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Is the bladder filling protocol for prostate cancer patients undergoing radiotherapy fit for purpose?

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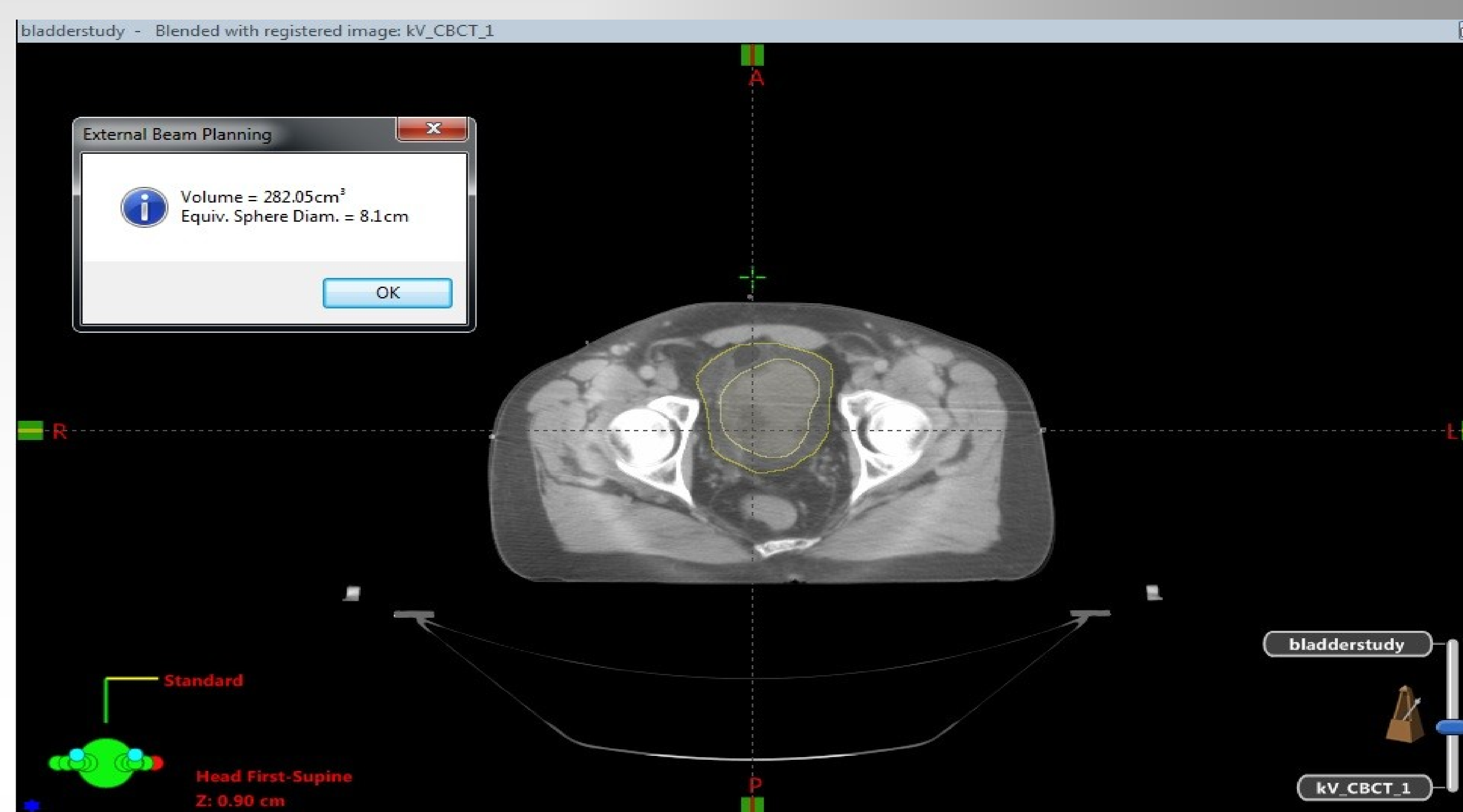
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OBJECTIVES

Conventional radiotherapy for prostate cancer has been planned with a full bladder based on the rationale that this will move the small bowel out of the treatment field and result in greater sparing of the bladder itself. Our department has moved from a comfortably full (CF) bladder to a strict drinking protocol (DP) of emptying the bladder, drinking three cups of water and waiting 30 minutes prior to treatment. A service evaluation was carried out to determine if this change in practice results in a more consistent bladder volume from CT planning to treatment impact of bladder preparation protocols on post treatment toxicity in radiotherapy for localised prostate cancer patients.

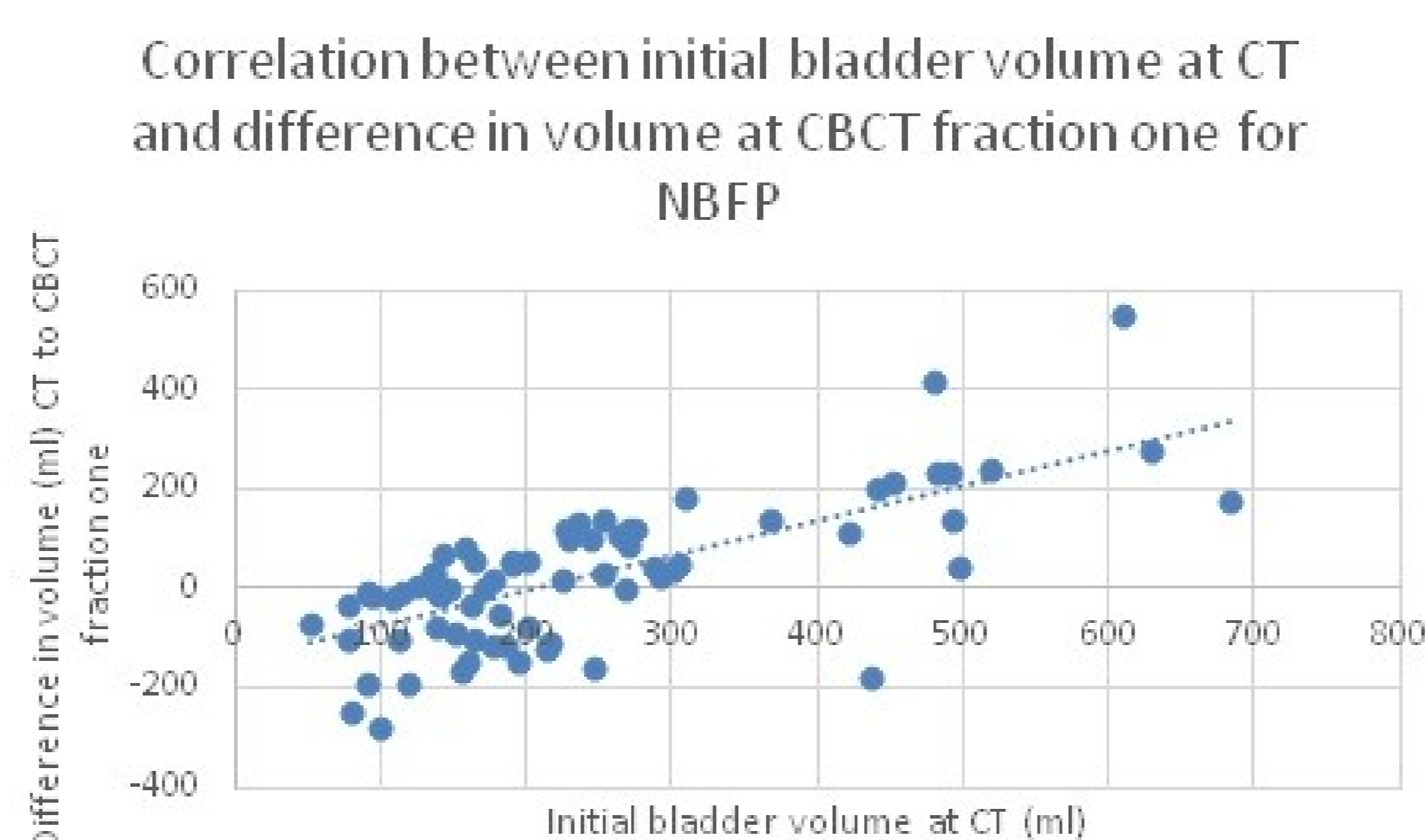
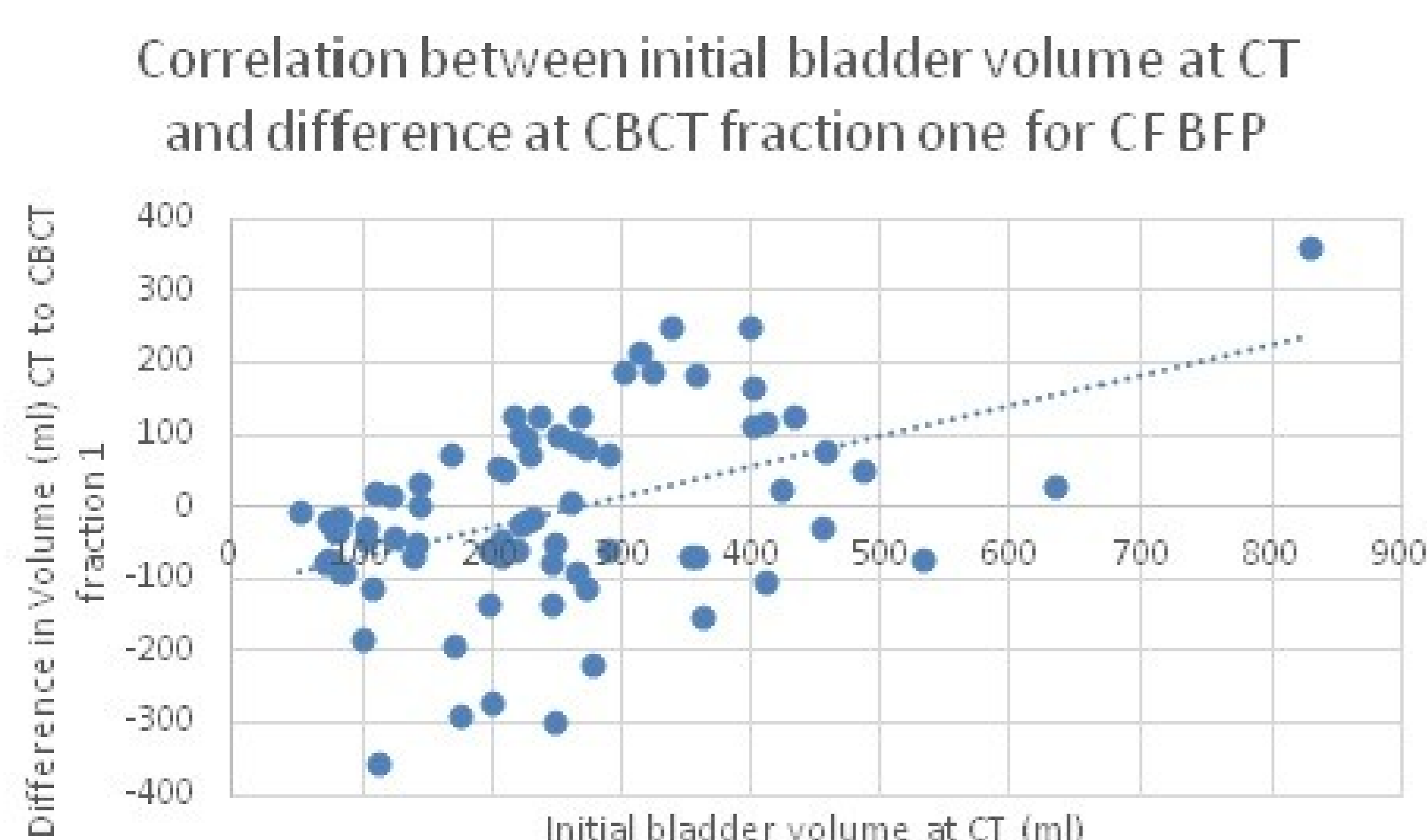
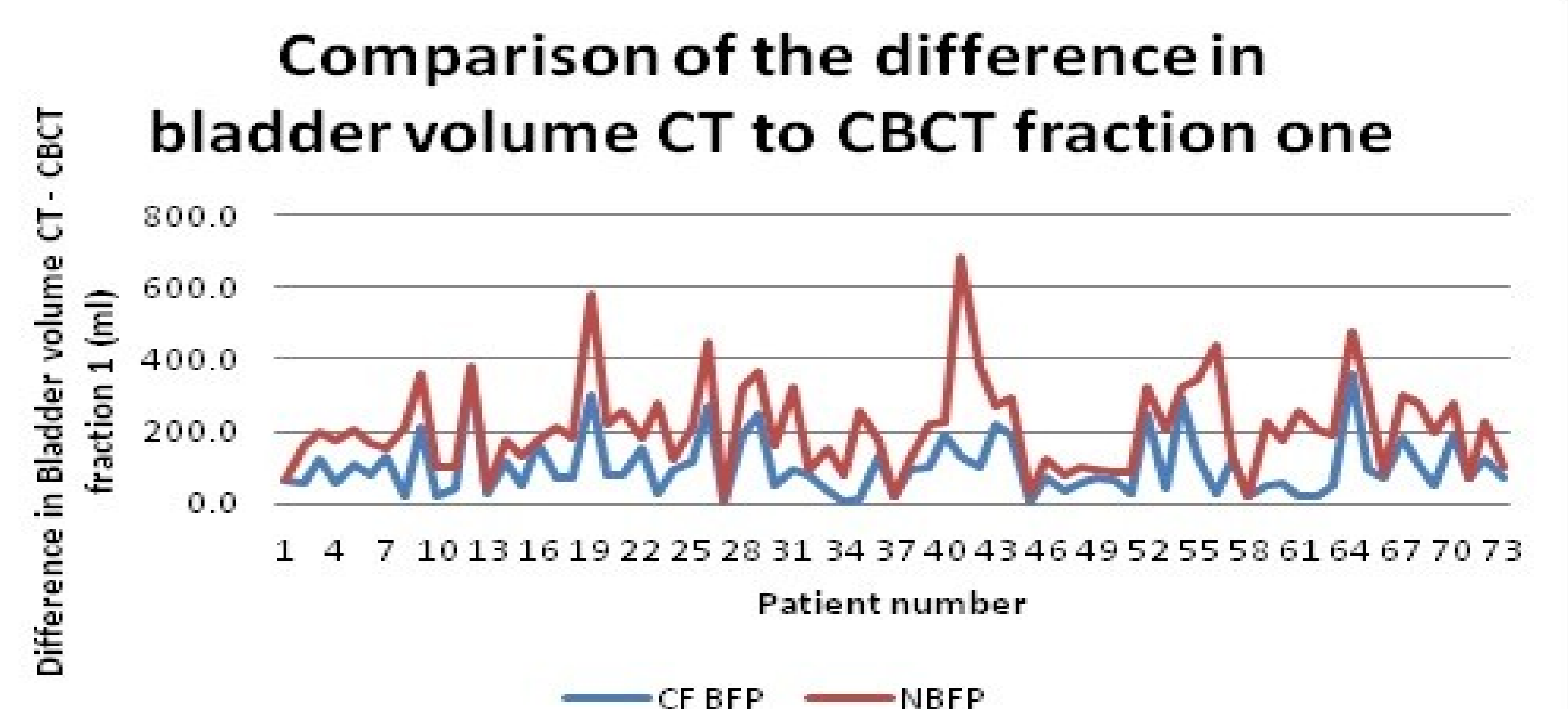
MATERIALS AND METHODS

Based on 233 prostate patients treated per year a sample size of 146 was determined to result in a 95% confidence level with a 5% margin of error. The last 73 patients on the CF protocol and the first 73 patients on the DP bladders were compared. The bladder volume from CT and on CBCT fraction one was outlined by one observer to ascertain the difference in bladder volume and assess if an increase in consistency had been achieved with the addition of the DP. Each bladder protocol was also assessed to ascertain which protocol results in the most consistent bladder volume at treatment



RESULTS

The addition of the DP does not result in a statistically significant ($P = -0.984$) difference in bladder volume from CT to CBCT fraction one compared to CF. Each bladder protocol was evaluated for consistency and it was found that neither protocol results in a consistent volume and a statistically significant result (CF: $p = 0.857$) and (DP: $p = 0.201$). The results illustrate that there is statistically no benefit gained from moving from CF to the DP in terms of consistency of bladder volume achieved.



Results of the Spearman's correlation coefficient for the NBFP protocol indicated there was a statistically significant strong positive association between initial bladder volume and difference in bladder volume at CBCT fraction one $r = (73), +.690, CI 95, p < .001$.

CONCLUSIONS

- There is no statistically significant difference in consistency gained from employing a strict drinking protocol compared to maintaining a comfortably full bladder.
- In the UK there are currently no official guidelines on what is the optimal volume of bladder for prostate cancer patients.
- To attend a busy regional cancer centre patients may have had to travel a long distance, this coupled with any unintended delays can result in patients having to empty their bladder or be taken of the treatment couch, therefore a strict drinking protocol may not be feasible.