Post-prostatectomy incontinence (PPI) is still one of the more troublesome events that can occur following prostate surgery. The incidence of incontinence in men has reduced over recent years due to improved surgical techniques and early detection of prostate cancer. The literature reports that at one-month post-prostatectomy, 50% of men are incontinent; however, by the end of the first year, this has reduced to 1-5%. The improvement observed from rates reported 10 years ago has been attributed to current nerve sparing techniques during surgery, early detection and the use of minimally invasive surgery. There is, however, a marked difference between the incidence of incontinence reported by surgeons and that reported by patients.

Functional anatomy of the male urinary sphincter mechanism

The male urinary sphincter mechanism consists of two components. The first is the bladder neck sphincter (also known as internal sphincter mechanism), which is under involuntary sympathetic alpha-adrenergic control. The second is the rhabdosphincter-levator ani complex (also known as external sphincter), which is under voluntary control and innervated by branches of the pudendal nerve. The rhabdosphincter component of this complex is made up primarily of slow-twitch muscle cells, which maintains continuous tone and the levator ani part consisting of mainly fast-twitch fibres, which are responsive to the need of sudden on-demand fibre recruitment such as prior to a cough or sneeze. It is this levator ani component that is most often trained via pelvic floor muscular exercise.

Causes of PPI

The cause of PPI will determine how it should be treated. Surgeons have focused attention on five causative factors, namely: neurolourological or functional urethral length; preservation of the bladder neck; preservation of the neurovascular bundles; avoidance of sphincteric injury and de novo bladder overactivity or reduced bladder compliance. The first four factors are related to surgical technique.

Continence physiotherapists and nurses are not able to change surgical techniques. However, we need to be aware that when techniques change, there may be a change in the rate and the cause of PPI.

After radical prostatectomy, continence control is partly determined by the integrity of the remaining external urethral sphincter, of which paraurethral support by the levator ani and its voluntary contractile pressure have the most significant role in the immediate postoperative period.

Recording incontinence

Patient-reported incontinence at 12 months post-surgery is at a level between 33% and 65%. This difference is due to how
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Continence is defined as the use of one pad is considered ‘socially continent’ by some – usually without describing how big the pad, how wet it gets or whether it is worn due to need, or just in case. A variety of tests have been used to assess continence, such as a 1- or 24-hour pad test, bladder diary, or paper towel. The impact of incontinence is rarely taken into account in research. For men who have previously been fully confident in their ability to stay dry at all times, the occasional unexpected leakage can be rated somewhere between difficult and devastating.

When determining the severity of PPI, clinicians need to keep in mind several factors. Most men complain of incontinence in the later part of the day. It is therefore very important that incontinence is measured using a 24-hour pad test rather than a 1-hour pad test. Standardising the activities undertaken during the day can be difficult when using this outcome measure as a measurement tool; however, clinically the 24-hour pad test has proven value. Twenty-four-hour pad weight testing has also been shown to be more reliable than the number of pads used, especially in the elderly population.

Pad use can be a reliable, objective measure when used clinically to chart progress. For pad use to be effective, care needs to be taken about recording the type of pads used and when the pad is changed. A formal or informal record of activity in the measuring period can also add valuable information to the record. For this outcome measure to be reliable, men need to be carefully questioned about when they change their pads; for example is a change of pad necessary as the pad is full, or is the change for hygiene or convenience only?

**Impact of incontinence**

Quality of life (QoL) scores are used to describe the outcomes of new or varied techniques. Outcomes from different treatment options for the management of prostate cancer are compared using QoL scores. The effect incontinence had on men and their spouses after application of different treatment options was studied by Sanda et al. However, relatively few studies have investigated how incontinence affects the lives of men post-prostate cancer treatment.

While most men are happy that the cancer has been removed, ongoing incontinence can greatly affect their quality of life. The discomfort of wearing continence pads, skin irritation from being constantly damp and the fear of leaks and smell can render a man isolated from his social life and his work. Few papers look at how having to deal with pads or finding toilets affect how men live.

Incontinence is well-recognised as a significant health issue in women. While the statistics bear this out, we cannot ignore the problem in men. Assessing and treating men is a growing area as more men are now screened for, diagnosed with and survive prostate cancer. There are many similarities in treating men and women, but there are also fundamental differences. For instance, coping and motivation to get better may vary significantly between the sexes.

Overall, women are more prepared to deal with incontinence than men. They have heard comments all their life about the effects of childbirth on the pelvic floor and wear pads for menses. For women, incontinence is usually of a gradual onset, worsening over many years.

Men, on the other hand, are often unprepared for the severity and the impact of incontinence. They are not familiar with the concept of pad use and are still coping with the impact of a diagnosis of cancer. Many do not know there is help to be found, let alone where to find it and are often too embarrassed to talk about it with health professionals. If the possibility of incontinence is discussed in an open, matter-of-fact way before surgery, then afterwards it is more likely that, when the need arises, they will know where to go for help.

Men are typically very keen to get back to their preoperative continence and erectile status. They are usually very motivated to do whatever it takes to fix the problem as quickly as possible so they can return to normal life.

Most men find their surgeon intimidating. It is up to the treating therapist to ensure that men explain to their surgeon that incontinence is still a problem and affecting quality of life and that they do not leave a consultation with their surgeon thinking that they are okay. Advising the patient to provide information to the surgeon, such as saying: “I wear one thin pad just in case”, or: “I have to wear at least one big pad which gets saturated most days”, can mean the difference between early consideration for further surgery and a timely return to work, versus early retirement and depression.

Quality-of-life questionnaires such as ICIQ, ICSmaleSF, MUDI and MUSIQ and a standard description of pad use can be useful to the therapist to assess and treat incontinence. As men are often not good communicators with healthcare providers, continence therapists have a very important role to play here.

**Preoperative assessment**

For optimal management, a man should be referred for a continence assessment as soon as he has been diagnosed with prostate cancer and surgery is deemed a likely option.

Assessment should include taking a full subjective history, looking especially for any lower urinary tract symptoms (LUTS). These can affect the final continence outcomes. Pre-existing nocturia, for example, will not be cured by surgery. Bladder outlet obstruction (BOO) will improve as will the accompanying symptoms of frequency, but overactive bladder (OAB) may not change at all, or its irritative symptoms can worsen. Erectile functioning and sexual history need to be assessed. It is also useful to explore any preconceived ideas or expectations about the surgery and its outcomes. Detailed discussion should occur about what the man can expect as far as incontinence post-surgery is concerned and what importance he places on erectile functioning.
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Objectively, a rectal examination is indicated if there are any suggestions in the history that could indicate the pelvic floor muscles (PFM) may be weakened. These would include previous surgery or trauma, neurological damage and chronic constipation. An accurate assessment of strength and endurance of the PFM will assist in postoperative management of these patients. A significant proportion of men with prostate cancer are now diagnosed via prostate-specific antigen (PSA) screening and may not have LUTS. There is no reason for their pelvic floor to be weak prior to surgery and, hence, routine digital rectal examination (DRE) may not be necessary in this context.

Preoperative management

The optimal management of PPI would be multi-disciplinary and start before surgery. Wherever possible, surgeon, nurse and physiotherapist should work together to achieve the best outcome for the patient. Ideally, the physiotherapist as well as the nurse sees each patient prior to surgery. Where preoperative clinics are available, continence or urology nurses should educate about pad use, catheter management and bowel care in the immediate postoperative period. If indicated in the assessment, education on normalising bladder and bowel habits should happen preoperatively as well.

At the preoperative visit with the physiotherapist, men need education about surgical changes to the continence mechanism, location of the PFM and erectile dysfunction (ED). One of the most important parts of the preoperative visit is to teach what it feels like to activate the pelvic floor. Men who have had even a few days’ practice prior to surgery have less trouble finding their pelvic floor after surgery when muscles may be impaired by swelling, nerve damage and pain. Men need to try activating their pelvic floor consciously in many different positions and activities. Practising ‘the knack’ whenever the intra-abdominal pressure rises is critically important. ‘The knack’ is the ability to tighten up the PFM in preparation for a known leakage-provoking event.

Pelvic floor muscle training (PFMT)

PFMT is very important for the prompt return of bladder control. Generally, surgery does not affect the strength of the muscle, however, with the continence mechanism damaged by surgery, the PFM have to function in a different way. The pelvic floor needs to be functionally retrained. The muscles, which previously worked as a back-up to the intrinsic (bladder neck) sphincter, now have a primary role in continence maintenance. The physiotherapist’s main aim is to retrain the pelvic floor rather than rehabilitate damaged muscles.

Post-surgery, the pelvic floor needs to be active at a much lower intra-abdominal pressure. When walking, for example, the muscles need to provide enough power to counteract gravity, while still allowing for high-pressure situations, such as coughing.

In acute situations, the PFM need to be able to pull up quickly and sharply with abrupt increases in intra-abdominal pressure. ‘The knack’ is very important if the man wants to regain continence after prostate surgery. An anticipatory tightening of the muscles will prevent those small ‘squirts’ many complain of after the constant dripping has eased. This anticipatory tightening will need to become a virtual reflex action, occurring automatically before coughing, lifting or other such activities.

Muscles also need to be working over longer periods. An intact male internal sphincter is strong enough to maintain continence when walking, but post-prostatectomy the pelvic floor needs to be able to maintain a low-grade contraction during activity. Endurance training is an important part of regaining continence.

PPI management needs to be goal-orientated. Finding out what an individual’s sports and hobbies are is necessary to create a programme that will help him to reach his goals. It can be an interesting challenge to work out with a patient at what point during a golf swing urinary control is lost, how to assess the muscles at that time and then train the pelvic floor, all without increasing their handicap!

Postoperative management

It is not always possible to assess everyone before surgery. If a preoperative assessment was not done then a subjective history needs to be taken.

To inform the postoperative management of the patient it is useful to learn from the surgeon if the procedure went according to expectation or if there were intraoperative problems. For example, a large blood loss during surgery may slow healing. If extensive exploration was needed to find lymph nodes (which are close to the obturator nerves and other branches of the pelvic plexus) there is an increased risk of temporary swelling and hence changes in function of neural structures. This may translate to temporary reduced response to their effector muscles (the pelvic floor). Although care is taken to avoid pelvic floor damage during surgery, those fibres of the levator musculature closest to the prostate may be temporarily or permanently affected. If there were adhesions to the bowel, then postoperative bowel control needs to be carefully monitored.

There are many other factors that influence recovery post-prostatectomy. Continence nurses and physiotherapists need to assess pain management, bowel function and general coping. Ongoing assessment of lifestyle choices, bladder and bowel habits and fluid intake is important to avoid long-term bladder or bowel problems. Men often complain about a sensation of feeling a ‘golf ball’-like lump in the perineum. Localised swelling and impaired sensations due to nerve damage cause this lump, but continence pads are commonly blamed for this discomfort and, as a result, men will inappropriately change the type or brand of pad. Gentle perineal pressure and massage can greatly ease the swelling and reduce the discomfort.

There are no guidelines as to when to commence pelvic floor exercises after surgery. The debate for and against doing pelvic
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floor exercises while the urinary catheter is in situ has not been resolved. Some things to consider when making this decision are:

- Irritation by the catheter balloon on the trigone as it moves.
- Irritation or pain by the catheter along the whole urethra.
- Effectiveness of the PFM contracting around a firm tube.
- Compliance with exercises both while the catheter is in situ and later if exercises cause pain.
- Ability to monitor progress and effectiveness of the exercise regimen while the catheter is in situ.

A visual confirmation that pelvic floor exercises are being done properly is needed once the urinary catheter has been removed. An effective, strong contraction should retract the penis and gently lift the testes. Observation may be done in supine lying with the legs bent up or in standing position. If there is a problem with visualising the pelvic floor contraction then a DRE is indicated. Care must be taken concerning healing.

Further PFMT gradually progresses the PFM exercises. It is useful to assist men to identify those situations where their intra-abdominal pressure rises causing them to leak. They then learn to activate the pelvic floor in anticipation to prevent the urine leaving the bladder. Endurance as well as ‘the knack’ are needed so both are trained. Clinically this protocol works well for men with mild to moderate incontinence, in the early postoperative period. Functional training, adapted for men from Kari Bø’s work with women, keeps it meaningful for the patient. Once men are dry at night they should be able to identify times at which they are likely to squat urine. Usually these squirts occur during physical activity and sudden movements. Learning to use ‘the knack’ and maintaining some tension in the pelvic floor until the end of the movement renders most completely dry. It is during these latter sessions, often after 3-4 months, that men are encouraged to remove their pads permanently.

**Psychosocial support**

Men often have the attitude of “the more exercises I do, the quicker I will get better”. Physiology teaches us that muscles need time to recover and that time spent resting is as important as the time spent exercising. It is in the resting phase that muscles have time to recuperate and heal. Men who work too hard do not give their pelvic floor a chance to rest and recover.

The psychosocial support required by men during the prostate cancer journey has been explored in recent years. Studies have shown that this is an area that healthcare professionals need to develop as part of a model of care. Many men find that they are not able to discuss issues such as incontinence and impotence with their surgeon. “Men repeatedly recounted that physician failure to meet basic expectations regarding prostate cancer care was inconsistent with good medical care”. Continence advisors and physiotherapists spend quality time with each individual. The support that they can give at this time is important and valued. Referral to the local prostate cancer support group, discussing and normalising expectations and being available when questions arise, helps the patient and his family get through this time.

**Erectile function**

Evidence is emerging to support the use of pelvic floor exercises for the management of ED. While ED is not usually a concern while cancer is still present in the body, once continence is regained men are looking to get their erectile function back as well.

Erectile functioning is often compromised due to surgical nerve involvement or swelling leading to nerve compression. Damaged nerves can regrow and healing continues for up to a year after prostatectomy. Healing takes place better if there is a good blood supply. PFM exercises help to bring more oxygenated blood to the area and removes the deoxygenated blood. PFMT has been shown to restore function in men with ED. Exercise in conjunction with other forms of treatment (such as oral medication, vacuum pumps and injections) has not yet been researched.

The psychosocial impact of ED is well-established and found to be a real concern for many. Loss of ‘manhood’ and damage to self-image can impact greatly upon self-esteem and lead to depression.

Continence advisors need to be aware of these issues especially where ongoing continence problems and ED occur. Referral to counselling services and support groups can be of real value to patients.

**Further research**

Many questions exist around the management of male incontinence. In men who had no LUTS before surgery, pelvic floor strength is assumed to be normal. In men who have had LUTS, either short-term or for years, how much has the pelvic floor strength been influenced? For those with urgency, pelvic tone is likely to be increased and for those with obstructive disease, a reduction in tone may have occurred. How much and to what degree pelvic floor strength has changed is unknown.

Healthcare workers know that the risk of incontinence after radical prostatectomy increases with age. This is secondary to the common observation that older men undergoing radical prostatectomy have a higher chance of urodynamic stress incontinence than their younger counterparts do. The loss of rhabdosphincter muscle mass may be due to ageing but this has not been well studied. In the light of this, as well as other potential benefits of having a healthy pelvic floor, prostate cancer remains common and is being diagnosed in increasing frequency in the community. The question for physiotherapists working in the male continence area is: should pelvic floor awareness and education in men start earlier, even in the younger healthy male?
The optimum regimen for exercising has not yet been found, in terms of the exact frequency, duration and type of exercises. Functional work has been adapted from work done by the Norwegian team led by Kari Bo and some of the work done by Peter Dornan. Kari Bo has only tested her regimens in women and none of Dornan’s work has been explored beyond a small clinical trial. Not to say they do not work, there have just not been any randomised, controlled trials.

The psychosocial impact of incontinence in men has not thus far been adequately explored. When offering therapy for which there are no randomised, controlled trials, the additional benefit of the support given along the way could be vital to recovery, yet it is currently not known how important the support given is.

The usefulness of biofeedback and electrical stimulation as intervention agents are still being debated in the literature. Finally, if urinary incontinence cannot be resolved by conservative management then the patient may need to consider surgical interventions such as injections of bulking agents around the urethra, male urethral sling, or in severe cases creation of an artificial sphincter.

Conclusion
PPI is a growing clinical area requiring appropriate assessment and treatment. While there are significant gaps in knowledge about what management method is optimal, conservative treatment has already been shown to offer relief to many men. Continence physiotherapists and continence nurse specialists play an important role both preoperatively and postoperatively in the recovery of continence and erectile function for these men. Comprehensive assessment for other bladder and bowel problems and advice on lifestyle changes where appropriate are a critical component of care. Pelvic floor exercises can help to speed the recovery of continence; however, they need to be taught preoperatively where possible and to be functional in order to minimise the leakage that occurs with activity. Appropriate psychosocial support given during this time can help the individual and his family cope with the diagnosis, treatment and after-effects of cancer.

References