. If necessary, intraoperative ultrasound B-scan can be used to verify plaque location. Once the correct position is found, the dummy plaque is replaced by a radioactive plaque and sutured definitively. The operated eye is patched and the patient remains hospitalized until plaque removal.

Results. This technique facilitates the identification of the local gross tumor volume and allows an accurate positioning of the plaque in direct contact with the tumor choroidal melanoma. The selection of an adequate size of plaque is also critical.

Conclusions. Precise plaque localization is critical to ensure that the choroidal tumor receives the dose prescribed. The team’s experience is highly relevant for successful performance of this technique and achieving a significant learning curve for plaque placement technique remains a challenge.

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Demonstration video brachytherapy implant high rate of plastic tubes in cancer soft palate
E. Martinez, V. Garcia, E. Cardenas, A. Lozano, R. Garcia
Hospital Universitario Virgen De La Arrixaca, Spain

Summary. Our video shows the process of implantation of plastic tubes from the first visit in consultation of a 56-year-old male patient diagnosed with squamous cell carcinoma of cT2 cN2a Mo soft palate (history, examination, and images) CT simulation, contouring, planned and treatment until the withdrawal out of the tubes. External radiation therapy 44 Gy photons bilateral neck, bilateral clavicular 50 Gy, ipsilateral neck with electrons up to 56 Gy, and 56 Gy bilateral anterior neck, and N (+) to 70 Gy, cisplatin at 40 mg/m²/week was changed to cetuximab for thrombocytopenia. Has presented mucositis and xerostomia G2. Subsequently, he has been treated with interstitial brachytherapy boost. The implementation of the tubes is carried under general anesthetic in the operating theater CMF central through Pernot technique. The postoperative course was uneventful. CT is performed, contouring, marking the area of 70 Gy in neck five fractions to 3 gy were applied separated by at least 6 h. Total 15 Gy to PTVt with DBE a/b 2 = 18 and 74 Gy total dose tumor. A week presented mucositis G2 geographical marking the

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Endocavitary HDR brachytherapy with Ir192 using a Chassagne mould

Hospital 12 De Octubre, Oncología Radioterapia, Spain

Introduction. Radiotherapy is an essential part of cervical cancer treatment. The application of endocavitary radiotherapy can be done with generic or personalized applicators using high or low dose rate or with pulsed radiation. Previously, treatment prescription was made to point A (ICRU 38), and recently, with the development of 3D brachytherapy planning systems, it’s prescribed to CTV. We have gone from prescription by points (A and B) using orthogonal radiographic simulation and dose limiting rectal and bladder points, to prescription to volume (CTV) with simulation using CT/MRI and limiting dose to certain volumes of organs at risk (bladder, rectum and sigmoid colon).

Objective. To describe the procedure of brachytherapy with Ir192 high dose rate using a in-house Chassagne mould.

Materials and methods. We describe the procedure to make a vaginal mould (with alginate powder) on the 4–5th week of treatment with external beam radiotherapy. We canalize the endocervical channel with a Cornier cannula, either by direct visualization or by hysteroscopy in cases where it is not possible to visualize or get through the cervical external os. Then we introduce gauze to the bottom of the vaginal pouch, and diluted calcium alginate powder. We wait for its solidification to remove it and include it in plaster. This plaster impression is used to make the definitive acrylic resin mould where 3 channels are carved to make place for the applicators (2 vaginal and 1 uterine). Later, we perform 5 applications: the first one for treatment planning (using CT/RM and orthogonal radiographs) and, after that, 4 applications of brachytherapy done once a week. Dose prescription is made to the CTV, administering 7 Gy in each session, while the dose constraints used are V6 Gy less than 2cc to the bladder and V5 Gy less than 2cc of rectum and sigmoid colon.

Episcleral brachytherapy in the treatment of choroidal melanoma

J. de Frutos Baraja1, D. Antón García1, D. de Miguel Pérez2, P. Alonso Martínez1, P. Diezhandino García1, C. García Álvarez1, A. del Castillo Belmonte1, D. Alonso Hernández1, M. Saornil Álvarez1, R. Barquero Sanz2, G. Antonio1, F. López-lara Martín1
1 Hospital Universitario De Valladolid, Spain
2 Hospital Universitario “Del Rio Hortega”, Spain

Episcleral brachytherapy is a conservative alternative to enucleation in the treatment of choroidal melanomas and some other eye injuries as angioma or macular degeneration associated with age. This video describes the process of this technique for the diagnosis and indication to surgical technique, through dosimetry, indispensable throughout radiotherapy. It also details the radiation protection standards, as they work with radioactive sources.

Interstitial HDR brachytherapy for oral tongue cancer: Educational video

A. Polo1, A. Montero2, M. Salgueiro1, R. Colmenares1, A. Abondano1, A. Candela2, A. Hervás3, A. Ramos1
1 University Hospital Ramon y Cajal, Radiation Oncology, Spain
2 University Hospital Ramon y Cajal, Anaesthetics, Spain
3 University Hospital Ramon y Cajal, Spain

Purpose. Interstitial brachytherapy is a classic technique in the treatment of oral tongue cancer. Low dose rate brachytherapy has been used for many years, with good clinical results. Currently, improvement in surgical technique has reduced the number of available cases in the Radiation Oncology Departments in our country. However, new developments in brachytherapy (HDR afterloading, computer calculations, CT-based dosimetry) create a good environment to promote this technique for selected patients. In this educational video we will show the step-by-step technique for interstitial HDR brachytherapy in oral tongue cancer, with emphasis in the multidisciplinary work. Informed consent was obtained and signed by the patient before recording the video footage.

Step-by-Step Technique. 1. General anesthesia with naso-tracheal tube. 2. Field cleansing and preparation: using sterile technique the field was prepared and the oral cavity was washed with antiseptic solution. 3. Physical exam: the dimensions of the lesion were assessed by inspection and palpation. The presence of satellite lesions, leukoplasia and other suspicious lesions was assessed. The lesion is then delineated with an sterile marker. 4. Clipping of the lesion: sterile markers were inserted with the help of a hollow needle. Four markers were inserted to help the assessment of the lesion from CT images. 5. Implant planning: from the previous steps, a previsional ballistics is planned. Needle entry points are marked in the skin of the patient. 6. Implant