

# Single Fraction Stereotactic Radiosurgery Efficiently Controls Local Prostate Cancer Recurrence After Radical Prostatectomy

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**Categories:** Radiation Oncology, Urology

**Keywords:** prostate cancer recurrence, single fraction stereotactic radiosurgery, cyberknife

## How to cite this abstract

Haidenberger A, Spek A, Graser A, et al. (April 02, 2020) Single Fraction Stereotactic Radiosurgery Efficiently Controls Local Prostate Cancer Recurrence After Radical Prostatectomy. *Cureus* 12(4): a468

## Abstract

**Objectives:** To assess the therapeutic potential of single fraction robotic stereotactic ablative body radiation (SABR) in patients with locally recurrent prostate cancer (PC) after radical prostatectomy (rPx).

**Methods:** We included 35 patients with biochemical failure after rPx with single-site local recurrence in the prostate bed diagnosed at PSMA PET/CT. 20/35 pts had previously received post-surgical adjuvant radiation therapy. High-resolution multiparametric magnetic resonance imaging (mpMRI) for exact visualization of tumor tissue was performed at 1.5 (n=23; Siemens Magnetom Aera) or 3 Tesla (n=12; Siemens Magnetom VIDA, Siemens Healthineers, Erlangen, Germany). Using the MRI dataset for planning, SABR was carried out after ultrasound-guided placement of a single gold fiducial marker using a CyberKnife M6 unit (Accuray, Sunnyvale, USA). Due to the high diagnostic accuracy of PSMA PET/CT and in accordance with international clinical best practice, pre-SABR biopsy of tumor tissue was not deemed necessary. PSMA PET/CT performed 21.5±x days before SRS confirmed absence of distant metastases. MpmMRI was performed 1.5 days prior to this intervention. SABR was performed in a single fraction with a dose of 20 (5/35), 21 (27/35) or 22 (3/35) Gy. Follow-up serum PSA was measured every 3 months thereafter.

**Results:** Median patient age was 72 years (57-80 yrs) and median time from rPx to SABR was 96.8 months (IQR, 69.3-160.2). Median serum PSA before SABR was 1.38 ng/ml (IQR 0.75-2.72). At 3 months median PSA had dropped significantly in 27/35 patients to a median of 0.35 ng/ml (IQR 0.25-0.68). At 6 months, 30/35 patients showed biochemical response to SABR, while 5 patients were progressing: 3 had systemic disease on PSMA PET/CT, while two patients in spite of rising PSA values had no visible correlate on PET/CT. Median follow up time was 11.07 months.

**Conclusions:** SABR is an efficient treatment option in management of single-site local recurrent PC without any evidence of systemic disease; due to its very low morbidity, it is an alternative to surgical treatment. It can significantly delay the onset of androgen-deprivation

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### Abstract

Published 04/02/2020

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therapy (ADT) in biochemical failure after radical prostatectomy.