



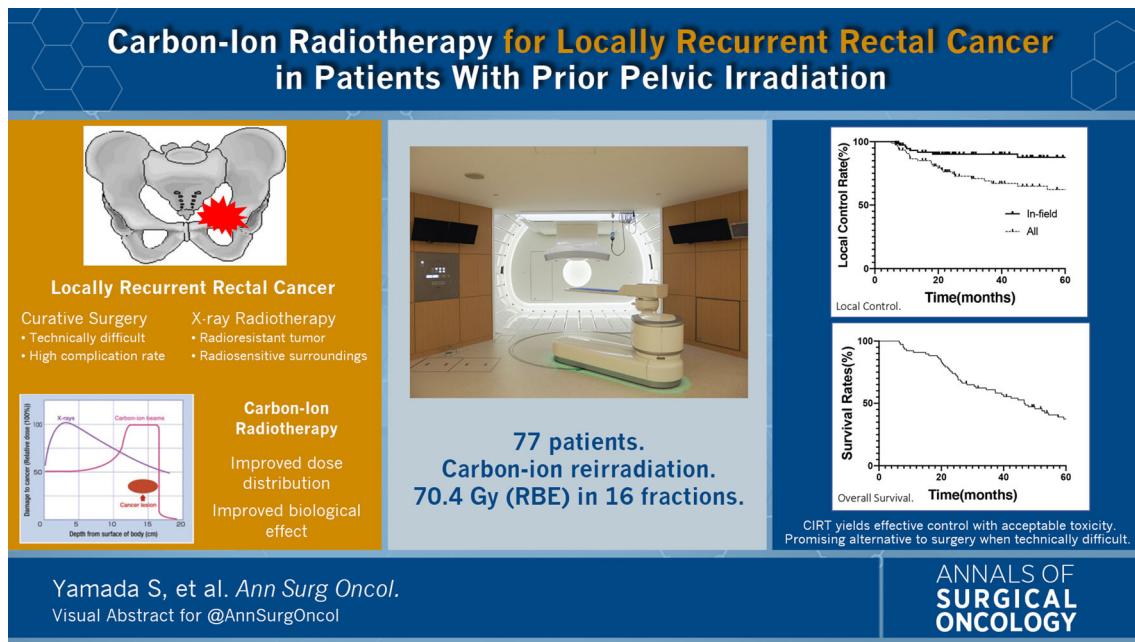
## ASO Visual Abstract: Carbon Ion Radiotherapy for Locally Recurrent Rectal Cancer in Patients with Prior Pelvic Irradiation

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Seventy-seven patients with locally recurrent rectal cancer (LRR) were treated with carbon ion radiotherapy (CIRT) re-irradiation between September 2005 and December 2017. All had received prior radiation therapy with a median dose of 50.0 Gy (range 20–74 Gy), principally for neoadjuvant or adjuvant recurrence prophylaxis in 34 patients and treatment of recurrence in 43 patients (<https://doi.org/10.1245/s10434-021-10876-4>). Total CIRT dose was 70.4 Gy (RBE; relative biological effectiveness and defined as the ratio of a dose of photons to a dose of carbon to produce the same biological effect) and was

administered in 16 fixed fractions over 4 weeks (4.4 Gy [RBE] per fraction). All patients completed the scheduled treatment course, and none received resection post-CIRT. Acute grade 3 toxicities occurred in 8 (10%) patients, including five grade 3 pelvic infections, two for pain, and one for neuropathy. Late grade 3 toxicities occurred in 16 (21%) patients: 13 late grade 3 pelvic infections, nine gastrointestinal toxicity, one skin toxicity, two pain, and four neuropathy. Carbon ion re-irradiation of previously X-ray-irradiated locally recurrent rectal cancer appears to be safe and effective, providing good local control and survival advantage without unacceptable morbidity.



**DISCLOSURE** higeru Yamada, Hirotohi Takiyama, Yuka Isozaki, Makoto Shinoto, Daniel K. Ebner, Masashi Koto, Hiroshi Tsuji, Hideaki Miyauchi, Mitsugu Sekimoto, Hideki Ueno, Michio Itabashi, Masataka Ikeda, and Hisahiro Matsubara have no disclosures to declare

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