“Mulling” over the early Contributions of M Goitein

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250 kVp x-ray

Harvard / Mass Gen Hosp, 1974

2 MV van de Graff

Co-60 55 cm SAD 源轴距
The first use of perforated aquaplast

Perhaps the most accurate (sub-mm) Image-guided Stereotactic Radiation Treatment
Immobilization Error: Some Theoretical Considerations
Michael Oakin, Ph.D., and Joel Boone, M.D.
Radiology 117:407–417, November 1975

Proton Radiation as Boost Therapy for Localized Prostatic Carcinoma
William U. Stiegele, M.D., Joel E. Tapper, M.D., George R. Prout, Jr, MD, Lynn J. Vahr, PhD, Oscar A. Miranda-Table, MD, Michael Stolzen, PhD, Andreas M. Knudt, PhD, Herman D. Sult, MD

DOSE-VOLUME HISTOGRAMS

R. E. Drzazga, Ph.D., L. Mohan, Ph.D., L. Bennett, M.S., E. C. Ph.D., M. Griswold, Ph.D., T. W. Hands, B.S., and M. Urai, Ph.D.

A joint of a cumulative dose-volume frequency distribution, commonly known as a dose-volume histogram (DVH), generally summarises the cumulative radiation dose within a volume of interest of a patient which would result from a proposed radiation treatment plan. DVHs are used as tools for comparing ideal treatment plans for a specific patient by clearly presenting the uniformity of dose to the target volume and any hot spots or adjacent normal tissues or organs. However, because of the loss of positional information in the volume, better consideration is, it should not be the sole criterion for plan evaluation. DVHs can also be used to prepare data to estimate tissue control probability (TCP) and normal tissue complication probability (NTCP). The similarity of DVH of TCP and NTCP calculations is weight changes to the DVH shape which is used for an accurate optimization of the best possible radiation treatment plan. However, variations of the DVHs, some cases, indicated some on their use and the quest for more precise DVHs.
The Comparison of Treatment Plans
Michael Gottein
Organ and Tumor Motion: An Overview
Michael Gottein

Limitations of two-dimensional treatment planning programs
Michael Gottein

Introducing the concept of Error Analysis

Introducing the concept of Dose Differences
Major Components of MD Tx PI System

I. Delineation of Anatomy

Synthesis of diagnostic information
CT, US, scintigram etc.
Appreciation & delineation of anatomy
Display and Markup
Simulation of therapy
BEV, non-coplanar tx
Dose distrib. calcul. and evaluation
3D display, inhomogen., uncertainties
Verification of treatment
Input for 'record/verify', 'sim' film
II. BEV, Back Projection, & Proj thru CT

Fig. 1. Schematic diagram of the geometry involved in computing a beam's eye view of radiographic images.
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Empowering Intensity Modulated Proton Therapy Through Physics and Technology: An Overview

Thank you for your attention!