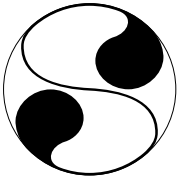
Tutorial

for

Continence Systems



MANFRED SAUER GMBH (UK Branch)

This manual is printed on recycled paper in our own printing shop – our contribution to the environment.

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Barry Kaighin, born in 1961, has had paraplegia since 1988 following a road traffic accident. After working in the computer and record industries Barry became part of the international Manfred Sauer team being involved in product development and is currently the Sales & Marketing Director of Manfred Sauer GmbH (UK branch). Barry also lectures on continence and disability awareness issues in universities, hospitals and healthcare conferences around the UK & Ireland and has presented to professionals in Sweden, Holland and Germany.

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On our Web Site you will find the latest information about our products, useful hints and tips for managing a continence problem. There are many links to other related sites, as well as the opportunity to win £25 for your story serious or funny about your experiences living with a continence problem home or abroad.

Our Web Site can be accessed from any of the following World Wide Web addresses:
www.manfredsauer.co.uk • www.legbags.com • www.urinarysheaths.co.uk

Preface

Due to the high demand for our tutorial, we have produced this revised and updated edition to reflect the latest developments and changes to our system.

The tutorial is intended for our product consumers and healthcare professionals. In many of the consultations with our customer advisers we have noticed the need for a general comprehensive explanation of bladder function and dysfunction. For this reason we have included an article on the subject.

The advice in the tutorial will not answer all of your questions. Do not hesitate therefore to speak to your customer adviser. All our customer advisers use our products and would be happy to share their experiences and help you with any queries.

Any comments or suggestions you have as a result of your own experiences are welcome and may be used in future editions of this tutorial or in advisory consultations.

Lobbach, April 2002

Manfred Sauer

"I never realised how much my bladder controlled my life until I started controlling my bladder. The advice I had from the Manfred Sauer Helpline has completely changed my life and given me the confidence to socialise again!" – SB Newcastle 1997

You are not alone, as many as 1 in 3 women and 1 in 9 men experience incontinence at some period in their life. The aim of this tutorial is to briefly outline certain aspects of urinary incontinence, offer solutions to enable people to make informed decisions to achieve full **continence with confidence**. This means you are in full control – being able to choose where and when you go to the toilet, by managing your continence problem. Advice given here is general and should in no way be seen as a substitute for professional urological investigation which may uncover underlying problems that need medical intervention.

Note: Throughout this tutorial we have used the word urinary sheath to refer to urinary condom. Self-adhesive urinary sheath is also used throughout this tutorial to refer to a urinary sheath with its own self-adhering adhesive film bonded to the sheath.

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About incontinence and bladder paralysis

Introduction

The following tutorial on incontinence is mainly addressed to people with neurogenic bladders and more specifically spinal injuries, but it will also be of interest to people with a whole range of other conditions. The quality and length of life of people with spinal injuries and many other conditions that affect continence depends on maintaining a healthy bladder and healthy kidneys. It is therefore important to be aware of the basic functions and damage that can be done to the urinary tract. This information will compliment advice from your doctor or specialist nurse and enable you to take responsibility for your own health. A glossary of terminology appears on page 12 & 13 for your reference.

The function of a healthy bladder

Bladder function can be divided into two phases. First, there is a permanent filling and retaining phase, where urine, produced in the kidneys is stored in the bladder over a period of several hours. This process is involuntary and there is no noticeable build-up of pressure in the bladder (intra-vascular pressure).

As soon as the bladder is filled to a trigger point which will differ from person to person, a message is sent to the bladder centre (the sacral miction centre) and from there to the control centre in the brain – both involve the spinal cord (see Fig. 1). The information is then registered as a urinary urge only, as the bladder still has an adequate reserve capacity left.

As soon as the time and place for voiding the bladder is reached, a signal runs in the opposite direction and releases a voluntary voiding phase (micturition). If necessary, one can release urine without having a urinary urge.

The command to micturate starts a very complicated procedure. The bladder muscle (the detrusor) contracts increasing the pressure in the bladder. In males, the pressure within the bladder can reach approx. 50 cm H_2O. An extremely complex, but very finely harmonised autonomic mechanism ensures, practically simultaneously, that the bladder neck opens, the external sphincter relaxes and the muscles of the pelvic floor give way to free passage of urine. Both the bladder muscles and the sealing mechanism (sphincters) must work well together (Detrusor-Sphincter-Synergy), so that the urine can freely flow through the urethra.

The following points are vital to assure trouble free micturition:

- The nerves between the bladder, the lower bladder centre and the brain must be intact so that the nerve impulses can be passed on.
- The bladder must be intact.
- The inner and outer sphincters must stand up to the bladder pressure.

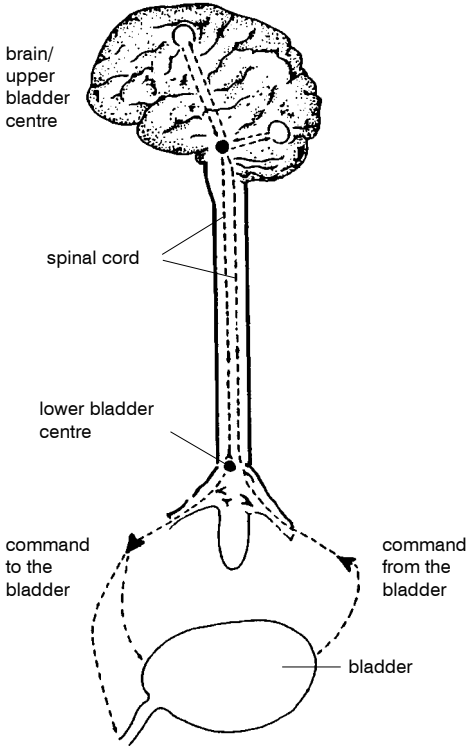


Fig. 1 – The diagram shows bladder drainage by the central nervous system

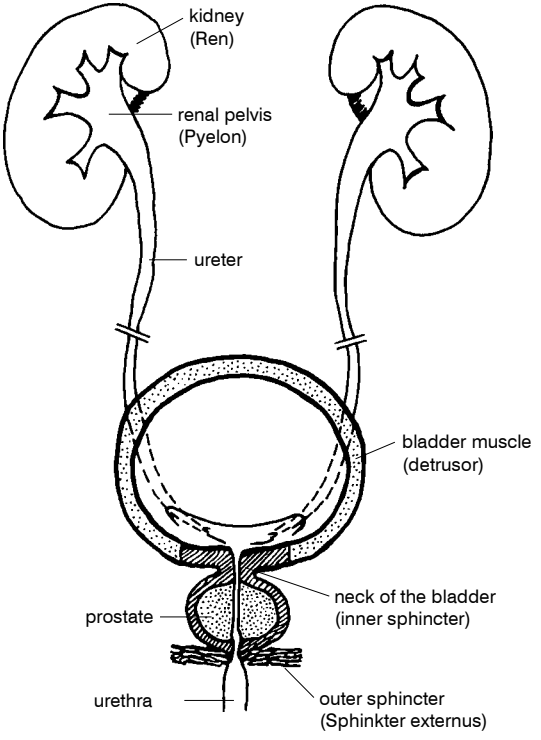


Fig. 2 – Urinary tract (male)

Incontinence

As soon as a disorder occurs at one stage of the process, incontinence is the *likely* result. Incontinence means unintentional loss of urine. The control over bladder voiding is disturbed through some cause or another.

Apart from urinary incontinence, there is also bowel incontinence which is not covered here (for organisations that can provide further information see useful contact numbers and website addresses on inside back cover – see our own website for the very latest list of links to such organisations at: www.manfredsauer.co.uk).

There are various types of incontinence, dependent on where the defect or disorder occurs or why it occurs:

- **Stress incontinence**: see following pages.
- **Overflow incontinence**: Loss of urine caused by loss of bladder muscle function – see limp bladder paralysis.
- **Urge incontinence**: Normal filling of the bladder, with an inability to hold back urination once the desire to void is felt. The Urge Syndrome is the combination of frequency, urgency and nocturia.
- **Reflex incontinence**: see following pages.

The forms of incontinence described here are those that are mainly the result of neurogenic bladder conditions such as spinal cord injury and Multiple Sclerosis.

Reflex incontinence – the spastic bladder

The main reason for this form of incontinence is damage to the spinal cord in the pathway between the brain and the lower bladder centre. This damage can be caused by trauma such as spinal injury with paralysis, or may be the result of illness (e.g. multiple sclerosis) or congenital condition such as in spina bifida. The signal that the bladder is full arrives in the lower bladder centre but cannot be sent further. This first signal can sometimes be faulty as it does not always relate to the filling of the bladder, but can also be released through other stimuli. This gives rise to the command occuring too early or too often. Because the brain cannot intervene, a “short circuit” in the lower bladder centre occurs, and this causes a reflex, spastic and unintended – often unnoticed – release of urine.

In more favourable cases, the bladder fills well, the interior bladder pressure is raised moderately, and the reflex activity leads to a residual-free bladder voiding several times within 24 hours. This is a well balanced reflex bladder.

Further improvement is possible by triggering this reflex through bladder training (tapping, triggering-off or knocking). In this case the individual can decide when to void the bladder (see bladder training on pages 58 & 59).

Unfortunately, such cases are rare and an unbalanced reflex bladder is more common. This occurs when the finely balanced relationship between inner bladder pressure and the sealing mechanism is disturbed (Detrusor-Sphincter-*Dys*-Synergy). The pressure caused by the reflex action of the bladder does not lead to opening of the sealing mechanism but to contraction. This results in the bladder (muscle) working even harder to try and overcome the contraction. Bladder pressure is raised once again, and this can lead to the following problems:

- increased amounts of residual urine
- dilation of the bladder wall (diverticle, pseudo-diverticle)
- reflux of the ureters and kidneys
- reduction in the capacity of the bladder
- infiltration of urine into the internal male genitals
- advanced reduction of kidney function

All of the above increases the existing risk of infection.

For people with a spinal cord injury above the level of T/6 there is the added risk of complications that many healthcare professionals outside the specialist area of Spinal Injuries may not be aware. Depending on the severity of the problem, the affected person experiences cramps and varying degrees of related disorders of the autonomic nervous system, ranging from *unbearable outbreaks of sweating*, *flushing of the face, neck and shoulders and goose pimples, to dangerously high blood pressure in spinal cord lesions above the T6 level* "*Autonomic dysreflexia or hyper-reflexia*" *which, if unchecked, can lead to fits, a cerebral haemorrhage (stroke) and death* (From Spinal Injuries Association – Moving Forward, April 1995).

In addition, the people concerned cannot even help themselves, because the triggering or knocking of the bladder increases the symptoms and dangers.

Treatment possibilities

It is the aim of every treatment to reach a nearly residual-free drainage, with as low as possible inner bladder pressure. For the treatment, there are two possibilities, either the reduction of drainage resistance or the reduction of activity of the bladder muscle. Depending on the case, the two methods can be combined.

Depending on the severity of the case, drainage resistance can be reached by the following methods:

- relaxed sitting position (in a wide sense a relaxed body)
- intermittent self-catheterisation
- slitting the sealing mechanism (sphincterotomy)
- enlarge the bladder by positioning a section of the bowel into it (augmentation cystoplasty)

The over (hyper) active bladder muscle can be treated by medication such as oxybutynin. These drugs increase bladder capacity by diminishing unstable detrusor contractions, but all may cause dry mouth and blurred vision and in extreme cases may precipitate glaucoma. For some time now, in cases of over active reflex voiding, it is possible to improve the capacity function and bladder voiding through surgery. The nerve routes that convey the level of the capacity and provide the reflex are severed (Deafferentation). The nerve routes that register the activity of the bladder are then attached to electrodes. A low pressure reservoir in the bladder is guaranteed through deafferentation, and the bladder can be voided willingly. This means that urine can accumulate in the bladder for a few hours without being disturbed by involuntary reflexes, yet can still be voided voluntary at any time. This large-scale operation is often referred to as a "Bladder Pacemaker", "Sacral Anterior Root Stimulator (SARS)", or a "Brindley Operation". This however is a major operation taking up to 4 hours, with recovery time up to one month. The operation involves cutting certain nerves which may reduce the option open to the individual as new medical advances are made. There are new treatments in magnetic resonence currently being developed which may eventually replace this SARS operation. Seek specialist advice to determine if you are suitable for such an operation and its potential advantage/disadvantage on your lifestyle.

The limp (Acontractile) bladder

When the damage to the spinal cord lies below the area of the lower bladder centre (T12), the reflex nervous system is also damaged, so the bladder has no muscle tone and doesn't contract to empty automatically. This causes a limp bladder, which leads to high quantities of residual urine and increased risk of infection. As a result, stimulating the bladder is impossible because the micturition reflex cannot be released. It is possible to attempt to void the bladder through careful application of pressure, but this can cause the inner bladder pressure to rise dangerously.

In this situation, residual and pressure free drainage can be achieved through intermittent self-catheterisation.

Stress incontinence

Even when the bladder is emptied at regular intervals without the application of pressure and with no resulting residual urine, it does not mean that continence is guaranteed.

The muscle tone of the sealing (sphincter) mechanism can give way or be damaged by earlier surgery so that loss of urine may occur even through minimal strain. Bladder strain – resulting in the involuntary release of either small or large amounts of urine – can be caused by changing position in the wheelchair, or even by sneezing or coughing.

If this form of incontinence cannot be treated with medical aids, there remains the possibility that a false sphincter – the "Scott sphincter" – can be implanted.

Urological diagnosis

This summary clearly shows that bladder function is extremely complicated, so while we hope that these notes will be of use to you in your own self-monitoring, it is essential you do this in conjunction with regular consultations with your specialist and continence adviser.

For Men: Benefits of the sheath drainage system

Although treatment – surgical or otherwise – can attain significant results, full continence is seldom achieved. The problem is how to deal with partial incontinence or in the case of someone who is fully continent but with impaired mobility, to reach the toilet in time? For men, the urinary sheath is still the best solution, both in practical terms and peace of mind against uncontrolled reflex voiding, because it enables you to lead a full social life. Only someone in this position can appreciate the benefits – both freedom and confidence – that a urinary sheath drainage system can provide.

The sheath drainage system is a solution for people with neurogenic bladders such as spinal injuries, *Multiple Sclerosis* etc. in the sense that other therapies do not always lead to continence with confidence.

For men that have had various prostate treatments or removal, some incontinence usually remains to a greater or lesser extent. Experience shows that the sheath drainage system is a satisfactory solution in most cases.

Unlike permanent catheters or disposable/reusable pads which are still widely used, it is clear that the sheath drainage system causes fewer problems when dealing with incontinence due to old age, such as skin care issues with pads and recurrent infections with catheters. For medical staff, this

means re-thinking current urinary care methods using permanent catheters or nappies, and going for the sheath drainage system as an alternative.

For Women: What are the alternatives?

Assuming a full urological investigation has ruled out pelvic floor exercises as a method of achieving full continence the choices women have are limited to:

- intermittent catheterisation
- urethral or suprapubic permanent catheterisation
- relying on urinals (see URIbag F & URIfem described later in this tutorial)
- bladder training may be possible in some cases (described later in this tutorial)
- "Sacral Anterior Root Stimulator (SARS)" or a "Brindley Operation". (see treatment possibilities earlier).

Reusable or disposable pads for men and women

These are basically specialist nappies for people over the age of 4 years old working on the principal of soaking up any leaks as efficently as possible whilst trying to keep the layer next to the skin as dry as possible to avoid irritation. Odour and social confidence will always be a problem with this type of continence management. Unfortunately they are often the first choice by some healthcare professionals as it is easier to "pad a person up" than investigate the underlying reasons for the continence problem. *However, they are not the ones expected to wear the pads!* We believe this should be the last resort as pads certainly do not inspire social confidence and can lead to all sorts of skin problems and sores, particularly when the person has little or no sensation, as may be the case with conditions such as spinal injuries. These products are not available on prescription in the UK and each local health authority has a different policy on supplying pads to people in the community. Where you live may be the difference between being supplied with as many pads as you require or just one pad to last the whole day!

Lobbach, October 1998

Günther Udri

Recommended reading

For the general public:

Moving Forward – The Guide to living with Spinal Cord Injury published by the Spinal Injuries Association (SIA). The guide is about helping people with spinal cord injury regain their independence.

(SIA contact details at the end of this tutorial) A4 binder also available on CD ROM

Promoting Continence and Product Awareness – free booklet on products produced by Promocon & Ricability (Available dirrectly from Promocon contact details at the end of this tutorial)

Childrens Continence Products – free booklet on products for children produced by Promocon & Ricability (Available dirrectly from Promocon contact details at the end of this tutorial)

For the Healthcare Professionals:

Nursing for Continence – C Norton, Beaconfield Publishers, Beaconfield

Clinical Handbook for Continence Care – B Roe, K William's, Scutari, London

Incontinece - Abrahams P, Khoury S, Wein A 1999 Health Pub Ltd Plymouth

Promoting Continence – Getliffe and Doleman, 1997 Bailliere Tindall

Good Practice in Continence Service published by the Departmant of Health April 2000 is available on the internet: www.doh.gov.uk/continenceservices.htm

Contact the Continence Foundation (contact details at the end of this tutorial) for an updated list of publications, papers and fact sheets and useful addresses for Patients, Carers and Relatives.

Glossary of terminology

Autonomic Dysreflexia ..... Spinal Injuries only. A sudden life-threatening surge in blood pressure. In Tetraplegics and paraplegics with lesions of T6 or above, an overfull bladder is the commonest cause to trigger this reaction. Once the cause is removed, i.e. bladder emptied, the danger is over.

Autonomic nervous system ..... The part of the nervous system responsible for the control of bodily functions that are not conciously directed.

Continence Adviser ..... Specialist nurse or physiotherepist with expert knowledge on helping people with continence problems. A referal from a doctor is not normally required. Contact through the Association of Continence Advisers or Continence Foundation helpline (see inside back cover for details) or local doctor's surgery/clinic.

Detrusor ..... Bladder muscle

Dys-synergy ..... The forces working against one another (see synergy)

Incontinence ..... Involuntary loss of urine

Intermittent self-catheterisation .... Emptying of the bladder by passing a special catheter into the bladder. Once the bladder is emptied, the catheter is removed.

Intravesical ..... Pressure within the bladder

Micturition ..... Emptying of the bladder

Neurogenic ..... Pertaining to the nerves

Pseudo diverticle ..... Widening of the bladder

Reflux ..... Flowing back of urine from the bladder into the ureters and kidneys

Residual Urine ..... Measure of a post-micturition, urine (whats left in the bladder after emptying)

Sacral miction center ..... Lower bladder centre in the transitory area between the thoracic and lumbar vertebrae

Sphincter ..... Sealing muscle (inner and outer)

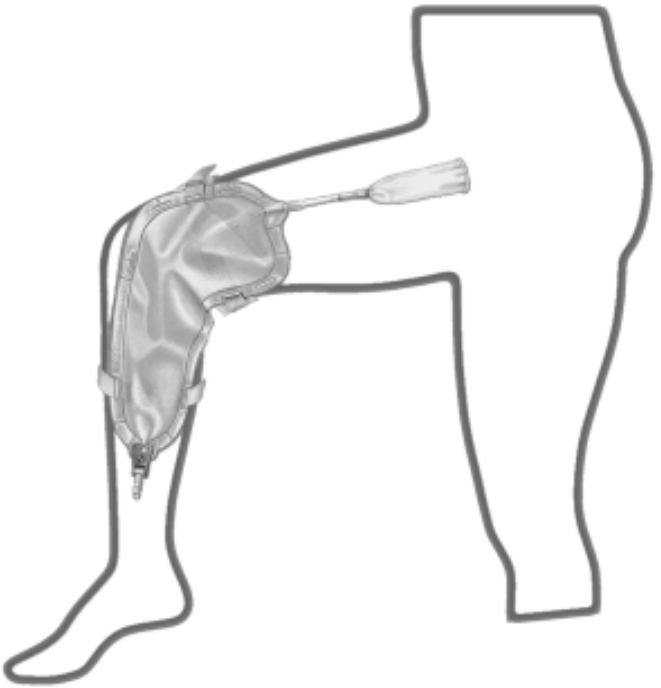
Suprapubic catheter ..... Permanent catheter which will be passed into the bladder through the abdominal wall. Requires a minor outpatients surgical procedure to initially fit. There is evidence that points to them being less prone to bladder infections than ureathral catheters. Also prefered by many people who have an active sex life

Synergy ..... The working together of forces (see dys-synergy)

Ureatral catheter ..... A permanent catheter which will be passed into the bladder through the urethra (the usual channel for urination)

Trauma ..... Injury through force e.g. an accident

The principle of an up-to-date urine drainage system



Criteria for choice

For Men

- **Urinary sheath type**
  Latex urinary sheaths
  Synthetic urinary sheaths
  “Funnel type” urinary sheaths
- **Urinary sheath attachment**
  Skin adhesive, adhesive tape
  Self-adhesive urinary sheaths

For Men & Women using a urethral or suprapubic catheter

- **Drainage tubes**
  Flexible and discreet
  Variable length (can be shortened as part of the prescription service in the UK) with adapter to connect to any urinary sheath or catheter in the UK
- **Inlet tube non-return valves**
  4 eyelets on entry into bag to ensure clear flow prevents reflux of urine
- **Leg bags**
  Capacity, shape
  Material, leakproof
- **Straps**
  Soft material with anti-slip properties
  Wide enough to comfortably secure leg bag without damaging skin
- **Closures**
  Swing tap with easy close security band
  Sliding tap
- **Attachment to overnight bag**
  Will fit any UK night bag with supplied connector
- **Groups aimed at**
  Wheelchair user
  Ambulant people and children
  People in bed

(ladies go to page 37 to skip the following section on urinary sheaths)