

Laparoscopic cryoablation of small renal tumors – does anatomical tumor complexity effect treatment outcome?

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Background

Renal cryoablation has been the modality of choice for localized pT1a renal tumors at Aarhus University Hospital in Denmark since 2005.

Anatomical tumor classification (eg. PADUA & RENAL score) were initially introduced as tools to evaluate complication risks in relation to nephron sparing surgery, but they may also prove to be useful when planning cryoablation.

Aim

To investigate the association between anatomical tumor complexity and treatment failure in relation to laparoscopic cryoablation of small renal masses.

Material and methods

With approval from the Danish National Health and Medicines Authority a review of a Aarhus Cryoablation Register was performed.

A total of 120 patients with a biopsy verified pT1a renal tumor and treated with primary laparoscopic cryoablation between Aug 05 and Dec 13 were identified.

Preoperative anatomical tumor complexity was assessed using PADUA score.

Postoperative follow-up was conducted using contrast enhanced CT with pathological contrast enhancement defined as attenuation levels > 25 HU.

Treatment failure was defined as residual unablated tumor, recurrent tumor or metastatic disease.

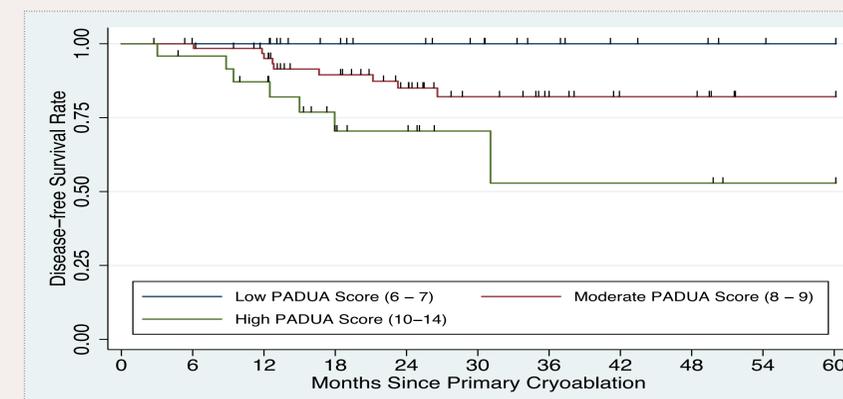
Results

A total of three patients (2.5%) were excluded as the PADUA score could not be obtained.

Baseline demographics are presented in the table below, numbers reported are mean values with 95%CI.

	PADUA Score low & moderate (6-9)	PADUA Score high (10-14)	p-value
Number of patients, n (%)	93 (79%)	24 (21%)	
Age, year	62 (60:64)	69 (65:73)	< 0.05
BMI, kg/m ²	27 (26:28)	29 (27:30)	n.s.
Tumor size, mm	26 (25:28)	31 (27:35)	n.s.
ASA score ≥ 3 (%)	26 (27)	6 (25)	n.s.
ECOG p.s. ≥ 2 (%)	31 (33)	6 (25)	n.s.
Follow-up, months	25 (21:29)	18 (12:24)	n.s.

Treatment failure was diagnosed in 8/93 patients (8.6%) with a low-moderate PADUA score compared to 6/24 patients (25%) with a high PADUA score.



Patients with a high preoperative PADUA score was found to have a significantly higher risk of treatment failure compared to patients with a low/moderate PADUA score.

Age adjusted HR = 3.6 (95%CI: 1.3-10.2), p=0.02.

Conclusion

Patients with a high preoperative PADUA score have a significantly higher risk of treatment failure compared to patients with less anatomical complex tumors when treated with laparoscopic cryoablation.

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