

AbstractID: 2108 Title: Using virtual structures to improve NPC inverse treatment planning

Add virtual structures to the NPC inverse treatment planning to improve the homogeneous of dose distribution and to avoid hot spot producing^{1,2}. We select twenty NPC inverse treatment plans which to create two type of plans individually and compare both. The Nucletron PLATO ITP inverse treatment planning system which is we used. One type of plans is creating virtual structures and setting constrains before the optimization. Others are only creating general normal critical structures. Dose homogenous comparison used D_{95} and D_5 and Tissue-volume ratio two index. Appending of virtual structure made the inverse planning decreasing about 10% of total segment numbers and acquired more homogeneous isodose distribution easily. Two groups of plans did not have obvious difference from DVH evaluation of CTV and PTV. The creation of virtual structure is helpful for NPC dose based constrains inverse treatment planning. Decreasing total segment number makes the IMRT delivery more efficiency and less variation.

1. Q Wu, et al. Int. J. Radiat., Oncol., Biol., Phys. 46(1), (2000).

2. N Dogan, et al. Radiology, 223, (2002)