Journal of Clinical Cases and Reports

ISSN: 2582-0435 **Case Communication** | Vol 1 Iss 1

Management of Post Prostatectomy Urinary Incontinence

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Abstract

Urinary incontinence is an involuntary loss of urine which can be very distressing to the patient and the relatives. The prostatic surgeries are among the common urologic procedures worldwide with it attendant consequences one of which is urinary incontinence and the commonest types of urinary incontinence after prostatectomy is stress urinary incontinence. With the advent of increase in dexterity because of use of modern surgical armamentarium ranging from finer and more précised instruments to minimally invasive procedures to robotic prostatectomy the risk of urinary incontinence is decline, Urinary incontinence is commonly seen in patients with early prostate cancer who have open radical prostatectomy usually due to increased risk of damaging the external sphincter, the stress incontinence seen in post radical prostatectomy requiring more than one pad per day is up to 5% of patients beyond six months, this is due to damage or injury to the external sphincter during division and control of dorsal vein complex bleeding but it can be as low as 0-1% post robotic radical prostatectomy, however in total incontinence the incidence is less than 3%. Sound knowledge of anatomy, adequate lightening and exposure with meticulous tissue handling goes a long way in reducing the chances of this distressing problem not only to the patient and his relatives but also to the surgeon. Although some studies have shown no much difference in terms of post prostatectomy urinary incontinence between open and laparoscopic radical prostatectomy in a high volume centre, however the use of robotic prostatectomy using the davinci system has a better outcome because one can operate through a few centimeters small incision with a magnified 3Dimentional high definition vision system with tiny wristed instruments that bend and rotate far greater than human wrist.

Keywords: ***Management; Post prostatectomy; Urinary incontinence***

Received Date: March 04, 2018; **Accepted Date:** March 18, 2018; **Published Date:** March 25, 2018

Introduction

Urinary incontinence is an involuntary loss of urine which can be very distressing to the patient and the relatives. The prostatic surgeries are among the common urologic procedures worldwide with it attendant consequences one of which is urinary incontinence and the commonest types of urinary incontinence after prostatectomy is stress urinary incontinence [1].

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Citation: Musa MU. Management of Post Prostatectomy Urinary Incontinence. J Clin Cases Rep 2018: 1(1) 10-17. DOI: https://doi.org/10.46619/joccr.2018.1-1004

instruments to minimally invasive procedures to robotic prostatectomy the risk of urinary incontinence is declining.

Urinary incontinence is commonly seen in patients with early prostate cancer who have open radical prostatectomy usually due to increased risk of damaging the external sphincter, the stress incontinence seen in post radical prostatectomy requiring more than one pad per day is up to 5% of patients beyond six months, this is due to damage or injury to the external sphincter during division and control of dorsal vein complex bleeding but it can be as low as 0-1% post robotic radical prostatectomy, however in total incontinence the incidence is less than 3%, and rarely transient post prostatectomy urinary incontinence can occur following prostatectomy in patients with benign prostatic hyperplasia [2].

Age is the single most important factor determining the restoration of continence post prostatectomy which is a gradual process with 50% of patients becoming continent at three months then seventy five percent at six months and others at 9-12 months, although some patients may take up to 3 years to regain their continence and few patients may not regain their continence necessitating intervention, but when it happened the challenge is enormous and very demanding on the patient and the managing team [3-5].

European Association of Urology define continence following radical prostatectomy as either total control with no leakage or pad usage, no pad use but loss of a few drops of urine or use of up to one safety pad per day [6].

Sound knowledge of anatomy, well-articulated surgical skills, adequate lightening and exposure with meticulous tissue handling and use of appropriate instruments goes a long way in reducing the chances of this distressing problem not only to the patient and his relatives but also to the surgeon. Although some studies have shown no much difference in terms of post prostatectomy urinary incontinence between open and laparoscopic radical prostatectomy in a high volume center, however the use of robotic prostatectomy using the davinci system has a better outcome because one can operate through a few centimeters small incision with a magnified 3Dimentional high definition vision system with tiny wristed instruments that bend and rotate far greater than human wrist [7-9].

About 14-20% of patients who had radical prostatectomy may need a pad to manage their post prostatectomy urinary incontinence in the long run as such the stressful condition and psychological imbalance the patients suffer is enormous and devastating with a lot of them seeking medical intervention and constituting a significant cause of consultation [10-12].

Pathogenesis

Although the precise pathogenesis of post prostatectomy urinary incontinence is still an enigma yet to be fully understood bladder neck dysfunction and damage of the nerves and sphincter during surgery may be the cause, damage to the urethral sphincter can be from direct muscle damage or it can be from damage of the nerve supply, but recently it is believed to be due to sphincter laxity from post-operative intrinsic sphincter deficiency despite good function of the sphincter which is caused by the disturbance and distortion of the male sphincteric integral system post operatively [13-16].

the functional urethral length is a very important factor for the maintenance of continence a urethral functional length of more than or equals to 28 mm is necessary for effective urinary control mechanism, it is believed that repair of the external sphincter may be necessary to achieve control and hence loss of functional sphincteric length a major cause of post prostatectomy urinary incontinence [17-21].

Types of post prostatectomy urinary incontinence

Stress incontinence

This is the leakage of urine with activity such as coughing, laughing or any activity that will increase the intra-abdominal pressure, it is the commonest urinary incontinence after prostatectomy and it is usually caused by a weak or damaged external sphincter, the severity ranges from mild stress urinary incontinence manifesting as leakage of few drops of urine with only vigorous activity such as coughing, sneezing or laughing to brisk stress urinary incontinence leaking urine with almost any movement [1,8].

Total urinary incontinence

This is a continuous leakage of urine with complete inability to store or control leakage of urine regardless of activities, it seen when the external sphincter is completely damaged especially in difficult open radical prostatectomy for cancer with bleeding, this is the type of post prostatectomy urinary incontinence that may require surgical intervention or the use of artificial sphincter [1].

Overflow incontinence

This is seen with chronic retention as a result of bladder neck stenosis or urethral stricture following prostatic surgery, the patient develop enuresis which may require urethral dilatation, optical urethrotomy, urethroplasty or bladder neck incision depending on the cause of the incontinence [3].

Urge incontinence

This is when the patient has the urge to micturate but leaks urine before getting to where it is socially acceptable, this may occur as a result of overactive bladder from post prostatectomy prostatitis in patients with benign prostatic hyperplasia (bph) or as a result of bladder irritation post radiotherapy in patients with prostate cancer [1,9].

Risk factors

1. Increasing age
2. Pre-existing bladder dysfunction
3. Previous radiotherapy
4. Prior TURP
5. Advanced stage of the disease
6. Surgical technique

Presentation

The patients with urinary incontinence following prostatic surgery can present as early as when the urethral catheter is removed and the patient noticed an involuntary loss of urine, or the patient may develop the urinary incontinence later as a result of bladder neck stenosis or urethral stricture.

Evaluation

History

- History of the time and the nature of the leakage of the urine so as to differentiate between the stress urinary

incontinence occurring during activity which may improve with time or it is the patient continuously leaking urine as seen in total urinary incontinence**.**

- History of number of pads used per day for the patient to be able to maintain dryness will indicates the severity of the urinary incontinence
- History of predominantly obstructive progressive lower urinary tract symptoms (luts) followed by enuresis is usually the case in overflow urinary incontinence due to bladder neck stenosis or urethral stricture**.**
- History of pain on micturition and fever which may point to the fact that the patient may have developed prostatitis post prostatic surgery**.**
- History of polyuria, polyphagia and polydipsia with weight loss may be used to rule out diabetes mellitus as the cause of the problem.

Physical examination

The general appearance of the patient may show the degree of psychological stress that the patient is going through as such the patient may be anxious, and the patient may be having ammoniac odor from the leaking urine, the patient may be warm to touch from the concomitant infection.

Chest examination may revealed evidence of respiratory tract infection as abnormal breath sound making the stress urinary tract infection more bothersome due to cough.

Cardiovascular system examination may detect a concomitant irregular pulse rate or elevated blood pressure in the elderly patient

Abdominal examination is usually where the main findings are which may include flank fullness or suprapubic swelling and tenderness, there may be visible urine leakage with the activity of physical examination in stress urinary incontinence or patient is asked to a vasalva maneuver to demonstrate the urine leakage, but in case of total urinary incontinence the urine will be seen leaking continuously.

Investigations

The diagnosis of post prostatectomy urinary incontinence is mainly clinical however certain investigations are done.

Dipstick test

This involves the dipstick testing of the leaking fluid for creatinine which is higher than the serum creatinine concentration confirming it is urine [9].

Urine microscopy culture and sensitivity

This involves examining the urine for evidence of active pathogenic microorganisms causing urinary tract infection presenting with urge incontinence [1].

Urodynamic studies

This is very important investigation which may be able to differentiate between urge incontinence from stress urinary incontinence and the degree of severity of the urinary incontinence [19].

Abdominopelvic ultra sound scan

This may confirm the presence of urine in the bladder from chronic urine retention causing overflow urinary incontinence or it

may demonstrate evidence of cystitis due to infection [1].

Retrograde urethrogram

This may be necessary in patient with overflow urinary incontinence which may confirm the presence of urethral stricture or demonstrate evidence of bladder neck stenosis.

Urethrocystoscopy

This may be necessary to demonstrate the presence of the urethral stricture the nature of the surrounding urethral tissue or it may demonstrate presence of bladder neck stenosis following prostatectomy.

Treatment options

This is divided into supportive care which will improve on the quality of life of the patient and definitive treatment.

Supportive care

This includes behavioral modification such as restricting fluid intake, avoiding caffeinated drinks alcohol or spicy foods, patient may also be advised not to drink before going to the bed, regular micturition every two hours, losing weight may result in improvement of the urine control especially in patients with stress urinary incontinence and most patient may achieve urine control with these measures [17].

Definitive treatment

These are active measures or maneuver taken to achieve urine control in patients with post prostatectomy urinary incontinence.

Pelvic floor exercise

This is employed to train the patient to be able to achieve urinary control, kergel exercise which entails strengthening the pelvic floor muscles by deliberately squeezing the pelvic floor muscles as if one is trying to stop urinating midstream or prevent the passing of flatus in public, in some instances kergel exercise is usually started before radical prostatectomy to retain and strengthen the muscles that surgery may weaken [1,9,11].

Biofeed back

This is a training program that can be used to reinforce the kergel exercise using a variety of instruments to record small electrical signals emitted when the sphincter muscles are squeezed during contraction these are converted to a tone or flash or light that indicate how well the action was performed the patient then attempt to reproduce the muscle contractions that produce the correct bio feedback [17,20].

Drugs

The use of drugs may help patients with urinary incontinence especially due to overactive bladder such as tolterodine 2mg daily or oxybutynin which are anticholinergic drugs blocking the message of the bladder nerves hereby preventing bladder spasms however these drugs can lead to urine retention, other drugs such as nasal decongestants may tighten up the muscles of the urethra and hence can be used in stress urinary incontinence, oxytol patch have been used with different degree of success [1,21].

Neuromuscular electrical stimulation

This is used to retain and strengthen weak urinary muscles and hereby improving bladder control, this involves the insertion of rectal probe into the anus and a current is passed through the prove at a level below the pain threshold causing a contraction and the patient is instructed to squeezes the muscles when the current is switched off [9,11].

Surgical intervention

Several surgical procedures are in the armamentarium of the urologist when confronted with an intractable post prostatectomy urinary incontinence

Collagen injection

This can be done by serially injecting collagen which will narrow the bladder neck and thereby reduce level of urinary leakage

Bulbourethral sling

This is another surgical procedure were a sling can be used to suspend and hence compress urethra, the sling material can be made from a synthetic or from natural material such as the patients tissues to cause the urethral compress to control urine.

Surgical placement of artificial sphincter

This the mainstay and standard care of treating patients with total urinary incontinence post prostatectomy, this patient controlled device is made up of three parts a pump, a pressure regulating balloon and a cuff that encircles the urethra thereby preventing the urine from leaking , the success rate of curing patient with this is seen in 70-80% of patients [11].

Penile clamp

This may be the only way out for some patients when the other procedures are not feasible or have failed , there are different kind of soft rubber based devices used to control post prostatectomy urinary incontinence by removing it every 2 to 4 hourly [1,8].

Urethroplasty

This is done for the patient that developed overflow urinary incontinence post prostatectomy due to urethral stricture, this can be inform of optical urethrotomy or urethroplasty depending on the severity of the urethral stricture.

Urinary diversion and bladder neck closure

In some patients this maybe the only available procedure that can be done to keep them dry, it involves the diversion of the urine to a continence catheterizable stoma and closure of the bladder neck

Complications

These are some of the complications of the surgical intervention and the drugs used in the management of post prostatectomy urinary incontinence [3,7].

1. failure of continent procedure
2. recurrent urinary tract infections
3. urine retention due to use of anticholinergic
4. constipation
5. dry mouth

6. blurring of vision
7. mechanical failure of the artificial device

Prevention

Sound knowledge, adequate lightening, meticulous tissue handling, prompt and adequate hemostasis and adequate patient preparation and optimization with early commencement of kergel exercise are paramount to preventing this notorious and distressing problem

Follow up

This is very important since it will accord the surgeon the opportunity to find out if the patient is cured or there is failure of the treatment modality which may necessitate the use of another treatment modality.

Conclusion

The burden of post prostatectomy urinary incontinence cannot be over emphasized although majority resolved spontaneously within 3 years while some may require surgical intervention, although there is improvement in surgical techniques even in high volume centers the rate of post prostatectomy urinary incontinence is still around 1%, however the recommendations for various types treatment and the choice of treatment per patient are challenging.

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