



COMPARATIVE TREND ANALYSIS OF THE OUTCOMES OF ROBOT-ASSISTED LAPAROSCOPIC PROSTATECTOMY (RALP) BEFORE AND AFTER THE 2012 USPSTF RECOMMENDATION AGAINST PSA SCREENING.

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Introduction

- In 2012 the US Preventive Services Task Force (USPSTF)'s recommendation against PSA-based screening (D Recommendation) has resulted in a change in practice patterns of patients receiving robot assisted radical prostatectomy (RALP).
- We evaluated the possible influence of these changes on oncological and functional outcomes following RALP.

Materials and methods

- Retrospective analysis of men that underwent RALP between 2008 to 2018 with minimum 12 months follow up.
- The impact USPSTF statement against PSA screening on our functional and oncological outcomes, time-trend changes were investigated for these variables using a logistic regression model with two covariates and their interactions.
- The time numerical covariate designated for each successive year from 2008 to 2018, and a binary variable, indicating patients treated before (group 1) or after (group 2) the USPSTF statement.
- Nerve sparing definitions :-**
 - "Grade 1 Nerve sparing" - $\geq 95\%$ of overall NVB preservation.
 - "Grade 2 Nerve Sparing" - $\geq 75\%$ of overall NVB preservation.
 - "Grade 3 Nerve Sparing" - $\geq 50\%$ of overall NVB preservation.
 - "Grade 4 Nerve Sparing" - $< 50\%$ of overall NVB preservation.

Outcomes definitions.

- Potency** - ability to penetrate and satisfactorily complete the intercourse with or without PDE5 inhibitor usage.
- Trifecta** - combination of continence, potency and absence of biochemical recurrence.
- Pentafecta** outcomes is defined as trifecta along with absence of positive surgical margins and absence of post-operative complications.

Results

Baseline patient characteristics: -

- 8,564 patients with at least 12 months follow up
- The mean preoperative PSA increased from 6.0 to 7.4 ng/ml after the USPSTF recommendations.
- We detected statistically significant time-trend changes after 2013 including an increase in the positive slope of Gleason $\geq 4+4$ and non-organ-confined disease ($\geq pT3$) (Fig No 1).
- There was a 17% decrease in bilateral full (grade 1) NS and 19% increase in partial (grades 2 and 3) NS after the USPSTF statement.

Comparison of outcomes before and after the recommendation

- Overall, 90.6% of patients achieved full (pad free) continence, with significant continence decrease after 2013 (94.3% vs 87.5 %; $p < 0.001$).
- There was a significant increase in the negative slope and difference in the intercepts of postoperative 12-month continence indicating a break point in continence recovery at the end of 2012 (fig 1).
- Our sub-group analysis revealed that 12-month potency and continence rates were maintained in age < 55 years, SHIM > 22 and low volume disease.
- In this sub-group, pre- and post-recommendation potency rates were 93% vs. 88.7% in D'Amico class 1, and 88.9% vs. 83% in D'Amico class 2 patients, respectively ($p > 0.05$).
- Regardless of age, pre-operative SHIM score, and NS status, the overall potency rate at postoperative follow-up was 56.4%, with significant decline after 2013 (65.6% vs 48.6%; $p < 0.001$) and the trend analysis demonstrated similar effects as with continence after 2013.
- The downward trend in continence and potency represents the decrease availability of good candidates for good nerve sparing.
- There was no significant trend change for 12-month BCR rates after the USPSTF recommendation and overall slope remained constant (Fig No 1).
- Overall, the positive surgical margins (PSM) rate was 16.7%. Total PSM rate increased from 14.1% to 18.9% after the USPSTF recommendation ($p < 0.001$).
- However, PSM rates pertinent to each pathological stage did not change significantly after the 2012 recommendation ($< pT2$ ($p = .469$), $pT3a$ ($p = .948$), $pT3b$ ($p = .162$) $pT4$ ($p = .446$), supporting good oncologic technique.
- Trend changes were seen in trifecta and pentafecta too (Fig No 1).

Fig No 1: Comparison of trends patient outcomes after 2012 US task force recommendation.

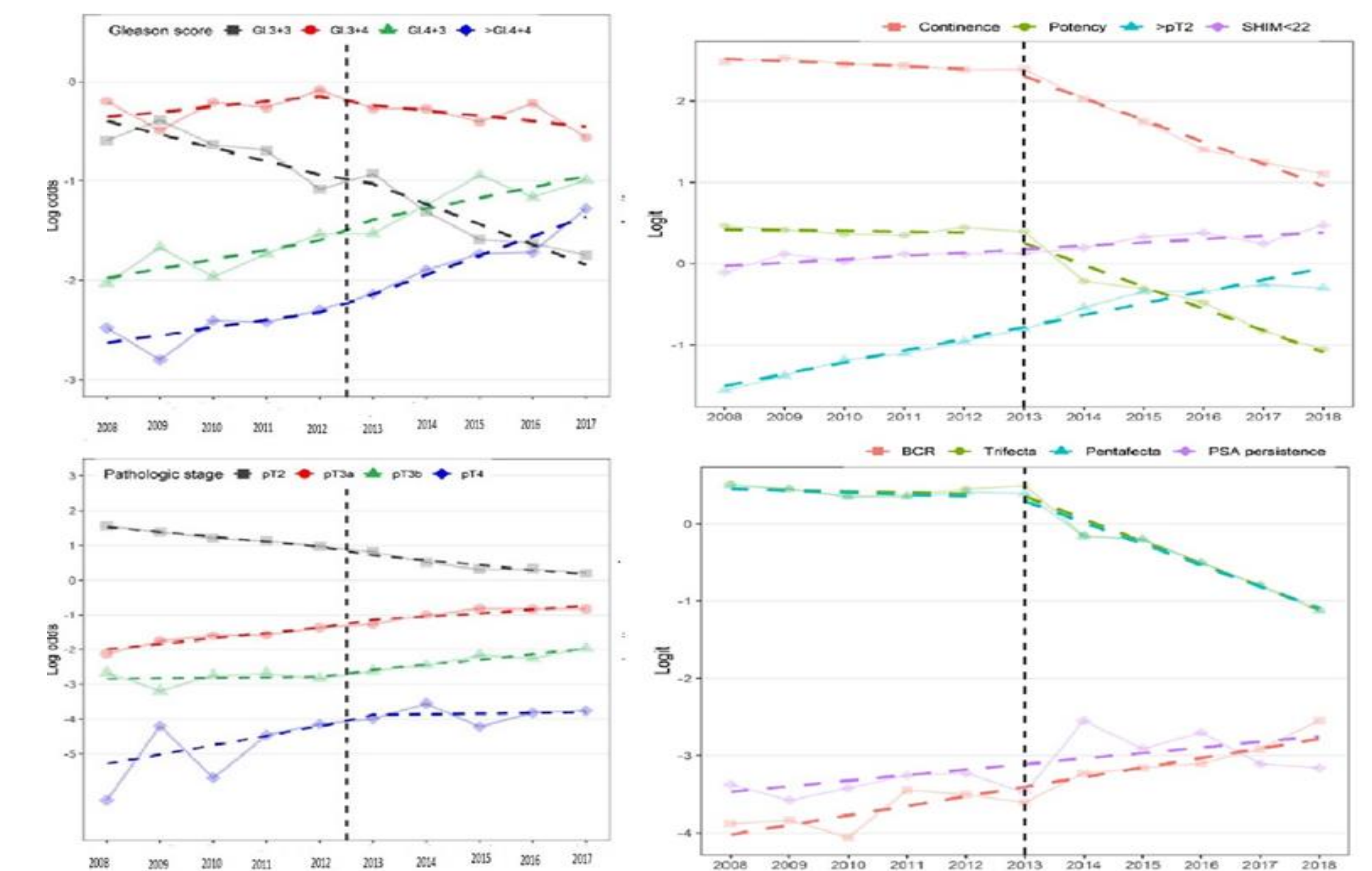


Table No 1: Comparison of outcomes before and after the recommendation stratified based on age, prep SHIM and D Amico class

PATIENT GROUPS	CONTINENCE			POTENCY			BCR		
	2008- 2012	2013-2018	P VALUE	2008- 2012	2013-2018	P VALUE	2008- 2012	2013-2018	P VALUE
AGE <55, SHIM>= 22 AND D AMICO CLASS 1	354(98.9)	232(97.5)	.191	333(93)	211(88.7)	.065	19(5.3)	9 (3.8)	.669
AGE < 55, SHIM>= 22 AND D AMICO CLASS 2	254(97.3)	260(96.3)	.504	232(88.9)	224(83)	.058	43(16.5)	29(10.7)	.033
AGE < 55, SHIM>= 22 AND D AMICO CLASS 3	54(96.4)	60(84.5)	.028	47(83.9)	45(63.4)	.010	14(25)	15(21.1)	.535
AGE 55-65, SHIM>= 22 AND D AMICO CLASS 1	409(95.6)	289(95.1)	.754	375(87.6)	231(76)	.000	24(5.6)	10(3.3)	.332
AGE 55-65, SHIM>= 22 AND D AMICO CLASS 2	341(96.6)	454(93.6)	.053	292(82.7)	339(69.9)	.000	53(15)	52(10.7)	.110
AGE 55-65, SHIM>= 22 AND D AMICO CLASS 3	102(93.6)	137(85.6)	.042	70(64.2)	69(43.1)	.001	28(25.7)	35(21.9)	.562
AGE > 65, SHIM>= 22 AND D AMICO CLASS 1	143(92.3)	82(82.8)	.021	100(64.5)	55(55.6)	.153	0	1(1)	.210
AGE > 65, SHIM>= 22 AND D AMICO CLASS 2	132(92.3)	192(80.7)	.002	97(67.8)	96(40.3)	.000	3(2.1)	11(4.6)	.439
AGE > 65, SHIM>= 22 AND D AMICO CLASS 3	43(95.6)	107(78.7)	.009	27(60)	49(36)	.005	5(11.1)	13(9.6)	.786

Conclusion

Following the 2012 USPSTF recommendation we have observed:-

- Worsening oncological features: higher grades and higher stage of disease.
- Increased volume of disease has led to less optimal candidates for Full NS and more candidates received Partial NS.
- Our adaptation to the oncologic changes has effected negatively the overall functional outcomes after surgery.
- In low risk candidates who received Full NS we were able to maintain the high quality outcomes. However, overall due to the worsening oncologic features there were less numbers of optimal candidates for full NS post USPSTF recommendation.