Purpose: The purposes of this study were to expound on the benefit of replanning using clinical outcome and Quality of life (QoL) during Intensity-Modulated Radiation Therapy (IMRT) for nasopharyngeal carcinoma (NPC).

Methods: A total of 129 new patients with NPC, who were curatively treated by IMRT from June 2007 to August 2011, were recruited. Eighty-six patients with repeat CT and replanning and 43 patients non-replanning were retrospectively analyzed. The Chinese version of the European Organization for Research and Treatment of Cancer Quality of Life (QoL) Questionnaire C30 and H&N were completed before treatment, the end of treatment, 1, 3, 6, 12 month after treatment. QoL and Kaplan-Meier estimators were used to estimate the survival function of patients with or without replanning.

Results: The clinical outcome comparison indicated that replanning during the IMRT for NPC improved the locoregional control (LRC) (p=0.040), but did not improved the overall survival (OS) (p=0.475). The 2-year LRC, OS rates were 92.4%, 82.2%, and 97.2%, 89.8% in non-replanning and replanning, respectively. Global QoL (p=0.012) and role functioning (p=0.000) and social functioning (p=0.000) and dyspnea (p=0.001) and appetite loss (p=0.010) and constipation (p=0.010) and diarrhea (p=0.010) and speech problems (p=0.000) and trouble with social contact (p=0.000) and teeth (p=0.031) and opening mouth and dry mouth (p=0.000) and sticky saliva (p=0.015), have significantly differences between replanning and non-replanning in patients with NPC.

Conclusions: Our results indicate that replanning can improve significantly LRC and QoL variables in patients with NPC.

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