



## Assessment of stability of Gold Anchor™ fiducial marker implants in the prostate

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### Purpose/Objective:

Evaluation of the stability of placement of fiducial markers implanted into the prostates of patients undergoing IMRT/IGRT radiotherapy.

### Materials/Methods:

In 56 prostate cancer patients qualified for IMRT/IGRT radiotherapy Gold Anchor™ fiducial markers were implanted prior to treatment, under transrectal ultrasound guidance.

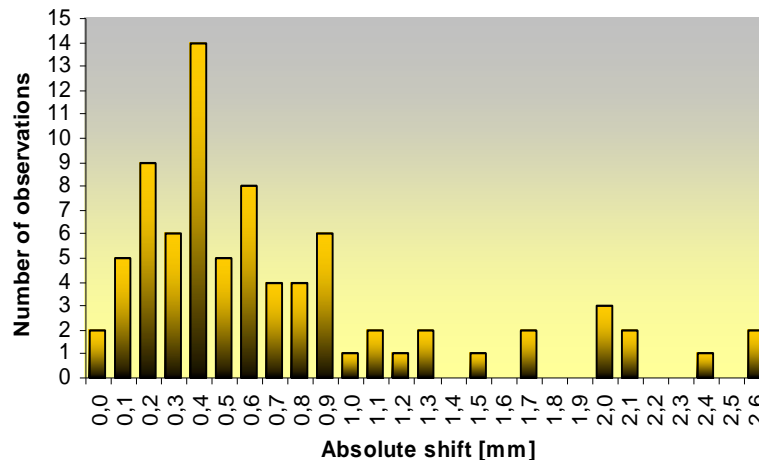
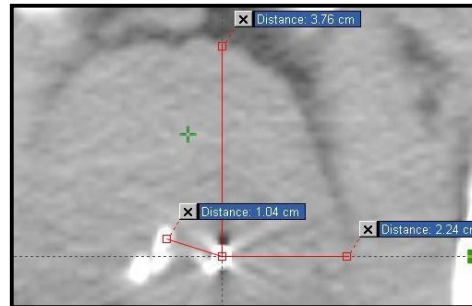
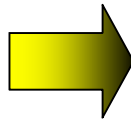
In 32 of these patients a CT scan was performed on the day of marker implantation (day 0). A virtual simulation CT of these patients was reconstructed (with 2.5 or 5.0 mm layers) several days later. The period between obtaining the initial and reconstructed CT images ranged between 2 and 98 days (mean period: 24 days).

In these images, distances between the marker position and: (1) the nearest side edge of the prostate, along the left-right (LR) axis, (2) the front edge of the prostate, along the anterior-posterior (AP) axis, and - in 16 cases - (3) the characteristic calcifications within the prostate gland were measured.



← CT  
Day 0

CT  
Day 7



### Results:

The mean absolute shifts in the marker positions inside the gland between the two CT images were: (1, LR)  $0,7 \pm 0,5$  mm (range 0,2 - 2,6 mm); (2, AP)  $0,9 \pm 0,7$  mm (range 0,0 - 2,1 mm); and (3)  $0,6 \pm 0,7$  mm (range 0,0 - 2,1 mm).

### Conclusions:

The position of the Gold Anchor™ fiducial marker in the prostate gland is stable, the marker remaining within the gland volume.

The period of marker stabilization is less than the 7 days recommended by the manufacturer.

We suggest that virtual simulation of the patient can be performed immediately after marker implantation.

### Keywords:

Prostate cancer, fiducial markers, IGRT

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