

# A Patient's Guide to Cryosurgery for Prostate Cancer

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**This booklet is intended to help you understand your prostate and  
what your operation will involve**

This is a booklet for men who are either considering treatment, or are being treated, for prostate cancer by cryosurgery. It also provides useful advice and information for their families. It is best read in conjunction with the more general booklet in this series, *A Patient's Guide to Prostate Cancer*, which provides an overview of the subject and introduces terms used in this booklet. This booklet may have already been given to you, or it may be viewed and downloaded from the website: [www.prostatecancercentre.com](http://www.prostatecancercentre.com)

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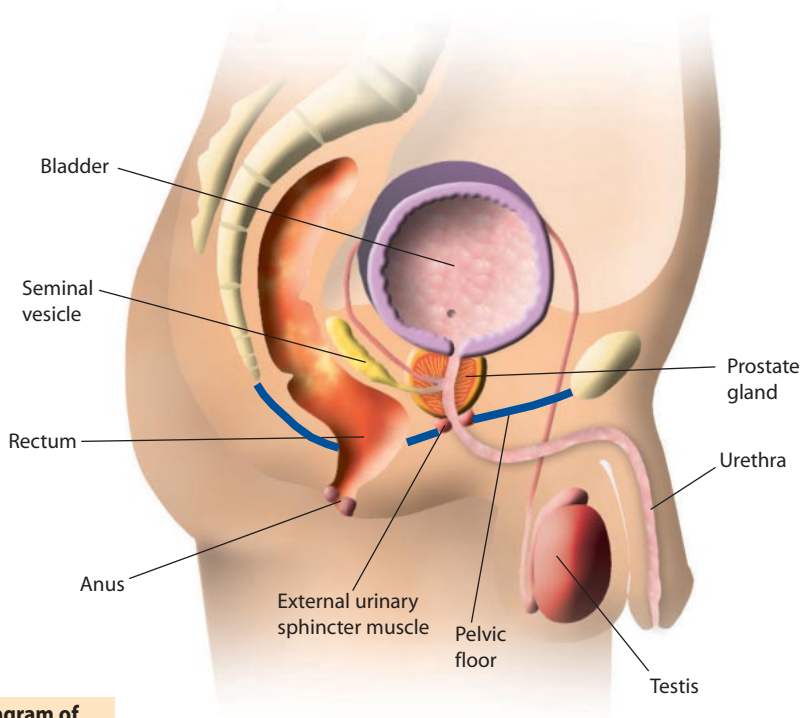
\*John Davies has pioneered cryosurgical treatment for prostate cancer in the United Kingdom

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# Introduction

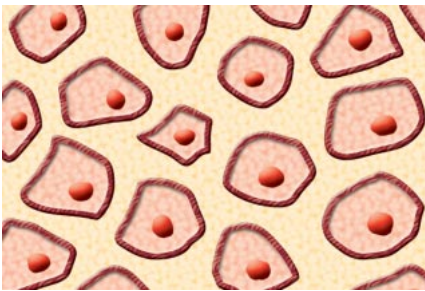


**Diagram of the prostate area (side view).**

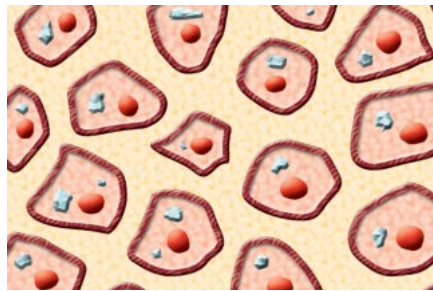
**Cryosurgery** is a technique designed to destroy the prostate gland in a minimally invasive manner (i.e. there is no need for incisions), utilising cryogenic gas. It can be used for men with prostate cancer confined to the gland and also in men where the prostate cancer is **locally advanced** (i.e. the cancer

has spread to the outer edge of the gland). In the United Kingdom, it is mainly used for men who have recurrent prostate cancer following radiotherapy treatment (this also includes **brachytherapy**, a procedure whereby small radioactive seeds are implanted into the prostate). For more information on either radiotherapy or brachytherapy, please read *A Patient's Guide to External Beam Radiotherapy* and *A Patient's Guide to Prostate Brachytherapy*, respectively, which should be available at your hospital or may be viewed and downloaded from the internet at [www.prostatecancercentre.com](http://www.prostatecancercentre.com)

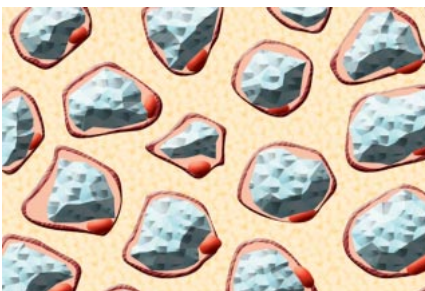
## How cryosurgery works



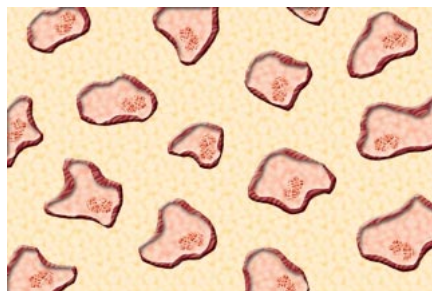
**A: Cells before treatment**



**B: Ice crystals beginning to form inside cells**



**C: Ice continues to form and destroys cell structures**



**D: After warming, ice has melted, leaving only dead cells**

Although minimally invasive, it is a procedure that requires expertise in prostatic ultrasound scanning, cryoneedle placement and experience in monitoring ice-ball formation.

## Cryosurgery

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Cryosurgery is also referred to as **cryoablation** or **cryotherapy**. It is a technique that involves using a carefully controlled freezing process as the surgery, instead of a scalpel. Cryogenic gases are circulated through tiny cryoprobes or needles within the prostate, which are introduced through the skin.

The concept of using extreme cold to treat prostate cancer was developed in the 1960s, when liquid nitrogen was used to freeze the prostate in a rather unsophisticated manner, but its use was limited by high complication rates and unsatisfactory results.

However, the introduction of liquid argon and helium gas technology, linked to sophisticated and accurate prostate ultrasound scanning techniques, has allowed cryosurgery to develop, using a procedure that minimises complications and improves results.

During the process, the prostate is frozen to  $-140^{\circ}\text{C}$  by argon gas, then warmed, using helium gas. Fine cryoneedles are introduced through the **perineum**, the area between the scrotum and anus, under ultrasound control and using a template for accuracy.

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There are no incisions. Temperature needles are used to monitor the process precisely, particularly around the sphincter muscle, which is situated below the prostate, and also the wall of the rectum. A warming catheter is used throughout the procedure, to protect the inner lining of the urethra and sphincter muscle area.



Cryoneedles attached to cryotherapy machine.

## Patient selection

Cryosurgery is most commonly used for men with prostate cancer that has recurred after radiotherapy treatment (including brachytherapy) when it remains confined to the prostate gland. It has also been used to treat patients with locally advanced disease.

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Cryosurgery is best used in situations where the PSA is less than 15 and the Gleason grade of the pathology is grade 7 or below.

Men who have severe urinary symptoms, or those who have had previous prostatic surgery may not be suitable, although this will be assessed at the initial consultation by a questionnaire and urinary flow tests. A preliminary telescope examination, under local anaesthetic, and bladder pressure monitoring, also under local anaesthetic, may be necessary as part of the initial assessment.

Some men may have a large prostate gland, which can make cryosurgery difficult. It is usually possible to shrink the gland, using hormonal agents which are often used in prostate cancer treatment. This is discussed at the initial consultation if necessary.

## **Advantages of cryosurgical treatment**

Cryosurgery is minimally invasive and can be carried out either as a day-patient case or with an overnight stay. There is little in the way of post-operative pain, although bruising is quite common around the site of the cryoneedles in the perineal area.

Most men are up and about quickly following the procedure, although it is advisable not to take strenuous exercise during the period whilst the catheter is in place.

There is usually no need for a transfusion, as blood

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loss is minimal. Cryosurgery can be repeated at a later stage if necessary.

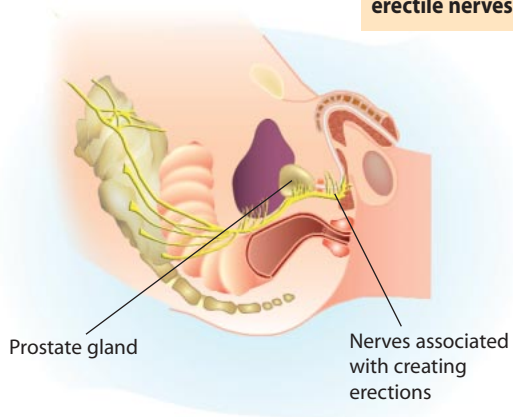
Cryosurgery can be used for men who have a recurrence of prostate cancer post-radiotherapy (including brachytherapy). It can also be used in men who are unsuitable for major surgery or radiotherapy.

Focal cryosurgery, a procedure in which the tumour within the gland is identified and treated, has been introduced in some centres, particularly in the United States. The technique is still under review, although early results are promising, especially with regard to lower impotence rates.

## Disadvantages of cryosurgical treatment

The technique has a higher risk of impotence than other treatments, as the nerves involved in creating an erection lie just behind the prostate gland, adjacent to the rectum, and are included in the freeze process. However, recovery can occur over 12 months or so. Patients can be instructed in the use of medications such as Viagra, injection therapy and vacuum erection devices, if necessary.

Figure showing close proximity of the prostate gland and erectile nerves.

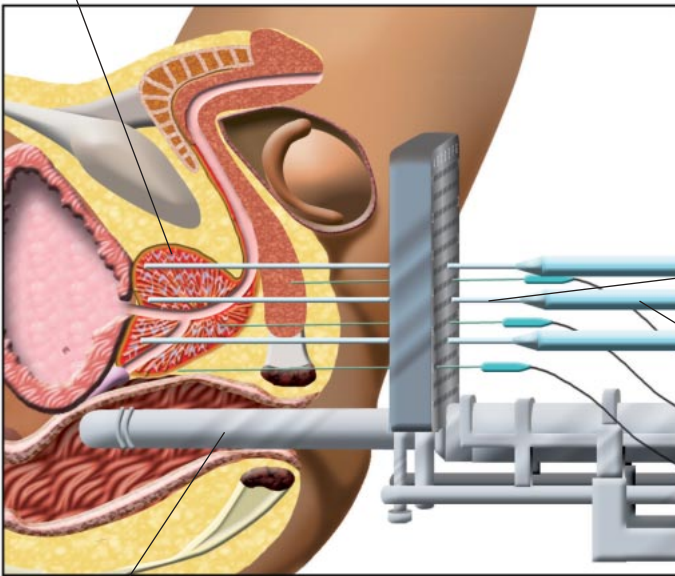




# Pre-Operation

On admission to hospital, the procedure is discussed both with the surgeon and with the anaesthetist. The procedure can be carried out under either a general or a local anaesthetic (i.e. spinal). Patients are usually given a simple enema to clear the lower bowel.

Prostate gland



**Cryosurgical technique.**  
**1: Placement of cryoneedles under ultrasound guidance.**

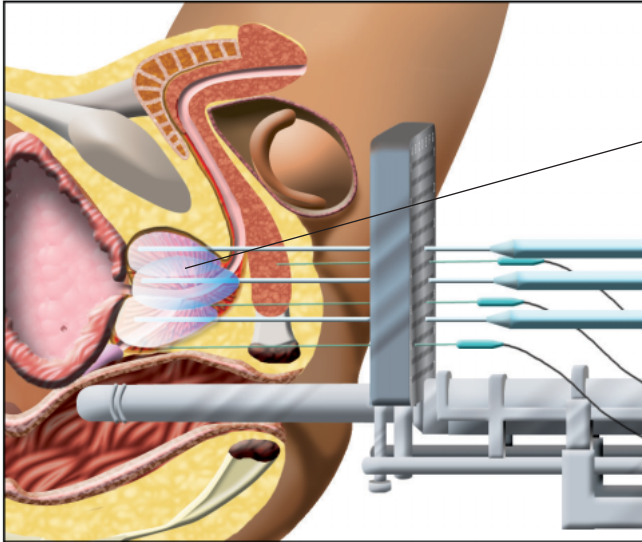
Cryoneedle

Argon/helium gas supply

Transrectal ultrasound

The procedure takes between 1-2 hours. Intravenous antibiotics are given to guard against the risk of infection.

Cryoneedles are introduced through the perineum under ultrasound guidance and a computer



Ice ball  
developing in  
prostate gland

**Cryosurgical  
technique.  
2: Destruction  
of prostate  
tissue by ice  
formation.**

technique, utilising a template grid. Full temperature monitoring is carried out and the urethra is warmed to preserve the sphincter muscle.

## Post-Operation

When the patient awakes, he will have a urethral catheter draining through his penis. This allows swelling of the prostate to settle down in the 14 days or so following the cryosurgery. There will be dressings around the perineum, to minimise bruising. The patient is returned to the ward and later instructed on how to use the catheter. The patient is discharged with dressings, which are changed daily following a bath. Simple painkillers may be necessary to relieve discomfort, although this is usually quite minimal.

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## Complications and side-effects

- Constipation is quite common following any surgical procedure and is usually managed by simple means such as gentle laxatives and increased fluid intake.
- Bruising of the perineal area is common and is managed by simple dressings and avoiding prolonged periods of standing in the two weeks following cryosurgery.
- Blood in the urine is very common following catheter insertion and removal and can occur intermittently for several weeks after cryosurgery.
- Longer term problems can include urinary incontinence, particularly during coughing and sneezing (stress incontinence).
- Very rarely, damage can occur to the rectum (fistula). This complication may need further surgery to resolve.
- Patients are discharged following catheter removal, with simple pads to minimise discomfort and are given full instructions in pelvic floor exercises (see page 10).

## Impotence

This is a common problem following cryosurgical treatment and will have been discussed in detail before consideration of cryosurgery. Recovery is possible over twelve months or so. There are various ways of helping with this problem and these are usually discussed before the operation with the surgery and cryosurgery nurse specialist.



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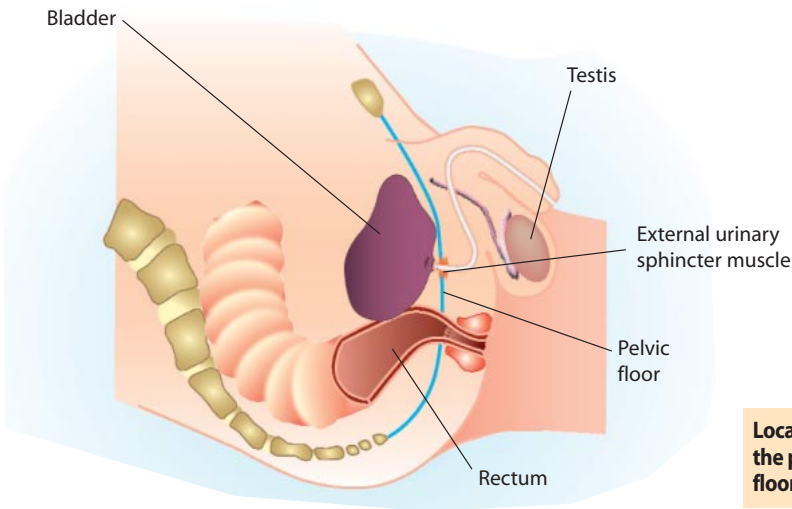
# Post-Cryosurgery and Removal of Catheter

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Men can return to normal activities following catheter removal. It is advisable to continue with the pelvic floor exercises (see below).

## Pelvic floor exercises

- To do these exercises effectively, you need to first relax your abdominal and buttock muscles.



- To identify and correctly contract the pelvic floor muscles, imagine that you are trying to hold back bowel movements or from passing gas.
- During this action, you should feel the opening of the rectum contract.

- 
- Tighten the muscles for 3-5 seconds and then relax for 6-10 seconds. Repeat this sequence 20-25 times.
  - Do the set of 20-25 contractions 3-4 times daily.
  - During the first week of the programme, perform the exercises whilst lying down, but later while sitting and standing. After the initial learning period, perform the exercises when you need them, i.e. just before sneezing, coughing or straining.

## Summary

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Cryosurgery is an effective treatment for men who have evidence of recurrence of prostate cancer following treatment utilising external beam radiotherapy or brachytherapy and has been reviewed and approved by the National Institute of Clinical Excellence (NICE). However, staging investigations are essential to check that the disease remains confined to the prostate gland.

Cryosurgery is a technique requiring considerable skill in ultrasound scanning of the prostate and needle placement. In addition, as with all surgical techniques, the best results are obtained by surgeons who have carried out a large number of these procedures. This should be discussed with the surgeon before making a final decision with regard to treatment.

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# Commonly Asked Questions

## (taken from The Prostate Cancer Charity Toolkit)

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- Will I be given hormone treatment prior to the cryosurgery? If yes, why? If not, why not?
- How long does the operation take?
- Will I have a blood transfusion?
- How many of these operations do you do a year?
- Will you be targeting any organ other than my prostate?
- Will you attempt to do nerve-sparing cryosurgery if possible? In your experience, how successful is this procedure?
- What are your results in respect of impotence and incontinence?
- How long will I be in hospital?
- Will I have much pain after cryosurgery and how will it be controlled?
- If I go home with a catheter, when will it be removed and by whom?
- How soon is my follow-up appointment after discharge?
- If I have continence problems after the cryosurgery, how would these be managed and by whom?
- How often will my PSA be checked?
- What should the PSA be after cryosurgery? What would it mean if it doesn't reach that level? What would you do then?

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## Useful website addresses and support networks

### **The Continence Foundation**

[www.continence-foundation.org.uk](http://www.continence-foundation.org.uk)

*'For people with bladder and bowel problems.'*

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### **The Prostate Cancer Centre**

[www.prostatecancercentre.com](http://www.prostatecancercentre.com)

*'Providing a single point of referral to specialists at the forefront of the treatment of localised prostate cancer.'*

Mr John Davies - *Cryotherapy and high intensity focused ultrasound (HIFU).*

Mr Christopher Eden - *Laparoscopic radical prostatectomy.*

Professor Stephen Langley - *Brachytherapy.*

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### **The Prostate Cancer Charity**

[www.prostate-cancer.org.uk](http://www.prostate-cancer.org.uk)

*'Prostate cancer is our sole concern.'*

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### **The Sexual Dysfunction Association**

[www.impotence.org.uk](http://www.impotence.org.uk)

*'To help sufferers of impotence (erectile dysfunction) and their partners.'*

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### **The Prostate Project**

[www.prostateproject.org](http://www.prostateproject.org)

*'A local charity promoting male health.'*

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THE  
PROSTATE  
PROJECT  
FOUNDATION



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# Useful Telephone Numbers

For administrative matters, treatment dates or enquiries, **during office hours**, please contact:

## **NHS Patients**

*Medical Secretary to Mr John Davies*  
Royal Surrey County Hospital  
*Telephone: 01483 571122 Ext: 4878*

*E-mail: [jhdavies@uk-consultants.co.uk](mailto:jhdavies@uk-consultants.co.uk)*

## **Private Patients**

*Private Secretary to Mr John Davies*  
Mount Alvernia Hospital  
*Telephone: 01483 567517*  
*Fax: 01483 455488*

*E-mail: [jhdavies@uk-consultants.co.uk](mailto:jhdavies@uk-consultants.co.uk)*

For enquiries relating to patient care or problems, **during office hours**, please contact:

*Cryotherapy Nurse Specialist*  
Royal Surrey County Hospital  
*Telephone: 01483 571122*  
*Pager: 0766 (via hospital switchboard)*

*Cryotherapy Fellow*  
Royal Surrey County Hospital  
*Telephone: 01483 571122*  
*Pager: 4841 (via hospital switchboard)*

For enquiries relating to patient care or problems, **at other times**, please contact the ward below or discuss with your GP:

## **NHS Patients**

Frensham Ward  
Royal Surrey County Hospital  
*Telephone: 01483 406858*

## **Private Patients**

Surgical Ward  
Mount Alvernia Hospital  
*Telephone: 01483 570122*

## **Hospital Addresses**

### **NHS Patients**

Royal Surrey County Hospital  
Egerton Road, Guildford  
Surrey GU2 5XX

### **Private Patients**

Mount Alvernia Hospital  
Harvey Road, Guildford  
Surrey GU1 3LX

