SEETRO

South and East Europe Technology in Radiation Oncology

RTT DER 2011

7th SOUTH AND EAST EUROPEAN TECHNOLOGY in RADIATION ONCOLOGY CONGRESS

19-21 SEPTEMBER, BAHÇEŞEHİR UNIVERSITY, ISTANBUL, TURKIYE

Endorsed by ESTRO

Dear Colleagues,

It is our great pleasure to welcome you to the **7th South and East European Technology in Radiation Oncology (SEETRO) Congress,** held between **19–21 September at Bahçeşehir University, Istanbul, Turkiye.**

This meeting brings together experts from around the world to share knowledge, foster collaboration, and discuss the latest technological and clinical advances in the field. Over the coming days, you will have the opportunity to attend inspiring keynote lectures, scientific sessions, and interactive workshops, all designed to enhance clinical practice and patient care.

We are particularly delighted to host this meeting in Istanbul, a city where East meets West, rich in history, culture, and innovation. We hope that beyond the scientific program, you will also enjoy the vibrant spirit of the city and the warm hospitality of Turkiye.

We would like to express our gratitude to all committee members, speakers, and participants whose contributions make this congress possible. Your active engagement and commitment are what truly bring SEETRO to life.

We wish you a fruitful congress and an enjoyable stay in Istanbul.

Sincerely,

Organization Committee

SEETRO 2025

SEETRO
South and East Europe Technology in Radiation Oncology

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SEETRO
South and East Europe Technology in Radiation Oncology

TURKISH SOCIETY OF RADIATION THERAPY TECHNOLOGIST RTT DER 2011

SCIENTIFIC PROGRAM

Friday, September 19, 2025	
09:00 – 10:00	**Registration**
10:00 – 10:30	**Welcome** Abidin Tecik · Adnan Şafek · Banu Atalar · Bahçeşehir University · Michelle Leech
SESSION 1	**Current Status of RTT from Different Country Aspect** Chairs: Yat Man Tsang · Abidin Tecik
10:30 – 10:45	**Current Status and Future of Radiotherapy in Turkiye** Yavuz Anacak
10:45 – 11:00	**RTT Training in Turkiye** Rıza Çetingöz
11:00 – 11:30	**IAEA Framework for RTT Education** Michelle Leech
11:30 – 12:00	**Coffee Break**
12:00 – 12:30	**Single Comprehensive Solution in Clinical Practice with Online Adaptive CT Linac Elekta Evo** Mustafa Karademir
12:30 – 13:00	**From Simulation to Delivery: Integrating SGRT into Clinical Practice** Bianca Coto
13:00 – 14:00	**Lunch**
SESSION 2	**Role of RTT in Practice** Chairs: Velimir Karadza · Adnan Şafe
14:00 – 14:20	**Radiation Protection in Clinical Radiotherapy and How it Impacts Radiation Therapists** Mary Coffey
14:20 – 14:40	**ESTRO RTT Committee: Perspectives and Opportunities** Yat Man Tsang
14:40 – 15:00	**RTTs As Part of the Multidisciplinary Leadership of Radiation Therapy/Oncology – Importance for the Profession and The Discipline** Philipp Scherer
15:00 – 15:20	**The Role of Young Radiologic Technologists in Modern Radiotherapy** Stefanija Smilevska
15:20 – 15:50	**Coffee Break**
15:50 – 16:20	**Medko Oncology Network Global Presence in Radiotherapy** Doğa Güneş **New Generation Helical Treatments with Radixact** Kaya Tetik

SCIENTIFIC PROGRAM

16:20 – 16:50	**A Comprehensive Range of Superior Radiation Therapy Solutions with Klarity** Şeyma Kızılkaya
SESSION 3	**Practical Usage of Advanced Techniques by RTTs** Chairs: Aleksandra Oklješa Lukič · Abdülkadir Arslan
16:50 – 17:05	**Clinical Evaluation of the Performance of Three Commercial Deep Learning Contouring Model in Head and Neck Region for Radiotherapy** Adam Miovecz
17:05 – 17:20	**Intrafraction Motion Review for Prostate Treatment with Auto Beam Hold** Tilen Šimic
17:20 – 17:35	**Gammaknife Surgery for Cerebral AVMs: Single Centre Experience** Milica Mitrović
17:35 – 17:50	**Photon-Counting Computed Tomography in Radiation Therapy: A Radiation Therapy Technologist's Perspective** Domagoj Brkić
17:50 – 18:05	**Use of 3D Printed Applicators in Gynecological Brachytherapy** Primož Marolt
18:30 - 20:30	**Bosphorus Boat Tour & Welcome Receptio**
Saturday, September 20, 2025	
SESSION 4	**Advanced Applications in Patient Positioning, Immobilization and Motion Management** Chairs: Enis Tinjak · Valerija Žager Marciuš
09:00 – 09:15	**Surface Guided Radiation Therapy: Introducing SGRT Identify for Safer Treatments** Drljaca Dusan
09:15 – 09:30	**MR-Guided Radiotherapy: Why Do We Adapt?** Derya Çöne
09:30 – 09:45	**Breast Radiotherapy in Prone Position Using the SGRT** Predrag Paunkovic
09:45 – 10:00	**Motion Management Strategies in Radiotherapy** Enes Kaya
10:00 – 10:30	**Efficient and Accurate Patient Positioning with C-RAD Surface Guided Radiotherapy** Philipp Scherer
10:30 – 11:00	**Coffee Break**

SCIENTIFIC PROGRAM

SESSION 5	**Advanced Radiotherapy Treatment Delivery** Chairs: Ilija Juric · Jovan Stevanovic
11:00 – 11:15	**Volumetric Modulated Arc Therapy as a Definitive Treatment Modality in Prostatic Adenocarcinoma: A Non-Invasive Alternative to Radical Prostatectomy** Gorgi Pavloski
11:15 – 11:30	**Treating Multiple Metastases with Hyperarc** İlkay Serbez
11:30 – 11:45	**Basic Workflow in MR-Linac** Melis Gençtürk
11:45 – 11:50	**Pediatric Radiotherapy: Presentation with Video** Angelovska Gjorgjievska
11:50 – 12:00	**Responsibilities of RTTs in Advanced IGRT Methods** Hande Sertkaya
12:00 – 12:10	**Implementation of Adaptive RT from RTT Perspective** Özlem ÖZKAYA BİNGÖL
12:10 – 12:40	**Advancements in Radiotherapy Patient Fixation and Positioning** Hande Baş Ayata · Can Çelik
12:40 – 13:10	**Safe and Precise Immobilization for Intracranial Radiosurgery: The Encompass Platform** Esra Küçükmorkoç
13:10 – 14:00	**Lunch**
SESSION 6	**SRS and SBRT in Clinical Practice** Chairs: Vedrit Ibusoski · Muharrem Yanar
14:00 – 14:15	**Stereotactic Body Radiation Therapy (SBRT) for Primary Liver and Pancreatic Tumors in Total I.V. Anesthesia** Mateja Nožinić
14:15 – 14:30	**SBRT of Lung Tumor and Metastasis Case Report** Dragana Vukasinovic
14:30 – 14:45	**Stereotactic Cardiac Irradiation** Jeraj Matjaž
14:45 – 15:15	**SRS-Fix, Non-Invasive Head&Neck Immobilisation for Stereotactic Radiosurgery** Gordan Nisevic
15:15 – 15:45	**Coffee Break**
SESSION 7	**RTT in SEETRO – Are There Enough? Position, Education and Number of RTT's Point of View** Chairs: Aleksandar Kostovski · Vedran Manestars

SCIENTIFIC PROGRAM

15:45 – 16:00	**Education and Recruitment of RTTs in South and Eastern Europe** Velimir Karadza
16:00 – 16:15	**RTT Education Level in South and Eastern Europe** Enis Tinjak
16:15 – 16:30	**SEETRO 15th years Overview** Ilija Curic
16:30 – 16:35	**First Announcement for SEETRO 8th**
16:35 – 16:40	**Closing Remarks**
20:00 – 22:30	**Social Event (Dinner)**
Sunday, September 21, 2025	
10:00 – 12:00	**Workshop in Acıbadem Maslak Hospital** Görkem Güngör · İlkay Serbez · Adnan Şafek · Melis Gençtürk

SESSION 1 : CURRENT STATUS OF RTT FROM DIFFERENT COUNTRY ASPECT

Current Status and Future Plans of Radiotherapy in Turkiye

Yavuz ANACAK[1]

SUMMARY

Turkiye, an upper-middle-income country located in Southeastern Europe and Western Asia, has a population of 85 million. In 2025, it is estimated that there will be over 240,000 new cancer cases, with this number expected to rise to 420,000 in the next 20 years. Considering that half of all cancer patients will require radiotherapy, Turkiye needs to have the capacity to treat 120,000 patients in 2025 and 210,000 patients in 2045. To meet this demand, the country should operate at least 240 linear accelerators (linacs) now and 420 linacs by 2045.

Over the past two decades, significant investments have been made by the Ministry of Health, university hospitals, and the private sector in radiotherapy infrastructure. As of 2025, Turkiye operates around 300 external radiotherapy machines, making it one of the few countries in the world capable of providing radiotherapy to all cancer patients who require it. Additionally, Turkiye's radiotherapy centers serve not only Turkish patients but also those from the Middle East, Central Asia, and Balkan countries.

Despite having a robust infrastructure for training radiation oncology professionals, including radiation oncologists (RO), medical physicists (MP), and radiotherapy technologists (RTT), there are challenges in education and training. Notably, RTTs currently receive only two years of undergraduate training, which does not align with the International Atomic Energy Agency (IAEA) recommendations and European Union (EU) curricula. Furthermore, there is a lack of official continuous medical education (CME) requirements for RO, MP, and RTTs, which hinders the implementation of modern radiotherapy techniques across the country.

In conclusion, Turkiye has made significant improvements in establishing a sustainable radiotherapy service and securing its future for the next two decades. The focus now should be on increasing capacity in radiation oncology research and innovation.

[1]Ege University School of Medicine, Radiation Oncology Department, Izmir, Turkiye

SESSION 1 : CURRENT STATUS OF RTT FROM DIFFERENT COUNTRY ASPECT

IAEA Framework for RTT Education

Michelle LEECH[1]

SUMMARY

In this presentation, the soon to be published IAEA Framework for Radiation Therapist Education will be discussed. The new framework is based on the CanMeds framework, which defines specific 'roles' of a health professional, with defined competencies for each role.

The seven roles with associated competencies in this curricular framework document are: Radiation Therapist Expert, Communicator, Collaborator, Leader and Advocate, Quality Care Provider, Evidence Based Practitioner and Professional. This presentation will discuss how each of these roles can be interpreted in various geographical settings and how curricular content can be matched to meet these roles.

[1]Discipline of Radiation Therapy, Trinity College Dublin, Ireland and Trinity St. James's Cancer Institute, Dublin, Ireland

SESSION 2 : ROLE OF RTT IN PRACTICE

Radiation Protection in Clinical Radiotherapy and How It Impacts Radiation Therapists

Mary COFFEY[1]

SUMMARY

Historically radiation protection in radiotherapy has been viewed in the context of pure science involving dosimetry and machine calibration and generally considered the responsibility of the medical physicist. Legislation also takes a more scientific approach and underpins regulatory inspection. From the radiation therapist perspective we are conscious of radiation protection of the general public in our departments and from the perspective of QA and QC of the equipment we use.

However we need to think more broadly as in reality we are ultimately responsible for the dose of radiation delivered to our patients. This involves ensuring that the high dose is delivered to the volume define and planned with as low as dose as reasonably achievable to the associated normal tissues and organs at risk. This is radiation protection from a clinical perspective and very much the responsibility of the radiation therapist.

Radiation protection is based in the two principles of Justification and optimisation and this presentation will consider our clinical role in this context. We are not directly involved in the justification of radiotherapy as the treatment of choice but we should consider the justification of the procedure in terms of the patient's physical condition/performance status and compliance with departmental protocols.

Primarily the radiation therapist is key in the optimization of the treatment preparation and delivery. Optimization starts at the time of simulation and includes patient identification, physical status, evaluation of the treatment site and the available equipment prior to commencing the procedure compliant with departmental protocols. Treatment delivery should be carried out with absolute attention to detail in terms of positioning and immobilization, image acquisition and evaluation and patient monitoring and support.

Ultimately the radiation therapist is key to ensuring that the patient is not exposed to unnecessary radiation resulting in long terms side effects and poor quality of life for our patients.

[1]Trinity Centre for Health Sciences, St. James' Hospital, Dublin

SESSION 2 : ROLE OF RTT IN PRACTICE

ESTRO RTT Committee: Perspectives and Opportunities

Yat Man TSANG [1]

SUMMARY

The ESTRO Radiation TherapisT Committee (RTTC) serves as a key driver for professional advancement within the European radiation therapy community and beyond. This session will provide an overview of the committee's current initiatives and examine the expanding opportunities available to radiation therapists in today's dynamic healthcare environment. The RTTC focuses on five primary objectives: enhancing professional recognition, supporting continuing professional development, establishing knowledge-sharing networks, strengthening multidisciplinary collaboration, and advancing the scientific foundation of radiation therapy practice. The committee responds to current workforce challenges through targeted workshops, educational programs, and collaboration with the ESTRO School, particularly addressing recruitment difficulties, workforce retention, and career development amid ongoing technological innovation. This presentation will detail how the committee supports advanced practice roles, encourages research participation, and develops leadership capabilities within cancer care teams. Participants will learn about the RTTC's approach to creating professional development pathways, fostering international connections, and strengthening the recognition of radiation therapists as essential members of the oncology team. The session will also highlight concrete opportunities for professional engagement and career advancement available through ESTRO's educational resources and professional networks, demonstrating the practical benefits of active participation in the broader European radiation therapy community.

[1]Princess Margaret Cancer Centre, University of Toronto, Toronto, Canada

SESSION 2 : ROLE OF RTT IN PRACTICE

RTTs As Part of the Multidisciplinary Leadership of Radiation Therapy/Oncology – Importance for the Profession and The Discipline

Philipp SCHERER[1]

SUMMARY

The rapidly evolving, partly technologically driven field of radiotherapy is currently shifting towards hypofractionation, patient-centred care, as well as individualized and adaptive therapies. This evolution necessitates a multi-professional team capable of adapting its scope of practice.

However, hierarchical structures with traditional career structures hinging on seniority potentially impede the development of a cohesive agile multi-disciplinary team, including the risk of policy-motivated discussions or professional politics. These structures are susceptible to dynamics linked to the Peter principle and tend to become less agile. Allowing for career options that overcome these traditional hierarchies can positively impact team dynamics and workspace culture. Valuing professional expertise and leadership from any position in the respective specific areas is crucial, as well as educating managers and employees not only in their core competencies, but also to understand the differences between leadership and management.

In some countries, radiation therapists (RTTs) traditionally hold subordinate roles, receiving clear instructions on how to treat the patients and use the equipment. In such environments, RTTs tend to work less self-paced or self-determined. This negatively impacts job satisfaction and motivation. Moving towards a scope of practice involving a deep understanding of the roles and responsibilities necessitates adequate training; primarily to acquire the competencies, but also to establish trust among other professionals. Role models potentially build this trust in individuals and the profession, respectively.

Expanding RTT roles comes with the potential of raising the profession's autonomy and creating a positive influence on the multi-professional team. Additionally, an enhancement of autonomy, competence, and relatedness can boost job satisfaction and motivation. This approach can motivate RTTs to become experts in their fields, create additional scientific outcomes and act as leaders in multidisciplinary radiation oncology, researching and promoting their vision for improved and safer patient care.

Keywords: radiotherapy, radiation therapist, leadership and management.

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SESSION 2 : ROLE OF RTT IN PRACTICE

The Role of Young Radiologic Technologists in Modern Radiotherapy

Stefanija SMILEVSKA[1]

SUMMARY

Introduction: Radiotherapy is one of the primary approaches in the treatment of malignant diseases, characterized by increasing technological complexity and the need for multidisciplinary collaboration. In this context, young radiologic technologists are gaining an increasingly important role in providing high-quality, safe, and patient-centered therapy.

Objective: The aim of this research/review is to analyze the educational, professional, and ethical aspects of the involvement of young radiologic technologists in the radiotherapy process, as well as their contribution to technological and clinical innovations.

Methodology: A descriptive method is used, based on literature review and analysis of clinical practice, with a focus on the specific tasks, competencies, and interprofessional relations of young technologists within radiotherapy teams.

Results: Young technologists emerge as highly trained and technologically adaptable professionals, actively involved in patient preparation, therapy application, verification procedures, and monitoring of side effects. Their openness to digital tools, research activities, and continuous education positions them as key drivers of clinical protocol advancement and quality of care.

Conclusion: The participation of young radiation technologists therapist in radiotherapy goes beyond the execution of technical tasks; it includes active influence on the efficiency, safety, and humanization of treatment. Their professional development should be supported through mentoring programs, education, and integration into scientific projects, opening new perspectives for the development of the profession and improvement of outcomes for oncology patients.

Keywords: Radiotherapy, radiologic technologists, young professionals, multidisciplinary team, digital transformation, oncology.

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SESSION 3 : PRACTICAL USAGE of ADVANCED TECHNIQUES by RTTs

Clinical Evaluation of the Performance of Three Commercial Deep Learning Contouring Model in Head and Neck Region for Radiotherapy

Adam MIOVECZ[1,2,3], Bettina NAGY[1], Daniel GUGYERAS[1], Daniel FAJTAI[4], David SIPOS[1,2,3], Arpad KOVACS[2,3,5], Ferenc LAKOSI[1,2,3]

SUMMARY

Purpose/objective(s): Our goal was an objective and subjective comparison of the head-and neck lymph regions and organ at risks (OAR's) segmented contours by three DLC-based models with expert contours in head-and neck tumor patients using three AI software (Mirada*, Limbus**, Mvision***).

Material and methods: Between 2020 and 2023 we selected 20 patients with hypopharynx/larynx cancer randomly whom were treated at our Institute. The OAR's (brainstem, left and right parotid, esophagus, left and right gland submandibular, spinal canal) and lymph node region (I-V. H&N region) contours generated by three commercial AI auto-segmentation solutions (Mirada, Limbus, MVision) were compared to manually-drawn expert contours. Comparisons were made using geometric similarity metrics including volumetric Dice similarity coefficient (DSC), and distance based Median surface distance (MDSD), 95% Hausdorff distance (HD95%) Jaccard index (Jc) indices were employed. The subjective evaluation was classified into two categories: major (significant) and minor (insignificant), according to the degree of modification. Furthermore, the time required for modification and manual contouring was recorded.

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SESSION 3 : PRACTICAL USAGE of ADVANCED TECHNIQUES by RTTs

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SUMMARY

Results: In the lymph node region nearly similar value we observed for Dice similarity coefficient based on the pairwise comparison: expert vs. Limbus 0.82(0.63-0.99), expert vs. Mirada 0.84(0.55-0.99) while expert vs. MVision 0.79(0.71-0.92). The median surface distance remained below 3.74 mm on average, considering all lymph node cases and comparisons. Hausdorff distance 95% sym resulted in a difference of up to nearly 23 mm: expert vs. Limbus 8.07 (0.1-19.47), expert-Mirada 6.49(0.1-22.43), and expert-MVision 9.06(5.39-13.30). In the OAR's contours we measured the smallest Dice value 0.15 in the expert vs. Mirada comparison in the esophagus organ while the best match resulted in the right parotid. The Jaccard index showed the largest similarity 1 at the MVison comparison in the gland submandibular (left and right) at one case. The use of the three software significantly shortened the contouring time of the H&N (OAR's and lymph node region) by an average of 2 minutes, compared to manual segmentation, which required for OAR's contouring an average of 28 minutes while for lymph node region required 24 minutes average.

Conclusion: Auto-segmentation (DLC) models based on deep learning significantly reduce the time required for contouring, as they segment the head-and neck lymph node region, and OAR's with a good approximation. We found an excellent and good match between the three models, overall MVision model requires the least amount of modification.

Keywords: AI, Deep Learning Contouring, OARs, Lymph node region

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SESSION 3 : PRACTICAL USAGE of ADVANCED TECHNIQUES by RTTs

Intrafraction Motion Review for Prostate Treatment with Auto Beam Hold

Tilen ŠİMİC[1], Helena LENKO[1], Emir KUDUZOVİĆ[2]

SUMMARY

Purpose/Objective: The aim of this study was to investigate the impact of different auto beam hold tolerances on treatment interruptions, treatment duration and the effect of rotational corrections (pitch and roll) in radiotherapy of prostate cancer with volumetric modulated arc therapy . In addition, we investigated whether a reduction of the planning target margin to 5 mm in all directions is feasible.

Materials and Methods: We analyzed the data of 180 prostate cancer patients treated with volumatric modulated arc therapy at the Institute of Oncology in Ljubljana between January 2020 and April 2022. All patients had implanted gold fiducial markers to track movement within the fraction. Patients were divided into three groups based on auto beam hold trigger frequency (every 58° vs. every 5 seconds) and alignment method (4D-translation with only couch rotation vs. 6D-translation with all rotations). We compared treatment interruptions, treatment time according to verification method (cone beam CT vs. planar imaging) and the impact of multiple arcs.

Results: Frequent auto beam hold activation led to more interruptions. With auto beam hold every 58° at a tolerance of 3 mm, interruptions occurred in 45% of the fractions, decreasing to 22% at 4 mm and 12% at 5 mm. With auto beam hold every 5 seconds, the interruptions increased to 55% (3 mm), 29% (4 mm) and 15% (5 mm). Rotational corrections (pitch and roll) resulted in more interruptions due to patient muscle contractions, with 6D alignment having higher interruption rates (55% at 3 mm) compared to 4D (27% at 3 mm). Treatment duration increased with cone beam CT verification and additional arcs. With a tolerance of 4 mm, the treatment time was 5:14 min for one arc, 8:00 min for two arcs and 9:07 min for three arcs.

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SESSION 3 : PRACTICAL USAGE of ADVANCED TECHNIQUES by RTTs

Intrafraction Motion Review for Prostate Treatment with Auto Beam Hold

Tilen ŠİMİC[1], Helena LENKO[1], Emir KUDUZOVİĆ[2]

SUMMARY

Conclusions: To minimize disruption and optimize treatment efficiency, we recommend 4D alignment without pitch and roll for prostate-only treatments and the use of single- or dual-arc plans whenever possible. The results suggest that a safety margin of 5 mm may be feasible, but further validation is required.

Keywords: Prostate cancer, intra-fraction motion, fiducial markers, treatment interruptions, 4D vs. 6D alignment.

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SESSION 3 : PRACTICAL USAGE of ADVANCED TECHNIQUES by RTTs

GammaKnife Surgery for Cerebral AVMs: Single Centre Experience

Milica MİTROVİĆ (Author)[1], Boris BABİĆ (Co- author)[1]

SUMMARY

Purpose/objectives: Gamma knife radiosurgery (GKS) is a non-invasive treatment option that uses focused beams of radiation to obliterate cerebral arteriovenous malformations (AVM). The role of the radiation therapy technician (RTT) in GKS is essential to the success of the treatment. Our objective was to explain the role of radiation therapy technologist (RTT) in radiotherapy treatment delivery.

Materials & methods: This retrospective study included 160 patients treated with Gamma Knife Radiosurgery (GKS) for intracranial Arteriovenous Malformations (AVMs).

Patient Preparation and Imaging: Prior to GKS, all patients underwent a standardized preparation protocol. This involved a detailed neurological examination, comprehensive medical history, and obtaining informed consent. On the day of the procedure, a stereotactic frame (e.g., Leksell Gamma Knife System's stereotactic frame) was affixed to the patient's head under local anesthesia to ensure precise spatial registration. Subsequently, detailed neuroimaging was performed to accurately delineate the AVM nidus and its relation to surrounding critical structures. This included:

- Magnetic Resonance Imaging (MRI)
- Digital Subtraction Angiography (DSA): Stereotactically-guided DSA was conducted for all patients, providing a three-dimensional reconstruction of the AVM. DSA was crucial for precise identification of afferent arteries, the AVM nidus, and efferent veins, as well as blood flow dynamics.

All imaging data (MRI and DSA) were then fused within the treatment planning system to create a comprehensive 3D model for accurate radiation dose planning.

[1]Neuroradiosurgery Department University Clinical Center Serbia Belgrade

SESSION 3 : PRACTICAL USAGE of ADVANCED TECHNIQUES by RTTs

GammaKnife Surgery for Cerebral AVMs: Single Centre Experience

Milica MİTROVİĆ (Author)[1], Boris BABİĆ (Co- author)[1]

SUMMARY

Results: We retrospectively reviewed 160 patients who were treated with Gamma-Knife RS for intracranial AVMs between 14 March 2016. and 15 April 2024. There were 80 male and 80 female patients with a range of years 11- 74. Obliteration was assessed with MRI, MRI angiography and DSA imaging.

Conclusion: Radiosurgery was successful in the majority of patients with minimal morbidity. RTTs play a critical role in patient care, from the initial consultation to the follow-up appointment. They work closely with the radiation oncologist to develop the treatment plan and ensure that it is delivered safely and effectively. RTTs also provide emotional support to patients and their families throughout the treatment process. Their expertise, skill, and compassion are essential to the success of this treatment.

Key words: GammaKnife, AVM, RTT

[1]Neuroradiosurgery Department University Clinical Center Serbia Belgrade

SESSION 3 : PRACTICAL USAGE of ADVANCED TECHNIQUES by RTTs

Photon-Counting Computed Tomography in Radiation Therapy: A Radiation Therapy Technologist's Perspective

Domagoj BRKİĆ[1], Sanja BREZOVEC[1], Jadranko OROZ[1]

SUMMARY

Purpose/Objective: To present the implementation of photon-counting computed tomography (PCCT) in radiation therapy (RT) from the perspective of a Radiation Therapy Technologist (RTT), focusing on clinical workflow, improvements in image quality, and skill adaptation.

Materials and Methods: The Specialty Hospital Radiochirurgia Zagreb installed PCCT technology, featuring semiconductor-based detectors capable of counting individual photons, in August 2024. The RT planning package went live in October 2024. The first patient to undergo RT planning with PCCT was scanned on October 21, 2024. Between October 2024 and February 2025, a total of 554 patients underwent PCCT scans for RT planning purposes, with 387 receiving contrast-enhanced scans.

Results: In our experience, PCCT provided enhanced spatial and contrast resolution, enabling improved visualization of tumor borders. A lower radiation dose per scan was noted without compromising image quality. RTTs observed differences in workflow and recognized new skills and adaptations required for transitioning to PCCT technology, such as new imaging protocols, spectral data handling, and contrast management. The daily workflow benefited from reduced treatment planning time, while the clinical advantages were most apparent in target delineation and anatomical clarity.

Conclusion: Based on our experience, integrating PCCT into RT planning has reduced daily workflow planning time, enhanced imaging quality, and minimized radiation exposure. To achieve this, RTTs needed to adjust their protocols and develop new skills. From the RTT's perspective, PCCT is a valuable resource in modern RT, enabling more efficient, precise, and safer patient care.

Keywords: Photon-counting Computed Tomography, radiation therapy, RTT, RT planning.

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SESSION 3 : PRACTICAL USAGE of ADVANCED TECHNIQUES by RTTs

Use of 3D Printed Applicators in Gynecological Brachytherapy

Primož MAROLT[1], Helena Barbara ZOBEC LOGAR[1]

SUMMARY

Background: External beam radiation therapy and brachytherapy are the treatments of choice for most of gynecological cancers. In modern image-guided adaptive brachytherapy the tumor, high risk clinical target volume (CTV-THR) and organ ar risk (OAR) delineation and treatment planning is MRI (magnetic resonance imaging) based. The new brachytherapy applicators available on the market allow for the guidance of interstitial needles that can be implanted together with intracavitary component. However, these standard applicators are not suitable for patients with an unfavorable anatomy. For such cases, the 3D printing technique enables manufacturing of individualized applicators.

Aim of the study: To improve (CTV-THR) coverage with the use of individual 3D-printed applicators in advanced gynecological cancers without exceeding the dose constraints to the OAR. This study aimed to develop and test the efficiency and safety of the individualized applicators for different gynecological cancers.

Materials and methods: MRI from the first brachytherapy application with an in situ standard intracavitary applicator was used for modelling of individual applicator. Virtual needles were added to the treatment plan to achieve the best possible coverage of CTV-HR. The location of the needles in the plan were used to create an individualized 3D printed applicator. For each patient optimized intracavitary + interstitial plan with standard applicator and optimized plan with individual 3D printed applicator were created.

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SESSION 3 : PRACTICAL USAGE of ADVANCED TECHNIQUES by RTTs

Use of 3D Printed Applicators in Gynecological Brachytherapy

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SUMMARY

Results: The study confirmed that the use of individual applicators improved DVH parameters for CTV-HR by approximately 30–40%. The D2cc dose for the OARs was higher, but the dose did not exceed the dose constraints to the OAR.

Conclusions: The benefit of this approach could be applied also to the patients for which the dose aim could not be reached, but the improvement of the CTV-THR DVH parameters could result in better local control probability and thus improve the quality of life.

Key words: Brachytherapy, 3D printed applicator, MRI, HR-CTV, OAR.

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SESSION 4 : ADVANCED APPLICATIONS IN PATIENT POSITIONING, IMMOBILIZATION AND MOTION MANAGEMENT

Surface Guided Radiation Therapy: Introducing SGRT Identify for Safer Treatments

Drljaca DUSAN[1]

SUMMARY

Introduction: Surface Guided Radiation Therapy (SGRT) represents a significant advancement in the precision and safety of radiation oncology. The IDENTIFY system by Varian introduces a cutting-edge approach to SGRT by utilizing real-time 3D surface imaging to monitor patient positioning throughout the treatment process.

Material and Methods: This presentation shows us the implementation and clinical integration of the IDENTIFY Surface Guided Radiation Therapy (SGRT) system developed by Varian Medical Systems. The methodology focuses on evaluating the system's performance in enhancing patient positioning accuracy, treatment safety, and workflow efficiency across various radiotherapy applications.

Equipment and Technology SGRT System: IDENTIFY by Varian, integrated with TrueBeam and Ethos platforms.

Imaging: Real-time 3D surface imaging using stereoscopic camera arrays.

Treatment Planning: Eclipse Treatment Planning System (TPS) with individualized Regions of Interest (ROIs) defined for each patient.

Verification Tools: Cone Beam CT (CBCT) and portal imaging for baseline comparison.

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Surface Guided Radiation Therapy: Introducing SGRT Identify for Safer Treatments

Drljaca DUSAN[1]

SUMMARY

Results: As a result, SGRT with IDENTIFY contributes to safer, more effective, and patient-friendly radiation treatments, setting a new standard in modern radiotherapy

Conclusions: The integration of Surface Guided Radiation Therapy with advanced systems like IDENTIFY marks a transformative step in radiation oncology. By enabling real-time, non-invasive monitoring and enhancing treatment precision, SGRT significantly improves patient safety and clinical outcomes. As the technology continues to evolve—embracing AI, adaptive radiotherapy, and broader clinical applications—it is poised to become a cornerstone of personalized, high-precision cancer care. The future of SGRT lies in its ability to seamlessly integrate into diverse treatment workflows, ensuring safer, more efficient, and patient-centered radiation therapy.

Keywords: Identify, surface guided, workflow

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SESSION 4 : ADVANCED APPLICATIONS IN PATIENT POSITIONING, IMMOBILIZATION AND MOTION MANAGEMENT

MR-Guided Radiotherapy: Why Do We Adapt?

Burak AKGÜL[1], Derya ÇÖNE[1], Kardelen VARDAR[1], Volkan DEMIRCAN[1], Evren Ozan GÖKSEL[1], Osman Artunç TÜRE[1], Alptekin ARIFOĞLU[1], Evrim TEZCANLI[1], Ufuk ABACIOĞLU[1], MERIÇ ŞENGÖZ[1]

SUMMARY

Purpose/Objectives: The integration of MR-Linac technology in radiotherapy (RT) enables the minimization of interfractional and intrafractional variations such as patient positioning, daily anatomical changes, and internal organ motion. Adaptive RT plans can be generated in real-time based on daily anatomy while the patient remains on the treatment couch. This study aimed to investigate the reasons for online plan adaptation in patients treated with the MR-Linac system at our clinic.

Materials and Methods: Forty patients were treated with stereotactic body radiotherapy (SBRT) on a ViewRay MR-Linac over five fractions. Treatment regions included thorax (n=15), upper abdomen (n=17), and prostate (n=8). For each fraction, the adaptation reason was classified as related to conformity, critical organ dose constraints (RAO), gradient index, or a combination thereof. Descriptive statistical analysis was performed.

Results: In the thoracic group, 40% of 75 fractions were adapted due to conformity loss and 41% due to conformity+RAO. In the upper abdomen, these rates were 63% and 20%; in the prostate group, 57.5% and 30%, respectively. Adaptation due to RAO alone was required in 7% (thorax), 11% (abdomen), and 7.5% (prostate). Gradient index-based corrections were applied in 6 thoracic cases, in one prostate fraction, and none in the abdomen. No adaptation was required in 7 fractions (3.5% of all fractions). Only one fraction required correction for all adaptation criteria. Overall, 83.5% of fractions required adaptation due to conformity loss, and 38.5% due to RAO doses.

Conclusions: Our findings show that conformity loss is the most common reason for daily online adaptive RT across all anatomical sites, underlining its importance in maintaining optimal tumor control. Additionally, the need to adjust RAO doses in ~40% of fractions highlights the crucial role of daily adaptation in minimizing toxicity.

Keywords: MRgRT, online, daily, adaptive, MR-Linac

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SESSION 4 : ADVANCED APPLICATIONS IN PATIENT POSITIONING, IMMOBILIZATION AND MOTION MANAGEMENT

Breast Radiotherapy in Prone Position Using the SGRT

Predrag PAUNKOVIC[1]

SUMMARY

Purpose/Objective: Breast cancer is the most commonly diagnosed cancer among women globally, and radiotherapy is a cornerstone of breast cancer treatment, particularly after breast-conserving surgery. Prone positioning is increasingly used to reduce radiation dose to organs at risk (OARs) such as the heart and lungs, especially in patients with larger breast volumes. This paper discusses the clinical implementation of prone breast radiotherapy, highlighting the role of the CATALYST (C-RAD) surface guidance system in improving setup precision, treatment accuracy, and overall patient safety.

Materials/Methods: Radiotherapy for breast cancer aims to deliver an optimal therapeutic dose to the target volume while minimizing exposure to surrounding healthy tissues. Supine positioning has been the traditional approach, but prone positioning has emerged as a promising alternative for selected patients. The development of surface-guided radiation therapy (SGRT) systems like CATALYST has further advanced the precision and reproducibility of patient positioning.

The prone position enables the breast to fall away from the chest wall, which can significantly reduce the radiation dose to the heart and lungs. This is particularly beneficial for left-sided breast cancers. Additionally, prone positioning reduces the risk of skin toxicity and improves dose homogeneity, especially in women with larger breasts. Several dosimetric studies have demonstrated better sparing of OARs with comparable or improved target coverage.

Result: Benefits of CATALYST in Prone Breast Radiotherapy:

- Enhanced setup reproducibility and reduced setup times
- Continuous monitoring of patient motion during treatment
- Non-ionizing verification method that eliminates the need for frequent imaging

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SESSION 4 : ADVANCED APPLICATIONS IN PATIENT POSITIONING, IMMOBILIZATION AND MOTION MANAGEMENT

Breast Radiotherapy in Prone Position Using the SGRT

Predrag PAUNKOVIC[1]

SUMMARY

- Increased patient comfort and safety
- Integration with respiratory gating technique

Limitations and Consideration: Despite its advantages, prone positioning is not suitable for all patients. Anatomical variations, discomfort, or difficulty in maintaining breath hold may limit its applicability. Additionally, implementation requires trained personnel and dedicated equipment. Clinical judgment is necessary to determine the optimal positioning technique for each patient.

Conclusion: Prone breast radiotherapy using the CATALYST system is a highly effective technique that combines dosimetric advantages with technological precision. By minimizing radiation exposure to critical structures and improving treatment reproducibility, this approach supports safer and more accurate radiotherapy delivery. Future developments in SGRT may further enhance the integration of surface imaging into routine clinical practice.

Keywords: Breast cancer, prone position, SGRT,

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SESSION 4 : ADVANCED APPLICATIONS IN PATIENT POSITIONING, IMMOBILIZATION AND MOTION MANAGEMENT

Motion Management Strategies in Radiotherapy

Enes KAYA[1]

SUMMARY

Purpose/Objective: To evaluate and present comprehensive motion management strategies in radiotherapy that address the challenges posed by various types of anatomical motion during radiation treatment delivery, with the aim of improving treatment accuracy and patient outcomes.

Materials and Methods: A comprehensive review of current motion management techniques was conducted, analyzing breath-hold techniques, respiratory gating systems, abdominal compression methods, and real-time tumor tracking technologies. Each strategy was evaluated based on clinical applicability, technological requirements, patient tolerance, and effectiveness in different anatomical regions, particularly focusing on thoracic and abdominal tumor treatments.

Results: Multiple motion management strategies demonstrate distinct advantages for specific clinical scenarios. Breath-hold techniques effectively reduce tumor displacement by temporarily suspending respiration during beam delivery. Respiratory gating systems successfully synchronize radiation delivery with predetermined breathing phases, reducing target motion uncertainty. Abdominal compression methods show significant reduction in diaphragmatic movement through controlled pressure application. Real-time tumor tracking systems enable dynamic beam adaptation, maintaining target coverage despite ongoing anatomical motion. The selection of appropriate techniques depends on tumor location, patient cooperation capacity, and institutional technological capabilities.

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SESSION 4 : ADVANCED APPLICATIONS IN PATIENT POSITIONING, IMMOBILIZATION AND MOTION MANAGEMENT

Motion Management Strategies in Radiotherapy

Enes KAYA[1]

SUMMARY

Conclusions: Effective implementation of motion management strategies significantly enhances radiotherapy precision by minimizing the impact of respiratory motion, cardiac activity, internal organ shifts, and patient movement. These techniques not only improve dose delivery accuracy and tumor control rates but also reduce radiation exposure to healthy tissues, thereby enhancing overall treatment safety and clinical outcomes. The integration of appropriate motion management protocols is essential for optimal radiotherapy delivery, particularly in treatments involving mobile anatomical regions.

Keywords: Radiotherapy, organ motion, motion management, tumor tracking, respiratory gating

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SESSION 5 : ADVANCED RADIOTHERAPY TREATMENT DELIVERY

Volumetric Modulated Arc Therapy as a Definitive Treatment Modality in Prostatic Adenocarcinoma: A Non-Invasive Alternative to Radical Prostatectomy

Gjorgji PAVLOVSKI[1], Miroslav MITEVSKI[1]

SUMMARY

Volumetric Modulated Arc Therapy (VMAT) is an advanced external beam radiotherapy technique that enables highly conformal dose distribution through continuous modulation of gantry speed, dose rate, and multileaf collimator (MLC) positions during one or more arcs around the patient. In the management of prostatic adenocarcinoma, VMAT provides a non-invasive alternative to radical prostatectomy, delivering comparable oncological outcomes while significantly reducing treatment-related morbidity.

In contrast to traditional surgical interventions, which involve resection of the prostate and are associated with risks such as urinary incontinence, erectile dysfunction, and other postoperative complications, VMAT targets the prostatic neoplasm with sub millimetric precision, sparing adjacent critical structures including the rectum, bladder, and neurovascular bundles. This precision results in a notable reduction in both acute and chronic toxicities, particularly radiation-induced proctitis, cystitis, and neuropathy. Recent clinical studies have shown that VMAT ensures excellent biochemical control, along with improved patient-reported outcomes regarding quality of life (QoL), functional preservation, and psychological well-being. The modality also facilitates the use of hypo fractionated regimens, thereby increasing treatment efficiency and enhancing patient convenience. Given its high precision, lower invasiveness, and favorable toxicity profile, VMAT is increasingly recognized as a definitive, standalone treatment modality capable of replacing traditional surgical approaches in carefully selected patients with localized or locally advanced prostate cancer. Its adoption into modern oncological protocols marks a significant paradigm shift toward personalized, organ-sparing radiotherapeutic strategies.

Keywords: VMAT, Volumetric Modulated Arc Therapy, prostate cancer, prostatic adenocarcinoma, non-invasive treatment, radical prostatectomy, radiation-induced toxicity, biochemical control, hypofractionation, quality of life, organ-sparing therapy, personalized oncology

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SESSION 5 : ADVANCED RADIOTHERAPY TREATMENT DELIVERY

Treating Multiple Metastases with Hyperarc

İlkay SERBEZ[1]

SUMMARY

In patients with malignant tumors or vascular tangles in the intracranial region, the indication for radiotherapy as a non-surgical alternative is decided, and the treatment dose and fraction scheme are determined according to the field size, cell structure and treatment technique.

Stereotactic radiosurgery (SRS) treatment technique with ablative doses between 1 and 5 fractions may be preferred, taking into account the tumor cell structure and size. In this method, which is an alternative to surgery, it is aimed to achieve high conformality of the gross tumor volume (GTV) by avoiding the tolerance doses of critical organs and situations that may cause acute or late side effects to the patient.

There are several situations that can lead to risks and possible errors in SRS treatments. First, the mask to be used as immobilization must immobilize the patient very rigidly and restrict unwanted movements to the maximum level. In this process, the task of the technicians in the preparation process should prepare the mask precisely in accordance with the treatment and check that it is reproducible. If the patient's hair is long during mask making, a bonnet should be worn so that it does not prevent the repetition of the head position and the bonnet should be left outside by opening a gap from the top of the press. The use of the mouth biting device used with the mask to limit the jaw movement, which has become a common problem in all masks, is important in terms of the repeatability of the position when the treatment process is started, and the presence of a laser that can control the patient plane in the preparation room provides convenience for the patient to control the flatness of the mask bottom racket.

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SESSION 5 : ADVANCED RADIOTHERAPY TREATMENT DELIVERY

Treating Multiple Metastases with Hyperarc

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SUMMARY

Attention should be taken to ensure that the tomography images (CT) to be used in planning are thin slices, and that the different additional magnetic resonance image(MRI) image sequences to be used for matching are three-dimensional and processed without angles.

When drawing target and critical organs, high resolution drawing and reporting of the detected structures with diagnostic imaging modalities should be taken into consideration. While contouring critical organs, structures such as optic nerves and brain stem will help with drawing on the combined MR image.

During the treatment process, the technician can use the surface tracking system, if possible, to check the head tilt in the patient's head position while the patient is on the treatment table, and then recheck the mask accuracy and proceed to the imaging process.

The technician should analyze the cone beam computed tomography(CBCT) image in detail with the reference CT image from the planning, and after using the suitable anatomical markers, make the 3D matching by considering the table angles. In case of the risk of noncoplanar treatment arcs hitting the table, the device should perform the rotation control and start the treatment process. At the stage when the treatment process is started, patient follow-up, immobilization of the patient, correct delivery of device and table angle should be constantly monitored. At the end of the treatment, CBCT can be taken at the end of the treatment in order to control any voluntary or involuntary movement of the patient during the treatment process and its accuracy can be confirmed by performing 3D matching again.

Keywords: Stereotactic radiosurgery (SRS), Gross tumour volume (GTV), Magnetic resonance image(MRI), Cone beam computor, Cone beam computed tomography (CBCT) image .

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SESSION 5 : ADVANCED RADIOTHERAPY TREATMENT DELIVERY

Basic Workflow in MR-Linac

Melis GENÇTÜRK[1]

SUMMARY

Background: Magnetic Resonance Linear Accelerator (MR-Linac) systems have initiated a new era in radiotherapy by combining high-quality MR imaging with precise radiation delivery. This technology offers an innovative workflow to enhance treatment accuracy and patient safety.

Objective: This study presents the basic workflow implemented with MR-Linac, summarizing the processes of simulation, imaging, treatment planning, and online adaptive radiotherapy.

Materials and Methods: The MR-Linac workflow begins with patient selection and preparation, followed by high-resolution MR-based simulation. During contouring and target delineation, the superior soft tissue contrast provided by MR imaging is utilized by the multidisciplinary team. After treatment planning, the online adaptive workflow enables real-time plan adaptation based on daily anatomical changes. Quality assurance procedures are applied throughout the process to maintain treatment precision. Additionally, various care and management models (such as the Care Management Model) are used to support the regular and effective progress of the workflow.

Results: Implementation of the basic MR-Linac workflow has made the process from simulation to treatment more efficient and safer. Online adaptive planning has improved target coverage and reduced the dose to organs at risk. The multidisciplinary approach has supported team communication and workflow efficiency.

Conclusion: The basic workflow established with MR-Linac enables personalized and adaptive radiotherapy applications, improves clinical outcomes, and sets a new standard for patient-centered care in radiation oncology.

Keywords: MR-Linac Workflow, Adaptive Radiotherapy

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SESSION 5 : ADVANCED RADIOTHERAPY TREATMENT DELIVERY

Pediatric Radiotherapy: Presentation with Video

Blagica Angelovska GJORGJIEVSKA[1]

SUMMARY

Radiotherapy treatments for children traditionally ask for the usage of anesthesia, to secure non-movement and precision during the treatment. However, by using techniques to draw the attention of the child and creating an atmosphere of trust, safety and great support, it is possible to successfully go through the radiotherapy treatment without the use of anesthesia.

Materials and Methods: Radiotherapy treatment through VMAT technique, with 30 fractions and Total Turmeric Dose 54Gy on a three year old child with diffuse midline glioma ponti

Results: In the short video it will be presented how the medical team of doctors, RTTs, physicists and the rest of the personal, for the first time in the clinic succeed to treat a child without anesthesia.

Conclusions: The great work the RTT has done with maximal care- from patiently communicating with the child, to precisely positioning, and using visual and audiovisual comfort –managed to secure a fourteen-day efficient treatment without anesthesia, inspiring trust between the youngest patients and proving the hard work of the team to secure human and scientific care." because every step can build hope.

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SESSION 5 : ADVANCED RADIOTHERAPY TREATMENT DELIVERY

Responsibilities of RTTs in Advanced IGRT Methods

Hande SERTKAYA[1]

SUMMARY

Image-Guided Radiotherapy (IGRT) has become an essential component of modern radiotherapy, offering improved accuracy in tumor targeting and better protection of surrounding normal tissues. With the implementation of advanced IGRT methods, the role of Radiation Therapists (RTTs) has evolved significantly. RTTs are now responsible not only for treatment delivery but also for precise patient positioning, acquisition and interpretation of daily imaging, and verification of target localization. Their duties extend to quality assurance of imaging systems, application of adaptive strategies, and active participation in decision-making processes within the multidisciplinary team. Advanced technologies such as cone-beam CT, MRI-guided radiotherapy, and surface-guided techniques require RTTs to develop enhanced technical and analytical skills, ensuring safe and efficient treatment workflows. In addition, the integration of artificial intelligence and automation into IGRT practices emphasizes the importance of continuous education and professional development for RTTs. Ultimately, RTTs play a pivotal role in optimizing patient outcomes and ensuring the successful application of advanced IGRT methods in clinical practice.

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SESSION 5 : ADVANCED RADIOTHERAPY TREATMENT DELIVERY

Implementation of Adaptive RT from RTT Perspective

Özlem ÖZKAYA BİNGÖL[1]

SUMMARY

Purpose/Objective: This presentation reframes adaptive radiotherapy (ART) through the radiation therapist (RTT) lens. It (i) clarifies what ART is and why daily anatomical variation matters, (ii) delineates RTT responsibilities across offline and online workflows, (iii) illustrates adaptation decisions with a prostate case showing sequential target-volume regression across fractions, and (iv) highlights feasibility and efficiency from an RTT-only, CBCT-guided bladder adaptation protocol. The overarching objective is to show how clearly defined protocols and training enable RTT-led, patient-centred adaptation without compromising safety or timing.

Materials and Methods: Content integrates an updated overview of ART and an RTT task map (image quality checks, alignment, contour review, trigger criteria, timing). Evidence from a CBCT-guided, RTT-only bladder workflow is summarized to show practical steps for plan selection/adaptation, documentation, and escalation rules. The talk also outlines center-based credentialing and the role of decision support, including AI-assisted contouring.

Results: When RTTs identify day-to-day anatomical change early, ART supports margin reduction and improved OAR sparing. In the prostate example, progressive volume regression across early, mid, and late fractions provided clear adaptation triggers while maintaining acceptable in-room times. In bladder workflows, structured RTT-only protocols allowed therapists to adapt bladder/tumour volumes in the majority of sessions and deliver treatment safely with predefined escalation—demonstrating efficiency when roles, thresholds, and QA steps are standardized.

Conclusions: Within credentialed frameworks, RTT scope can safely extend to contour validation, plan selection, and workflow control in both offline and online ART. Scaling ART will depend on center-specific training pathways, robust decision support (including AI tools), and staffing models that reflect the time-critical nature of online adaptation. The presented case plus RTT-only bladder experience emphasize that RTT-led adaptive practice is feasible, efficient, and patient-cented.

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SESSION 6 : SRS AND SBRT IN CLINICAL PRACTICE

Stereotactic Body Radiation Therapy (SBRT) for Primary Liver and Pancreatic Tumors in Total I.V. Anesthesia

Mateja NOŽINIĆ[1], Marica KESER[1]

SUMMARY

Purpose: The gold standard when treating primary liver and pancreatic tumors is surgery, but is manageable in < 30% of patients. In recent years advancements in technology have allowed ablative stereotactic body radiotherapy (SBRT) or radiosurgery to be used as a treatment option.

SBRT is non-invasive and done without anesthesia. However, general anesthesia with endotracheal intubation may be required in specific situations, such as patient's inability to cooperate with breath hold techniques and if full immobilization and motion control is needed to achieve tight CTV-PTV margins.

Materials/Methods: From October 2022 to June 2025, 303 consecutive patients who were scheduled to receive SBRT for pancreatic and hepatic malignancies were irradiated under total IV anesthesia.

Patients were intubated and mechanically ventilated, which allowed us to had controlled breathing and complete immobilization during the radiation procedure.

Results: All patients were treated with BED10 = 129 Gy in a single fraction and there were no postirradiation grade > 2 acute toxicities. Several patients underwent Orthotopic Liver Transplantation. Preliminary Results are very encouraging …

Conclusions: SBRT for liver and pancreatic tumors under total IV anesthesia is safe and effective approach in selected patients when precise motion control is essential. It allows delivery of high- dose conformal radiation with minimal risk to organs at risk.

Successful implementation depends on a multidisciplinary team, including radiation oncologists, medical physicists, anesthesiologists, and radiation therapists.

Keywords: SBRT, liver, pancreas, I.V. anesthesia

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SESSION 6 : SRS AND SBRT IN CLINICAL PRACTICE

SBRT of Lung Tumor and Metastasis Case Report

Ilija CURIC[1], Dragana VUKASINOVIC[1], Bojan IVANOV[1]

SUMMARY

Purpose: The gold standard when treating primary liver and pancreatic tumors is surgery but is manageable in < 30% of patients. In recent years advancements in technology have allowed ablative stereotactic body radiotherapy (SBRT) or radiosurgery to be used as a treatment option.

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SESSION 6 : SRS AND SBRT IN CLINICAL PRACTICE

Stereotactic Cardiac Irradiation

Valerija Žager MARCIUŠ [1,2], Aleš POSL[1], Helena LENKO[1], Matjaž JERAJ[1]

SUMMARY

Purpose/Objective: Stereotactic body radiotherapy is a novel, non-invasive therapeutic approach for patients with refractory ventricular tachycardia. It offers a potential alternative to conventional catheter ablation techniques, especially for patients for whom such procedures are not an option. At the Institute of Oncology in Ljubljana, we have introduced this technique in close collaboration with cardiologists and other medical specialists, making us one of the few centers in the world to perform cardiac stereotactic body radiotherapy.

Materials and Methods: Since the beginning of 2023, nine patients with drug-resistant and ablation-refractory ventricular tachycardia have undergone stereotactic body radiotherapy at our center. The first treatments were performed with the Versa HD linear accelerator (Elekta), while in more recent cases the linear accelerator True Beam (Varian) was used. The switch was primarily due to improved integration with the Eclipse treatment planning system, which allows for faster workflow, better visualization and easier patient transfer between devices. Each treatment was preceded by high-resolution planning computed tomography, target delineation in collaboration with the cardiologists, and comprehensive quality assurance procedures for the device and image guidance, including Winston-Lutz testing and Cone Beam Computed Tomography based six-degree patient positioning with a Hexapod couch.

Results: A dose of 25 Gy in a single fraction was administered with flattening filter free beams with submillimeter precision. A significant decrease in ventricular tachycardia episodes was observed in most patients within a few weeks of treatment, with corresponding improvements in overall quality of life and a reduction in hospital admissions. No significant acute toxicity was reported.

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SESSION 6 : SRS AND SBRT IN CLINICAL PRACTICE

Stereotactic Cardiac Irradiation

Valerija Žager MARCIUŠ [1,2], Aleš POSL[1], Helena LENKO[1], Matjaž JERAJ[1]

SUMMARY

Conclusions: Although cardiac stereotactic body radiotherapy is still considered experimental, it shows promising therapeutic efficacy in a subset of patients with otherwise incurable ventricular arrhythmia. Further research and patient monitoring are essential to prove the long-term safety and efficacy of the treatment.

Keywords: Ventricular tachycardia, stereotactic body radiotherapy, linear accelerator Versa HD, linear accelerator True Beam

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SESSION 7 : RTT in SEETRO – ARE THERE ENOUGH? POSITION, EDUCATION and NUMBER of RTT's POINT OF VIEW

Education and Recruitment of RTTs in South and Eastern Europe

Velimir KARADZA[1], Damir CIPRIC[2], Vedran MANESTAR[3]

SUMMARY

Purpose/Objective: South and Eastern European countries traditionally, until these very times didn't use to have problems with Radiation Therapist staff shortages. This trend appears to be changing now. Qualified and skilled health workers are the pillar of any health care system. Competent Radiation Oncology health professionals are key for quality of care for oncology patients. In most South and Eastern European countries, Radiation Therapists (RTTs) lack in education, training programs and professional recognition. Over the years, this has led to lowering of motivation for employment and has already resulted with organizational problems in radiation therapy service. Strengthening RTTs professional profile and taking on a different approach in recruitment and retention strategies is crucial.

Material/Methods: Several South and Eastern European countries shared their insights and knowledge about radiotherapy services, machines and educational background of RTTs in their radiotherapy and oncology departments, in a form of a questionnaire. These inputs were used to evaluate possible scenarios and consequences of staff shortages in those countries and wider in the region.

Results : In certain South and Eastern European countries problems with fewer RTT candidates showing up on job interviews begun few years ago. The needs for medical staff started to significantly exceed the number of available medical professionals. The lack of workforce was not so obvious in the field of radiation therapy until recently, and there could be several reasons for that being so now.

Many RTTs working in the public radiotherapy sector are either starting to move towards private centers and industry or are drawn by higher salaries in western European countries. At the same time, number of lesser experienced RTTs working in radiotherapy departments is growing and quantity of new radiotherapy equipment is rapidly increasing in many countries. The number of radiotherapy machines in certain countries will almost double in the coming years. Since clinical experience, as part of knowledge and skills is essential for RTT professionals, assembling skill-balanced team

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SESSION 7 : RTT in SEETRO – ARE THERE ENOUGH? POSITION, EDUCATION and NUMBER of RTT's POINT OF VIEW

Education and Recruitment of RTTs in South and Eastern Europe

Velimir KARADZA[1], Damir CIPRIC[2], Vedran MANESTAR[3]

SUMMARY

working on radiotherapy machines could be challenging, especially during periods of leaves and vacations. Education for RTTs in South and Eastern European countries is performed through integrated study programs, educating Radiation Technologists in the fields of radiology, radiotherapy, and nuclear medicine. The share of radiotherapy specific learning outcomes in these study programs is inadequate in both, theory and practice. Thus, the initial interest of graduate students in radiotherapy is fairly low, as is their level of confidence in practicing as radiation therapist.

Conclusion: In South and Eastern European countries graduate RTTs are starting their work with inadequate basic education and facing a high demand for continuing professional education. They are challenged with increased demand for RTT workers and a high workforce mobility. Although the national CPD framework is well-established and functional in many countries, an effort must be made to make the formal education more efficient. The knowledge dissemination should be improved both nationally and internationally. Attaining knowledge and skills should be formalized and equally recognized in all of the European countries. If RTTs education, professional awareness and job satisfaction would be enhanced in near future, this could reduce staff turnover and ensure service continuity, quality and safety.

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SESSION 7 : RTT in SEETRO – ARE THERE ENOUGH? POSITION, EDUCATION and NUMBER of RTT's POINT OF VIEW

RTT Education Level in South and Eastern Europe

Enis TINJAK[1], Fuad JULARDZIJA[2], Mirjana Ristanic BEROS[1], Muhamed TOPCAGIC[3]

SUMMARY

Purpose/Objectives: Education for the profession of radiotherapy technologist has become a very important link in the treatment of oncological patients, as well as in leadership positions in healthcare institutions. This paper aims to evaluate and analyze educational programs in the countries of Southern and Eastern Europe for the education of the RTT profession. The purpose is to show differences and similarities, benefits and shortcomings in educational programs for the RTT profession, are the programs and curriculum harmonized according to European directives.

Material and methods: A questionnaire was used to collect data, which was distributed among the representatives of the SEETRO 7th Congress participants for the countries of South-Eastern Europe. A total of 7 countries which participating in the SEETRO 7th Congress completed the questionnaire. The results were compared and evaluated based on 13 predetermined questions that are key to reaching conclusions in the field of first-cycle, formal education of the RTT profession.

Results: The total number of accredited faculties for education in the RTT profession within the 7 countries participating in SEETRO 7 is 45 faculties. The most common generally accepted title after completing the first cycle of formal education is Radiological Technologist. Of the 7 countries that completed the questionnaire, 5 have a comprehensive radiological program (RTT), while one country has a separate radiotherapy program (RTT) and one country does not have any program. Also, of the total number of countries evaluated, 3 countries have all three levels of educational programs (BA, MA and PhD), while the remaining countries have only Bachelor or Bachelor and Master levels, and one participating country does not have an education

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SUMMARY

program for RTT. Most countries have a first degree of study lasting 3 years and a total of 180 ECTS credits after completing formal education. Also, within individual countries there is a different level of ECTS credits 180 or 240 depending on the faculty and years of education. The total number of students enrolling in the first year of study (BA degree) for all 6 countries is approximately 4,440 per year, while approx. 2,281 students graduate per year in these countries combined. The average number of hours of clinical practice and theoretical teaching within the first study cycle, BA degree, in RTT education is approximately 1,800 hours combined for the six countries participating in the congress. There are a total of 8 doctoral students with basic RTT education, belonging to three countries, while four countries do not have doctoral students in the RTT profession. Out of the total number of doctoral students, 5 of them work as assistant professors or professors in RTT education. In most countries there is a possibility for an RTT to be a leader or manager of a health or educational-health institution.

Conclusions: Based on the questionnaire conducted, it can be concluded that the countries of Southern and Eastern Europe still have an uneven educational programs in terms of the duration of the first cycle of studies, as well as the curriculum for the education of the RTT profession. Only some countries have developed three cycles of education, which speaks in favor of the fact that there is room and need for additional training and education in the profession of RTT. Also, a small number of RTTs work as professors at higher education institutions, which is also one of the indicators that the field of Radiotherapy Technologist (RTT) is still not saturated and in need of expansion at all educational levels.

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SESSION 7 : RTT in SEETRO – ARE THERE ENOUGH? POSITION, EDUCATION and NUMBER of RTT's POINT OF VIEW

SEETRO 15th years Overview

Ilija CURİC[1]

SUMMARY

Background : SEETRO Congress began on 2012 cover 1st Regional RTT Congress. After 15th years was held 7th Congress with main aim : Improvement of education, position and roles of RTT. During this period, even SEETRO Congress, important event for RTT future held on 3rd ESTRO Forum in Barcelona, with name : Different regions different challenges-How would RTT world like after 2020. This was also one of guides of SEETRO works.

Purpose /Objectives : After all past congress is the questions arises-is the result in RTT education, roles position? Follow the reports from past congress response in education results with improvement in postgraduate studies, MSc and PhD, but not in all countries.

RTT have more and more important role in RT system. In all SEETRO countries is increasing developments of RT equipment and techniques, which automatically request enough educated staff . And that the most commonly problems of RTT-enough number for quality work.

Materials and methods: To receive valid data used simply questions about number of RT departments, LINAC, advanced machine, BU units, CT&MRI SIM, number of RTT, statement regulatory, required education level, total number of employees RTT, number RTT per machine and shift, migration problem. Questionary filled 6 countries which participants partaking on SEETRO 7th Congress in Istanbul 2025.

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SEETRO 15th years Overview

Ilija CURİC[1]

SUMMARY

Results: Six countries from SEETRO regions which partaked in questionary have together 194 RT departments with 308 LINAC , 83 CT SIM , 42 BRT Units , CyberKnife, MRILINAC, Proton Therapy which serve 2327 RTT .Global population is 103 millions inhabitants . Required school level is three years BA or Vocational studies. In half of countries exist postgraduates studies on MSc and PhD levels. Two countries have statement regulatory for number of RTT per machine, two recommendation, two without any of this.

Conclusion: With simple calculation global number of inhabitants and number of therapy machine including BRT Units we receive the one machine is coming on population of 237000. Follow total number of machine and RTT we can see the 4 RTT is on one machine , but is that real situation? Number of RTT including RTT, MSc and PhD, but does all of them work on machine and what are they duties? Even the all work on machine ,application of new technologist and number of patients caused the number of RTT is still not enough. It is very important to define and separate roles of RTT from roles and duties of MSc and PhD.

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