

Benign prostatic hyperplasia: How do newer procedures compare with standard surgery?



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The prostate gland is an important part of the male sexual organs. Its main function is to produce the fluid in semen, called ejaculate. The prostate lies beneath the bladder, between the anus and the base of the penis, and surrounds the urethra (the canal that carries urine out of the bladder and through the penis) like a ring. It is about the size of a walnut in early adulthood. The prostate keeps growing very slowly throughout life, but then in about 1 out of every 5 men it starts to grow quite a lot after they are 50 years old.

The medical term for an enlarged prostate is benign prostatic hyperplasia or hypertrophy (BPH). "Hyperplasia" means enlargement. Sometimes the symptoms that are associated with this condition are collectively called benign prostatic syndrome (BPS). An enlarged prostate can put pressure on the bladder and the urethra, obstructing the flow of urine down the urethra and affecting the muscles under the bladder. This causes several urinary symptoms, including a weak urine stream, not being able to fully empty the bladder, and a frequent need to urinate (including at night).

Most men manage without treatment. There is usually no need for immediate treatment so it should be possible for you to weigh up the pros and cons of different treatment options. If the symptoms occur frequently or are very bothersome there are treatments that can help. The most commonly used treatments are medicines. Some men will consider surgery, but it is not often necessary. You can read more about the prostate, BPH and the other treatment options [here](http://www.gesundheitsinformation.de/prostate.539.56.en.html) (URL: <http://www.gesundheitsinformation.de/prostate.539.56.en.html>) . In this summary we focus on the research about standard surgery and other procedures that aim to remove prostate tissue. In our fact sheet (URL: <http://www.informedhealthonline.org/index.442.en.html>) on surgical procedures for the treatment of BPH you can find out more about the practical issues with these interventions, and what factors could be taken into consideration when deciding whether or not to have surgery.

When surgery might be considered

Surgery and similar procedures for BPH do not usually

completely remove the prostate. Rather, the goal of these treatments is to reduce its size so that it no longer puts pressure on the bladder and urethra. Most surgery for BPH is not what surgeons call "open surgery", although that is occasionally necessary. An open procedure is when an incision (cut) is made in the skin. Most of the procedures done to reduce the prostate are done by inserting a miniature instrument and camera down the urethra to operate either on the urethra itself, or the prostate tissue that is obstructing the urethra. We explain these procedures below.

Surgical procedures can provide substantial relief from the symptoms caused by BPH, but they are usually only considered as a last resort. Sometimes surgery is essential, for example when obstruction has become so severe that the man can no longer urinate at all. This is called urinary retention and it is uncommon. An operative procedure is usually only otherwise considered when symptoms are becoming too difficult to manage and medication either has not worked or the man cannot use it, for example because he does not tolerate it well.

For some men, surgical procedures will not be an option because they have complications or other illnesses that mean surgery is too risky or will not help.

Types of surgery

There are many different surgical techniques used to treat benign prostate enlargement. A variety of instruments and devices have been developed to cut away or destroy excess prostate tissue. Not every specialist and every hospital will use every single technique. However, there are some surgical procedures that have become standard practice.

- Most common procedures - standard surgery:

The most common type of surgery performed is so-called closed surgery (not with open incisions). These standard kinds of surgery include transurethral resection of the prostate (TURP) and variations, like transurethral electrovaporisation (TUEVP) and transurethral vaporisation (TUVRP) of the prostate. In all of these procedures a surgeon inserts a small instrument into the urethra and pushes it through to the prostate. The instrument used in TURP is a thin tube called a resectoscope. This consists of a tiny camera (endoscope) with a light, an electrical loop to mechanically remove

bits of tissue as well as seal off blood vessels with the heat it produces, and valves for controlling the fluid used to flush the tissue out. The operation is done under anaesthesia and it takes about 90 minutes.

Other forms of closed surgery include TUIP, or transurethral incision of the prostate. Here, instead of removing tissue, the urethra is widened with one or two small cuts where the bladder meets the prostate.

Open surgery techniques are also considered to be standard surgery. However, nowadays they are hardly used in the treatment of BPH in Germany.

- Other procedures:

These procedures are based on various sources of energy, such as lasers or microwaves. As with TURP, the instruments are inserted into the urethra and guided through to the prostate, but a variety of techniques are used to try to remove or destroy tissue.

Other than laser procedures, some of the more commonly used techniques include TUNA (transurethral needle ablation) and TUMT (transurethral microwave thermotherapy). TUNA uses radio waves and TUMT uses microwaves.

Comparing the different procedures

It is thought that laser therapies and other similar treatments are less damaging ("minimally invasive") and so cause fewer complications than standard surgery. But is this really true? What about effectiveness? Are newer techniques as good as surgery at relieving symptoms? Researchers from the German Institute for Quality and Efficiency in Health Care (IQWiG) looked into these questions together with researchers from the University of Duisburg-Essen and the University Hospital Giessen-Marburg in Germany.

To really be certain about what treatment approaches work best, all of the many different procedures would have to be compared to each other - and compared to the alternatives like medications. To have a test where you can really be sure of the result, you would need to compare what happens to a group of people who have one treatment, with what happens to a similar group of people who have no treatment, medication or a different treatment.

The researchers analysed a total of 65 trials involving about 7,000 men, most of whom had quite severe symptoms. The average age of the men in these trials was 67. There were 16 different procedures in these trials that were not considered to be standard surgery. Despite the large amount of research, many questions remain unanswered because there were problems with many of the trials. For example, a lot of men dropped out of the trials so we cannot be sure about their treatment results. This makes it difficult to evaluate the long-term effects of the treatments. Another problem of the trials was that they did not always report all adverse effects. What is more, hardly any of the trials looked at how much pain people experienced with each of the treatments.

The main adverse effects that can occur after prostate surgery or other procedures are sexual problems, particularly "dry climax" (retrograde ejaculation), urinary tract infections and, more rarely, loss of bladder control (incontinence). Retrograde ejaculation is where no semen or much less than usual is discharged from the penis during ejaculation - instead, it flows backwards into the bladder. This can happen if the muscles that close the entrance of the bladder during ejaculation are damaged. Although retrograde ejaculation is harmless and usually does not affect men's sensation of orgasm during sex, it reduces their fertility.

Sometimes a urinary catheter is required for a few days or weeks after treatment. This is a thin plastic tube that is inserted into the urethra and pushed through to the bladder, so that the urine can leave the bladder through the catheter without coming into contact with the healing wound. And - as with any operation - there is a risk of bleeding that may need treatment. Fatal complications are extremely rare.

Transurethral resection of the prostate (TURP)

The results of the trials show that, compared to the other procedures that were looked at, TURP has the best proven long-term effect in relieving the symptoms of an enlarged prostate, such as having to get up at night to urinate or having problems emptying your bladder. There was also some evidence that five other procedures might be effective too: VLAP, TUMT, HoLEP, HoLRP and TmLRP (see below).

The men who took part in the research on TURP were asked beforehand how bad their symptoms were. Most of them said they had severe symptoms, like having to get

up more than three times a night to go to the toilet, or regularly having to go to the toilet twice within two hours during the day. After the operation they reported having far fewer symptoms. For example, three out of four men said they now only have to go to the toilet once, or even not at all, during the night.

The research showed that urinary tract infections and urinary retention were less common with TURP than they were with some of the newer treatments. Also, a further operation is less likely to be necessary with TURP than with several other approaches. But compared to a lot of the newer methods it is associated with a higher risk of bleeding that requires treatment. This adverse effect was a lot less common with many of the less invasive procedures.

Men who had TURP usually had to stay in hospital for two to four days after the operation, which is somewhat longer compared to some of the other procedures.

As well as the adverse effects mentioned above, TURP may cause so-called TUR syndrome, which is associated with temporary nausea, vomiting or confusion. This rare but potentially life-threatening adverse effect can occur when some of the fluid that is used to wash away the prostate tissue removed during surgery gets into the bloodstream. In the trials, 2 to 3 out of 100 men (2 to 3%) had this problem. In rare cases TUR syndrome can lead to heart or circulation problems, but no serious complications were reported in any of these trials.

Other treatments

The main laser treatments tested in the trials were visual laser ablation of the prostate (VLAP), holmium laser enucleation (HoLEP), holmium laser resection (HoLRP) and thulium laser resection (TmLRP) of the prostate.

Although VLAP relieved the symptoms, it was found to be less effective than TURP. But HoLEP, HoLRP and TmLRP could be as effective as TURP. More and better trials are needed to be more sure about this, though.

The advantage of the four laser therapies is that men were able to leave hospital a bit earlier compared to men who had TURP. Also, the catheter could be removed one to two days earlier in men who had HoLEP, HoLRP or TmLRP. However, it was not possible to reach clear conclusions about some of the other kinds of laser treatment, such as interstitial laser coagulation (ILC).

Microwave thermotherapy (TUMT) has also been well studied. Most of the trials used a particular type called high energy microwave thermotherapy (HE-TUMT). The research showed that this treatment relieved BPH symptoms, but that it was less effective than TURP at improving the men's quality of life.

Another drawback of TUMT was that men needed a catheter for between 9 and 12 days longer after treatment compared to after TURP. One advantage of TUMT is that it can be performed under local anaesthetic without having to be admitted to hospital overnight. In the trials, bleeding that required treatment was less common in the men who had TUMT compared to those who had TURP.

What the IQWiG researchers concluded

The IQWiG researchers did not find enough scientific evidence to show that the newer procedures, which are often claimed to be "gentler" or "less invasive", are better than, or as good as, established standard surgery. But there is evidence which suggests that some treatments can reduce BPS symptoms, and may have some advantages as well.

Some of the less invasive procedures probably make it possible for patients to leave hospital sooner. Major complications such as bleeding seem to be less likely after certain procedures than after TURP. There are probably also differences between the treatments in terms of other adverse effects, like retrograde ejaculation and pain associated with the operation, but these have not been studied well enough. Generally speaking, it seems that the more effective treatments are also associated with a higher risk of complications.

It is particularly unclear how long the effects of laser and heat therapy last. Most of the trials of these treatments did not go on for longer than six or twelve months, did not have enough people in them, or had other flaws. This means that the results are not reliable enough to draw clear conclusions. Better trials with more participants could provide more clarity here.

Our fact sheet (URL: <http://www.informedhealthonline.org/index.442.en.html>) on surgical procedures describes the various approaches in more detail and may help you to decide what treatment would be best for you.

Author: German Institute for Quality and Efficiency in Health Care (IQWiG)

Note

This health information is a summary of a scientific report published by IQWiG. It is not an assessment of the right to have health care services reimbursed by statutory health insurance funds in Germany. By law, decisions about the reimbursement of diagnostic and therapeutic procedures can only be made by the German Federal Joint Committee (G-BA). The Federal Joint Committee takes IQWiG reports into consideration in its decision-making process. You can find information about the decisions of the German Federal Joint Committee on its English-language website, www.english.g-ba.de (URL: <http://www.english.g-ba.de/>).

Glossary

endoscope

With an endoscope, a doctor can look inside parts of the body that have openings, like the bowel, lungs, vagina or bladder. Endoscopes usually have a little light and a camera. Depending on the type of examination, an endoscope could be a short, stiff pipe that enables inspection of the bladder or vagina. Or it can be a long flexible tube that can be inserted into, for example, the stomach or bowel.

evidence

Evidence is what we call scientific proof from well-conducted, good-quality scientific trials that have been carefully designed to answer specific questions. Depending on the types of questions, different scientific research methods (types of study) are most appropriate to find reliable answers to these questions. Randomized controlled trials (RCTs), for example, are the best way to get reliable evidence on the effectiveness of medical treatments (interventions). This type of study, however, is not the best form of evidence for all possible questions, and does not provide the best answers to all kinds of questions, either. Epidemiological studies, for example, are very suitable for establishing well-founded proof for the spreading of a disease in the population.

coagulation

Coagulation or clotting stops bleeding. Coagulation is a complex process involving several steps. If a blood vessel is damaged, thrombocytes (platelets) line the wall of the blood vessel. The platelets clump together. This process is called aggregation. Clotting factors, which are particular proteins formed in the liver, also travel to the wounded blood vessel. A complex chain reaction including these factors gathers more platelets and repairs the wound. The walls of the wound close together and connective tissue cells help build new tissue.

Sources

German Institute for Quality and Efficiency in Health Care (IQWiG). *Non-drug local procedures for treatment of benign prostatic hyperplasia. Final report N04-01. Version 1.0.* Cologne: IQWiG. June 2008. [Executive summary (URL: http://www.iqwig.de/download/N04-01_Executive_summary_Non-drug_local_procedures_for_treatment_of_benign_prostatic_hyperplasia)] [Full text (URL: http://www.iqwig.de/download/N04-01_Abschlussbericht_Nichtmedikamentoese_lokale_Verfahren_zur_Behandlung_de_BPH.html) - in German]

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The German Institute for Quality and Efficiency in Health Care (IQWiG)

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Evidence basis of our health information

Our information is based primarily on systematic reviews of the effects of health care. Systematic reviews are necessary to gain an objective picture of health care. In order to do this, a clear question is formulated. Researchers then find all the relevant studies that could answer this question. They then evaluate those studies.

You can find a list of the evidence and other scientific literature on which this information is based at [**www.informedhealthonline.org**](http://www.informedhealthonline.org)

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