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Hacad C[1], Howard G[2], Zambon J P[1], Burti J S[1], Veloso V L[1], Almeida F[1]
1. Federal University of Sao Paulo, 2. Cornell University of New York

PELVIC FLOOR MUSCLE SURFACE ELECTROMYOGRAPHY AND RADICAL RETROPUBIC PROSTATECTOMY (RRP) : IS IT POSSIBLE TO PREDICT ANY PRE-OPERATIVE VARIABLE RELATED TO URINARY DYSFUNCTION AFTER RRP ?

Hypothesis / aims of study
The aim of this study was to evaluate pelvic floor muscle surface electromyography (SEMG) variables in patients underwent radical retropubic prostatectomy (RRP) and its association with urinary incontinence and quality of life questionnaires.

Study design, materials and methods
This study is a clinical prospective trial, with 38 patients with localized prostate cancer. Patients were asymptomatic (IPSS below 7) and continent before radical retropubic prostatectomy.
Inclusion criteria - men with diagnostic of prostate cancer (T1 and T2 stage). All patients received oral orientation and signed a voluntary informed consent term, previously approved by research ethical committee of the Federal University of São Paulo.
Exclusion criteria – men with previous pelvic radiotherapy treatments, systemic or neurologic diseases that affect pelvic organs and structures and men that refused to participate of this study.
All patients were submitted to pelvic floor SEMG assessment (*Glazer Protocol*) and Quality of Life questionnaires : IPSS (*International Prostate Symptoms Score*), UDI 6 (*Urinary Distress Inventory*), IIQ 7 (*Incontinence Impact Questionnaire*) and OAB V8 (*Overactive Bladder*). The evaluations were made by the same professional, before surgery and 1 month, 3 months and 6 months after RRP.
We used a SEMG Myotrac Infiniti device with an surface intra-anal sensor (*Thought Technology, Ltd., Montreal, Canada*) and "Glazer Protocol" software. A reference electrode, as part of the sensor, was placed on hipbone of the patient to avoid any electric interference. Patients were evaluated in supine and semi reclined position, with knees semi-flexion and external rotation of the heels, stretching the internal obturator muscle, in order to improve PFM SEMG readings.
After 6 months, patients were divided in 2 groups regarding continence and incontinence and PFM SEMG variables were compared. Incontinence was evaluated by number of pads/day and UDI 6 questionnaire.

Results
Thirty eight patients were evaluated, mean age of 63,13 ± 5,71 years. After 6 months of surgery, 20 patients (52%), mean age of 62,25 ±5,50 years, didn´t have any urinary leakage, and 18 patients (47%), mean age of 64,11 ±5,93 years, had any degree of urinary leakage.
Over the time, we have observed an increase of phasic contraction amplitude *(p=0,006)*, rest amplitude after phasic contraction *(p=0,04),* tonic contraction 10 seconds amplitude *(p=0,024)* and a decrease of median post baseline FFT *(p=0,016).* After 6 months, patients with urinary leakage had an increase of onset time tonic contraction 10 seconds *(p=0,022)* and patients without leakage had an increase of rest amplitude after phasic contraction *(p=0,009)* and post baseline amplitude *(0,021).*
We could not identify any pre operative EMG variables predictive of urinary incontinence after 6 months of RRP. Regarding quality of life questionnaires, we have observed that patients with overactive bladder symptoms (OABV8 >8) had higher post baseline FFT. Moreover, post baseline FFT had positive correlation with number of pads/day and UDI-6.

Table 1 - SEMG variables pre surgery and 1,3,6 months post prostatectomy (n=38)

	Moments				
	Pre	**1 month**	**3 month**	**6 month**	
SEMG Variables	**Mean (sd)**	**Mean (sd)**	**Mean (sd)**	**Mean (sd)**	p*
Phasic contraction amplitude (µV)	59,66 (34,39)	61,39 (28,10)	65,34 (25,55)	75,26 (32,18)	0,006
Rest amplitude after phasic contraction (µV)	11,01 (7,82)	15,09 (12,62)	14,32 (8,72)	13,37 (6,70)	0,04
Tonic contraction 10s amplitude (µV)	32,12 (17,90)	38,28 (22,01)	39,64 (18,08)	40,26 (17,23)	0,024
Post baseline amplitude (µV)	7,13 (9,09)	8,81 (8,23)	6,97 (3,78)	6,38 (3,56)	0,011
Post baseline median FFT (Hz)	110,66 (27,14)	109,76 (34,76)	103,05 (14,91)	97,11 (16,21)	0,016

Table 2. . SEMG variables of urinary loss group and dry group

Dry Group (n=20)	Pre	1 month	3 month	6 month	
	Mean (sd)	**Mean (sd)**	**Mean (sd)**	**Mean (sd)**	**p**
Rest amplitude after phasic contraction (µV)	11.85 (9.59)	17.53 (14.36)	12.79 (7.35)	14.05 (7.81)	**0.009 ***
Post baseline amplitude (µV)	6.51(4.90)	10.69 (10.51)	6.69 (3.86)	7.21 (4.00)	**0.021****
Post baseline median FFT (Hz)	107.45 (22.28)	112.47 (40.77)	104.16 (13.36)	96.67(13.57)	0.073

Urinary loss Group (n=18)	Pre	1 month	3 month	6 month	
	Mean (sd)	Mean (sd)	Mean (sd)	Mean (sd)	p
Onset time tonic contraction 10s (ms)	1.68 (0.44)	1.82 (0.43)	2.08 (0.44)	2.18 (0.52)	**0.022***
Post baseline amplitude (μV)	7.81 (12.34)	6.84 (4.30)	7.28 (3.77)	5.55 (2.93)	0.076
Post baseline median FFT (Hz)	114.22 (31.99)	106.89 (27.95)	101.89 (16.71)	97.56 (18.88)	0.272

Concluding message

After 6 months, we could not identify any pre operative EMG variables predictive of urinary incontinence. We've found some alterations in EMG variables over the time, but the real significance of our findings remains unclear. New researches are necessaries to clarify the EMG utilization to evaluate male urinary dysfunctions.

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Is this a clinical trial?	**Yes**
Is this study registered in a public clinical trials registry?	**No**
Is this a Randomised Controlled Trial (RCT)?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Federal University of São Paulo Ethical Comitee**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**