AbstractID: 11172 Title: Planning Comparison between IMRT and RapidArc in CGMH experience

Purpose: To evaluate the dose performance and delivery efficiency for RapidArc plan.

Material and methods: Fixed-beam IMRT can deliver prescribed dose to target and spare dose to OAR. Because it had an ineffective beam on time, some patients would lie on treatment couch for a long time. A new technique- RapidArc- was developed for shortening treatment time to compare with fixed-beam IMRT. A selected NPC case was involved in this study, and treatment plans were created with IMRT and RapidArc technique for evaluating dose performance and delivery efficiency. In this case, the prescribed dose of CTV was 46Gy in the first phase. Fixed-beam IMRT plan with 7 fields was used and RapidArc plan was performed using two arcs with total 718 rotation angle. Both plans executed on Eclipse ver 8.6 planning system. CTV coverage and avoidance structures sparing are two major indexes to compare through DVH.

Results: Compared DVH showed 46Gy covering 96% and 95% volume of CTV for fixed-beam IMRT and RapidArc respectively. High dose did not exceed 110.5% of prescribed dose in both. RapidArc can have heterogeneity dose in CTV as IMRT. With more than received dose 23Gy in parotid glands, the former had 30%~31% volume and the later had 40.5%~42% volume. Other avoidance structures showed the former had lower mean dose than the later. The total MU was 627 MU and delivery time was 3.5 min. in RapidArc. But, IMRT had 1195 MU and around 10 min. treatment time.

Conclusions: In this study, RapidArc provided better plan quality than fixed-beam IMRT. The features of lower MU and lower delivery time are the clinical advantage in RapidArc.