



# Prognosis of Anal Carcinoma in HIV Infected Persons in the Anti-Retroviral Era

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## GENERAL STUDY DESIGN AND AIM

This was a population-based cohort study of male HIV infected and uninfected persons diagnosed with squamous cell carcinoma of the anus (SCCA) from 1997 to 2009.

**AIM: We utilized longitudinal, population-based data to compare treatment patterns and outcomes in patients with SCCA by HIV status.**

## BACKGROUND

- SCCA is a rare cancer, however, its incidence in the US is increasing among both women and men at a rate of ~ 2% per year.<sup>1,2</sup>
- SCCA is emerging as a leading source of morbidity in the HIV infected population, and is now the second most common non-AIDS defining malignancy.<sup>3</sup>
- Chemoradiotherapy (CRT) with 5-fluorouracil (5-FU) and mitomycin C is the standard treatment of care for early stage SCCA.
- Studies prior to the anti-retroviral era demonstrated worse outcomes in HIV infected patients with invasive SCCA - increased toxicities, decreased tolerability, subsequent treatment interruptions, and degradation of immune function.

## METHODS

- We used data from the Surveillance, Epidemiology, and End Results (SEER) registry linked to Medicare claims to evaluate outcomes among a cohort of male HIV+ and HIV- patients diagnosed with SCCA.
- We determined initial and subsequent courses of treatment using SEER data and using Medicare claims.

- 1) All-Cause Mortality
- 2) Anal Cancer-Specific Mortality
- 3) Anal Cancer Recurrence
- 4) Colostomy Placement

**Table 1. Outcomes of Interest.**

- Kaplan-Meier methods were employed to compare outcomes (Table 1) by HIV status and stage.
- We fitted Cox regression models with each outcome, compared by HIV status, adjusting for age, race/ethnicity, modified Charlson comorbidity score, initial course of treatment and diagnosis year.

## RESULTS

**Table 2. Demographic Characteristics by HIV Status and SCCA Stage.**

	Stage I/II		P-value	Stage III/IV		P-value
	HIV+ (%) N=312	HIV- (%) N=539		HIV+ (%) N=47	HIV- (%) N=93	
Age (time of diagnosis, SD)	48 (41 – 56)	70 (65 – 77)	<0.05	47 (37 – 53)	67 (62 – 74)	<0.05
Race						
Caucasian	200 (62)	469 (87)	<0.05	31 (66)	78 (83)	0.12
African American	76 (24)	36 (7)		8 (17)	8 (9)	
Hispanic	37 (12)	17 (3)		7 (15)	6 (7)	
Other	8 (2)	17 (3)		1 (2)	1 (1)	
Comorbidity Score						
0	208 (65)	249 (46)	0.05	33 (70)	37 (40)	>0.05
0 - 4	86 (27)	207 (39)		9 (19)	36 (39)	
> 4	27 (8)	83 (15)		5 (11)	20 (21)	
Year of Diagnosis						
1997-2001	62 (19)	128 (24)	0.05	9 (18)	23 (25)	0.69
2002-2005	113 (35)	20 (39)		19 (41)	38 (41)	
2006-2009	146 (46)	201 (37)		19 (41)	32 (34)	

**Table 3. Treatment Comparison by HIV Status and SCCA Stage.**

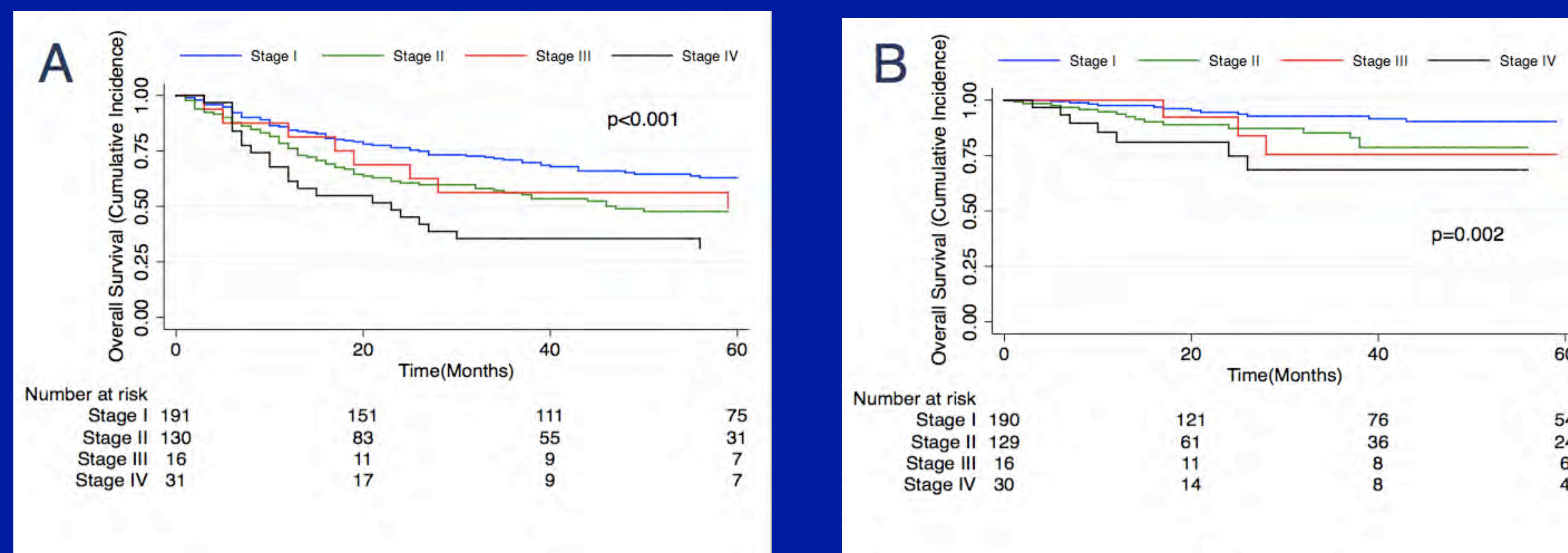
	Stage I/II		P-value	Stage III/IV		P-value
	HIV+ (%)	HIV- (%)		HIV+ (%)	HIV- (%)	
Initial Treatment						
Surgery Only	66 (21)	103 (19)	0.001	4 (9)	5 (5)	0.83
Surgery/Chemo	4 (1)	2 (0)		0	0	
Surgery/Chemo/ Radiation	97 (30)	123 (23)		16 (34)	15 (16)	
Radiation Only	29 (9)	79 (15)		4 (9)	18 (19)	
Chemo/Radiation	66 (21)	163 (30)		17 (36)	33 (36)	
Chemo Only	0	5 (1)		0	1 (1)	
No Treatment	10 (3)	24 (5)		0	6 (7)	
Total	29 (9)	79 (15)		4 (9)	18 (19)	
Radiation Only	321	539		47	93	

- Initial treatment varied by HIV status only among patients diagnosed with early stage SCCA (p<0.05).

**Table 4. Adjusted Outcomes by HIV Status.**

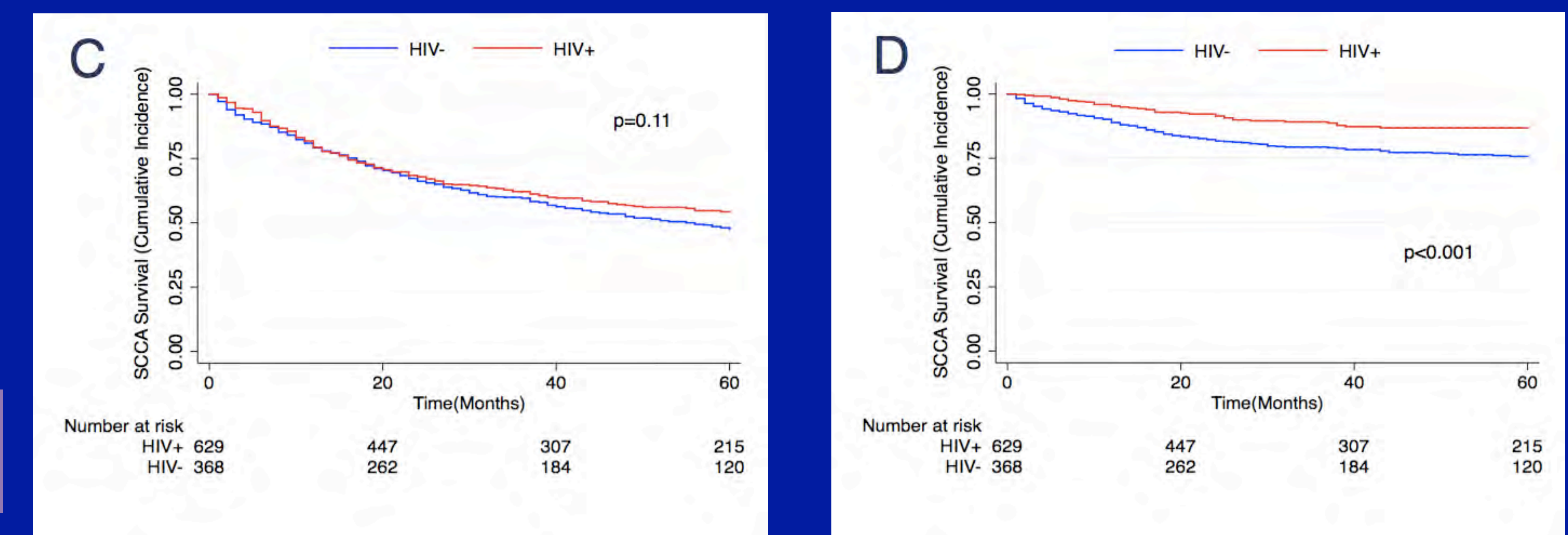
Outcome	Hazard Ratio	95% CI
Overall Survival	1.53	1.18 – 2.0
SCCA-Specific Survival	0.83	0.51 – 1.37
Colostomy	1.12	0.67 – 1.87
Recurrence	0.82	0.50 – 1.35

**Figures A and B. Overall Survival (A) and SCCA-Specific Survival (B) Among HIV+ Patients By SCCA Stage**



- In adjusted analyses, HIV patients had worse overall survival (HR 1.5, %CI: 1.2 - 2.0), but no difference in SCCA-specific survival, colostomy placement or cancer recurrence.
- The median overall survival in HIV+ SCCA patients ranged from 95 months (95% CI: 79 - 125) for stage 1 to 23 months (95% CI: 10 - 56) for stage IV.

**Figures C and D. Overall Survival (C) and SCCA-Specific Survival (D) by HIV+ Status.**



- In Kaplan-Meier analysis, HIV patients with later staged cancers had worse overall and SCCA-specific survival (Figures A and B).
- HIV+ patients had better SCCA-specific survival compared to HIV negative patients (Figures D), but no difference in overall survival (Figure C).

## CONCLUSIONS

- HIV+ patients with SCCA presented with earlier stage cancers, possibly related to anal cancer screening.
- Treatment patterns differed for early stage HIV+ patients compared to HIV- patients.
- In adjusted analyses, SCCA-specific survival did not differ by HIV status despite discordance in initial treatment, suggesting that overall survival differences were related to HIV-related sources of mortality.

## REFERENCES/ACKNOWLEDGEMENTS

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