

Summary of Pelvic PT Distance Journal Club - Male Study Group 2015

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Special thanks to Craig Allingam

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Although research is being done we still have many unanswered questions. Most of the information in these documents is expert opinion (possibly the opinion of one person, although the groups was asked to review the document and give comment). Full answers to survey questions are provided so the reader can review and come to their own conclusion. As with many aspects of PT, this treatment must be individualized and there are probably several ways to arrive at the same result.

Introduction to Pelvic PT Distance Journal Club Male Study Group

I started this project out of my own need for more information on the rehabilitation of post prostatectomy UI (PPUI). Below is to outline of the process

1. A call was put out to the entire Pelvic PT Distance Journal Club email list for experts in the field of PPUI who were interested in participating in this project.
2. Beth started a draft of questions related to clinical practice
3. A survey was created by Dan using those questions. A link was distributed to the core group and 11 answered all survey questions
4. The first conference call was completed on May 13, 2015. The survey questions formed the basis of the discussion. The call was recorded and a transcript of the call was created. The transcript includes all contents of survey questions discussed. Bolded numbers are the question number of the survey followed by the question and the survey results. Summary of talk is in italics. References are included when able.
5. The core group was invited to make comments and add information to this transcript. Any members not able to attend the call were also invited to contribute.
6. The second call was on July 17, 2015. A similar format was followed but this call was not able to be recorded. A transcript was created and members were invited to make additions and comments.
7. Further refinement of the transcripts were completed by Beth adding references and clarifying comments made. Care was taken to preserve the full text comments provided by each core member on the original survey.
8. Beth later had a Skype conversation with Craig Allingham, Australian male physiotherapist and author of the book "Prostate recovery map". A few thoughts have been added based on that conversation.
9. An additional literature search found a few more articles which have been summarized and added – this could probably go on forever as research in the field is actively being done.
10. Lastly a shorter summary of findings was created by Beth and circulated to the group for final approval.

I hope this review is helpful. Beth

Measurements of PFM function

Everyone agrees that there is no perfect assessment test. There are many ways to test PFM function and all tests are taken in context of other findings.

External palpation and visualization

Craig teaches his patients palpation of the PFM contraction externally lateral to the base of the penis at the perineal body. Others have men watch the penis move upward in the mirror or just by looking down. One PT uses a video camera aimed at the rectal sphincter to show men the inwards movement.

Rectal PFM assessment

Some PTs do rectal exam pre-operatively. Rectal palpation can be helpful (although subjective) for assessing decreased ability to relax and PFM pain. It is unclear if this information is reflective of possible post-operative complications. Some feel rectal palpation is also helpful for cueing PFM contraction. Most (72%) seldom or never perform a rectal PFM assessment post operatively. Is assessing MMT of anal sphincter truly reflective of urethral sphincter function? This question applies not only to rectal assessment of PFM function but also to EMG assessments of rectal PFM.

Ultrasound measurements

Few PTs have US machines (18% in this survey use US). Those who do feel it is less invasive and very helpful for assessment and feedback. Skill in using the machine is important for accurate information. Preparation for in office US is important. One PT asks her patient to empty his bladder and drink 500 ml 1 hr before PT appointment. Early post-operative US can be difficult as the bladder does not hold urine well and a small volume bladder is harder to find.

Jo's research - currently being submitted for publication

Test of PFM function - tests done supine and standing with suprapubic US

- Quick Test (Rapid Response Test) 10 quick PFM maximal contractions timed - under 10 seconds for 10 contractions = better chance of continence post op, over 10 seconds good chance of persistent UI, especially Stress UI
- Sustained Endurance Test : one endurance maximal PFM contraction to point of exhaustion, maintain breathing. Contraction length 60 seconds = better change of post op continence
- Scoring system???

EMG assessment

EMG is a common modality in PFM assessment and treatment (64% in this survey use EMG). Most feels any changes in post-operative EMG PFM contraction level, endurance or resting tone are too variable to comment on. There is no evidence to say that EAS function is reflective of urethral sphincter function or has any influence on recovery of UI in men. Therefore measuring EMG activity of the EAS may not give the true picture. However, it seems to be very useful as an indicator of PFM awareness. And men often find it helpful.

Those patients with faster recruitment on EMG (time of contraction onset) had better continence (Rajkowska-Labon 2014)

As with biofeedback in female UI, the Cochrane review shows no significant difference with biofeedback (Anderson 2015)

Rectal palpation, EMG, and US measure different function of the PFM and all can be useful in training. At this point we have no research to dictate which is best (watching, palpating externally, EMG, US, or palpation rectally) or if any are necessary (18% in this survey do not use EMG or US). This is a practice choice. Several in the group do think it is important to ensure proper technique and not just take the patient's word that they feel they are doing the PFM contraction correctly. This is especially important post operatively as sensations can change and it is important to ensure proper technique for full recovery.

It was also pointed out that most men have a significant amount of hair around the anus and the surface electrodes do not stick well. This will increase surface resistance and decrease the amount of muscle activation which is displayed on the screen. This is an important factor to keep in mind when interpreting EMG data.

Outcomes tools for post-operative UI were discussed – EPIC-IC (Chang 2011) and IPSS were suggested as a valid and useful tool. The group discussed indicators (pre or post operatively) which might predict better or worse outcomes for continence level. Research is included where available.

Positive outcomes

Preoperative longer urethral sphincter per MRI (Dubbelman 2012)
Exercises, Physical worker, higher levels of activity (Baumann 2012, Park 2012)
Good sexual function (conflicting with Lavigueur-Blouin 2015)
Younger (Lavigueur-Blouin 2015, Jeong 2012)
BMI 18-25 (conflicting with Lavigueur-Blouin 2015)
Good urinary function, low IPSS (Lavigueur-Blouin 2015)
Use of one pad per day after surgery (Jeong 2012)
More experienced surgeon
Compliance with correct, individualized, and functional PFM exercises program – although some who are very compliant do not achieve positive outcome
Motivated to achieve continence

Negative outcomes

Older (Lavigueur-Blouin 2015, Jeong 2012)
Moderate IPSS (Lavigueur-Blouin 2015)
Perineal descent (Rigatti 2012)
Obesity, lack of exercise, Unfit (conflicting with Lavigueur-Blouin 2015)
Radiation after surgery
OAB, Bladder or urological problems
BPH
Smoker
Moderate consumption of bladder irritants
Sexual dysfunction
Previous hx of abdominal surgery
CPPS
Post-operative complication – UTI, anastomosis stenosis

PFM exercises instructions for men

The group was split with 45% instructing men to use mostly the anterior PFM and 55% asking men to contract the anterior and posterior PFM equally. Stafford 2015 article was discussed during the first call. Further investigation came up with four articles on this topic, summarized here (Stafford 2015, Stafford 2013, Stafford 2014, Stafford 2012)

Muscles considered important for male continence

- Levator ani (LA) - seems to include all in that layer but most importantly the puborectalis
- Striated urethra sphincter (SUS) - not sure if they are talking about the sphincter urethra or the compressor urethra or if there is a different configuration in men.
- Bulbocavernosus (BC)

Muscle actions

- LA moves base of bladder superior
- SUS moves urethra posterior or dorsal
- BC moves bulb of urethra anterior and superior

Verbal instructions article

- LA resulting in anterior movement of anorectal junction - seems all instructions result in activation but mostly "tighten around the anus" followed by "stop the flow of urine"
- SUS resulting in dorsal movement of mid urethra (MU) - "shorten the penis" followed by the instruction "stop the flow of urine"
- BC resulting in compression of the bulb - "tighten around the anus" followed by "shorten the penis"

Although authors agree this is a complex mechanism it appears the focus of continence is the dorsal (or posterior) displacement of the mid urethra (MU) which seems to be related to the SUS. Cough was evaluated in continent males with the following order of events

- SUS and BC shortening
- LA lengthening - it is postulated that this is an eccentric contraction

Limitations

- Measurements were done sitting and may not be transferable to standing
- Measurements were done on healthy volunteers and may not be the same in men after prostate surgery
- We have no research on what all this information means in the clinic with patients. Is posterior displacement of the MU really the action that defines UI vs continence?
- In communication with other expert it appears that different men may use different strategies to achieve continence before surgery. This means different instructions may be needed in different men to achieve continence after surgery.

In this paper "shorten the penis" resulted in best peak mid-urethral displacement. However some in the group do not find this instruction helpful for men. Many men are already upset with shortening of penis and may not respond well to this command. The paper states "Instruction had no differential effect on displacements at ventral urethral-vesical junction". Some still feel anal sphincter contraction is best. Another helpful command seems to be "lift the nuts up to the guts". Craig feels that some men use the smooth muscle of the prostate as their primary continence mechanism before surgery and these men are apt to have much more UI after surgery if they are not able to get the PFM working. Other men use the PFM for continence before surgery and will do better after surgery as the PFM is still working. Observe a visible retraction of the base of the penis into the body and a testicular lift (Dorey 2013)

Pre operative PFM exercises

Pre op therapy is being performed by many and research supports this treatment. (Sueppel 2001, Centemero 2010) Most in the group would like to see patients 4 to 6 weeks in advance but realistically it may be only 2 weeks ahead. (in this groups 24% of patients are seen 6 weeks ahead, 38% 3 to 4 weeks ahead and 30% 1 to 2 weeks ahead) Training has two modes: 1. Increasing awareness of the PFM contraction – learning how to contract. This can be done in as little as one visit but some patients may take several visits. Most agree this is essential. 2. Increasing the strength, endurance and coordination of the PFM before surgery. Some men may need this but it is less clear and certainly will take longer (4 to 6 weeks) and possibly more visits. In this group 64% reports typically completing one pre-operative visit, 27% report 2 pre-operative visits. One PT does the pre-operative visit in a group seminar. Study of activities contributing to post surgical UI suggested training of endurance PFM contractions in sitting and walking pre operatively (as those were the activities most related to post surgical UI) (Mungovan 2014) 20-68 days pre op for 5 appointments (range 3-5) (Mungovan 2013) Patient seen within 3 months of surgery had statically sig more continence than those who started more than 3 months after surgery (Rajkowska-Labon 2014)

Topics included in pre-operative training include:

- Evaluate their pelvic floor function, establish home program based on exam
- Anatomy/physiology and function of bladder/pelvic floor
- PFM awareness training / motor learning, education and PFE progression and instruction for post-op initiation of PFM exercises (soon after catheter comes out usually)
- Start patients working on improving cardiovascular fitness and weight loss for those who are overweight
- Bladder training & habit changes re caffeine, alcohol & water consumption
- Details about surgery and the immediate post op phase, what to expect regarding urinary control and sexual function after surgery, and return to normal activities.
- Information given on support groups, local YMCA programs, and collection pads needed

Pre-operative PFM training programs vary greatly and will be individualized to the patient’s needs. Total number per day varies greatly (10 to 200 PFM contractions per day). Holding time also varies from 1 to 10 seconds with many including both quick and endurance exercises in the program. The following chart outlines how many PFM exercises therapists prescribe.

Reps	Seconds held	Sets per session	Sessions per day	Total per day
10	10	1	3	30
10 to 20	5 to 10	1	1 to 2	10 to 40
10	10	1	8	80
10 to 12	3 to 4	2	3	60 to 72
10	5 to 10	1	3	30
10	5 to 10	2	2	40
10 quick 10 slow	Quick - 1sec, Slow 3-10sec, equal rest time	1	5	100
25	5	4	2	200
10 quick, 10 slow	1 sec quick, up to 10 sec in slow	1 of each	5 MAX	100

Urinary catheters

Many in the group reports that currently catheters are in place for a short time (5 to 10 days on average). A few still have physicians leaving catheter in for 2 to 3 weeks. With a short duration of catheter use most in the group do not encourage PFM exercises with catheter in. It was pointed out that the PFM is a postural muscle and it does contract with catheter in during functional movements. It was suggested to consider training the TrA to indirectly activate the PFM if needed. One surgeon is using suprapubic catheter to decrease discomfort but this may result in extended urgency and frequency. Performing PFM exercises while a catheter is inserted is documented in the literature. Pro's and cons to PFM exercises with catheter in where discussed (see full transcript of July 17, 2015).

PFexs may be performed gently while the catheter is in place provided the surgeon agrees.

(Dorey2013)

Post operative perineal pain

Survey results show PTs estimate 17.91% (range 5% to 30%) of patients have post operative perineal pain. A quick survey of those on the call it appears between 10 and 20% of men undergoing robotic prostatectomy have post operative perineal pain. Open procedures result in 25 to 30% post operative pain especially the perineal approach.

Treatments used for post op pain

- Limit PFM exercises (less than 30% of recommended), decrease intensity of PFM exercises
- Time with breathing, overall relaxation and PFM relaxation
- Lower extremity and trunk stretching
- Modalities: TENS, heat on perineum - rice sock in the microwave
- Pain education if you suspect a sensitive nervous system
- Suggest decreased sitting especially on hard surfaces, Teach them sitting positions with towel rolls under the ishiums, or cervical pillow with the opening in front.
- Myofascial release techniques and manual therapy for overall pelvic and hip dysfunction
- External and internal PFM palpation along with STM when indicated. (not sure when MD would allow internal PFM massage post operative)
- Kenosio tape, lymphedema treatment,
- Deep visceral and sacral visceral mobilization (although there was some concern about deep abdominal techniques in the immediate post operative recovery)
- Encourage use of Anti-inflammatory medication - or review with Urologist if concerned
?UTI ?Constipation ?Haematoma- need medical guidance?

Post-operative PFM training

Most in the group (45.3%) see patients within 2 weeks of catheter removal for the first post-operative assessment and training. Typically patients are seen 4-6 visits (42%) or 1-3 visits (33%). One PT feels twice per week is needed to ensure adherence and success. Research is not consistent and there have been no comparative studies

- 2 visits per week for 6 weeks (Mariotti 2009)
- 1 visits per week for 4 weeks (Porru 2001)
- Every other week for 8 weeks (Goode 2011)

- 5 visits over 3 months (Parekh 2003)
- 5 visits over 1 year (Sueppel 2001)
- HEP can be practiced as strongly as possible twice a day in supine lying, sitting and standing. the hold time in seconds is set individually by the therapist according to the number of seconds held during the digital anal examination. The rest time should exceed the hold time to allow the muscle to recover from exertion. (Dorey 2013)
- Perform exercises at home, consisting in three sets of 30 contractions daily, holding the contraction alternatively 1-2 seconds and 6-7 seconds without gluteal and abdominal muscle involvement. (Marchiori 2010)
- Patients were asked to selectively contract their anal sphincter 10 times every hour. Started in supine, then sitting, standing and during ADLs. (Cornel 2005)
- Increasing patient self efficacy instilling a "can do" attitude is important in adherence and success of exercises (Joseph 2006)
- Well done systematic review of post prostatectomy UI treatment - many papers reviewed, inconclusive evidence (Nahon 2006)
- Early 'structured' PFMT program significantly reduces continence recovery time - RCT (Filocamo 2005)

Post-operative training includes:

- PFM evaluation with US, external palpation or external EMG and instruction in PFM exercises
- Bladder schedules, bladder irritants, fluid intake, bladder training as needed
- Avoid constipation and adhere to activity restrictions set by surgeon
- Decreasing pad usage –use the smallest pad necessary, first while sleeping, then in AM. This challenges the PFM to hold better and decreases discomfort related to bulky, large pads and sweating.
- Pain management as needed
- Gradual return to activities. Rest encouraged PM. Activity AM. Walk 15-20 mins 2x/day
- Over time refine PFM training and advance exercise duration and possible position.
- HEP of core exercises (ab's, hips, etc), coordination of PFM with abdominals and breathing
- Erectile dysfunction and possible treatments including PFM exercises
- In cases of severe UI after 3 months Jo suggests use of penile clamp for bladder training
 - Worn up to 12 hrs per day (not during sleep) 6 days per week
 - 4 to 6 weeks as needed and reintroduce pads (should be down to 1-2 by then)
 - Void every 1.5 to 3 hrs
 - Jo's protocol - no reference
- Later rehab - electrical stimulation

Post-operative PFM program varies depending on patient need (24 to 250 per day). One PT feels there should be less initially, to minimize leakage and fatigue, but ensure gradual return to pre-op PFM strength. There is no comparative research. The following chart outlines how many PFM exercises therapists prescribe

Reps	Seconds held	Sets per session	Sessions per day	Total per day
10	5	1	3	30
8 to 12	10	3	1	24 to 36
30	5	1	2	60
5	2	2	3	30
10	3 to 5	1	2-3	20 to 30
To fatigue	2	1	4	
10 quick 10 slow	1- quick, 3-10 sec slow	1	3	60
25	5 to 10	4 to 5	2	200 to 250
10 quick, 10 slow	1 sec quick, 5-10sec slow	1	3	60

Position for PFM exercises

There is little evidence for position changes in PFM exercises but it seems to make sense. Evaluations are done in hook lying or side lying with some personal preference dictating the position. Most in this group agree with affect of gravity and consider horizontal exercises easier but also feel function activities are necessary. Research in female PFM training does not support the need for changing body position. (Borello-France 2006) One of the most common functional activities is contraction of PFM during sit to stand post operatively due to the high incidence of UI with this transition. Cynthia has patients squeeze a ball with PFM contraction during sit to stand. Vickie has men try to keep some PFM contraction during the first 2 or 3 steps after standing. This does seem to be a very common leaking pattern.

Supine lying, sitting and standing (Dorey 2013)

Started in supine, then sitting, standing and during ADLs. (Cornel 2005)

The most common position to start PFM exercises in is hook-lying (45%), followed equally by supine with knees extended, sitting and standing (all 18%).

Position of PFM exercises were ranked from easiest to hardest by the group:

1. hook lying
2. side lying
3. supine with knees extended
4. sitting static
5. sitting dynamic
6. standing static
7. standing dynamic
8. functional

Pros and cons of different positions during PFM exercises were discussed

Pros

Good for men who like lots of information and exercises

Muscle isolation, pt focus, functional early!

Task specific training

With moderate UI, gravity assisted may benefit, or accessory muscles i.e. hip and, add.

May help wake up the muscles post up.

Expand functional use of muscles
Increased challenge
Improve functional implications of exercises
Upright standing best for hypertrophy & to address symptoms
Progressive program for gravity and load onto bladder and PFM .
Represents ADLs and encourages hypertrophy of PFM against gravity & in symptomatic postures

Cons

Too confusing
Female lit does not support need to change position (Borello-France 2006)
Pt may not be as compliant if in a position that facilitates more leakage
Incorporates other muscles
Discourages PT, sensor issues
Can fatigue if over train
Too much PFM training in non-gravity positions, minimizes recovery

Resting baseline

Resting tone is another difficult topic (as it is in all of medicine). Most feel it is too variable to set an expected level or to guess what might change post operatively. It was discussed that some men develop elevated resting tone post operative possibly in response to pain or in an attempt to stop leakage. It is important to avoid excessive resting tone which can result in decreased blood flow, trigger points, and pain. The challenge is that we do not know what normal resting tone is (2 microvolt level previously taught in courses is not supported by research and too restrictive to be used globally).

Conversely, there was discussion about the possibility of relaxing the PFM too much (hypotonic resting tone) which may contribute to more UI. Unfortunately we have no way of knowing what too little tone is. Some practitioners are experimenting with submaximal contractions (30% to 50%) held over longer periods (30 to 60 seconds). Walking UI is particularly disturbing to men. It was discussed that asking a patient to maintain tension for extended periods of time is not realistic or accepted with concern of hip muscle dysfunction. However it may be helpful to ask for a low level, submaximal contraction to be held for 5 to 10 steps to restore the ability of the muscle to hold under these circumstances.

In this group 55% are neutral when it comes to focus on PFM resting baseline, 27% are lenient and 18% are strict.

Abdominal muscles and isolation

Everyone is in agreement that isolated PFM contractions are taught first (100%). Although there is a treatment approach that incorporates overflow first for female UI (Hulme 1997) it does not appear this group uses that technique with men before or after prostate surgery. Abdominal and PFM coordination training is taught by most in the early post operative time frame (73%) (sometimes because there is just not enough time in pre op training to cover everything). It was also discussed that it would be important not to pull in the abdominals too soon as there might be increased intra-abdominal pressure which would increase UI. It is important to train the

abdominals well and make sure they are not bearing down. Submaximal PFM contractions often result in less overflow muscle activation and can be used initially in all treatments or added on an individualized basis.

A few comments from the group (see transcript of July 17, 2015 for full list of comments)

- I explain the connection between the 2 groups and feel that if coordination is appropriate, I do not make an issue of it. I look for bracing, straining, Valsalva and if these are not excessive with the PFM contraction, I do not address it. If abdominal over-recruitment is noted, I will work on timing
- I don't necessarily train the abdominals separate from the PFM

Breathing and PFM training

Most agree it is not desirable to hold the breath during PFM contraction (45% very strict, 45% strict). And most agree that it seems reasonable to assume that counting out loud decreases the tendency to bear down (73%). Although we were unsure if there is any research on this. It was pointed out that forced expulsion of breath is sometimes used in therapy. (Talas 2012) Most of this research is in women. Craig advocates "light breathing" to avoid downward pressure during endurance PFM contractions.

Erectile dysfunction (ED)

Overall recovery of erectile function is 58% (33% to 60%), May be continued improvements as long as 18 months after surgery, No significant difference in open versus laparoscopic, patient younger than 60 year old have more chance of recovery. (Tal R 2009)

Jo shared her research that just doing a cardiovascular exercise program does not improve ED or UI

The IIEF-5 Questionnaire (SHIM) was strongly suggested as a valid and useful tool. - attached. 66% of men post RP report sexual bother at 1 year post op, vs only 18% who were concerned with this pre-op and is associated with depressive symptoms (Telekon 2013)

In this group 100% of patients are using medication to address ED (increase blood flow even before erection is expected to keep vessels open and expandable Tal 2009, Chung 2013, Nelson 2013). In addition, 89% are using the vacuum pump, 44% are using penile injection and 33% are using penile suppository. Most PTs in this group (78%) regularly educate their patients on the rationale for ED and the potential interventions. All PTs in this group use the same exercises for ED and UI. The same pelvic floor muscle exercises should be the first line treatment for men with erectile dysfunction. PFM Ex must be practice daily for up to 3 months in men with ED (Dorey 2013)

Things PTs teach about ED

- Information on pelvic floor musculature and function with sexual response.
- Basic anatomy of erection and ejaculation
- Neuroanatomy - how the nerve sparing procedure works
- Why penile "rehab" is important early (to reduce fibrosis), Importance of vacuum pump for penile therapy to avoid atrophy and improve blood perfusion
- Expectation of when function can return - The evidence of 6 months to 1.5 years for recovery
- Self help

- Psychology treatment options
- How desire and intimacy play a role
- Partner support

Indicators pre-operatively that might predict better or worse outcomes for erectile function

Positive outcome

Nerve sparing

Commitment to penile rehab

Good erectile function pre-op

Young, Fit, Physical

Lower grade of Prostate CA

BMI 18-25

High IIEF scores

Negative outcomes

Lack of interest

ED pre-op

Obese

Previous Heart conditions

Diabetes

Poor PFM function

Patient resources

- Us Too international support group for prostate cancer survivors and their families
- "Prostate recovery map" by Craig Allingham. Redsok International 2104 - patient education book
- "Life after prostatectomy and other urological surgeries 10 weeks from incontinence to continence" Vanita Gaglani Osmosis Publishing 2014 - patient education book
- Grace Dorey has several books including "Pelvic Dysfunction in Men: Diagnosis and Treatment of Male Incontinence and Erectile Dysfunction" (Wiley Series in Nursing) Paperback – 30 Jun 2006 - professional text

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