



Michael Massari, MD, Padraic O'Malley, MD, Paul Crispen, MD
University of Florida Department of Urology

Background

- The complete response rate to BCG therapy in patients with high-risk non-muscle invasive bladder cancer (NMIBC) is as high as 80%.¹
- BCG is the standard for high risk NMIBC.
- Bladder tumor recurrences after nephroureterectomy for patients with a history of upper tract urothelial carcinoma occurs in 15% to 50% of cases.²
- The genetic profile of upper tract urothelial carcinoma (UTUC) differs from urothelial carcinoma arising from the bladder urothelium.³
- Recent retrospective series have suggested increased rate of bladder cancer recurrence and progression for NMIBC treated with BCG in patients with a history of UTUC.^{2,4}

METHODS

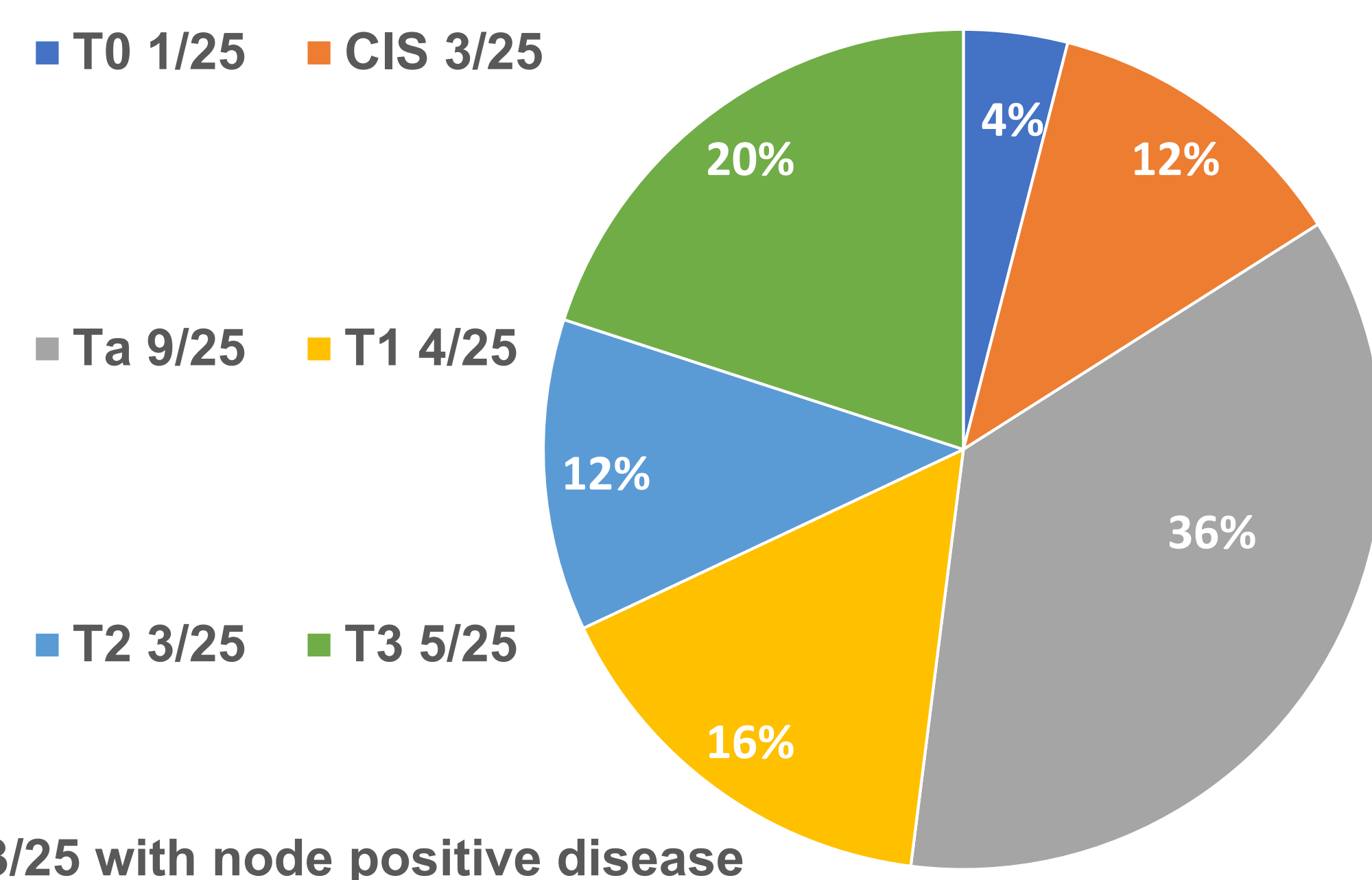
- A single institution retrospective review of patients who underwent nephroureterectomy for upper tract urothelial carcinoma from 2009 to 2021 was performed.
- Patients were included if they developed NMIBC after nephroureterectomy and subsequently received induction BCG with or without maintenance.
- A control cohort was then formed using a pre-existing database of patients with primary NMIBC treated with BCG at our institution from 2009 to 2021. Patients in the control cohort were matched 2:1 by stage of NMIBC.
- Our primary outcome was intravesical recurrence free survival. Secondary outcomes were stage of recurrence, time to recurrence, progression to cystectomy, and progression to metastatic disease.

Demographics

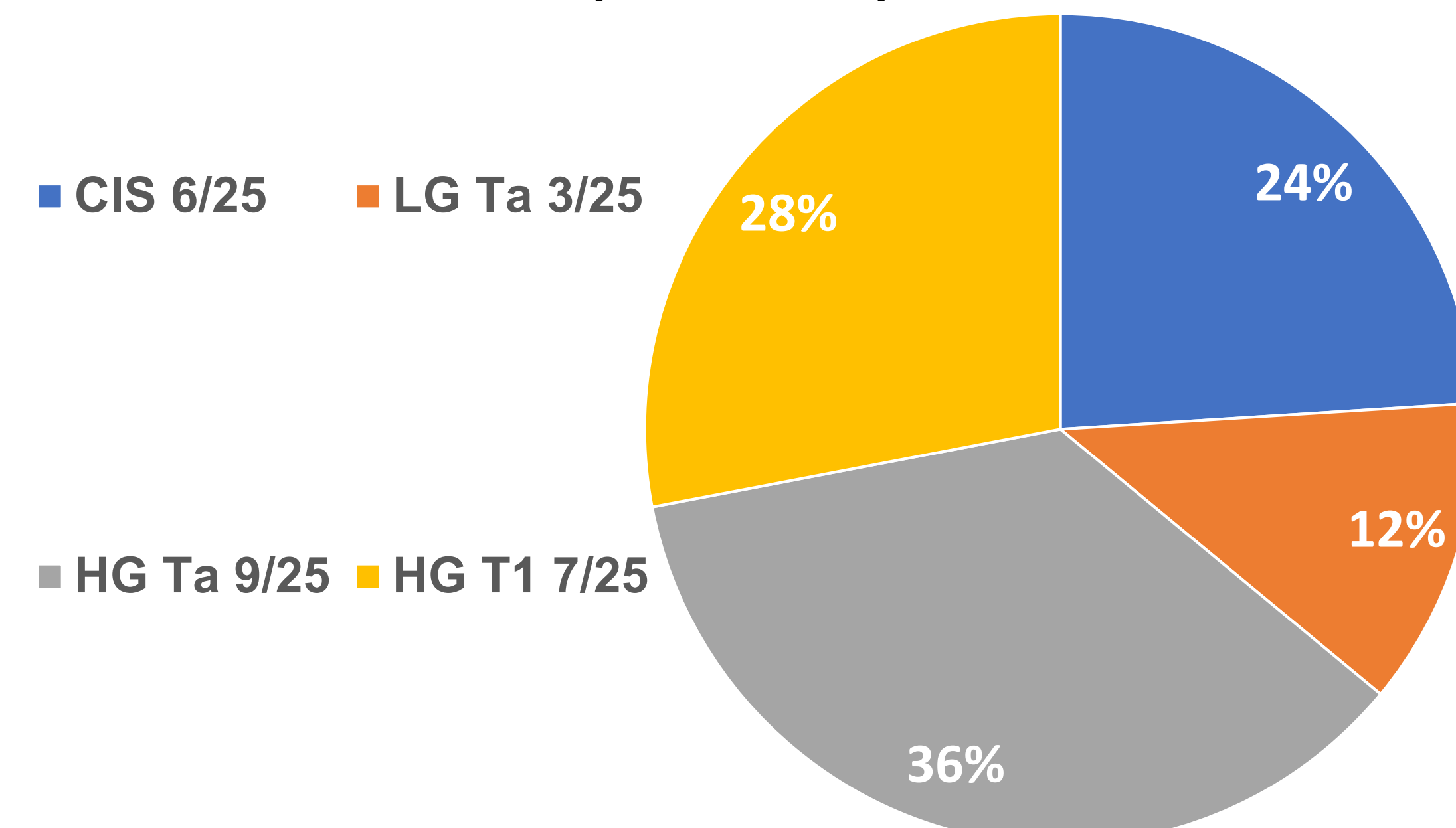
	History of UTUC	Primary Bladder (Control)	p-Value
Subjects (N)	25	50	---
Age (years)	71	67	0.725
Male (%)	80	78	1.00
Mean Follow-up (Months)	30 (SD 26)	71 (SD 36)	<0.001

Oncologic Characteristics of Study Group

Upper Tract Pathology*

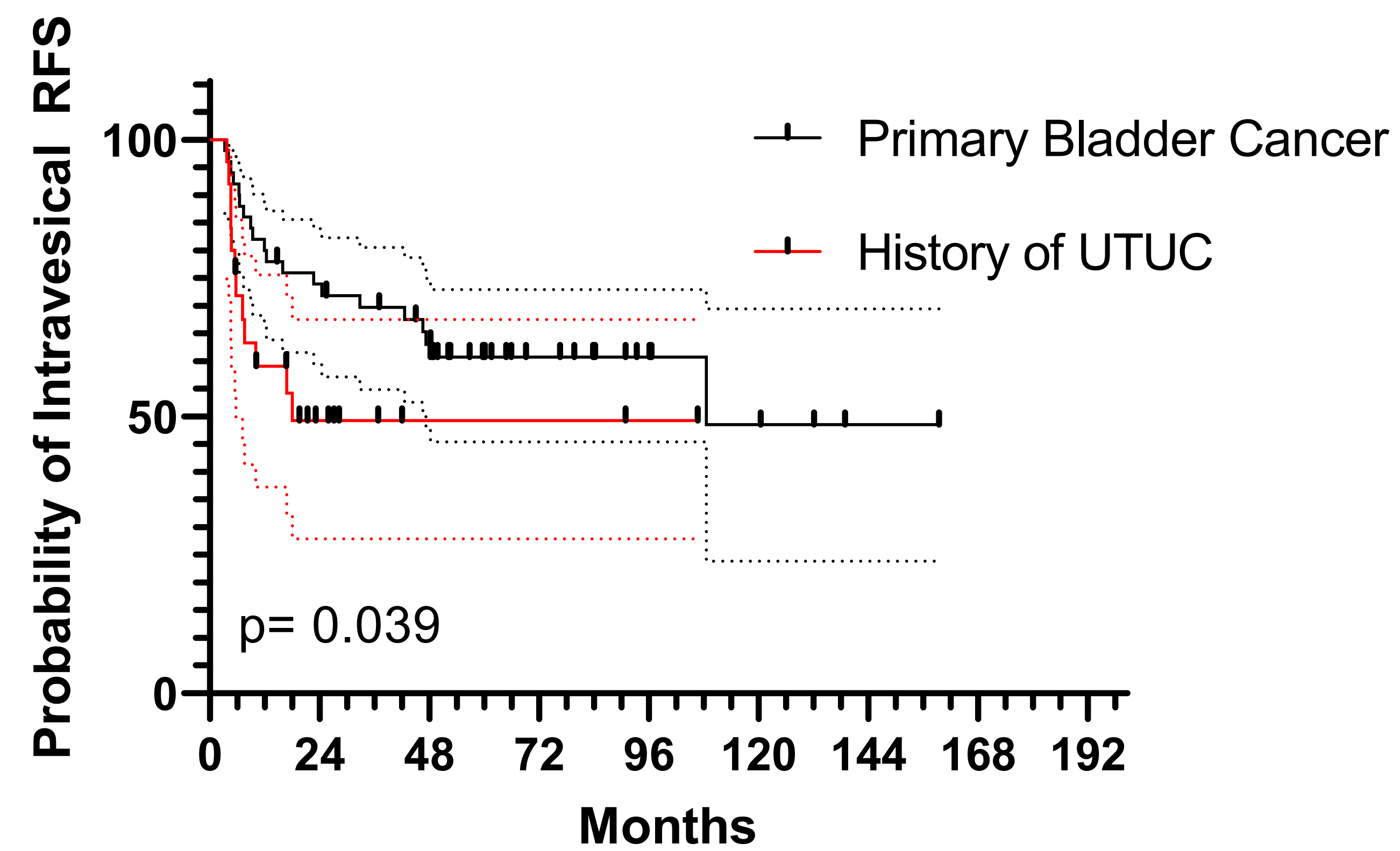


Stage of Bladder Cancer (Pre BCG)

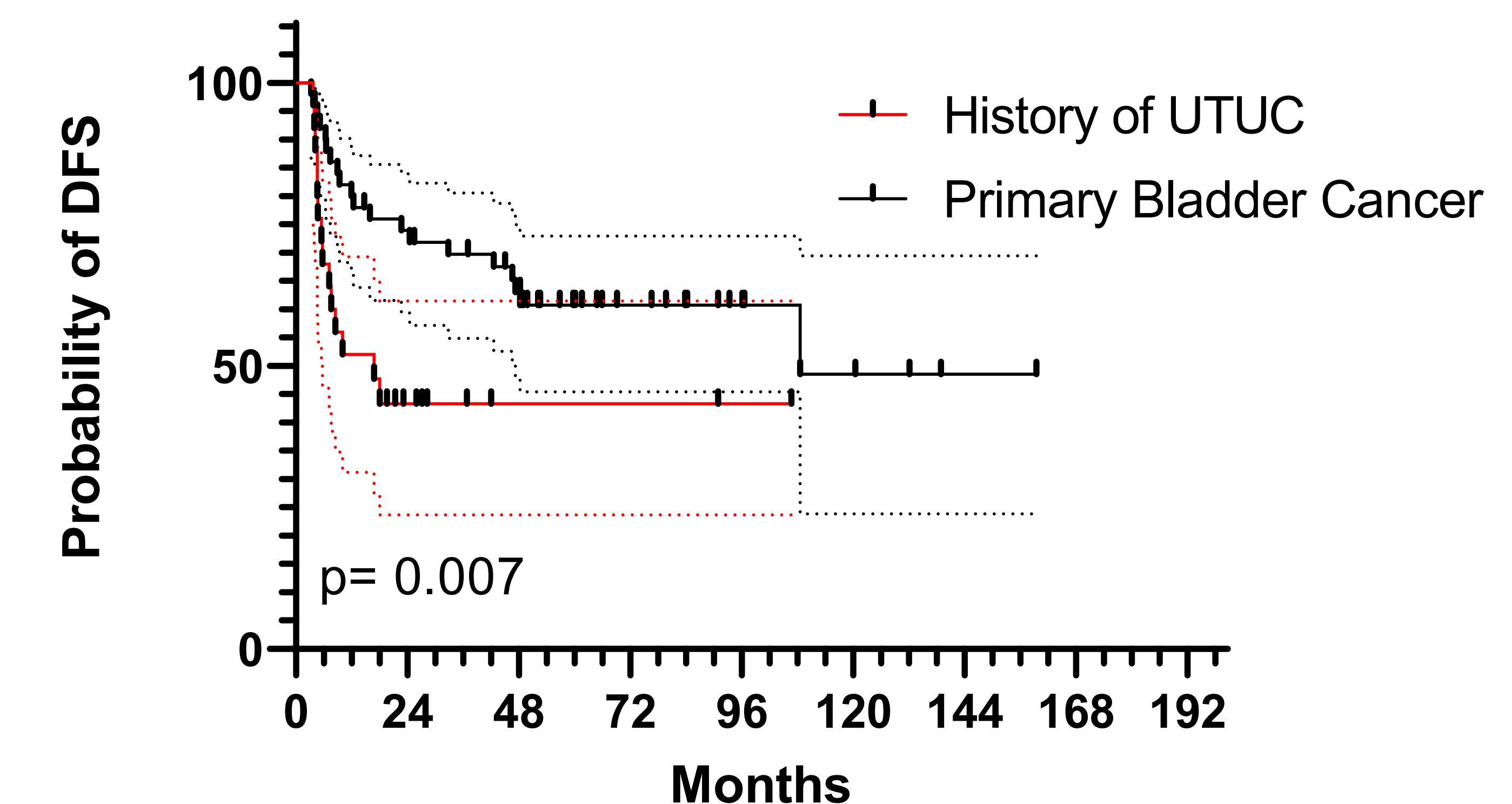


RESULTS

Intravesical Recurrence Free Survival



Disease Free Survival



	History of UTUC	Primary Bladder (Control)	p-Value
Rate of bladder tumor recurrence after BCG	52%	40%	0.338
Mean time to recurrence (Months)	7.0 (SD 4.8)	23.5 (SD 25.6)	0.0195
Rate of progression to Metastatic Disease	24%	2%	0.002
Stage of BTR after BCG	Tis 33% Ta 33% T1 8% T1is 8% T2 17% PUNLMP 0	5% 50% 30% 5% 0 10%	0.0598
Grade at BTR after BCG	LG 17% HG 83%	40% 60%	0.247
Rate of progression to Cystectomy	12%	8%	0.315

Conclusion

- Intravesical recurrence free survival, time to recurrence, progression to metastatic disease, and disease-free survival are worse in patients with a history of UTUC when compared to those with primary NMIBC after treatment with BCG for intravesical bladder cancer.
- Our series adds to the limited pool of literature demonstrating poor outcomes in patients with NMIBC after treatment for UTUC.
- Patients in this population should be counseled accordingly and more aggressive treatments for bladder tumor recurrence should be considered.

References

- Anastasiadis A, de Reijke TM. Best practice in the treatment of nonmuscle invasive bladder cancer. *Therapeutic Advances in Urology*. 2012;4(1):13-32. doi:10.1177/1756287211431976
- Miyake M, Tatsumi Y, Matsumoto H, et al. Outcomes of subsequent non-muscle-invasive bladder cancer treated with intravesical Bacillus Calmette-Guérin after radical nephroureterectomy for upper urinary tract urothelial carcinoma. *BJU Int*. 2018;121(5):764-773. doi:10.1111/bju.14111
- Sfakianos JP, Cha EK, Iyer G, et al. Genomic Characterization of Upper Tract Urothelial Carcinoma. *Eur Urol*. 2015;68(6):970-977. doi:10.1016/j.eururo.2015.07.039
- Bree KK, Hensley PJ, Brooks NA, et al. Impact of upper tract urothelial carcinoma on response to BCG in patients with non-muscle-invasive bladder cancer. *BJU Int*. 2021;128(5):568-574. doi:10.1111/bju.15344