implantation site. After 10 months of follow up, the patient is in complete response and side effect of xerostomia and mucositis presents G1.

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**Endocavitary HDR brachytherapy with IR192 using a Chassagne mould**


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**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.

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**Episcleral brachytherapy in the treatment of choroidal melanoma**

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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.

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**Interstitial HDR brachytherapy for oral tongue cancer: Educational video**

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**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, leukoplakia 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
execution: six needles were inserted, to cover the lesion with adequate safety margin to account for microscopic spread. Needles were planned and inserted according to the rules of the Paris System. 7. Plastic tube overinsertion: plastic tubes were overinserted into the hollow needles. Needles were then removed and the plastic tubes rested in place. 8. Evaluation of the implant: to assess if additional tubes are needed for adequate target coverage. 9. Fixation of the tubes with plastic buttons to the skin of the patient. 10. Under the supervision of the anesthesiologist, the patient goes to the CT-room under general anesthesia in order to facilitate the obtention of CT images to calculate the treatment plan. The patient then goes to the recovery room or ICU according to the anesthesiologist criteria. 11. Treatment plan is calculated by the medical physicist from CT images. The radiation oncologist prescribe the dose and accept the plan. 12. After QA procedures are cleared the patient starts treatment.

Conclusion. Interstitial HDR brachytherapy for tongue cancer is a feasible technique. Adequate training is needed to acquire the needed skills to implement this technique in a general hospital.

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Intraoperative high dose rate brachytherapy (HDR-IORT) in locally advanced rectal cancer

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The risk of developing local recurrence after treatment of a primary rectal cancer increases with increased stage. Treatment of early-stage rectal cancer with preoperative radiotherapy (RT) and total mesorectal excision result in a local recurrence of 6% for Stage II and 15% for Stage III tumors. Survival after recurrence depends on stage and treatment and this result in a 3-year survival rate varying from 0% to 60%. Intraoperative radiotherapy is used to increase dose of Radiation and decrease local recurrence. Two techniques can be used: intraoperative electron beam radiotherapy (IOERT) and high-dose-rate brachytherapy (HDR-IORT). The flexible template in HDR-IORT can treat all surfaces. Centers use a 1-cm-thick applicator as a template and often prescribed a dose of 15 Gy at the surface or 10 Gy at 0.5 cm depth from the surface of the applicator. The HDR-IORT procedure consists of placing a flat flexible applicator of a centimeter of thickness, in whose interior there are several placed catheters supporting parallelism and separation of 1 cm. The applicator is placed in the tumor bed marked with clips, for what is necessary the collaboration of the surgeons. Later, a 2D planning is realized and patient is translated to the unit of brachytherapy near the operating room.

Our series includes 7 patients treated between 2010 and 2012. Doses: 10 Gy to 1 cm of the catheters. Results: pathologic stages: pT0-mic: 2 p, pT3: 3p, pT4: 2p; distance to the surgical margin: 0–4 mm. Failures: local 0p, metastases 2p. Situation at the last review: 1p death with disease, 1p life with disease, 5p life without disease. In the video we can see a case report of a patient with locally advanced primary rectal cancer treated with HDR-IORT after preoperative chemoradiotherapy.

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LDR automatic prostate brachtherapy

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Introduction. The prostate cancer is the most frequent tumor in men; the brachytherapy is an alternative treatment highly effective and tolerable.

Abstract. In May 2011 we have launched LDR brachytherapy technique in our unit, indicated for low risk prostate cancer patients.

Personal: Radiation oncologist, physicist, urologist, anesthetist, nurse, auxiliary nursing and radiation technical. Patient settled in lithotomy position with spinal anesthesia and urinary catheter.

Procedure. – Positione the endorectal ultrasound image, visualize the prostate in transverse and longitudinal cuts, do the volumetric reconstruction and draw structures (prostate, urethra and rectum). – Perform preplanning dosimetry and check PTV and OAR dose. – Insert transperineal needles and verify the dosimetric parameters. – Place “seed-selector”, release the seeds automatically and remove the needles. – Make cystoscopy to sure that no seeds in bladder and test that there isn’t hematuria.

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Training in brachtherapy. High performance centre. Hospital virtual valdecilla

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Purpose. Brachtherapy allows delivering higher doses of radiation to more-specific areas of the body, compared with the conventional form of radiation therapy (external beam radiation). This allows being very effective in tumor control and not damaging