

Attending the 5th Varian Oncology Summit 2019: Learning Experiences as a Medical Physicist

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ABSTRACT:

The main objective of the conference was to provide insights into new innovation and technology-related products by Varian to its global users, thus aiming to facilitate better and advance treatment to every cancer patients. Varian organized this summit to create a platform for its users to share their experience and knowledge not only in India but also the neighbouring country such as Nepal, Bangladesh, etc. The need for radiotherapy center in our country Nepal has been growing rapidly yet there are only a few radiotherapy centers with less or not enough needed technical resources and manpower (Radiation oncologists (ROs), Medical physicists (MPs), Radiotherapy Technologists (RTT's)). Many radiotherapy centers still followed basic treatment modality only. However, due to the lack of high-end treatment techniques such as Intensity Modulated Radiation Therapy (IMRT), Volumetric Modulated Arc Therapy (VMAT), Stereotactic Radio Surgery (SRS) and Stereotactic Radio Therapy (SRT) in Nepal, it poses a great burden to patients as they have to travel outside the country to get better quality treatment.

Keywords: IMRT, Medical Physicist, Nepal, Radiation Oncologist, Varian, VMAT

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INTRODUCTION

A conference on 5th Varian oncology summit¹ was organized by Varian Medical Systems for Varian radiation oncology users (Medical physicist's, Radiation oncologist's) from 01st to 03rd August 2019 at Kolkata, India. The conference was attended by national and international participants. The target audience were Medical Physicist's and Radiation Oncologist's, while a few others were Surgical Oncologist and Medical Oncologists.

Main topics were discussed in the conference

Dr. Deepak Khuntia, Sr. VP & Chief Medical Officer from Varian Medical Systems, conducted a session on "FLASH RT: an overview of a promising new therapy" and also "Potential game changer in radiation oncology: peek into the future"; Dr. A Pichandi, Director of Medical Physics from Healthcare Global Hospital, Bengaluru presented "Scripting: bringing change (Knowledge-based planning and evaluation: In Indian setting), Dr. Indranil Mallick, Tata Medical Centre Trust, Kolkata conducted session "Evolution of Margin recipe in the era of image guidance", after that Dr. Biplob Sarkar, Manipal Hospital, Delhi "Spatial assessment and dosimetric consequence of rotational positional correction in cranial and extracranial radiotherapy" and "Artificial Intelligence (AI) & Machine Learning (ML) for Medical Physics: does it ease or decrease the role"; Dr. Kinjal Jani, Healthcare Global, Ahmedabad session about "Implementation of IGRT in a high volume facility", Dr. Kausik Bhattacharya, Apollo Hospitals, Hyderabad conducted session on "Implementation of intra-cranial stereotaxy in a new facility", Ms. Ekta Jhala from Varian Medical systems, Switzerland session about "Patient-centric approach for advanced brachytherapy" and "Streamlining and automation in physics quality assurance", Mr. Sai Subramanian, Yashoda Hospital, Hyderabad session about "Multiple energy Rapidarc - A feasibility study to check the clinical", Dr. Madhu Sairam, Kovai Medical Centre, Coimbatore session about "Intra-cranial high definition radiotherapy: clinical aspects and outcomes.

Introduction of new technology update products

1. Bravos HDR after loader System,
2. ProBeam® 360° Proton Therapy System
 - a. This is a new designed next-generation proton therapy system,

- b. Clinical delivery capabilities with ultra-high dose rates up to 10,000 cGy/min,
 - c. Rotation of 360-degree gantry,
3. FLASH Radiotherapy,
4. HyperArc™ high-definition radiotherapy (HDRT),
5. Rapid plan & Multi-Criteria Optimization (MCO),
6. Graphics Processing Unit (GPU) based planning system only for the Acuros XB algorithm,
7. Mobius & Dose lab - a powerful tool for quality assurance of radiation oncology linear accelerators

Key points about FLASH Radiotherapy

1. FLASH radiotherapy defined Ultra-high dose external beam therapy delivered in less than 1 second, in one to three treatment sessions²
2. Ultra-high dose rates in FLASH 720,000 cGy/min² (only in Pro-beam Research mode)
3. FLASH spares normal tissue compared to standard Radiotherapy (RT)
4. FLASH spares the skin from toxicity
 - a. No erythema, no moist desquamation,
 - b. No fiber necrosis, no hyperkeratosis
 - c. No inflammatory infiltrates, no dermal remodeling

SUMMARY

Many radiotherapy centers across the country have not moved on from basic treatment modalities such as 2D and conventional techniques. Advanced radiotherapy techniques such as Intensity-Modulated Radiotherapy (IMRT), Volumetric Modulated Arc Therapy (VMAT) are performed in very few centers and no literature on Stereotactic Radiosurgery (SRS) and Stereotactic Radiotherapy (SRT) and Stereotactic Body Therapy (SBRT) treatments for needed patients in our country. VMAT Rapid arc was introduced in the year 2007 by Karl Otto 3, but still, in the context of Nepal, the implementation of state of the art treatment is less known. The introduction of RapidArc (RA, Varian Medical Systems, CA, USA), a type of intensity

modulation achieved by changing parameters such as multi-leaf collimator (MLC) speed, dose rate, and gantry speed modulation ³ can be completed in less than 2 mins thereby reducing the overall treatment time and patient discomfort. We need to bring more technologies like IMRT, VMAT, SRS, SRT, and SBRT to make it accessible to every cancer patients, get quality care and treatment and reduce our people going abroad for treatment. They can get advanced treatment techniques with affordable cost in Nepal itself. But this also calls for investment in training manpower which is essential to quality care. Also, additional effort needs to be given so that individuals can gain technical skills, information and knowledge from this kind of conference and workshop too.

Abbreviations

IMRT - Intensity Modulated Radiotherapy

VMAT - Volumetric Modulated Arc Therapy

SRS - Stereotactic Radiosurgery

SRT- Stereotactic Radiotherapy

SBRT - Stereotactic Body Radiotherapy

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