

A Technically Challenging Case of Renal SABR: Innovation in Patient Positioning

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Key message

“Multidisciplinary innovation enabled radical SABR treatment for a medically inoperable RCC patient when standard positioning techniques failed”

Renal SABR Overview

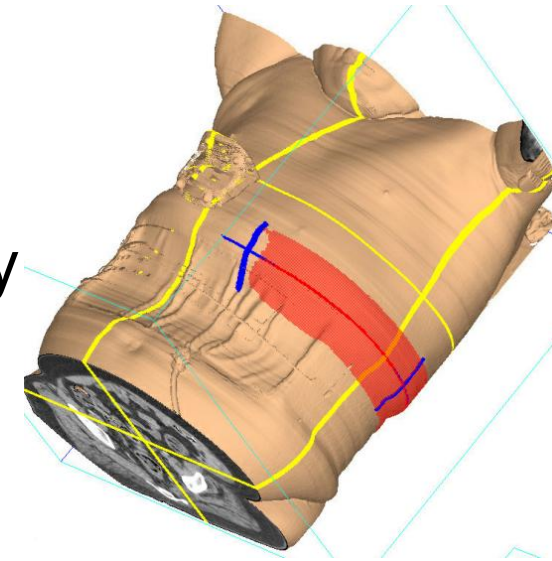
- Renal cell carcinoma (RCC)
- Surgery considered the standard of care for stage 1 cancer (T1a-T1b)
- T1a - if unfit for surgery, treatment options include active surveillance, radio-frequency ablation and cryoablation
- T1b – SABR is only treatment option for medically inoperable patients
- RFL offers SABR to T1a tumours for patients unfit for RF and cryo ablations, which is not commissioned by NHSE

Patient Overview

- 60-year-old male
- Primary RCC of the left kidney, 5.9 cm
- Performance Status 3
- Previous mid-brain bleed leading to left arm weakness
- Medically inoperable
- SABR was the only radical treatment option

Challenges

- Patient positioned as per local protocol – arms up on the thorax board with combi-fix + AC
- Positioning compromises made to the left arm due to arm weakness
- Collision between left arm and gantry for CBCT
- Offset bed for CBCT but missing too much of PTV and OARs for safe delivery
- Treatment could not be delivered

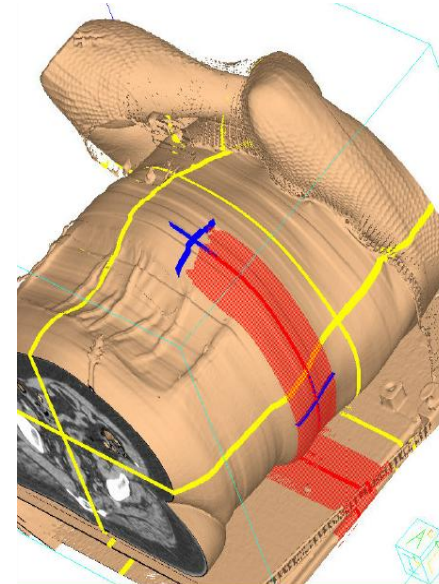


Problem solving process

- Re-discussion at SABR MDT¹
- MDT consist of drs, physicist, dosimetrist, pre-treatment and treatment radiographers
- MDT ensures comprehensive and effective decision making on all aspects patient's treatment
- Proposed solution – rescan and replan with arms high up on chest away from treatment site using custom thermoplastic shell

Solution

- Alternative positioning and immobilisation developed
- Patient was able to hold left arm with the right arm on chest
- Ensure this was high on chest to avoid beam going through
- Custom H&N shell used to hold arms on chest
- Vac-lok bag deemed unsuitable



Considerations

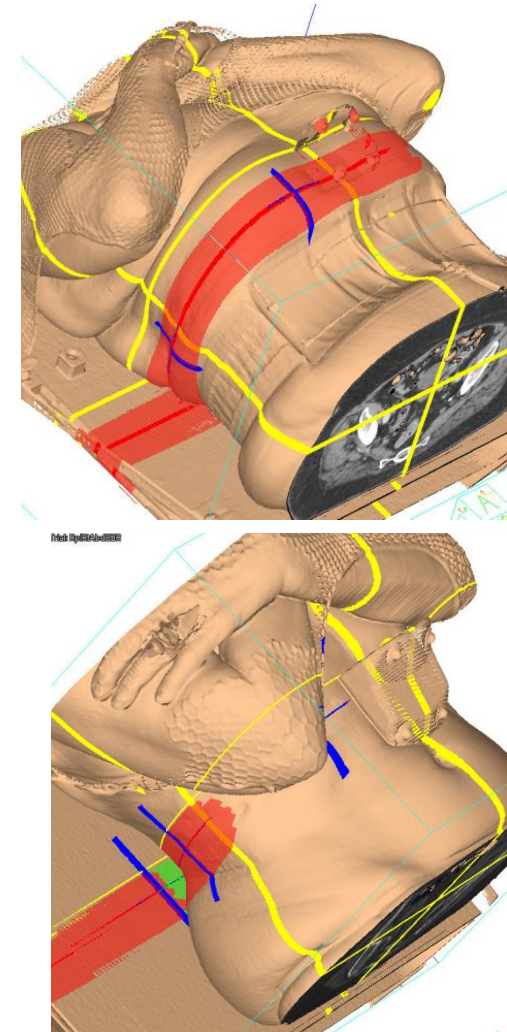
- Clear documentation of alternative set up
- Pictures of the set up taken
- At least one Radiographer who scanned patient also treated patient
- Concession – treated with 1# instead of 3# due to co-morbidities and difficulty with set-up
- Standard prescription for renal SABR:
 - Tumours <4cm given 26Gy/1# and >4cm but <7cm 42Gy/3#
- Clinician present for treatment

Patient outcome

- Replan successfully reproduced and treatment delivered
- No reported toxicities immediately after treatment or at 3 months follow-up.
- CT scan at 4 months post treatment showed stable disease but slight increase in lesion at 6 months
- At 12 months, patient passed away from a cause unrelated to cancer

Future patients

- 2 further patients successfully treated with this immobilisation technique
- One pt had pain in shoulders where they could not keep arms up for the duration of SABR treatment (~45mins)
- Another pt had right hemiparesis (right side body weakness)
- 1st pt - stable disease at 6 months
- 2nd - awaiting follow up data



Importance of this approach

- Equitable access to care by problem solving for patient specific factors and co-morbidities
- Collaborative MDT approach to problem solving and safe delivery of non-standard technique
- Opportunity for innovation and effective teamwork
- Improved patient outcomes and experience

References and thank you

- Clinical Commissioning Policy Stereotactic ablative body radiotherapy for patients with localised, non-metastatic, renal cancer who are medically unfit for surgery (adults) [2332]. NHSE. Published July 2026
- Thanks to;
- RFL SABR MDT
- RFL planning and physics team
- RFL pre-treatment and treatment radiographers



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Questions

world class expertise  local care