Minimal invasive treatment of small renal masses





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950 new RCC annually in DK

50 % of all RCC metastasize (1)

One year survival: 83% (1) Three year survival: 68% (1)



1. Petersen AC, Sogaard M, Mehnert F, Larsen EH, Donskov F, Azawi NH, et al. The database of the Danish Renal Cancer Group. Clinical epidemiology. 2016;8:725-9.

SRM (small renal masses) BACKGROUND

RCC: 3-4 % of new cancer (1)

RCC has been higher in Denmark than in other Nordic countries for decades (2)

The annual incidence of renal masses, including small RCCs has increased continuously worldwide (3)

50 % of RCCs are being reported as incidental findings (4)

1. Petersen AC, Sogaard M, Mehnert F, Larsen EH, Donskov F, Azawi NH, et al. The database of the Danish Renal Cancer Group. Clinical epidemiology. 2016;8:725-9.

 Hollingsworth JM, Miller DC, Daignault S, Hollenbeck BK. Rising incidence of small renal masses: a need to reassess treatment effect. Journal of the National Cancer Institute. 2006;98(18):1331-4.
 Escudier B, Porta C, Schmidinger M, Rioux-Leclercq N, Bex A, Khoo V, et al. Renal cell carcinoma: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. Annals of oncology : official journal of the European Society for Medical Oncology. 2016;27(suppl 5):v58-v68.



SRM (small renal masses) BACKGROUND

3-4 mm per year but 25% have grow under surveillance, and I-2 % of the tumors progressed to metastatic disease (5,6)

20-25 % of SRMs are potentially aggressive (7)

- Chawla SN, Crispen PL, Hanlon AL, Greenberg RE, Chen DY, Uzzo RG. The natural history of observed enhancing renal masses: meta-analysis and review of the world literature. The Journal of urology.
 2006:175(2):425-21
- 6. 2006;175(2):425-31.
- 7. Zhang L, Li XS, Zhou LQ. Natural history of small renal masses. Chin Med J (Engl). 2015;128(9):1232-7.
- 8. Ljungberg B, Bensalah K, Canfield S, Dabestani S, Hofmann F, Hora M, et al. EAU guidelines on renal cell carcinoma: 2014 update. European urology. 2015;67(5):913-24.







SRM (small renal masses) PERCUTANEOUS CRYOABLATION



Energy-based tissue-ablative techniques include radiofrequency ablation (RFA) and cryoablation. Controversy exists about which technology is superior. The primary requirement for an ablative technology to be efficacious is that it must deliver a lethal treatment to the cancer cells, leaving no viable cancer cells within the treated zone. Of equal importance, the physician must be able to localize, control and predict the area of treatment while avoiding inadvertent ablation of surrounding healthy tissue. Renal tumor ablations can be performed through open incisions or via laparoscopic or percutaneous routes under image guidance (US, MRI, CT). Although ablative therapies show promise of efficacy, long-term oncologic follow-up is not yet available

SRM (small renal masses) PERCUTANEOUS CRYOABLATION



9 Initial behandling af kræft i nyren

9.1 Hovedgrupper af behandlingsforløb

Nyrecancer behandles, så vidt det er muligt, **kirurgisk** - oftest med fjernelse af nyren (nefrektomi). Nyrebevarende behandling (partiel nefrektomi, kryo og RFA) finder dog stigende anvendelse. Kryo og RFA varetages på højt specialiseret niveau, mens partiel nefrektomi varetages på regionsfunktionsniveau.

De nyrebevarende procedurer radiofrequency ablation (varmebehandling) og kryobehandling (frysebehandling) kan anvendes til tumorer under 5 cm og finder stigende anvendelse.





Odense: 80-120 T1a RCC / year

SRM (small renal masses) PERCUTANEOUS CRYOABLATION

















CEP

E

- 40













2 ICE Pearl

3 ICE Rod

4 ICE Rod







2 cm

3 cm



4 ICE Force

































SRM (small renal masses) CRYO NEEDLE PLACEMENT



10 min



SRM (small renal masses) CRYO TREATMENT

2 x 10 min





CRYO (small renal masses)







15 years experience

Paper Points



Breen DJ, Bryant TJ, Abbas A, Shepherd B, McGill N, Anderson JA, Lockyer RC, Hayes MC, George SL Departments of Radiology, Anaesthesia, Urological Surgery and Public Health University Hospitals of Southampton NHS Foundation Trust, Southampton, UK

BJU International 2013; doi:10.1111/bju.12122

Paper Points



Characteristics of 171 Tumours

Technical Success Analyzed by Tertile of Treatment 153 Procedures



Breen DJ et al. BJU Int. 2013 Oct;112(6):758-65.

CT Guided Cryoablation of Small Renal Masses

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Retrospective study for technical success and complications 156 consecutive patients with 162 tumors initial procedures from 2012 to 2017







156 patients, mean patient age was 66 years (range 27-91 years) with
162 tumors & mean tumor size was 27 mm (range, 10-70 mm).
Mean follow-up period was 376 days (range, 77-2217 days)

Overalle technical success rate was 93.3% All periode: Incomplete ablation: 3.7% (n=6) and 3% (n=5) had recurrence

2017: Incomplete ablation: >1% (n=1) and >1% (n=1) had recurrence



Incomplete 3.7% (n=6)

5 tumors: re-cryo treatment, 1 tumor needed a second session of re-cryo 1 tumor: partiel nefrectomi

Recurrent tumor 3% (n=5)

3 tumors: re-cryo treatment

- 1 tumor: partiel nefrectomi
- 1 tumor: oncological treatment

Paper Points



Incomplet ablation

Technical Success Analyzed by Tertile of Treatment 153 Procedures



Breen DJ et al. BJU Int. 2013 Oct;112(6):758-65.



Paper Points



PERCUTANEOUS CRYOABLATION RESULTS The



The complication rate was 5.9 % (n=10)

Complications were defined as any case requiring therapeutic treatment/intervention, represented by:

- perirenal hematoma
 one infection
 renal abscesses
 hydronephrosis
 pseudoaneurysm
 neurogenic pain
 pneumothoraxes
- 1 cardiac arrest

No variables were found to predict technical failure, recurrence or complications

Paper Points





Georgiades CS, Rodriguez R. Cardiovasc Intervent Radiol. 2014 Dec;37(6):1494-9 Breen DJ et al. BJU Int. 2013 Oct;112(6):758-65.



Percutaneous CT-guided cryoablation appears to have potential as a safe and effective treatment option for small renal masses with low complication rates. The tertiel procedural distribution of technical failure indicated a steep learning curve.



Easy cases

Medium challenging cases

Challenging cases

Very challenging cases









Easy cases 1 12 month follow up







Very challenging cases 2 2 x ccRCC – 2 cm & 1 cm –



Very challenging cases 2



SRM (small renal masses)

CRYO





Very challenging cases 2 Cryo





Very challenging cases 2 12 month follow up



BUSINESS CASE 1



CRYO

Cryo day: Sedation: 1 hour & GA: 2 hours Recovery: Sedation: 30 min & GA: 1-2 hours Department: 1-3 hours Work: Next day Price: 6.000 €

Partiel nephrectomy

Surgery: GA: 2-4 hours Recovery: 1-3 hours Department: 2-4 days Work: 3-4 weeks Price: 5-6.000 €

Paper Points



Platinum Priority – Kidney Cancer

1424 cT1a patients, 1057 underwent PN, 180 underwent RFA, and 187 underwent cryoablation. In this cohort, local recurrence-free survival was similar among the three treatments (p = 0.49), whereas metastases-free survival was significantly better after PN (p = 0.005) and cryoablation (p = 0.021) when compared with RFA

Local recurrence-free survival (p = 0.81) and metastases-free survival (p = 0.45) were similar between PN and cryoablation

If these results were validated, an update to clinical guidelines would be warranted

Paper Points



2806 records, 73 articles

There are <u>no randomized controlled trials available comparing surgery and less invasive modalities</u>, leading to a low quality on the reported articles.

A case-controlled registry might be an alternative to compare outcomes of noninvasive treatment modalities in the future

RCCC (SMALL RENAL MASSES) PERCUTANEOUS CRYOABLATION FUTURE???





Carl fik frosset en kræfttumor væk på en halv time: »Det er helt vildt, at det kan være så let«



For første gang i Norden er en patient blevet kureret for kræft, der har spredt sig, ved at fryse tumoren væk. Behandlingen kaldes revolutionerende, fordi den er ekstra skånsom. Berlingske var med, da Carl Egtveds kræfttumor blev fjernet med is.



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