Methods: From 2012 to 2016, we have reirradiated all 25 rectal cancer patients with in-field recurrence. The first irradiation dose was 50.4Gy and all patients had received chemotherapy and undergone surgery. They underwent hyperfractionated reirradiation (1.2 or 1.25 Gy twice-daily, not less than 6 hours between fractions) to a total dose of 30 - 40 Gy, using 3D conformal radiotherapy concomitantly with oral chemotherapy (Xeloda 825 mg/m², twice daily for 5 days per week). The median interval between the two irrigations was 24 months (12-41 months). Patients presented a Karnofsky Performance Status of 70-100% at baseline and four of them had distant metastasis. Only two patients underwent surgical resection, one before and the other after reirradiation. The clinical response to reirradiation was assessed two months after retreatment. Acute and late toxicities were assessed systematically. Moreover, mortality was registered during the follow-up.

Results: All patients tolerated reirradiation and finished it in time. The median follow-up was 14 months (range 4-41 months). Acute G2 and G3 toxicities were seen in 40% and 4% of retreated patients respectively, while late G3 toxicity (small bowel obstruction) appeared only in 2 patients (8%) who underwent surgical intervention. One patient demonstrated signs of intestinal subocclusion 3 months after re-irradiation but without need for surgery. The clinical response rate post chemo-reirradiation was 92% and median survival was 16 months. Distance between irradiations was not predictive of any clinical outcome differences. Higher Karnofsky score at baseline was associated with better clinical response (p < 0.001) and lower mortality (p = 0.001). Acute and late toxicities were not associated with mortality in our sample.

Conclusion: Reirradiation concomitantly with chemotherapy is a safe treatment with acceptable toxicities for recurrent rectal cancer patients. It improves local control and also overall survival in some patients.