

*Presentations and Posters  
Relating to TomoTherapy®  
Radiation Treatments  
ASTRO 2007*



---

## SCIENTIFIC SESSIONS

Scientific Session D, The Theater - *Lymphoma*  
Monday, October 29, 10:15 am – 11:45 am

**29** **Reduced Acute Toxicities With Image Guided Targeted Marrow Irradiation (TMI) Using Helical TomoTherapy (HT) in Patients With Multiple Myeloma and Acute Leukemia Undergoing Hematopoietic Cell Transplantation (HCT)**

J. Y. C. Wong, A. Liu, T. Schultheiss, J. Rosenthal, S. Forman, G. Somlo

*City of Hope Cancer Center, Duarte, CA*

Scientific Session R, Room 408, *GU II – External Beam/Brachytherapy for Prostate Cancer*  
Wednesday, October 31, 10:15 am – 11:45 am

**145** **Does Image Guidance Need to be Performed Daily in the Treatment of Localized Prostate Cancers? Implications on Treatment Margins**

S. Meeks, P. A. Kupelian, C. Lee, T. Willoughby, O. Zeidan, K. Langen

*M.D. Anderson Cancer Center Orlando, Orlando, FL*

Scientific Session S, Room 403, *Lung II – SBRT/IGRT*  
Wednesday, October 31, 10:15 am – 11:45 am

**155** **Image-Guided, Intensity-Modulated Hypofractionated Radiotherapy for Inoperable Non-Small Cell Lung Cancer: Preliminary Results of a Phase I Dose Escalation Study**

J. B. Adkison, G. M. Cannon, D. Khuntia, H. Jaradat, W. Tome, W. Walker, B. Huang, M. Mehta

*UW Radiation Oncology Clinic, Madison, WI*

## POSTER DISCUSSIONS

**1066** **A Phase I/II Trial of Dose-per-Fraction Escalation for Prostate Cancer**

M. A. Ritter<sup>1</sup>, J. D. Forman<sup>2</sup>, P. A. Kupelian<sup>3</sup>, D. G. Petereit<sup>4</sup>, C. Lawton<sup>5</sup>, W. Walker<sup>1</sup>, J. F. Fowler<sup>1</sup>, W. A. Tome<sup>1</sup>

<sup>1</sup>University of Wisconsin Clinical Cancer Ctr., Madison, WI, <sup>2</sup>Wayne State University, Detroit, MI, <sup>3</sup>M.D. Anderson Cancer Center, Orlando, FL, <sup>4</sup>John T. Vucurevich Cancer Center Institute, Rapid City, SD, <sup>5</sup>Medical College of Wisconsin, Milwaukee, WI

### **1097 Data Compression in Adaptive and 4D Radiotherapy**

Q. Chen<sup>1</sup>, M. Chen<sup>1</sup>, W. Lu<sup>1</sup>, K. Ruchala<sup>1</sup>, G. Olivera<sup>1,2</sup>

<sup>1</sup>Tomotherapy Inc., Madison, WI, <sup>2</sup>Medical Physics Department, UW-Madison, Madison, WI

### **1100 Patient-specific Dose from Megavoltage CT Imaging With a Helical Tomotherapy Unit**

A. P. Shah<sup>1</sup>, K. M. Langen<sup>1</sup>, K. Ruchala<sup>2</sup>, A. Cox<sup>2</sup>, P. A. Kupelian<sup>1</sup>, S. L. Meeks<sup>1</sup>

<sup>1</sup>M. D. Anderson Cancer Center Orlando, Orlando, FL, <sup>2</sup>Tomotherapy Inc., Madison, WI

### **1117 Positional and Volumetric Changes in Parotid Glands During Head and Neck Radiation Therapy Assessed Using Deformable Image Registration**

C. Lee<sup>1</sup>, K. M. Langen<sup>1</sup>, P. A. Kupelian<sup>1</sup>, S. L. Meeks<sup>1</sup>, R. R. Mañon<sup>1</sup>, W. Lu<sup>2</sup>, J. Haimerl<sup>2</sup>, G. H. Olivera<sup>2</sup>

<sup>1</sup>M.D. Anderson Cancer Center Orlando, Orlando, FL, <sup>2</sup>Tomotherapy Inc., Madison, WI

## **POSTER VIEWING**

### **2060 Helical Tomotherapy for Routine Breast Cancer Radiation Therapy: Feasibility and Initial Clinical Experience**

D. Henrich<sup>1</sup>, J. Buskerud<sup>1</sup>, J. P. Limmer<sup>1</sup>, V. Mullins<sup>2</sup>, R. Adkins<sup>2</sup>, J. S. Welsh<sup>2,3</sup>

<sup>1</sup>UW Cancer Center-Aspirus, Wausau, WI, <sup>2</sup>UW Cancer Center-Riverview, Wisconsin Rapids, WI, <sup>3</sup>University of Wisconsin, Madison, WI

### **2085 MVCT Positioning Accuracy of Intracranial Stereotactic Radiosurgery With Helical Tomotherapy and Intrafraction Movement of Talon Immobilization System**

A. Liu, A. Zhuang, T. Schultheiss, Y. Chen, T. Tsai, J. Wong

City of Hope National Med Ctr, Duarte, CA

### **2096 Helical Tomotherapy Provides Significant Normal Brain Sparing Using a Simultaneous Integrated Boost**

J. M. Baisden, K. Sheng, A. F. McIntosh, P. W. Read, J. Sheehan, J. Larner

University of Virginia Medical Center, Charlottesville, VA

### **2168 MVCT Image-guidance Derived Bony Setup Accuracy for Supine and Prone Pelvic Radiation Therapy**

F. Siddiqui<sup>1</sup>, C. Shi<sup>2</sup>, N. Papanikolaou<sup>2</sup>, M. Fuss<sup>1,3</sup>

<sup>1</sup>Oregon Health & Science University, Portland, OR, <sup>2</sup>Cancer Therapy & Research Center, San Antonio, TX, <sup>3</sup>The University of Texas Health Science Center at San Antonio, San Antonio, TX

### **2193 Initial Experience With Helical Tomotherapy for Locally Advanced Esophageal Cancer by Concomitant Boost Strategy**

Y. Chen<sup>1</sup>, K. H. Kernstine<sup>2</sup>, S. Shibata<sup>3</sup>, D. Lim<sup>3</sup>, D. D. Smith<sup>4</sup>, A. Liu<sup>1</sup>, T. E. Schultheiss<sup>1</sup>, R. D. Pezner<sup>1</sup>, J. Y. C. Wong<sup>1</sup>

<sup>1</sup>Radiation Oncology, <sup>2</sup>Thoracic Surgery, <sup>3</sup>Medical Oncology, <sup>4</sup>Biostatistics, City of Hope National Medical Center, Duarte, CA

**2216 Short-term Hypofractionated Adjuvant Radiotherapy With Helicoidal Tomotherapy After Radical Prostatectomy: Planning Data and Toxicity Results**

C. Cozzarini<sup>1</sup>, C. Fiorino<sup>1</sup>, N. Di Muzio<sup>1</sup>, R. Valdagni<sup>2</sup>, A. Salonia<sup>1</sup>, F. Alongi<sup>1</sup>, S. Broggi<sup>1</sup>, P. Rigatti<sup>1</sup>, R. Calandrino<sup>1</sup>, F. Fazio<sup>1</sup>

<sup>1</sup>San Raffaele H Scientific Institute, Milan, Italy, <sup>2</sup>Direzione Scientifica, National Institute of Cancer, Milan, Italy

**2240 Intra-fraction Prostate Motion: Dosimetric Impact on Delivered Doses**

K. M. Langen<sup>1</sup>, P. Kupelian<sup>1</sup>, T. Willoughby<sup>1</sup>, S. Meeks<sup>1</sup>, W. Lu<sup>2</sup>, G. Olivera<sup>2</sup>

<sup>1</sup>MD Anderson Cancer Center Orlando, Orlando, FL, <sup>2</sup>TomoTherapy Inc., Madison, WI

**2284 Dose-Volume Response in Acute Gastrointestinal Injury of Prostate Cancer Patients Treated With Helical Tomotherapy**

J. C. Cheng, T. E. Schultheiss, K. Nguyen, J. Y. C. Wong

City of Hope Cancer Center, Duarte, CA

**2290 Acute Toxicity Results Using Dynamic Intensity Modulated Radiotherapy (dIMRT) in High-Risk Prostate Cancer**

N. Pervez, R. Pearcey, M. Parliament, D. Yee, J. Amanie, A. Murtha, K. Wachowicz, C. Field, M. Mackenzie, G. Fallone  
Cross Cancer Institute, Edmonton, AB, Canada

**2295 Hypofractionated Simultaneous Integrated Boost Tomotherapy in Localized Prostate Cancer: Preliminary Toxicity Results**

N. G. Di Muzio<sup>1</sup>, C. Fiorino<sup>2</sup>, C. Cozzarini<sup>1</sup>, F. Alongi<sup>1</sup>, S. Broggi<sup>2</sup>, P. Mangili<sup>2</sup>, G. Guazzoni<sup>3</sup>, R. Calandrino<sup>2</sup>, F. Fazio<sup>4,5</sup>

<sup>1</sup>Radiotherapy, <sup>2</sup>Physics, <sup>3</sup>Urology, <sup>4</sup>Radiotherapy, Nuclear Medicine-Scientific Institute San Raffaele, Milan, Italy, <sup>5</sup>Milano-Bicocca University, Milan, Italy

**2300 Daily Movement of Prostate Gland and Seminal Vesicles Assessed With Megavoltage CT in Patients Undergoing Hypofractionated/Dose Escalated Conformal Treatment by Tomotherapy for High-Risk Prostate Cancer**

D. M. Le, N. Pervez, M. Parliament, D. Yee, J. Amanie, A. Mihai, A. Murtha, G. C. Field, G. Fallone, R. Pearcey

Cross Cancer Institute, Edmonton, AB, Canada

**2308 Improved Rectal Sparing With Simultaneous Integrated Boost in the Treatment of Localized Prostate Cancer Using Helical Tomotherapy**

H. L. Lee<sup>1</sup>, J. M. Baisden<sup>1</sup>, H. D. Skinner<sup>2</sup>, B. F. Schneider<sup>1</sup>

<sup>1</sup>University of Virginia Health System, Charlottesville, VA, <sup>2</sup>West Virginia University School of Medicine, Morgantown, WV

**2321 A Dosimetric Analysis Comparing TomoTherapy and IMRT in the Treatment of Prostate Cancer**

A. P. Shah, S. Chen, J. B. Strauss, A. B. Coon, C. Miller, L. Brolley, J. Turian, J. Chu, M. Kirk, A. T. Dickler

*Rush University Medical Center, Chicago, IL*

**2383 Critical Structure Dose Variation in Daily Treatment of Nasopharyngeal Cancer Patients Based on Helical Tomotherapy Megavoltage CT Images**

C. Han, Y. Chen, A. Liu, T. E. Schultheiss, J. Y. C. Wong

*City of Hope National Medical Center, Duarte, CA*

**2407 Do Anatomic Changes During Radiation Impact Normal Tissue and Target Dosimetry? An Analysis of Calculated Cumulative Dose in Head and Neck Patients**

R. Mañon<sup>1</sup>, C. Lee<sup>1</sup>, K. Langen<sup>1</sup>, S. Meeks<sup>1</sup>, P. Kupelian<sup>1</sup>, J. Haimerl<sup>2</sup>, T. Shellenberger<sup>1</sup>, G. Olivera<sup>2</sup>

<sup>1</sup>*M. D. Anderson Cancer Center Orlando, Orlando, FL*, <sup>2</sup>*TomoTherapy Inc., Madison, WI*

**2465 A Dosimetric Evaluation of Markers vs. Bony Anatomy Alignments for a Head and Neck Case**

O. A. Zeidan, C. Lee, K. Langen, P. Kupelian, R. Manon, S. Meeks

*M. D. Anderson Cancer Center Orlando, Orlando, FL*

**2560 Evaluation of Lung Tumor Response to Stereotactic Body Radiotherapy Using Contrast Enhanced Perfusion MRI**

J. Cai, K. Sheng, J. Larner, S. Benedict, P. Read

*University of Virginia, Charlottesville, VA*

**2579 Adaptive Tomotherapy Planning for Integrated Boost Doses in Rapidly Responding Lung Cancers**

D. T. Vonk<sup>1</sup>, H. A. Jaradat<sup>2</sup>, M. P. Mehta<sup>2</sup>, D. Khuntia<sup>2</sup>

<sup>1</sup>*University of Wisconsin School of Medicine and Public Health, Madison, WI*, <sup>2</sup>*University of Wisconsin Department of Human Oncology, Madison, WI*

**2584 Quantification of Inter-Fractional Organ Motion and Deformation Using Megavoltage Computed Tomography Images From Helical Tomotherapy**

L. Lin<sup>1,2</sup>, C. Shi<sup>1,2</sup>, G. Swanson<sup>1</sup>, N. Papanikolaou<sup>1,2</sup>

<sup>1</sup>*University of Texas Health Science Center at San Antonio, San Antonio, TX*, <sup>2</sup>*Cancer Therapy and Research Center, San Antonio, TX*

**2783 Dosimetric Evaluation of Helical IMRT, Traditional IMRT and 3-D Conformal Radiation for Inoperable Non-Small Cell Lung Cancer**

G. M. Cannon, H. A. Jaradat, K. Rasmussen, W. A. Tomé, I. Tanumihardjo, W. Walker, M. P. Mehta, S. M. Bentzen, D. Khuntia

*University of Wisconsin, Madison, WI*

**2790 Real Time Respiration-compensated Tomotherapeutical Delivery**

W. Lu, C. Mauer, M. Chen, Q. Chen, D. Lucas, J. Zhang, K. Ruchala, G. Olivera

*TomoTherapy Inc., Madison, WI*

### **2803 Characterization of Intrafraction Prostate Deformation and Displacement via Twice Daily MVCT Imaging**

R. C. Susil, T. N. Teslow, T. R. McNutt, J. Wong, T. L. DeWeese, D. Song

*Department of Radiation Oncology and Molecular Radiation Sciences, The Johns Hopkins University School of Medicine, Baltimore, MD*

### **2838 Evaluation of Head and Neck Patient Setup and Immobilization Errors**

B. Robison, R. Seibert, C. R. Ramsey

*Thompson Cancer Center, Knoxville, TN*

### **2849 Whole Brain Radiation Therapy With Hippocampal Avoidance and Simultaneously Integrated Brain Metastases Boost With Helical Tomotherapy: A Planning Study**

A. N. Gutiérrez<sup>1</sup>, D. C. Westerly<sup>1</sup>, W. A. Tomé<sup>1</sup>, H. A. Jaradat<sup>1</sup>, T. R. Mackie<sup>1,2</sup>, S. M. Bentzen<sup>1</sup>, D. Khuntia<sup>1</sup>, M. P. Mehta<sup>1</sup>

<sup>1</sup>*University of Wisconsin, Madison, WI*, <sup>2</sup>*TomoTherapy Inc., Madison, WI*

### **2878 Tomotherapy Treatment of the Prostate and Pelvic Lymph Nodes with a Sequential Conedown**

S. Chen, A.P. Shah, J. B. Strauss, J. V. Turian, M. C. Kirk, J. C. H. Chu, A. Dickler

*Rush University Medical Center, Chicago, IL*

### **2889 Mechanical and Dosimetric Quality Assurance for Helical Tomotherapy**

C. R. Ramsey<sup>1</sup>, J. Gibbons<sup>2</sup>, T. Holmes<sup>3</sup>, K. Jeong<sup>4</sup>, K. Langen<sup>5</sup>, D. Low<sup>6</sup>, S. Meeks<sup>5</sup>, N. Papanikolaou<sup>7</sup>, K. Schubert<sup>8</sup>, M. Tomsej<sup>9</sup>, *et al.*

<sup>1</sup>*Thompson Cancer Center, Knoxville, TN*, <sup>2</sup>*Mary Bird Perkins Cancer Center, Baton Rouge, LA*, <sup>3</sup>*St. Agnes HealthCare, Baltimore, MD*, <sup>4</sup>*Yonsei University College of Medicine, Seoul, Republic of Korea*, <sup>5</sup>*MD Anderson Cancer Center, Orlando, FL*, <sup>6</sup>*Washington University, Saint Louis, MO*, <sup>7</sup>*Cancer Therapy & Research Center, San Antonio, TX*, <sup>8</sup>*University Clinic, Heidelberg, Germany*, <sup>9</sup>*ESTRO, Brussels, Belgium*

### **2939 ROI Constrained Deformable Image Registration for On-Line Adaptive Radiotherapy**

M. Chen, W. Lu, Q. Chen, K. Ruchala, G. Olivera

*TomoTherapy Inc., Madison, WI*

### **2942 Scalp and Ear Sparing Whole Brain Radiation Therapy Using Helical Tomotherapy**

J. P. Limmer<sup>1</sup>, J. Buskerud<sup>1</sup>, D. Henrich<sup>1</sup>, R. Adkins<sup>2</sup>, V. Mullins<sup>2</sup>, J. S. Welsh<sup>2,3</sup>

<sup>1</sup>*UW Cancer Center-Aspirus, Wausau, WI*, <sup>2</sup>*UW Cancer Center-Riverview, Wisconsin Rapids, WI*, <sup>3</sup>*University of Wisconsin School of Medicine, Madison, WI*

### **2950 Investigation of Helical Tomotherapy for Partial-Breast Irradiation of Prone-Positioned Patients**

K. Kainz, J. White, J. Herman, X, Li

*Medical College of Wisconsin, Milwaukee, WI*

**2956 Determining Margins for Organs at Risk to Account for Anatomic Motion**

N. V. Morrow, B. A. Erickson-Wittmann, C. A. Lawton, X. A. Li

*Medical College of Wisconsin, Milwaukee, WI*

**2967 CT Versus Ultrasound Image Guided Prostate Cancer Radiotherapy: Dosimetric Impacts**

C. Peng, K. Kainz, C. Lawton, X. A. Li

*Medical College of Wisconsin, Milwaukee, WI*