



# IOSI-RT 001: A phase II single-arm, multicenter Swiss prospective trial of stereotactic irradiation of the resection cavity in patients with brain metastases from solid tumors.

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## Purpose

Brain metastases represent a major complication of solid tumors. Unfortunately they tend to rapidly recur after surgical removal. In this paper we report the preliminary results of a single-arm, multicenter, phase-II prospective trial of postoperative single or multiple fraction radiosurgery (SRT) for patients with 1-3 brain metastases (BM). Such a treatment was already studied, but we wanted to confirm its effectiveness in our patients population. Furthermore we tried to understand more as regards Quality of patients during and after treatment.

## Materials and Methods

Patients  $\geq 18$  year-old with a maximum of 3 BM, of which one surgically resected, with WHO-PS 0-1, stable/decreasing corticosteroids, and stable systemic disease were eligible and included in the trial (Fig. 2). Based on BM treatment volume, a single fraction of 17-18 Gy or a fractionated SRS delivering 5 daily fractions of 5 to 7Gy was delivered to the resection cavity. We treated also up to 2 further BMs with doses according to guidelines. The planned follow up was of 52 weeks. Follow-up visits were planned at 2 weeks after SRT and every 3 months thereafter. Brain-MRI was performed at week-6 after SRS and thereafter in 3-monthly basis. Primary endpoint was local control (LC), while secondary endpoints were toxicity (CTCAE v4.03), quality of life (QOL) (EORTC QLQC30 and EORTC BN20), overall survival (OS), neurological progression (local+distant brain progression), and systemic progression.

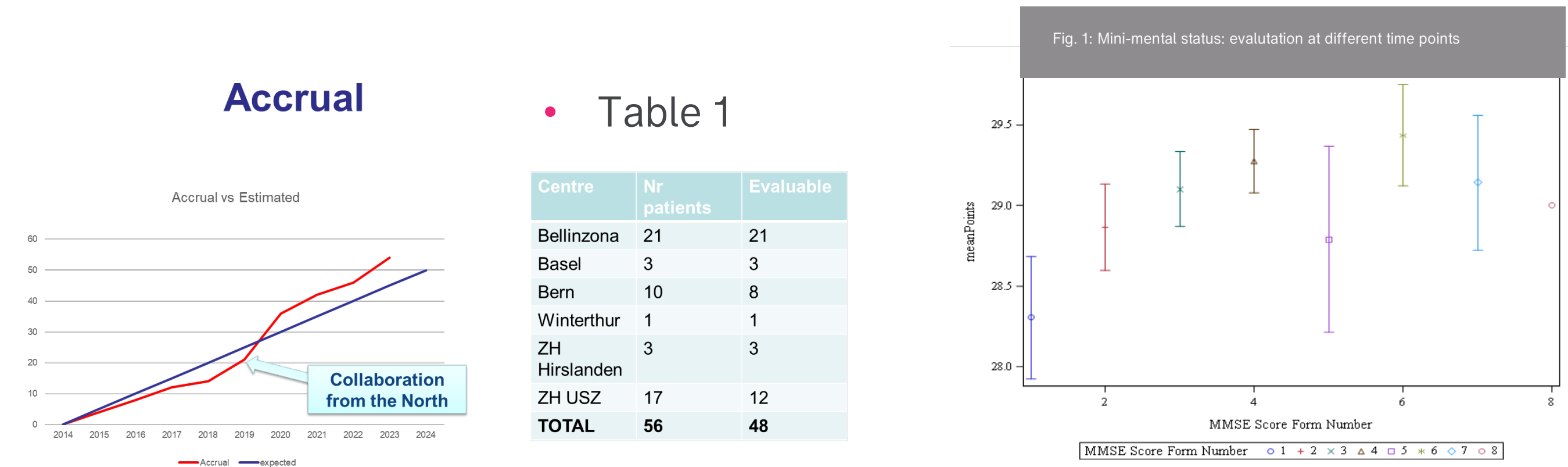
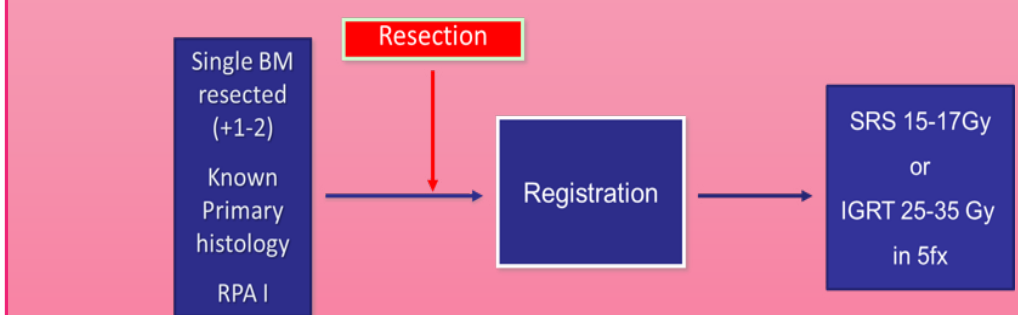


Fig.2: Study design



## Results

From 03.2014 to 12.2022, 56 eligible patients were enrolled at 6 Swiss centers (Table 1), and 48 were evaluable for the present analysis. The most common origin of BM was NSCLC (43%), melanoma (15%), breast (9%), and gastrointestinal (7%). Thirty-eight patients received fractionated treatment on the resection cavity, while single-fraction SRT was delivered in the 10 remaining patients. The V20Gy range for the healthy brain was 4.7-76.8 cc for the fractionated treatments. Acute toxicity was reported in 15 patients (31%), mostly grade 1 and 2. Among the reported serious adverse events (SAE), 3 were possibly related and 3 related to the treatment (3 seizures; 3 radio-necrosis). At 6 months, overall risk of neurological progression was observed in 50%, while the risk of systemic progression was observed in 30% of the patients Fig 3, 4). The median OS at 1 year was 75% in the 48 evaluable patients (Fig 5). The neuropsychological status (MMSE) was stable (score: 29-30) during the follow-up for the evaluable patients (50% of the patients at 30 weeks and 30% at 54 weeks) (Fig.1). Quality of life forms are under evaluation.

## Conclusion

This Swiss multicenter phase II prospective trial confirms that postoperative single or multiple fraction SRT after BM resection is a feasible and effective treatment for patients with 1-3 BM, associated with an acceptable toxicity profile. Quality of Life results will be further evaluated and reported.

Fig.3

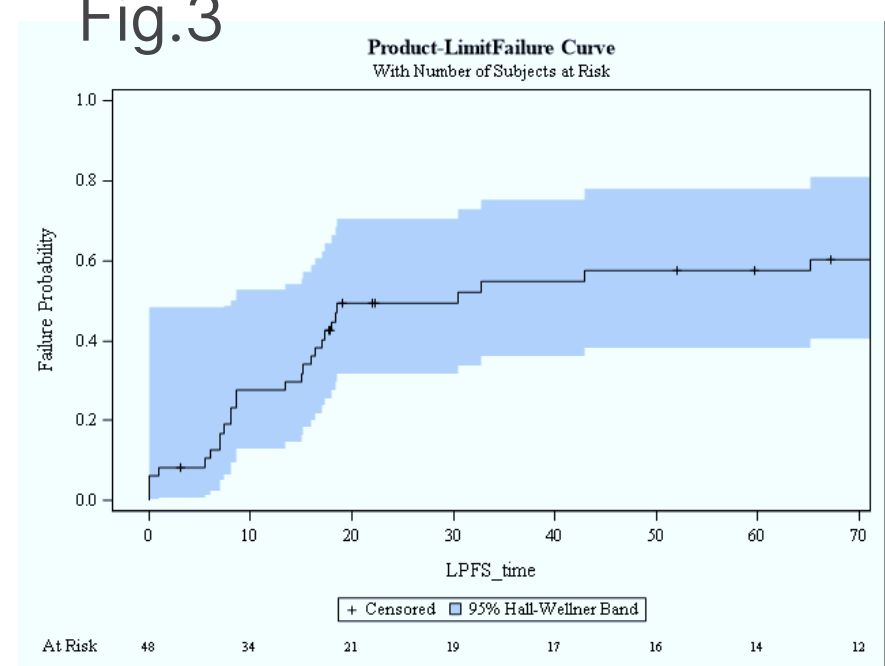


Fig.4

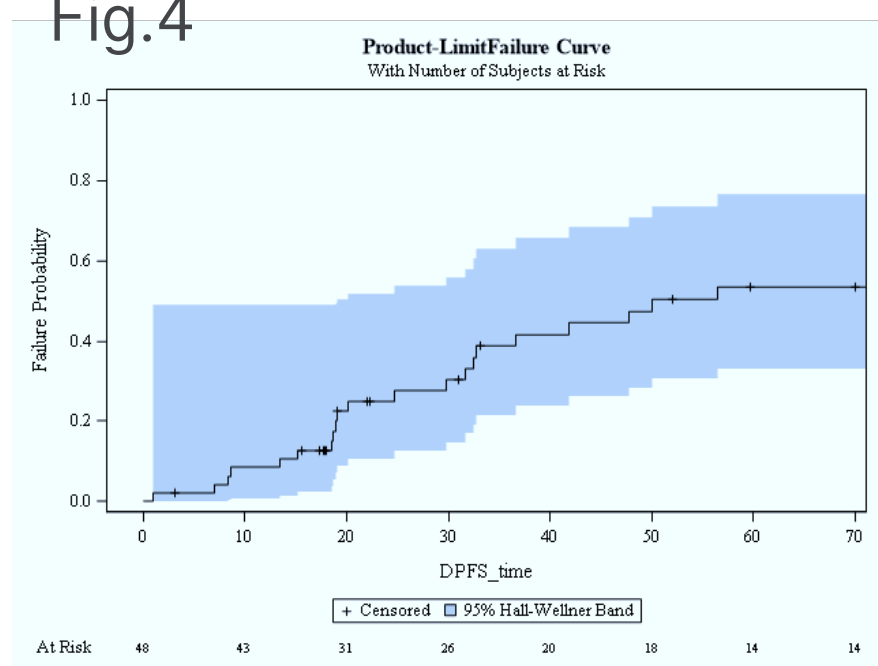


Fig.5

