Brainlab **Novalis Circle**
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Neoadjuvant fractionated stereotactic radiotherapy followed by piecemeal resection of brain metastasis

Hideyuki Harada, Shoichi Deguchi, Kazuaki Yasui, Koichi Mitsuya.

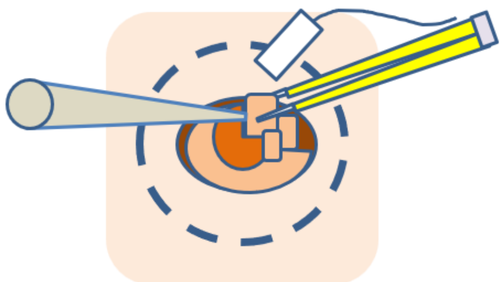
Purpose

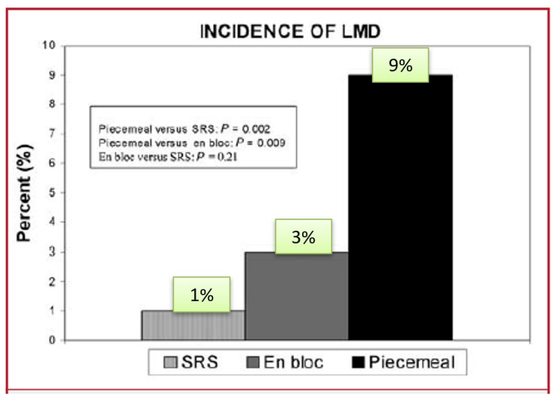
Surgical resection plays a significant role in the management of brain metastasis.
In clinical practice, postoperative SRS is often performed early in cases of piecemeal resection. However, there is concern that patients treated with postoperative SRS have increased rates of symptomatic radiation necrosis and leptomeningeal disease rather than postoperative WBRT. We treated with neoadjuvant fractionated stereotactic radiotherapy (Na-fSRT) followed by piecemeal resection for brain metastasis. The purpose of this study was to examine the efficacy and safety of this treatment strategy.

Materials and Methods

We retrospectively reviewed 20 consecutive patients with BM who underwent neoadjuvant FSRT followed by piecemeal resection between July 2019 and March 2021. The prescribed dose regimens were as follows: 30 Gy (n＝11) or 35 Gy (n＝9) in five fractions.

Piecemeal resection





(Suki D, Neurosurg, 2009)

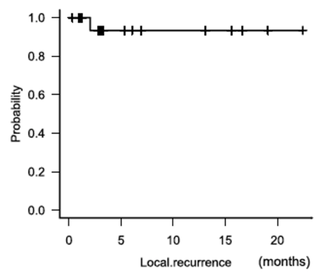
Results

The mean follow-up duration was 7.8 months (range 2.2-22.3). The median age was 67 years (range 51-79). All patients were symptomatic. The median maximum diameter and volume were 3.7 cm (range 2.6-4.9) and 17.6 cm3 (range 5.6-49.7), respectively. The median time from the end of fSRT to resection was 4 days (range 1-7). Gross total removal was performed in seventeen patients and sub-total removal in three patients. Local recurrence was found in one patient (5.0％). Distant recurrence was found in six patients (30.0％) and Leptomeningeal disease recurrence was found in one patient (5.0％).
No radiation necrosis developed.

Conclusion

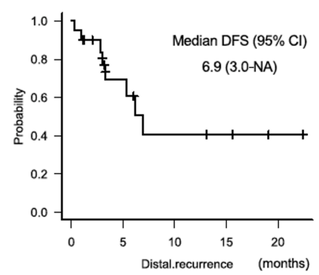
Na-fSRT followed by piecemeal resection for brain metastasis is safety and feasible (Int J Clin Oncol. 2022; 27(3): 481-487). Based on this result, we started a multicenter prospective phase 2 trial and now are accepting patient accrual.

Local recurrence



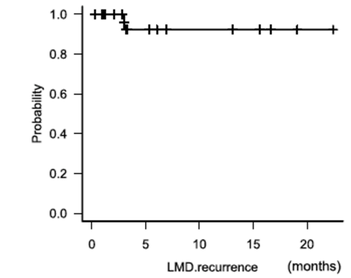
5%
(at 2 months)

Distal recurrence



30%
(median: 6.9 months)

Leptomeningeal metastases



5%
(at 3 months)

(Deguchi, Mitsuya, Harada, et al. 2022, IJCO)