ing the linear-quadratic model ratios): V45.4β/α (assuming the previous < 50%, V54.5 < 35%, V59.0 < 25%, V63.6 < 20%, V68.2 < 50% for rectum; V59.0 < 50%, V63.6 < 35%, V68.2 < 25%, V72.7 < 15% for bladder; Dmax < 45.4 Gy for femoral heads; Dmean < 45.4 Gy for penile bulb. Valid single VMAT arc plans are generated by the TPS. Target volumes preserve the optimal homogeneity and coverage, as well as OARs maintain their dose–volume parameters under those imposed by QUANTEC: 3.1)%, ±4.0)%, V63.6 = (6.5 ± 4.4)%, V59.0 = (8.9 ± 5.9)%, V54.5 = (11.7 ± V45.4 = (20.3 6.5)%, ± 7.3)%, V63.6 = (9.5 ± 2.4)% for rectum; V59.0 = (12.2 ± V68.2 = (4.1 4.6) Gy for femoral ± 4.0)% for bladder; Dmax = (35.3 ± 5.6)%, V72.7 = (2.7 ± V68.2 = (6.5 3.7) Gy for penile bulb. Mean treatment time is 310 ± 43 s. ± heads; Dmean = (42.3 VMAT in conjunction with IGRT techniques are powerful tools to cover a hypofractionated prostate cancer treatment program. It is possible to generate optimal plans to treat target volumes as well as to accomplish QUANTEC constraints. VMAT treatment technique allows the delivery of the treatment in a single arc, with a significant reduction in treatment time.

http://dx.doi.org/10.1016/j.rpor.2013.03.606

Inverse planned IMRT use in a rural community radiation oncology unit

J. Tisaire[1], W. Tourkmani[2], M. Rozas[3], I. Azinovic[4]
[1] *Instituto Oncologico de Castilla La Mancha (IOCLM) Alcazar de San Juan, Oncologia Radioterapica, Spain*
[2] *IOCLM, Alcazar de San Juan, Oncologia Radioterapica, Spain*
[3] *IOCLM, Alcazar de San Juan, Radiofisica, Spain*
[4] *IMO Group, Medical Director, Spain*

Introduction. The National Radiotherapy Advisory Group (NRAG) of the U.K. recommended that 24% of all radical fractions (32% of patients) should be delivered with inverse planned IMRT as target for quality radiotherapy care indicator.[1]
Objective. To analyse the inverse planned IMRT (IP-IMRT) pattern in our center and compare the results to the NRAG recommendations.
Patients & methods. The radiation oncology unit at Alcazar de San Juan covers a population of 203.233 in-habitants censored in 2011. From Jan to Dec 2011 a total of 344 patients were referred for radiation therapy, 106 of these with palliative intent and were excluded as IP-MRT was not used for palliation.
Results. 36.9% of patients (88 out of 238) received IP-IMRT with radical intent (define as exclusive & pre or postoperative radiotherapy), accounting for 31.7% of the total number of fractions administered. The technique used was hypofractionated SIB-IMRT in 71.5% of pts and a standard fraction one phase IMRT in 27.3%. According to primary tumor localization the IP-IMRT distribution was: Prostate 42%, rectal cancer 32% (SIB-IMRT dose escalation study), HNC 15%, Gynecologic cancers 8%. The IMRT use by tumor site was: Proste 100%, Rectal 82%, HNC 76%, Gynecol 77%. Distribution by treatment intention was as follows: RT only 34.5%, preoperative 32%, postoperative 23%, cancer local relapse 11%.
Conclusion. Use of IP-IMRT in our center is quite similar to the NRAG recommendations and greater than the 9.9% (8.5% IP-IMRT + 1.4% VMAT) of a recent survey in the UK[2] or the 6.2% use in France.[3] This benchmarking study allows us future comparisons in changing scenarios as reimbursement modifications or economical constraints.

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http://dx.doi.org/10.1016/j.rpor.2013.03.607

Keloid as a Bening disease in adjuvant radiation therapy

A. Vila Capel, J. Perez-alija, C. Camacho, J. Vilar, N. Artola, J. Julia, A. Pedro
Hospital Plató, Oncologia Radioteràpica, Spain

Purpose. Keloid represents a significant bother for patients and a therapeutic challenge. We present adjuvance with electron therapy after surgical excision with curative intention.
Materials and methods. Since May – 2007, we treated 20 keloids in 19 patients. Mean age was 38.5 years (interval 16–80). Twelve females and 8 males were irradiated with a maximum of 4 h after surgery. The radiotherapy was delivered using a Clinac 2100 (Varian MS-Palo Alto). Beam energy was 6 MeV, with a 4-mm thick aluminum foil 4-mm thick covering the end of the electron applicator, used as a spoiler. Doses of 15 Gy in 5 fractions of 300 cGy/d. were delivered. A 0.5 cm margin around the surgery excision was included within the treatment field, taking account that a thin lead mold should be placed around the scar on the skin, at least 1 cm inside the optical field in order to reduce the beam penumbra. To evaluate results and impact a photograph was taken before surgery and at the beginning of therapy, and also every year during the follow up (follow-up interval: 4–68 months).

Results. The most frequent keloid site was ear lobe (n: 10). Three cases were lost and excluded during the follow up. Response to therapy was shown in 13 cases (76.5%).
Complete response. 9 (53%), Hypertrophic scars: 4, and relapses: 4 (23.5%, mean time: 1 year). After 2 years of follow up, 12 cases continued as responders (90.3%), 9 cases (69.3%) after 3 years and after 4 years, 8 (61.5%) are still in response. Consequences were pain and pruritus in 5 patients (29.4%).
Conclusion. Post-excision radiotherapy seems to be an optimum technique in handling keloids. However, electron therapy using a spoiler needs to be further evaluated in practice. Our results seem to be similar to those obtained with other techniques, such a Brachytherapy or superficial X-ray.

http://dx.doi.org/10.1016/j.rpor.2013.03.608

Locally advanced bilateral breast cancer treated with VMAT. A case report

V. Jerviz Guía[1], P. Samper Ots[2], F. Clemente Gutierrez[3], M. López Carrizosa[1], M. Couselo Paniagua[1], J. Zapatero Ortuño[1], C. Ibañez Villaviciosa[1], M. Dominguez Morcillo[1]
[1] *Hospital Militar Central Gomez Ulla, Oncología Radioterápica, Spain*
[2] *Hospital Rey Juan Carlos, Oncología Radioterápica, Spain*
[3] *Hospital Militar Central Gomez Ulla, Radiofísica, Spain*

Introduction. Volumetric Modulated Arc Therapy is the last generation of arch dynamic therapy, a technology that allows better dose conformation, significant reduction of treatment time, improvement of patient comfort, reduce the risk of patient movement during treatment and reduce the dose received by the organs at risk.
Objective. The purpose of this paper is to present the case of a bilateral ductal invasive carcinoma treated with adjuvant radiotherapy using VMAT in order to demonstrate its dosimetric advantages.
Materials and methods. The patient is a 62 year old woman diagnosed in April 2011 with Bilateral Ductal Invasive Breast Carcinoma, cT4 cN1 M0 (Stage IIIB). The patient receives neoadjuvant chemotherapy (Adriamicine-Ciclofosfamide × 4, followed by weekly Paclitaxel × 12), followed by a bilateral radical mastectomy and axillary lymph node resection. After that, the woman was sent to our department to receive adjuvant radiotherapy. Given the characteristics of the target volume, radiotherapy planning with VMAT technique was chosen in order to reduce the dose received by the organs at risk.
Results. Our PTV was both chest walls and bilateral axillary and supraclavicular lymph node chains. The total dose was 50 Gy delivered in 25 fractions with a daily dose of 200 cGy. Planning was carried out using Monaco 2.03 with an full arch, 154 segments and 737.24 monitor units. In figure 1 shows the Dose-Volume histogram, the isodoses in an axial, coronal and 3D reconstruction and the isodose of 20 Gy. Table 1 shows the mean dose to the PTVs and the organs at risk. PTV right chest wall (Doses mean "Dm": 50.80 Gy); PTV left chest wall (Dm: 51.06 Gy); PTV right node (Dm: 50.68 Gy); PTV left node (Dm: 50.78 Gy) and mean dose in the most important organs at risk: Heart, (Dm: 12.94 Gy and V20: 17.82 Gy); right lung, (Dm: 11.96 Gy and V20: 18.75 Gy) and left lung, (Dm: 12.08 Gy and V20: 19.33 Gy). Treatment was carried out using an Elekta Synergy linear accelerator.
Conclusion. Using VMAT, we can administer our planned dose to large PTVs (in this case both chest walls, axillary and supraclavicular chains) and exclude organs at risk (heart and lungs) from the dose of 20 Gy.

http://dx.doi.org/10.1016/j.rpor.2013.03.609

Objectivity in the determination of the isocenter in radiotherapy treatment

J. Richarte Reina[1], A. Cid Galache[1], J. Reinoso Cobo[1], J. Garcia Madueño[1], C. Serrano Chica[1], Y. Luque Perez[1], C. de Haro Bueno[2], M. Martos Alcalde[2], M. Capllonch Blanco[2], M. Casanova Garcia[2], A. Cabrero Chinchilla[2]
[1] *Complejo Hospitalario Ciudad de Jaén, Hospitalary Radiophysics Unit, Spain*
[2] *Complejo Hospitalario Ciudad de Jaén, Radiation Oncology, Spain*

Introduction. We know objective ways of determining the location of the radiotherapy treatment isocenter (Image-Guided Radiation Therapy), but in many hospitals this is done through portal imaging (2D–2D) supervised by specialists. Without the aid of these technological means, we can question the influence exerted by the specialists' subjectivity on the correct placement of the isocenter.
Objectives. Observe whether there is a significant influence on the coordinate shifts performed by different specialists for different tumor sites.
Methods. We studied 552 patients treated with a Siemens Primus linear accelerator. The corrections performed on the treatment isocenter were analyzed in relation to the position established in the planning stage. These corrections may vary in subsequent days of treatment giving us a history of not only the variability inherent to the conditions of the patients but also of the variability due to the degree of subjectivity of the radiation oncologist. Corrections were made based on the realization of portal imaging tests within the first three days of treatment, and then on a weekly basis. We calculated corrections in each of the Cartesian axes (Dx, Dy and Dz) made for each patient. We also analyzed the maximum coordinate shifts. After grouping patients by pathology and radiation oncologist, we performed a statistical analysis to test for significant differences among different specialists in determining the isocenter.