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Abstract Title:

Application of Salvage Proton Radiotherapy in Patients with Postoperative Recurrent Chordoma

Teng-Fei Long Chao Shan Hsiao-Ming Lu Hong-yan Zhang Tao Zhou Shuang-hu Yuan
Department of Radiotherapy, Hefei Ion Medical Center, Hefei, China

Background / Aims:

Chordoma is a rare malignancy affecting the skull base and axial skeleton, with an annual incidence of less than 0.1/100,000. Primary chordomas have shown favorable outcomes with early adjuvant radiotherapy (i.e. preoperative and/or postoperative photon image-guided radiotherapy (IGRT), proton or carbon ion therapy) in terms of local control (LC) and overall survival (OS), but the application of salvage proton radiotherapy for recurrent chordoma has been scarcely reported. This study aims to evaluate the short-term toxicity, radiation dose, and local control rates of proton radiotherapy in patients with postoperative recurrent chordoma.

Subjects and Methods:

Between January 2022 and August 2022, eight patients with postoperative recurrent chordomas, including six cases arising from the skull base and two cases originating from the sacrococcygeal region, with a median age of 58 years (range 29-67), were treated with the Varian ProBeam proton system. Salvage proton radiotherapy was administered in the volume of recurrent tumor lesions, with a total dose of 70GyE.

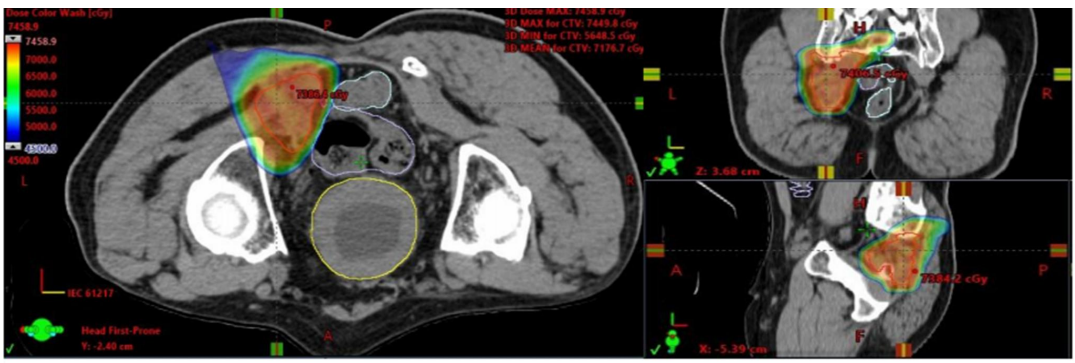

Figure 1 Proton beam therapy plan for sacrococcygeal chordoma showing steep dose-gradient with sharp dose fall off in proximity of Rectum and colon.

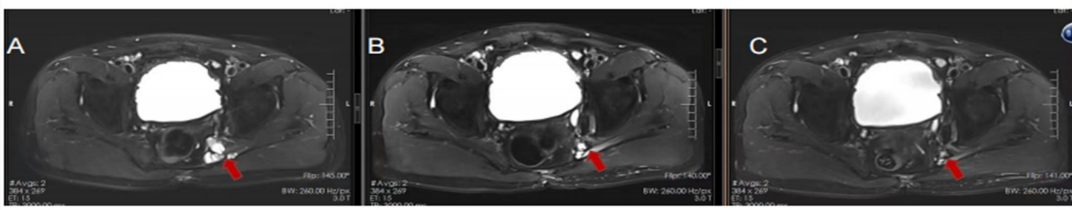

Figure 2. Patients with recurrence after sacrococcygeal chordoma surgery(Male 68 years old);
MRI T2-weighted imaging fat suppression sequence
A:Recurrent lesions before PT B:1 year after PT C:1.5year after PT

Result:

The median gross tumor volume (GTV) of the eight patients was 10.5cm3 (range 1.3-299.1), while the median clinical target volume (CTV) volume was 60.1 cm3 (range 26.3-373.9). The mean follow-up was 30.2months (range 27.1-33.3), and the two-years local control（LC）rate and overall survival（OS） rate were 100%；the two-years Progression-Free-Survival（PFS） was 87.5%. During the follow-up period, grade 1-2 skin and hematological toxicities were observed.