



Cryoablation of Renal Cell Carcinoma Tumours



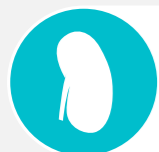
CASE COLLECTION



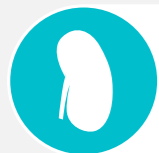
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Case Collection

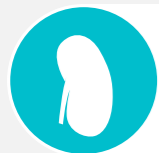
Cryoablation is being adopted by an increasing number of physicians to treat a variety of tumour types. Indeed, Cryoablation provides a durable effect with a low incidence of tumour recurrence. Explore these real-world cases where the prompt intervention and confident choice of cryoablation as strategy by Interventional Radiologists have been essential in delivering positive outcomes.



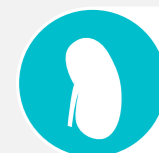
Cryoablation of Exophytic Right Renal Tumour 1
Dr Alex King, Southampton, United Kingdom



Cryoablation of Exophytic Right Renal Tumour 2
Dr Alex King, Southampton, United Kingdom



Cryoablation of 2.3cm RCC Following Previous Contralateral Partial Nephrectomy
Dr Thierry de Baere, Villejuif, France



Cryoablation of 7cm Renal Tumour after Previous Contralateral Nephrectomy
Dr Alex King, Southampton, United Kingdom





Cryoablation of Exophytic Right Renal Tumour 1

Dr Alex King, Southampton, UK

Interventional Radiologist, University Hospital Southampton, UK

Presentation

- 48-year-old male
- Recent resection of GI tract tumour (T3N1M1 oesophageal cancer)
 - Incidental detection of an exophytic right renal mass whilst undergoing staging
 - 3cm right lower pole tumour **A**
 - Confirmed on biopsy to be conventional clear cell renal cell carcinoma (RCC)

Treatment

- Cryoablation
 - One IceRod™ 1.5 PLUS and two IceSphere™ 1.5 needles were used to cover the tumour and create an appropriate 'safety' margin of renal parenchyma **B**

Outcome

- Single night in hospital but no analgesia required
- Continued adequate ablation at three-year follow-up
- Disease-free at four years
- No reported adverse events

Conclusion

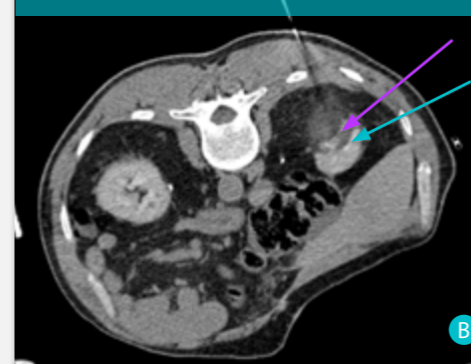
- Percutaneous renal cryoablation can provide a straightforward, low-morbidity treatment, particularly in the setting of recent complex surgery

Presentation



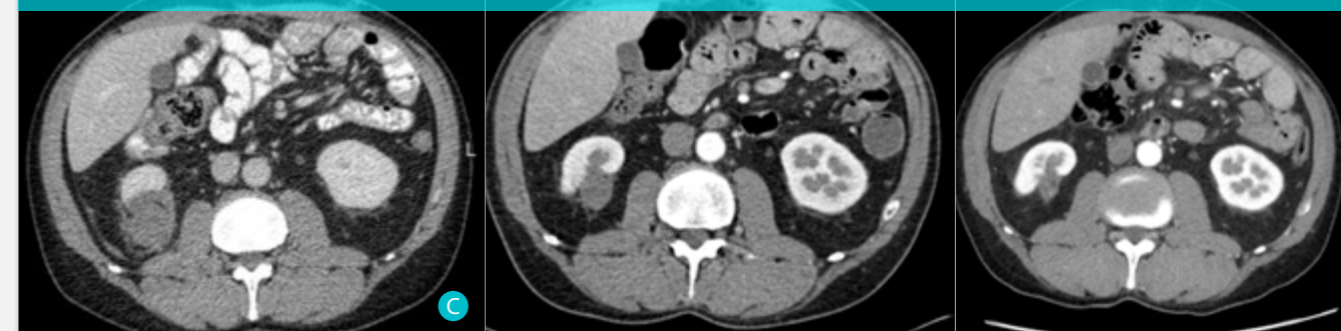
Presentation: CT scan reveals exophytic right lowerpole renal mass (3cm right lower pole RCC)

Treatment



Cryoablation: CT allows clear visualisation of iceball formation to confirm coverage of tumour (purple arrow) with ice extending into normal parenchyma beyond the tumour to achieve 'safety' margin (blue arrow)

Outcome



Post Cryoablation: Contrast-enhanced CT shows an involuting and non-enhancing ablation zone in axial view at one-month (left), one-year (centre) and three-year (right) follow-up





Cryoablation of Exophytic Right Renal Tumour 2

Dr Alex King, Southampton, UK

Interventional Radiologist, University Hospital Southampton, UK

Presentation

- 62-year-old female
- Bilateral renal tumours detected whilst being investigated for abdominal pain **A**
 - 3.2cm right lower pole
 - 2.1cm left lower pole
 - Biopsy confirmed conventional clear cell RCC

Treatment

- Each tumour was treated in a separate cryoablation session
- Right lesion ablation **B**
 - Hydrodissection to protect adjacent structures
 - Four IceSphere™ 1.5 needles used to sculpt the ice to ensure coverage of the tumour and appropriate parenchymal margin
- Left lesion ablation **C**
 - Hydrodissection to protect anterior bowel
 - Three IceSphere™ 1.5 needles used to sculpt the ice

Outcome

- Post cryoablation, CT imaging confirmed adequate bilateral renal ablation without complication **D**
- Renal function was preserved, with a negligible change in creatinine from 59umol/l before treatment to 63umol/l post bilateral cryoablation
- No reported adverse events
- At one-year follow-up, CT images show no sign of progression or recurrence **E**

Conclusion

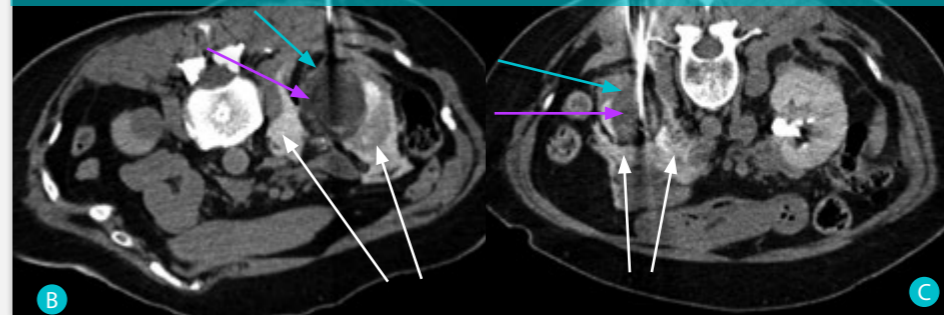
- Percutaneous renal cryoablation provides an option for treating bilateral tumours that allows renal function to be preserved

Presentation



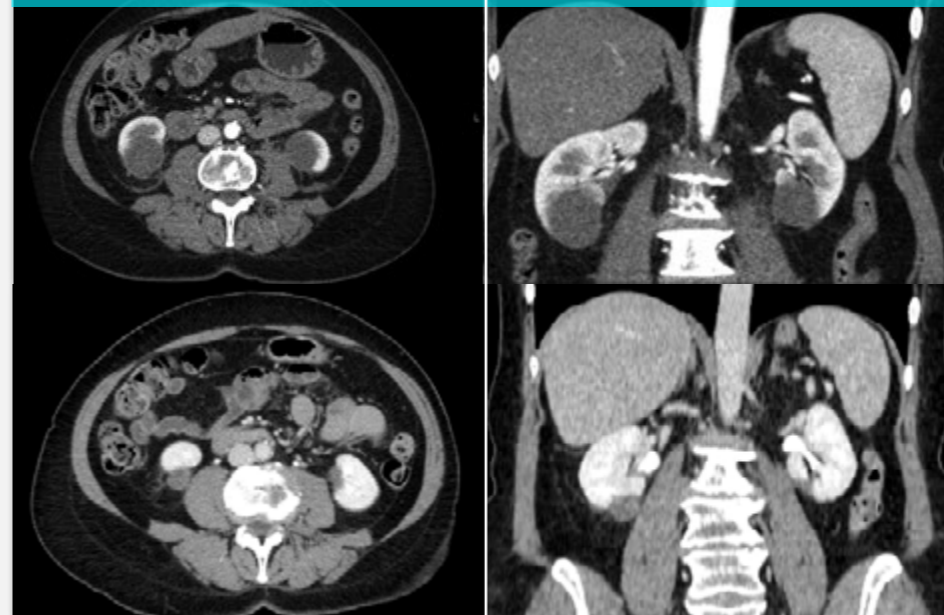
Presentation: Coronal CT shows bilateral renal tumours

Treatment



Right Lesion Cryoablation: CT (axial view) shows the iceball edge (blue arrow) completely covering the tumour (purple arrow) with an appropriate treatment margin and hydrodissection fluid (white arrows).
Left Lesion Cryoablation: CT (axial view) shows the iceball edge (blue arrow) engulging the completely covering the tumour (purple arrow) with an appropriate treatment margin and hydrodissection fluid (white arrows).

Outcome



Post Cryoablation: One-year follow-up CT images show no sign of RCC in either kidney in axial (left) or coronal (right) views



Cryoablation of 2.3cm RCC Following Previous Contralateral Partial Nephrectomy

Dr Thierry de Baere, Villejuif, France

Interventional Radiologist, Goustave Roussy Institute, Villejuif, FR

Presentation

- 72-year-old male
- Left nephrectomy five years previously for renal cell carcinoma (RCC)
- 7CT revealed arterially enhancing nodule of 2.3cm in right kidney with washout in the venous phase **A**
- Patient refused another partial nephrectomy and after consultation agreed to renal ablation
- The renal tumour could not be depicted on ultrasound examination or non-contrast enhanced CT

Treatment

- Super-selective injection of Lipiodol™ into tumour-feeding arteries to 'mark' the target tumour **B**
- One IceSphere™ 1.5 needle was inserted into the upper pole of the renal tumour **C**
- A second IceSphere™ 1.5 needle was inserted so the target tumour was surrounded using the 'chopstick' approach **D**

Outcome

- One-month follow-up CT scan showed the cryoablation zone with 'safety' margins around the Lipiodol™ marker in the tumour. The Lipiodol™ had been reabsorbed into the healthy renal parenchyma **E F**
- Three years post cryoablation:
 - CT shows there is a reduction in the size of the ablation zone **G**
 - Patient remains tumour-free with preserved renal function

Conclusion

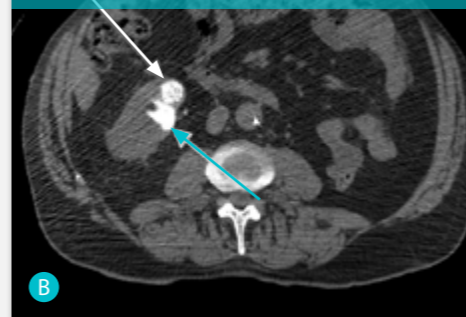
- Cryoablation of small renal tumours non visible on ultrasound or CT is possible with the help of intra-arterial injection of Lipiodol™. Lipiodol™ can remain for a very long period of time even after complete ablation

Presentation

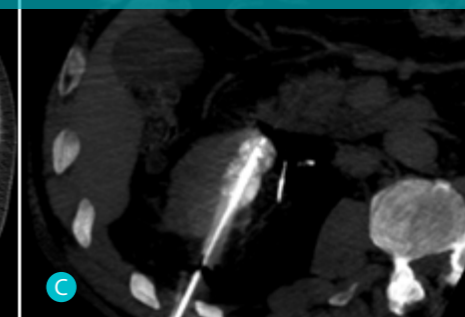


Presentation: Coronal CT shows bilateral renal tumours

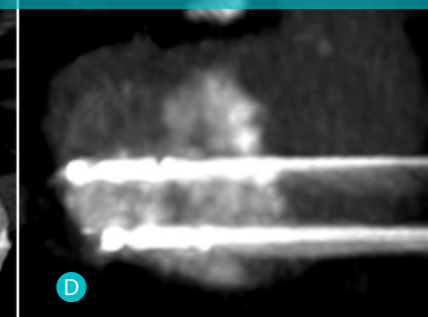
Treatment



Cryoablation: Non-contrast CT (axial view) immediately after super-selective injection of Lipiodol™ in tumour-feeding arteries shows 'marking' of the target tumour (white arrow) and some collected Lipiodol™ in the adjacent renal parenchyma (blue arrow)

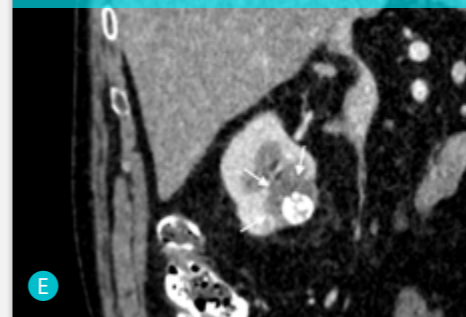


CT (axial plane) shows an IceSphere™ 1.5 needle inserted into the upper pole of the renal tumour)

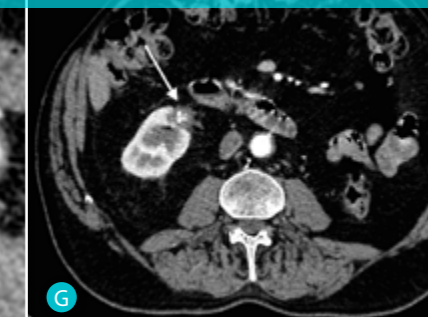
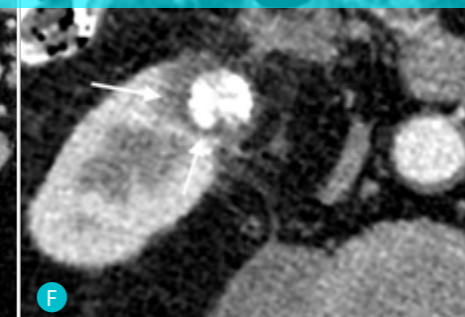


CT (parasagittal plane) shows two IceSphere™ 1.5 needles enclosing the target tumour using the 'chopstick' approach

Outcome



Outcome: One-month follow-up CT in coronal (left) and axial (right) views show cryoablation zone with 'safety' margins (arrows) around the Lipiodol™ marker in the tumour. Note that the Lipiodol™ in the healthy renal parenchyma seen in **B** has been reabsorbed



Three-year follow-up CT shows a reduction of the ablation zone (arrow)



Cryoablation of 7cm Renal Tumour after Previous Contralateral Nephrectomy

Dr Alex King, Southampton, UK

Interventional Radiologist, University Hospital Southampton, UK

Presentation

- 78-year-old male
- Right kidney multifocal renal cell carcinoma (RCC) with vein invasion and concurrent 7cm left anterior renal tumour **A**
 - Left tumour shown on biopsy to be conventional clear cell RCC

Treatment

- Right nephrectomy
- Left kidney cryoablation (three months after nephrectomy)
 - Hydrodissection to protect adjacent structures **B**
 - Seven IceRod™ 1.5 PLUS needles used to sculpt the ice to match the shape of the tumour **C D E**

Outcome

- Cryotherapy required a single night in hospital with simple analgesia
- No reported adverse events
- Early follow-up imaging of left kidney confirmed adequate ablation **F**

Conclusion

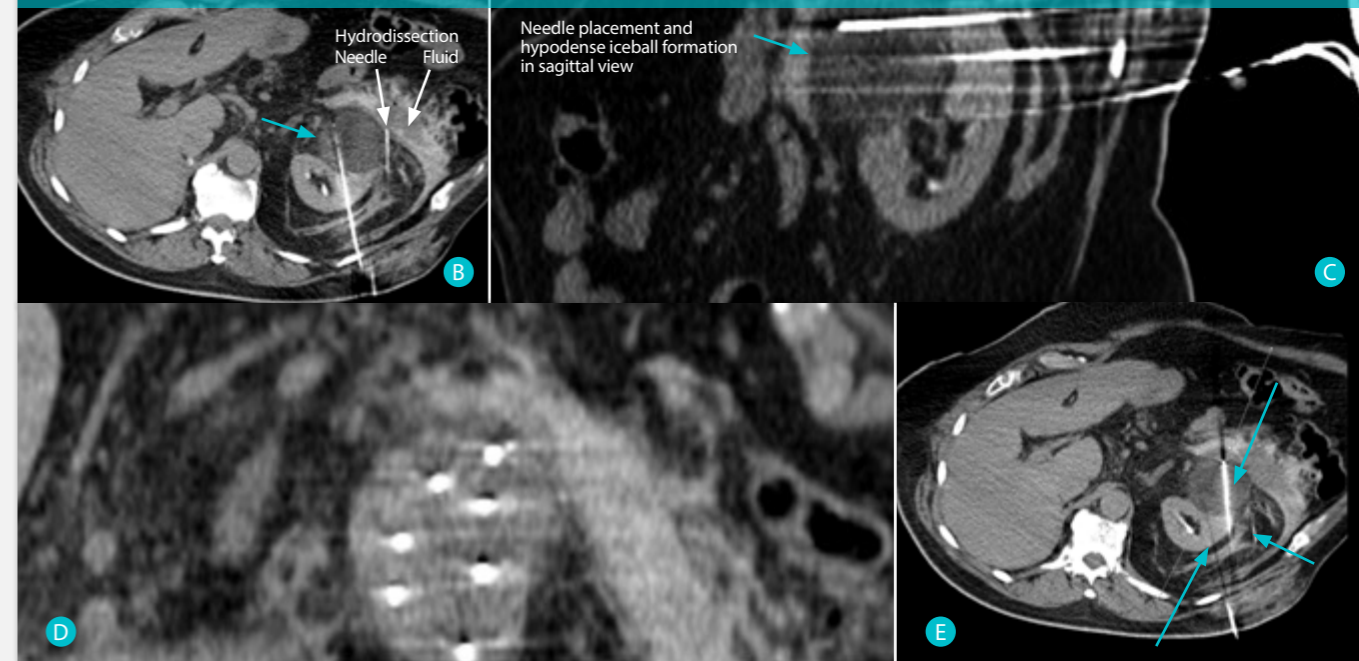
- This case highlights the benefit of cryoablation to avoid bilateral nephrectomy and subsequent dialysis or the morbidity of open partial nephrectomy

Presentation



Presentation: Multiphasic CT scans reveal multifocal RCC and a 7cm left anterior renal tumour in coronal (left), axial (centre) and sagittal (right) views

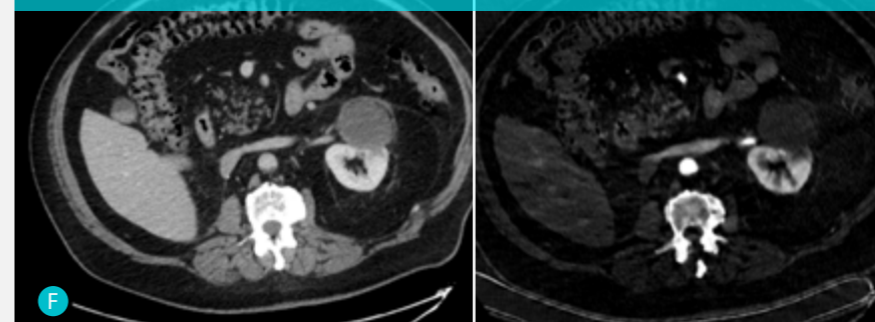
Treatment



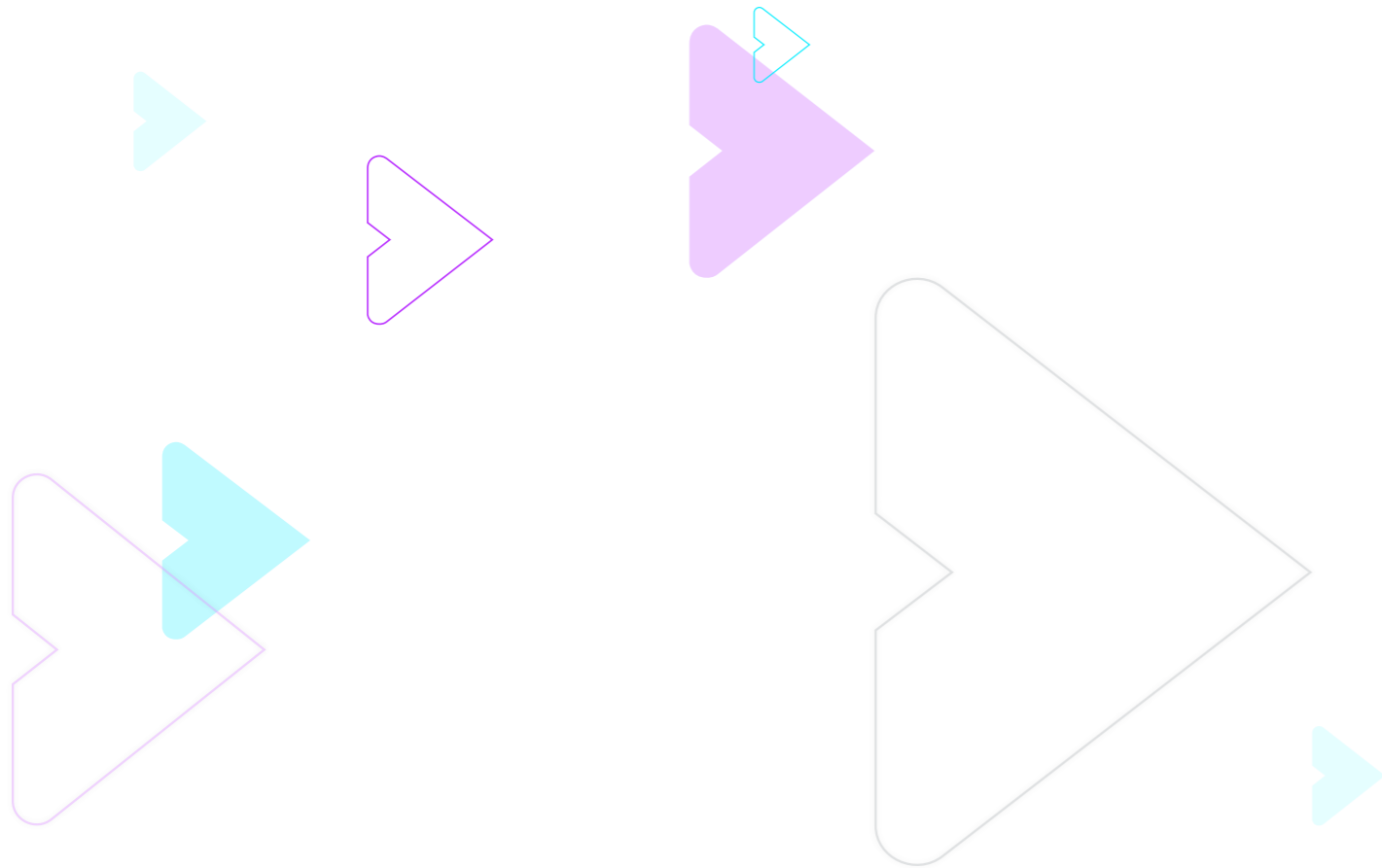
Cryoablation: Coronal CT demonstrates the distribution of needles in the slightly 'bean-shaped' tumour, illustrating how multi-needle cryoablation allows the ice to be sculpted to match the tumour morphology

Visibility of leading edge of iceball on axial CT during treatment (arrows) allows confirmation of tumour coverage and appropriate parenchymal 'safety' margin

Outcome



Post Cryoablation: Three-month follow-up CT scans. Top: conventional venous phase imaging. Right: Iodine map from dual energy scan showing absence of residual tumoural enhancement



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