



**Contouring of Anatomy and Tumors**  
*March 4<sup>th</sup>, 2007*  
*Sheraton Inner Harbor Hotel, Baltimore, Maryland*  
*8am – 3pm*



Conference sponsored by TomoTherapy Inc. and St. Agnes Hospital

## Agenda

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| <b>8:00-8:30 am</b>   | Welcome breakfast  |
| <b>8:30-9:20</b>      | Brian Butler, M.D., Methodist Hospital, Medical College of Cornell University, Baylor College of Medicine<br><br>"Evidence Based Target Delineation for Gastrointestinal Malignancies"   |
| <b>9:30-10:20 am</b>  | Danny Song, M.D., Johns Hopkins University School of Medicine<br><br>"Prostate Cancer: Contouring and Implications for TomoTherapy"  |
| <b>10:30-11:20 am</b> | Dr. James Zinreich, M.D., Johns Hopkins University School of Medicine<br><br>"Review of Head and Neck Imaging"   |
| <b>11:30-12:20 pm</b> | Vincent Grégoire, M.D., Ph.D., Catholic University of Louvain St-Luc University Hospital Dept. of Radiation Oncology<br><br>"Selection and Delineation of Target Volumes in Head and Neck Squamous Cell Carcinoma: The Known and The Unknowns" |
| <b>12:20-1:00 pm</b>  | Lunch  |
| <b>1:00-1:50 pm</b>   | Paul Read, M.D., Ph.D., University of Virginia Medical Center<br><br>"MRI Based Research for Sterotactic Radiation Therapy of Lung Cancer"   |
| <b>2:00-2:50 pm</b>   | An Liu, Ph.D., City of Hope National Medical Center<br><br>"Contouring and Treatment Planning of Total Marrow and Total Lymphatic Irradiation Using Helical TomoTherapy"   |
| <b>3:00 pm</b>        | Closing remarks  |



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## **Abstracts**

### **Brian Butler, M.D., “Evidence Based Target Delineation for Gastrointestinal Malignancies”**

Outline: Intensity Modulated Radiation Therapy has been routinely utilized for head and neck, prostate and CNS malignancies. The ability to initiate the treatment of gastrointestinal malignancies with IMRT requires a detailed understanding of axial CT anatomy. The clinical use of a detailed mapping system based on available anatomical data will be discussed. Target delineation for the following disease sites will be discussed: Pancreatic, rectal, anal, gastric, and esophageal carcinoma.

### **Danny Song, M.D., “Prostate Cancer: Contouring and Implications for TomoTherapy”**

Outline: Topics presented will include normal anatomy of the prostate, challenges presented with CT imaging, margin, selection, motion, and DVH constraints.

### **Dr. James Zinreich, M.D., “Review of Head and Neck Imaging”**

Outline not available.

### **Vincent Grégoire, M.D., Ph.D., “Selection and Delineation of Target Volumes in Head and Neck Squamous Cell Carcinoma: The Known and the Unknowns”**

Outline: This lecture will first discuss the data on which recommendations for the selection and the delineation of target volumes in the neck are based. In a second part, the lecture will discuss the issue of imaging for the delineation of the primary tumor GTV and CTV, and its implication on dose distribution. The lecture will end with a brief description of the potential benefit of biological image-guided IMRT.

### **Paul Read, M.D., Ph.D., “MRI Based Research for Stereotactic Radiation Therapy of Lung Cancer”**

Outline: Review of research to date in the development of a helical TomoTherapy-based lung Radiosurgery program at the University of Virginia. Initially, different effects of respiratory amplitude and frequency as well as gantry rotation speed were measured to determine how they affect the static planned dosimetry in a motion phantom. Utilizing the current RTOG lung SRT protocol dosimetric limitations, a mathematical equation was developed to determine an initial starting prescription dose for treatment planning. In a joint collaboration with the MRI research group at UVA, a novel sequence for dynamic MRI imaging and in-house software for ITV determination was developed. Currently, there is an institutional grant and clinical trial to use dynamic MRI for measuring lung reproducibility over the time course of SRT delivery as the initial test for the future development of probability based lung SRT treatment planning. We have pilot data for utilizing hyperpolarized helium as an inhalable contrast agent to understand lung biomechanics and improve current lung deformation mathematical models. Finally, we have an institutional protocol to study the biologic effects of lung SRT on normal lung tissue in an animal model to determine if these effects can be minimized with Amifostine.



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### **An Liu, Ph.D., “Contouring and Treatment Planning of Total Marrow and Total Lymphatic Irradiation Using Helical TomoTherapy”**

Outline: Total body irradiation (TBI) is an important part of bone marrow transplant conditioning regimens. Dose escalation of TBI has been difficult due to associated normal organ toxicities. Recently, City of Hope has demonstrated the feasibility of using helical TomoTherapy to deliver a more targeted dose of TBI to sites of greatest tumor burden (bone/marrow) with reduced doses to normal organs in a patient with multiple myeloma. This presentation shares the experience of contouring and treatment planning in the irradiation of total marrow and total lymphatic using helical TomoTherapy.