The role of thermal ablation and Qol of life

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Treatment options for SRM

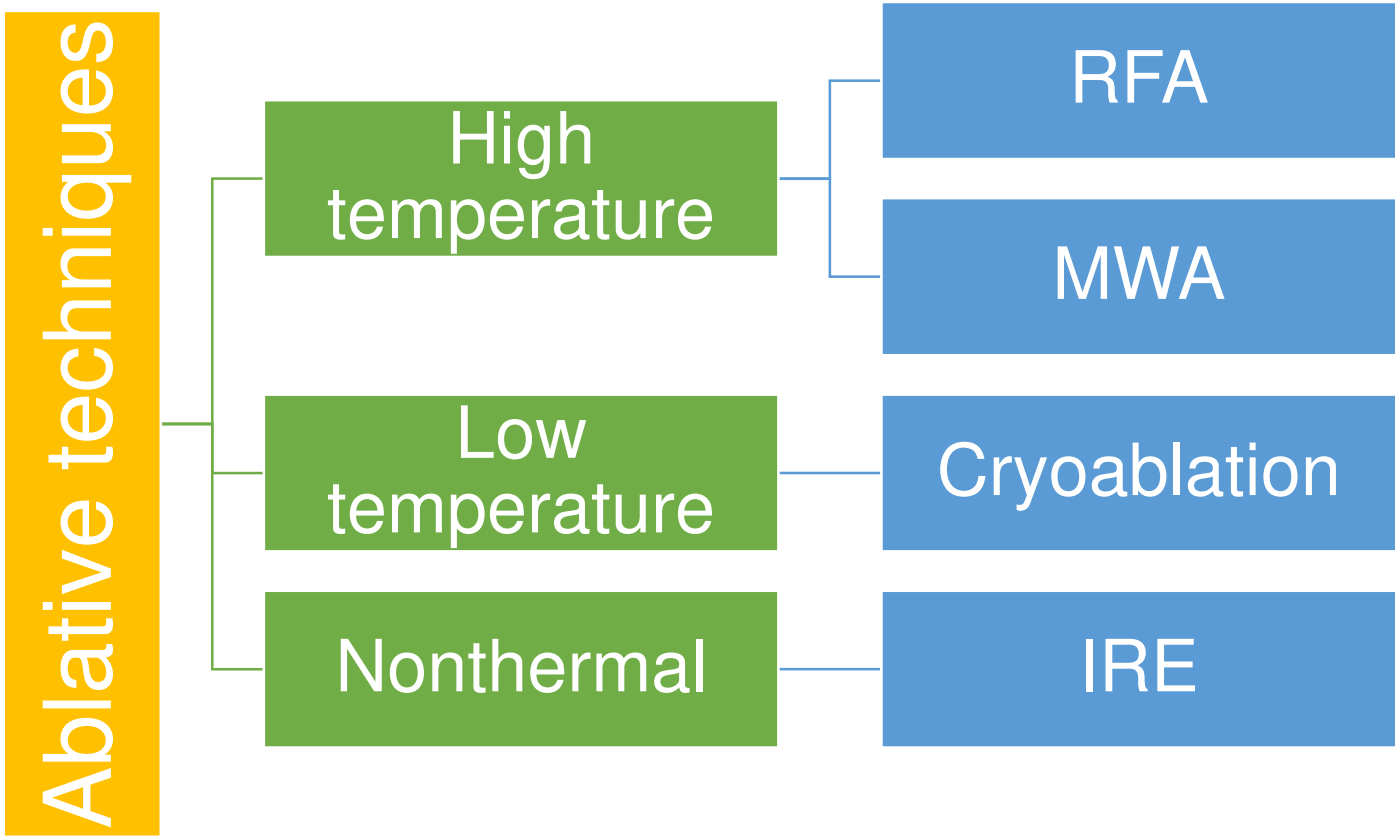
4 cm

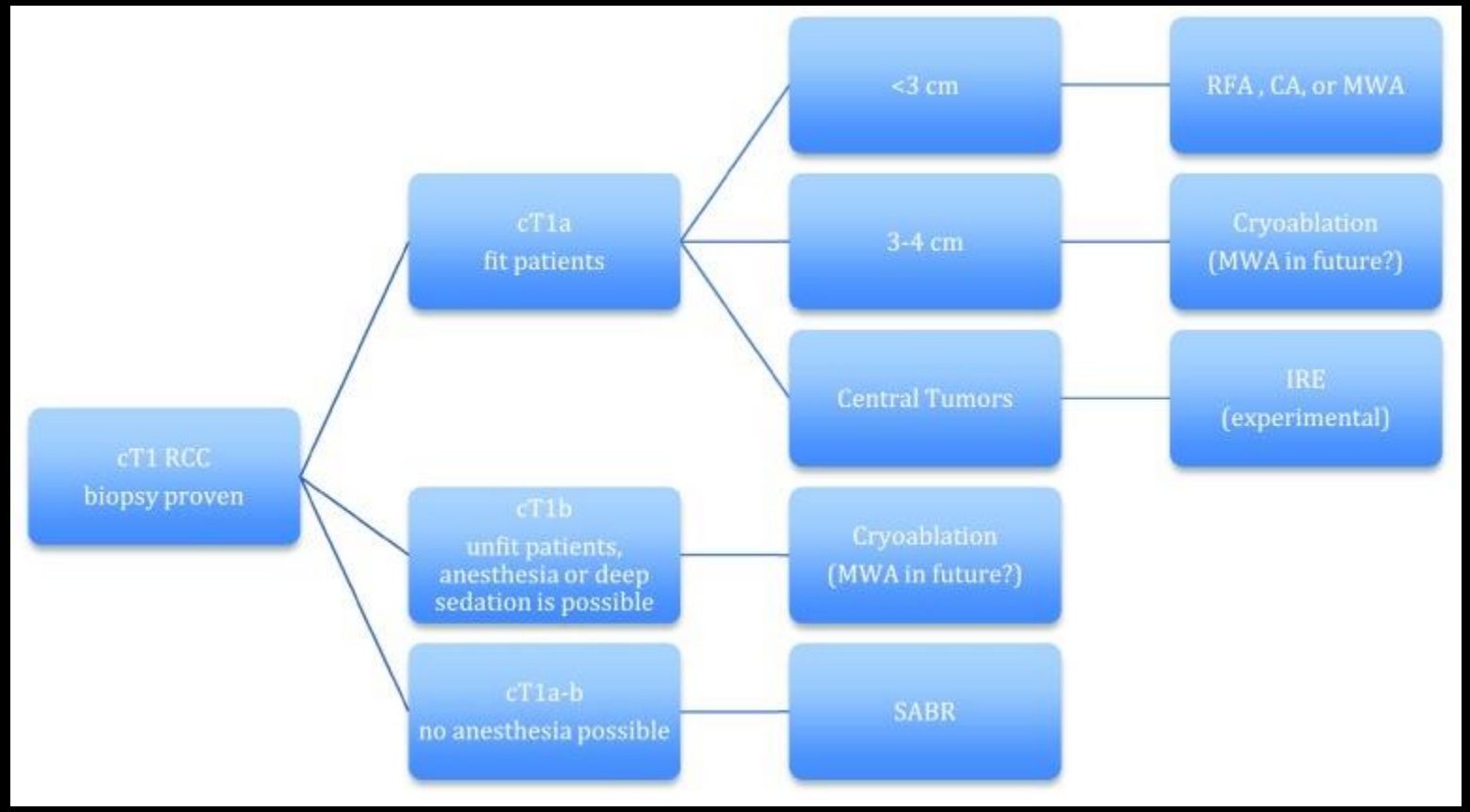
Ablative approaches
- RFA
- CA
- MWA
- IRE

Surgical treatment

Active surveillance

Modalities


Ablative techniques
High temperature
RFA
MWA
Low temperature
Cryoablation
Nonthermal
IRE


cT1 RCC
biopsy proven
cT1a
fit patients
cT1b
unfit patients,
anesthesia or deep
sedation is possible
cT1a-b
no anesthesia possible
<3 cm
3-4 cm
Central Tumors
Cryoablation
(MWA in future?)
SABR
RFA , CA, or MWA
Cryoablation
(MWA in future?)
IRE
(experimental)

Comparisons between currently available ablative techniques

Ablative Method	Advantages	Disadvantages
CA	Real-time visualization Lesions >3 cm Less painful than RFA	Longer procedural time More bleeding risk
RFA	Shorter procedural time Less bleeding risk	No real-time visualization No lesions >3 cm More painful than CA "Heat-sink effect"
MWA	Shorter procedural time Lesions >3 cm No "heat sink effect" Simultaneous ablation	More painful No real-time visualization Bulkier than RFA Need for a cooling mechanism
IRE	Avoidance of change in temperature No "heat sink effect" Less risk of vessel damage	Limited clinical experience

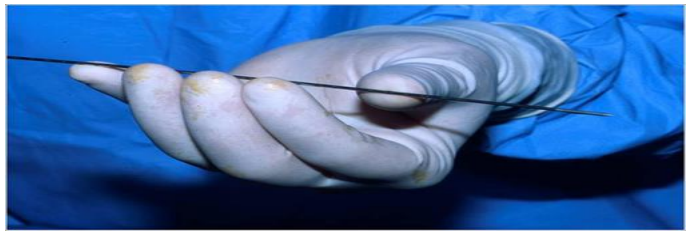
Abbreviations: CA: cryoablation; RFA: radiofrequency ablation; MWA: microwave ablation; IRE: irreversible electroporation.

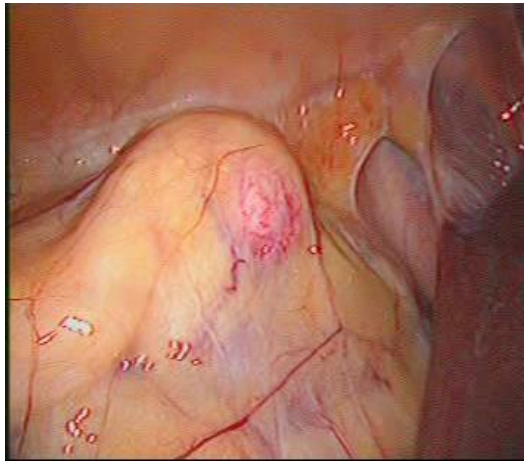
Radio Frequency Ablation (RFA)

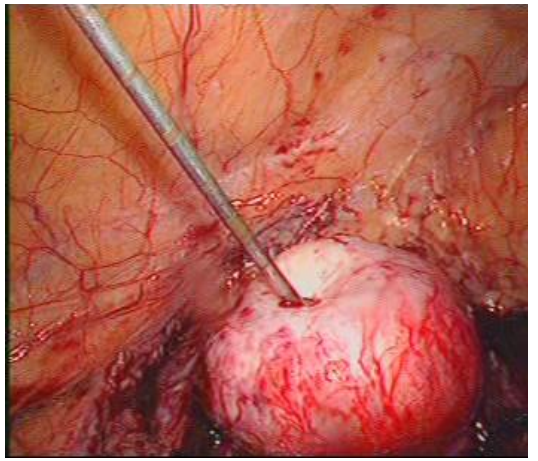
- Strengths
  - ✓ Easy to use
  - ✓ Fast
  - ✓ Safe
- Weakness
  - Large tumors
  - Thermal sink effects
  - Inability to monitor

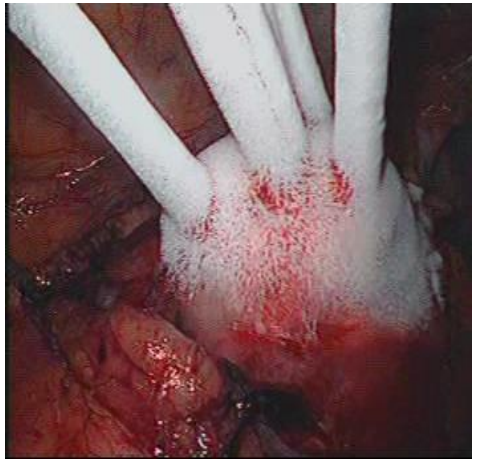
Cryo-ablation

- Strengths
  - ✓Large tumors
  - ✓Central tumors
  - ✓Monitoring
- Weakness
  - Bleeding
  - Duration
  - Cumbersome to use



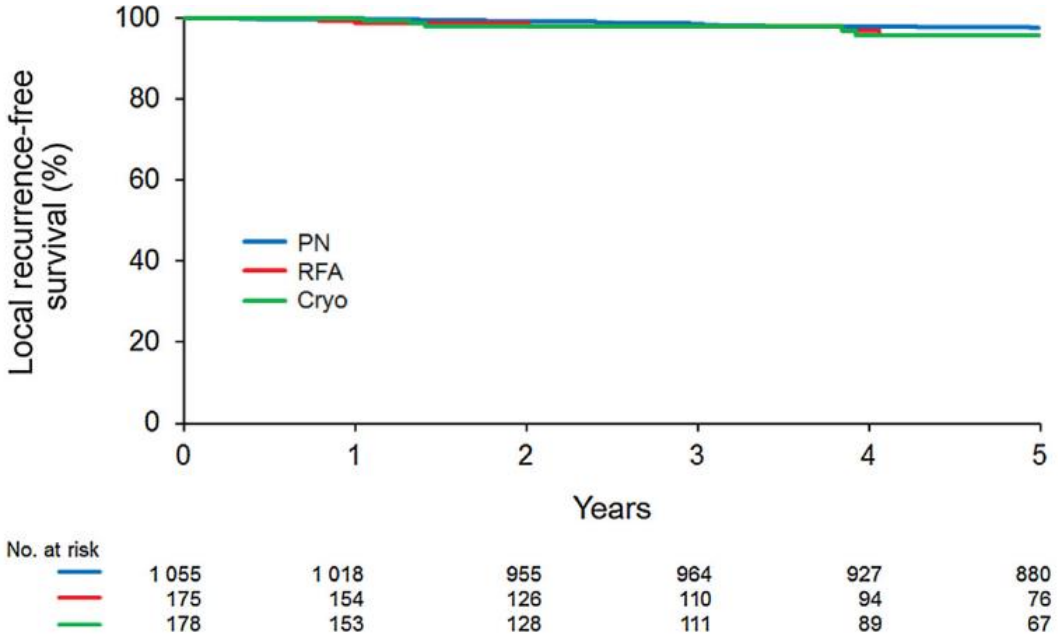


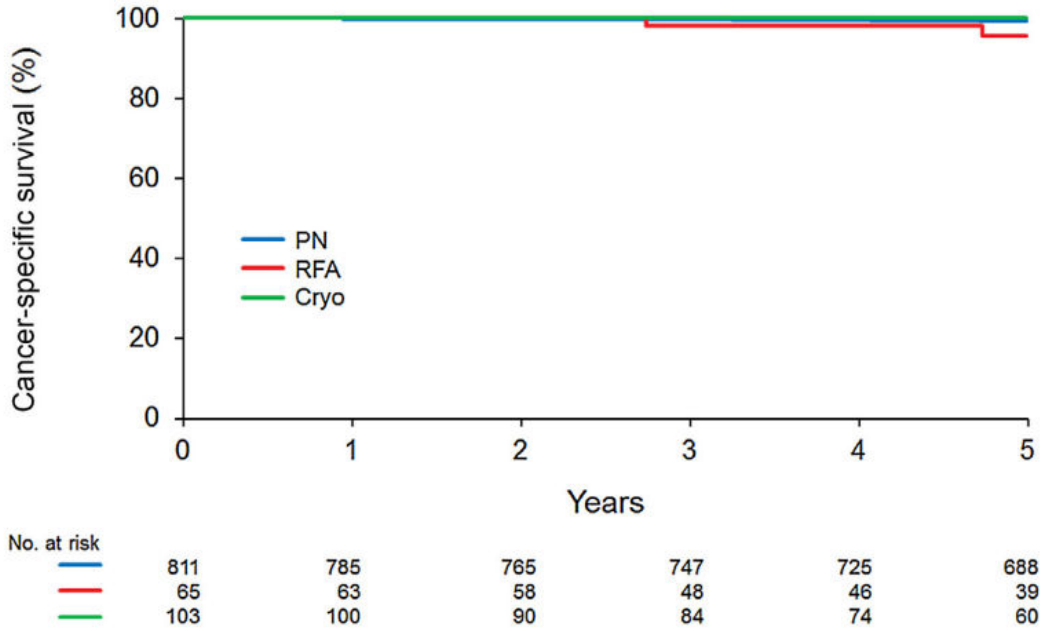




Feature	*n* (%)			*p* value
	PN *N* = 1055	RFA *N* = 180	Cryoablation *N* = 187	
Male sex	646 (61)	114 (63)	123 (66)	0.5
Race (*N* = 1337)				
White	943 (95)	164 (98)	175 (97)	0.8
Black/African American	14 (1)	2 (1)	1 (1)	
Asian	10 (1)	1 (1)	1 (1)	
American Indian/Alaskan	8 (1)	0	2 (1)	
Other	14 (1)	0	2 (1)	
Histologic subtype				
Unknown (not biopsied)	0	47 (26)	14 (7)	<0.001
Benign	220 (21)	60 (33)	65 (35)	
RCC	835 (79)	73 (41)	108 (58)	
Subset with RCC				
Histology				
Clear cell	559 (67)	38 (52)	73 (68)	0.019
Papillary	153 (18)	20 (27)	20 (19)	
Chromophobe	55 (7)	3 (4)	1 (1)	
Collecting duct	1 (<1)	0	0	
Not indicated	67 (8)	12 (16)	14 (13)	
Grade				
Not indicated	7 (1)	16 (22)	22 (20)	<0.001
1	173 (21)	24 (33)	26 (24)	
2	567 (68)	31 (42)	51 (47)	
3	84 (10)	2 (3)	9 (8)	
4	4 (<1)	0	0	

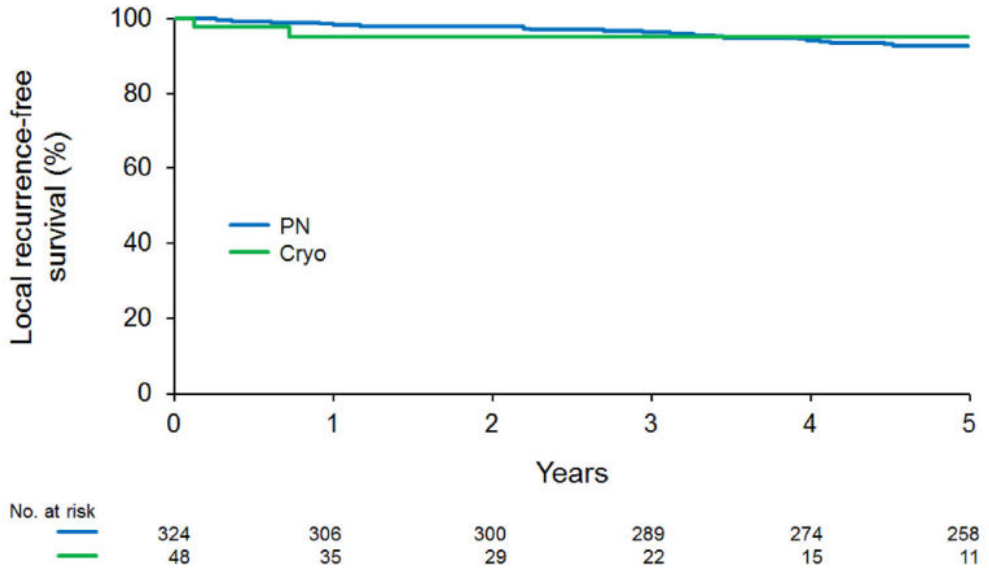
Results

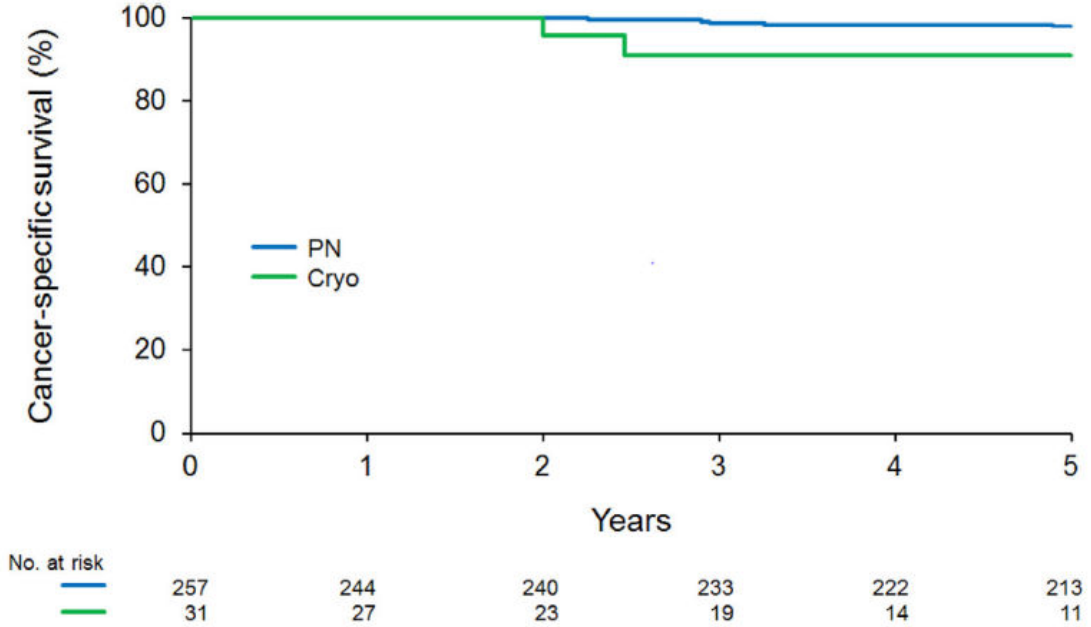

Local recurrence-free survival (%)
100
80
60
40
20
0
PN
RFA
Cryo
0
1
2
3
4
5
Years
No. at risk
1 055 1 018 955 964 927 880
175 154 126 110 94 76
178 153 128 111 89 67


Cancer-specific survival (%)
100
80
60
40
20
0
PN
RFA
Cryo
0
1
2
3
4
5
Years
No. at risk
811 785 765 747 725 688
65 63 58 48 46 39
103 100 90 84 74 60

Feature	*n* (%)		*p* value
	PN *N* = 324	Cryoablation *N* = 52	
Male sex	222 (68)	39 (75)	0.4
Race (*N* = 356)			
White	291 (95)	48 (98)	1
Black/African American	1 (<1)	0	
Asian	3 (1)	0	
American Indian/Alaskan	5 (2)	0	
Other	7 (2)	1 (2)	
Histologic subtype			
Unknown (not biopsied)	0	1 (2)	0.003
Benign	52 (16)	16 (31)	
RCC	272 (84)	35 (67)	
Subset with RCC			
Histology			
Clear cell	181 (67)	24 (69)	0.007
Papillary	59 (22)	4 (11)	
Chromophobe	18 (7)	0	
Not indicated	14 (5)	7 (20)	
Grade			
Not indicated	3 (1)	8 (23)	<0.001
1	27 (10)	8 (23)	
2	193 (71)	16 (46)	
3	49 (18)	2 (6)	
4	0	1 (3)	

Results


Local recurrence-free survival (%)
100
80
60
40
20
0
PN
Cryo
0
1
2
3
4
5
Years
No. at risk
324 306 300 289 274 258
48 35 29 22 15 11


Cancer-specific survival (%)
100
80
60
40
20
0
PN
Cryo
0
1
2
3
4
5
Years
No. at risk
257 244 240 233 222 213
31 27 23 19 14 11

Costs

Abdominal Radiology (2023) 48:411–417
https://doi.org/10.1007/s00261-022-03692-1

KIDNEYS, URETERS, BLADDER, RETROPERITONEUM

Check for updates

Cost-effectiveness analysis: percutaneous microwave ablation vs robotic-assisted partial nephrectomy for small renal masses

Clinton Yeaman[1] · Rebecca Marchant[3] · Jennifer M. Lobo[1,2] · Anthony DeNovio[3] · Lauren O'Connor[4] · Tanya Wanchek[2] · Christopher Ballantyne[1] · Drew L. Lambert[5] · Ayman Mithqal[5] · Noah Schenkman[1]

Received: 15 July 2022 / Revised: 22 September 2022 / Accepted: 26 September 2022 / Published online: 9 October 2022

The model revealed MWA had a mean cost of $8,507 and 12.51 QALYs.
RA-PN had a mean cost of $21,521 and 12.43 QALYs.
Conclusion: MWA is more cost-efective for the treatment of SRM when compared with RA-PN and accounting for complication and recurrence risk.

EAU guidelines 2024

Recommendations	Strength rating
Offer active surveillance (AS) or tumour ablation (TA) to frail and/or comorbid patients with small renal masses.	Weak
Perform a percutaneous renal mass biopsy prior to, and not concomitantly with, TA.	Strong
When TA or AS are offered, discuss with patients about the harms/benefits with regards to oncological outcomes and complications.	Strong
Do not routinely offer TA for tumours > 3 cm and cryoablation for tumours > 4 cm.	Weak

Recommendations	Strength rating
Offer surgery to achieve cure in localised renal cell cancer.	Strong
Offer partial nephrectomy (PN) to patients with T1 tumours.	Strong
Offer PN to patients with T2 tumours and a solitary kidney or chronic kidney disease, if technically feasible.	Weak
Do not perform ipsilateral adrenalectomy if there is no clinical evidence of invasion of the adrenal gland.	Strong
Do not offer an extended lymph node dissection to patients with organ-confined disease.	Weak
Offer embolisation to patients unfit for surgery presenting with massive haematuria or flank pain.	Weak

Quality of Life After Renal Cell Carcinoma Treatment

Nordic Advanced Renal Cancer Surgery Sourse,
Stockholm, 2025

Learning Objective(s)

- Quality of life is an essential outcome to consider when choosing treatment

- The evidence regarding quality of life after surgery for renal cell carcinoma (RCC) is sparse

What is Quality of Life?

"A state of complete physical, mental and social well-being and not merely the absence of disease"

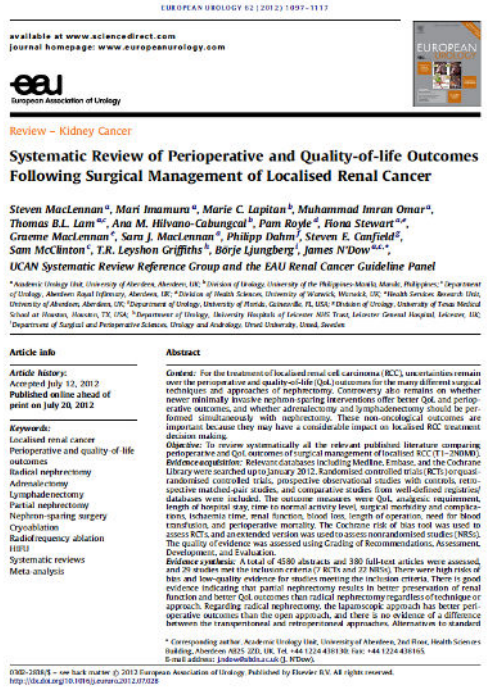
World Health Organization. Basic documents: Constitution of the World Health Organization Geneva: World Health Organization; 2020

Why talk about Quality of Life?

Treatment of localised renal cell carcinoma (RCC), uncertainties remain over the perioperative and quality-of-life (QoL) outcomes for the many different surgical techniques and approaches of nephrectomy.

What do we know?

Literature overview



EUROPEAN UROLOGY 62 (2012) 1097–1117

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

European Association of Urology

Review – Kidney Cancer

Systematic Review of Perioperative and Quality-of-life Outcomes Following Surgical Management of Localised Renal Cancer

Steven MacLennan[a], Mari Imamura[a], Marie C. Lapitan[b], Muhammad Imran Omar[a], Thomas B.L. Lam[a,c], Ana M. Hilvano-Cabungcal[b], Pam Royle[d], Fiona Stewart[a,e], Graeme MacLennan[e], Sara J. MacLennan[a], Philipp Dahm[f], Steven E. Canfield[g], Sam McClinton[c], T.R. Leyshon Griffiths[h], Börje Ljungberg[i], James N'Dow[a,c,], UCAN Systematic Review Reference Group and the EAU Renal Cancer Guideline Panel*

Article info

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Keywords:
Localised renal cancer
Perioperative and quality-of-life outcomes
Radical nephrectomy
Adrenalectomy
Lymphadenectomy
Partial nephrectomy
Nephron-sparing surgery
Cryoablation
Radiofrequency ablation
HIFU
Systematic reviews
Meta-analysis

Abstract

Context: For the treatment of localised renal cell carcinoma (RCC), uncertainties remain over the perioperative and quality-of-life (QoL) outcomes for the many different surgical techniques and approaches of nephrectomy. Controversy also remains on whether newer minimally invasive nephron-sparing interventions offer better QoL and perioperative outcomes, and whether adrenalectomy and lymphadenectomy should be performed simultaneously with nephrectomy. These non-oncological outcomes are important because they may have a considerable impact on localised RCC treatment decision making.

Objective: To review systematically all the relevant published literature comparing perioperative and QoL outcomes of surgical management of localised RCC (T1–2N0M0).

Evidence acquisition: Relevant databases including Medline, Embase, and the Cochrane Library were searched up to January 2012. Randomised controlled trials (RCTs) or quasi-randomised controlled trials, prospective observational studies with controls, retrospective matched-pair studies, and comparative studies from well-defined registries/databases were included. The outcome measures were QoL, analgesic requirement, length of hospital stay, time to normal activity level, surgical morbidity and complications, ischaemia time, renal function, blood loss, length of operation, need for blood transfusion, and perioperative mortality. The Cochrane risk of bias tool was used to assess RCTs, and an extended version was used to assess nonrandomised studies (NRSs). The quality of evidence was assessed using Grading of Recommendations, Assessment, Development, and Evaluation.

Evidence synthesis: A total of 4580 abstracts and 380 full-text articles were assessed, and 20 studies met the inclusion criteria (7 RCTs and 13 NRSs). There were high risks of bias and low-quality evidence for studies meeting the inclusion criteria. There is good evidence indicating that partial nephrectomy results in better preservation of renal function and better QoL outcomes than radical nephrectomy regardless of technique or approach. Regarding radical nephrectomy, the laparoscopic approach has better perioperative outcomes than the open approach, and there is no evidence of a difference between the transperitoneal and retroperitoneal approaches. Alternatives to standard

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TOPIC PAPER

Quality of life outcomes in patients with localised renal cancer: a literature review

Sabrina H. Rossi[1] · Tobias Klatte[1,2] · Grant D. Stewart[1]

Received: 31 April 2018 / Accepted: 18 July 2018 / Published online: 26 July 2018

Abstract

Purpose Patients with localised renal cell carcinoma (RCC) can expect excellent oncologic outcomes. As such, there has been a shift towards maximising health-related quality of life (HRQoL). A greater understanding of HRQoL outcomes associated with different treatment options for RCC can facilitate patient-centred care, shared decision-making and enable cost utility analyses to guide health policies. The aim of this literature review was to evaluate the evidence regarding HRQoL following different management strategies for localised RCC.

Methods Three databases were searched to identify studies reporting HRQoL in patients with localised renal cancer, including Medline, the Tufl's Medical Centre Cost Effectiveness Analysis registry and the EuroQol website.

Results Considerable methodological heterogeneity was noted. Laparoscopic nephrectomy was associated with significantly better short-term physical function compared to open surgery, although the effect on mental function was inconclusive. Nephron-sparing surgery was associated with better physical function compared to radical surgery. Patients' perception of remaining renal function was a significant independent predictor of HRQoL, rather than surgery type. Tumour size, stage, post-operative complications, age, body mass index, occupational status, educational level and comorbidities were significant predictors of HRQoL. Only three studies were available regarding non-surgical management options and very little data were available regarding the impact of follow-up protocols and long-term effects of "cancer survivorship."

Conclusion There is a need for validated and reproducible RCC-specific HRQoL instruments and standardisation amongst studies to enable comparisons. Increased awareness regarding determinants of poor HRQoL may enable high-risk patients to receive tailored support.

Keywords Localised renal cell carcinoma · Quality of life · Utility · Nephrectomy · Review

Abbreviations

AS	Active surveillance
CARE	Convalescence and Recovery Evaluation
CARES-SF	Cancer Rehabilitation Evaluation System-Short Form
DISSRM	Delayed Intervention and Surveillance for Small Renal Masses
EASE	European Active SurveillancE of renal cell carcinoma study
EORTC-QLQ-C30	European Organization for Research and Treatment of Cancer-Quality of Life Questionnaire-C30
EQ-5D	EuroQol questionnaire
FACT-G	Functional Assessment of Cancer Therapy-General
FKSI	Functional Assessment of Cancer Therapy-Kidney Symptom Index
GHQ	General Health Questionnaire
HADS	Hospital Anxiety and Depression Scale
HRQoL	Health-related quality of life
IES-R	Impact of Events Scale-Revised
LPN	Laparoscopic partial nephrectomy

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s00345-018-2415-3) contains supplementary material, which is available to authorized users.

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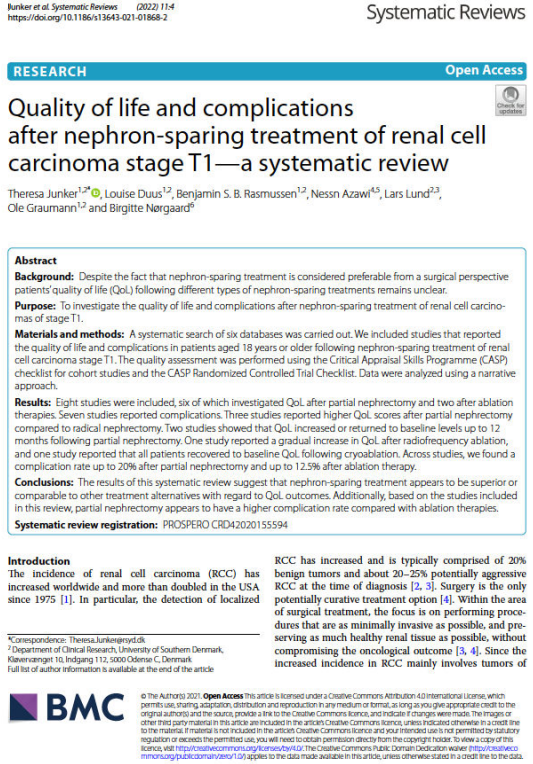

Junker et al. Systematic Reviews (2022) 11:4
https://doi.org/10.1186/s13643-021-01868-2

Systematic Reviews

RESEARCH Open Access

Quality of life and complications after nephron-sparing treatment of renal cell carcinoma stage T1—a systematic review

Theresa Junker[1,2*], Louise Duus[1,2], Benjamin S. B. Rasmussen[1,2], Nessn Azawi[4,5], Lars Lund[2,3], Ole Graumann[1,2] and Birgitte Nørgaard[6]

Abstract

Background: Despite the fact that nephron-sparing treatment is considered preferable from a surgical perspective patients' quality of life (QoL) following different types of nephron-sparing treatments remains unclear.

Purpose: To investigate the quality of life and complications after nephron-sparing treatment of renal cell carcinomas of stage T1.

Materials and methods: A systematic search of six databases was carried out. We included studies that reported the quality of life and complications in patients aged 18 years or older following nephron-sparing treatment of renal cell carcinoma stage T1. The quality assessment was performed using the Critical Appraisal Skills Programme (CASP) checklist for cohort studies and the CASP Randomized Controlled Trial Checklist. Data were analyzed using a narrative approach.

Results: Eight studies were included, six of which investigated QoL after partial nephrectomy and two after ablation therapies. Seven studies reported complications. Three studies reported higher QoL scores after partial nephrectomy compared to radical nephrectomy. Two studies showed that QoL increased or returned to baseline levels up to 12 months following partial nephrectomy. One study reported a gradual increase in QoL after radiofrequency ablation, and one study reported that all patients recovered to baseline QoL following cryoablation. Across studies, we found a complication rate up to 20% after partial nephrectomy and up to 12.5% after ablation therapy.

Conclusions: The results of this systematic review suggest that nephron-sparing treatment appears to be superior or comparable to other treatment alternatives with regard to QoL outcomes. Additionally, based on the studies included in this review, partial nephrectomy appears to have a higher complication rate compared with ablation therapies.

Systematic review registration: PROSPERO CRD42020155594

Introduction

The incidence of renal cell carcinoma (RCC) has increased worldwide and more than doubled in the USA since 1975 [1]. In particular, the detection of localized RCC has increased and is typically comprised of 20% benign tumors and about 20–25% potentially aggressive RCC at the time of diagnosis [2, 3]. Surgery is the only potentially curative treatment option [4]. Within the area of surgical treatment, the focus is on performing procedures that are as minimally invasive as possible, and preserving as much healthy renal tissue as possible, without compromising the oncological outcome [3, 4]. Since the increased incidence in RCC mainly involves tumors of

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Nordic Advanced Renal Cancer Surgery Sourse,
Stockholm, 2025

What do we know?

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Review comparing perioperative and QoL outcomes of surgical management of localised RCC (T1-2N0M0).

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There were high risks of bias and low-quality evidence for studies meeting the inclusion criteria.

Conclusions:

Partial nephrectomy results in significantly better preservation of renal function over radical nephrectomy.

For tumours where partial nephrectomy is not technically feasible, there is no evidence that alternative procedures or techniques are better than LRN in terms of perioperative or QoL outcomes.

The current evidence base has major limitations due to studies of low methodological quality marked by high risks of bias

What do we know?

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TOPIC PAPER

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		EQ-5D	EuroQol questionnaire
		FACT-G	Functional Assessment of Cancer Therapy-General
		FKSI	Functional Assessment of Cancer Therapy-Kidney Symptom Index
		GHQ	General Health Questionnaire
		HADS	Hospital Anxiety and Depression Scale
		HRQoL	Health-related quality of life
		IES-R	Impact of Events Scale Revised
		LPN	Laparoscopic partial nephrectomy

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s00345-018-2415-3) contains supplementary material, which is available to authorized users.

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A greater understanding of HRQoL outcomes associated with different treatment options for RCC can facilitate patient-centred care, shared decision-making and enable cost utility analyses to guide health policies.

Methods: Three databases were searched to identify studies reporting HRQoL in patients with localised renal cancer.

Results: Considerable methodological heterogeneity was noted.

a) **Laparoscopic nephrectomy** was associated with significantly better short-term physical function compared to open surgery, although the effect on mental function was inconclusive.

b) **Nephron-sparing surgery** was associated with better physical function compared to radical surgery. Patients' perception of remaining renal function was a significant independent predictor of HRQoL, rather than surgery type

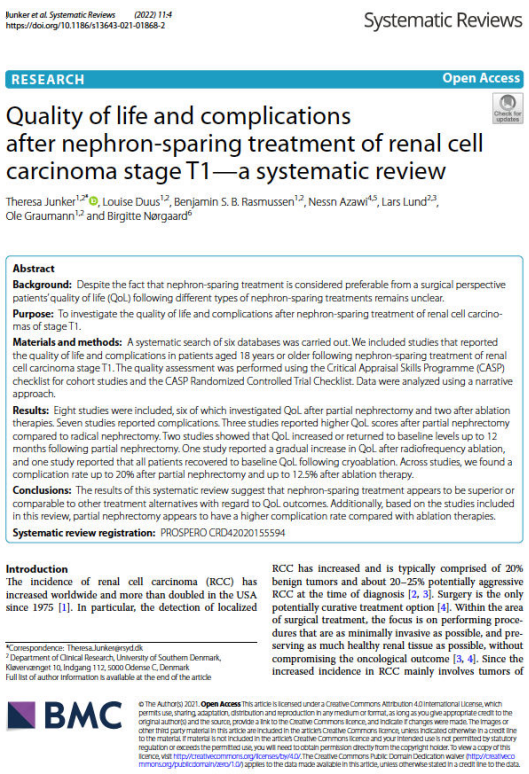
c) Tumour size, stage, post-operative complications, age, body mass index, occupational status, educational level and comorbidities were significant predictors of HRQoL.

d) Only three studies were available regarding non-surgical management options and very little data were available regarding the impact of follow-up protocols and long-term effects of "cancer survivorship."

Conclusion: There is a need for validated and reproducible RCC-specific HRQoL instruments and standardisation amongst studies to enable comparisons. Increased awareness regarding determinants of poor HRQoL may enable high-risk patients to receive tailored support.

What do we know?

Literature overview



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Systematic Reviews

RESEARCH Open Access

Quality of life and complications after nephron-sparing treatment of renal cell carcinoma stage T1—a systematic review

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Abstract

Background: Despite the fact that nephron-sparing treatment is considered preferable from a surgical perspective patients' quality of life (QoL) following different types of nephron-sparing treatments remains unclear.

Purpose: To investigate the quality of life and complications after nephron-sparing treatment of renal cell carcinomas of stage T1.

Materials and methods: A systematic search of six databases was carried out. We included studies that reported the quality of life and complications in patients aged 18 years or older following nephron-sparing treatment of renal cell carcinoma stage T1. The quality assessment was performed using the Critical Appraisal Skills Programme (CASP) checklist for cohort studies and the CASP Randomized Controlled Trial Checklist. Data were analyzed using a narrative approach.

Results: Eight studies were included, six of which investigated QoL after partial nephrectomy and two after ablation therapies. Seven studies reported complications. Three studies reported higher QoL scores after partial nephrectomy compared to radical nephrectomy. Two studies showed that QoL increased or returned to baseline levels up to 12 months following partial nephrectomy. One study reported a gradual increase in QoL after radiofrequency ablation, and one study reported that all patients recovered to baseline QoL following cryoablation. Across studies, we found a complication rate up to 20% after partial nephrectomy and up to 12.5% after ablation therapy.

Conclusions: The results of this systematic review suggest that nephron-sparing treatment appears to be superior or comparable to other treatment alternatives with regard to QoL outcomes. Additionally, based on the studies included in this review, partial nephrectomy appears to have a higher complication rate compared with ablation therapies.

Systematic review registration: PROSPERO CRD42020155594

Introduction

The incidence of renal cell carcinoma (RCC) has increased worldwide and more than doubled in the USA since 1975 [1]. In particular, the detection of localized RCC has increased and is typically comprised of 20% benign tumors and about 20–25% potentially aggressive RCC at the time of diagnosis [2, 3]. Surgery is the only potentially curative treatment option [4]. Within the area of surgical treatment, the focus is on performing procedures that are as minimally invasive as possible, and preserving as much healthy renal tissue as possible, without compromising the oncological outcome [3, 4]. Since the increased incidence in RCC mainly involves tumors of

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To investigate the quality of life and complications after nephron-sparing treatment of renal cell carcinomas of stage T1.

Materials and methods: A systematic search of six databases was carried out.

Results: Eight studies were included, six of which investigated QoL after partial nephrectomy and two after ablation therapies. Seven studies reported complications.

a) Three studies reported higher QoL scores after partial nephrectomy compared to radical nephrectomy.

b) Two studies showed that QoL increased or returned to baseline levels up to 12 months following partial nephrectomy.

c) One study reported a gradual increase in QoL after radiofrequency ablation

d) One study reported that all patients recovered to baseline QoL following cryoablation.

Across studies, we found a complication rate up to 20% after partial nephrectomy and up to 12.5% after ablation therapy.

Conclusions:

The results of this systematic review suggest that nephron-sparing treatment appears to be superior or comparable to other treatment alternatives with regard to QoL outcomes.

Partial nephrectomy appears to have a higher complication rate compared with ablation therapies.

Measurement tools

- **Generic questionnaires:** SF-36, SF-12, EQ-5D, HADS, SPQ, GHQ
- **Cancer specific questionnaires:** FACT-G, EORTC QLQ C30, Fear of recurrence
- **Renal cancer questionnaires:** FKSI, RCC-SI

RCT

BMJ Open. 2019 Jun 11;9(6):e030965. doi: 10.1136/bmjopen-2019-030965.

Protocol for a feasibility study of a cohort embedded randomised controlled trial comparing NE phron S paring T reatment (NEST) for small renal masses

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Affiliations + expand

PMID: 31189686 PMCID: PMC6577353 DOI: 10.1136/bmjopen-2019-030965

Small renal masses (SRMs; ≤4 cm) account for two-thirds of new diagnoses of kidney cancer.
There is an increasing concern regarding surgical overtreatment and the associated health burden in terms of morbidity and economy.
Aim: to assess if a novel trial design, the cohort embedded randomised controlled trial (RCT), will enable carrying out such a comparison.
Methods and analysis: Single-centre prospective cohort study of adults diagnosed with SRM (n=200) with an open label embedded interventional RCT comparing nephron sparing interventions. Cohort participants with biopsy-proven renal cell carcinoma eligible for both percutaneous cryoablation and partial nephrectomy will be randomly selected (1:1) and invited to consider percutaneous cryoablation (n=25). The comparator group will be robotic partial nephrectomy (n=25).
The primary outcome of this feasibility study is participant recruitment. Qualitative research techniques will assess barriers and recruitment improvement opportunities.
Secondary outcomes are participant trial retention, health-related quality of life, treatment complications, blood transfusion rate, intensive care unit admission and renal replacement requirement rates, length of hospital stay, time to return to pre-treatment activities, number of work days lost, and health technologies costs.

2024

Randomized Controlled Trial > Eur Urol. 2024 Apr;85(4):333-336.
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Nephron Sparing Treatment (NEST) for Small Renal Masses: A Feasibility Cohort-embedded Randomised Controlled Trial Comparing Percutaneous Cryoablation and Robot-assisted Partial Nephrectomy

Joana B Neves [1], Hannah Warren [1], Joseph Santiapillai [1], Nicola Rode [2], David Cullen [2], Menelaos Pavlou [3], Miles Walkden [4], Prasad Patki [2], Ravi Barod [1], Faiz Mumtaz [1], Michael Aitchison [2], Steven Bandula [5], Elena Pizzo [6], Veronica Ranieri [7], Norman Williams [8], William Wildgoose [9], Kurinchi Gurusamy [8], Mark Emberton [10], Axel Bex [1], Maxine G B Tran [11]

Affiliations + expand

A total of 200 participants were recruited to the cohort, of whom 50 were enrolled in the RCT.

In the CRA intervention arm, 84% consented (95% confidence interval [CI] 64-95%) and 76% (95% CI 55-91%) received CRA;
100% (95% CI 86-100%) of the control arm underwent RPN.
In the RPN group 2/25 (8%) were converted intra-operative to radical nephrectomy.
Postoperative complications (Clavien-Dindo grade 1-2) occurred in 12% of the CRA group and 29% of the RPN group.
The median length of hospital stay was shorter for CRA (1 vs 2 d; p = 0.019).
At 6 mo, the mean change in renal function was -5.0 ml/min/1.73 m2 after CRA and -5.8 ml/min/1.73 m2 after RPN.

CONCLUSION
This study demonstrates the feasibility of a cohort embedded RCT comparing CRA and RPN

Conclusion

- Expanded use of validated measurement tools
- Prospective randomized studies with long-term follow-up
- Quality of Life outcomes should be included in all clinical studies

Questions