



Reverse my Vasectomy

*Key facts for couples considering a
Vasectomy Reversal*

www.reversemyvasectomy.co.uk



This booklet of questions and answers is based on real conversations with real people over a very long period, whether they are on the phone, face-to-face or by email. Some may seem trivial and others appear complex. That is the very nature of the beast. The answers have been kept to the point where possible.

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Costs and financing your reversal

Do I pay for appointments?

No. All appointments are free, whether you proceed with a reversal or not.

Is the price quoted all inclusive?

The price quoted includes all fees relating to the admission – hospital, surgeon, anaesthetist, nurses and food etc. It is a fixed price so you will not be charged more if you need a longer operation or hospital stay or have to return to see us. We have not yet needed to re-admit a patient within 30 days of surgery, but the costs of admission to the BMI Bury St Edmunds would also be covered should that eventuality arise.

The fee doesn't include the cost of a post-op sperm count as we see patients from far and wide and most men have these performed nearer to home. The cost of this varies from region to region.

When do I have to pay?

You will be asked to pay a deposit of £300 to the hospital when you confirm your booking and date of surgery with them. The rest is payable about a week before your admission date.

How can I afford a reversal?

A lot of couples choose to use the BMI card to finance their reversal. It is easy to apply for and offers 0% interest free credit over a defined period.

How do know if I qualify for a BMI card to fund my vasectomy reversal? This is a common question. A BMI card does indeed help spread the payments for your vasectomy reversal, typically over 12 months. The easiest way to check is by following the link below onto the BMI web site (by pressing it). This will lead you onto the page and application forms. The BMI staff can also help with the application process if so desired.

What is the BMI Card? The BMI Card can be used to pay for treatment at any BMI Healthcare hospital or treatment centre. It can be used once or as many times as you need to (subject to available credit). It allows you to choose a credit limit that suits your circumstances and 12 months' interest-free payment terms.

How do I apply for a BMI Card? You can download or print an application form at <https://www.bmihealthcare.co.uk/bmicard> or apply by email, sending it to bmicard@bmihealthcare.co.uk.

The online link of the **BMI CARD** should you need it is:

<https://www.bmihealthcare.co.uk/~media/pdf/patient-information/bmi-card/bmicardapplicationformandagreement.ashx?la=en>

You can also print off the form and send / write to the BMI at: **BMI Card Team, BMI Business Services, 10 Eden Place, Cheadle, Cheshire SK8 1AT** or phone them on 0161 216 2500 and select option 8.

What about the interest rate on repayments? The interest rate and APR for any healthcare purchase is 0% for the first twelve months starting with the date the purchase is debited to your account. Thereafter, interest will be charged on the remaining balance of the account.

Is there a minimum spend? No, the BMI Card can be used to pay for any value of treatment up to a maximum of £20,000 (subject to status). The minimum amount that can be applied for is £1,000 and all applications will be rounded up to the nearest £1,000.

Is there a minimum age to apply for the BMI Card? Yes, applicants must be at least 18 years of age.

The Basics

Probably the first description of what we now call a vasectomy was by a surgeon, Sir Astley Cooper at the beginning of the nineteenth century. It was not for contraception on a large scale however until the 1950's.

How many men undergo vasectomy reversal each year in the UK? No one knows exactly. We do know that about 1 in 8 men in the UK under 70 have had a vasectomy and that 1 in 20 of these later seeks a reversal.

Nearly half (42%) of marriages end in divorce, with about 40% of men entering divorce having had a vasectomy.

Do I qualify for NHS vasectomy reversal? It is actually very difficult to get permission from the NHS funding bodies to allow a vasectomy reversal. Under exceptional circumstances they may agree, but even then the exact criteria vary from region to region and from patient to patient. Typical reasons would be:

- Re-marriage after death of a partner / spouse
- If you (the man) have tragically lost a child
- Loss of your unborn child while your partner was pregnant and where you had unfortunately had a vasectomy during that actual pregnancy prior to the loss
- Sometimes they may agree for 'post vasectomy pain syndrome' but this is, in our experience, the least reliable

Can I achieve a pregnancy after a vasectomy WITHOUT having a reversal? It is possible but very unlikely. Certainly in the first few months after a vasectomy a man can take longer than expected to clear all the sperms out of the tubing so it could be possible initially. Early vasectomy failure occurring after about 1 in 100 vasectomies.

Beyond that point it is actually rare to achieve a pregnancy. There is a phenomenon known as '*spontaneous recanalization*', whereby the vas tubing manages to knit back together, but the vas channel is usually smaller than the original and any re-appearance of sperm would be transient and in small numbers. It happens after about 1 in 2,000 vasectomies.

Why doesn't every surgeon offer a reversal? Vasectomy reversal has become a highly evolved procedure that requires experience and training in microsurgery.

How can you recognise a trained urological surgeon? He / she will:

- Possess FRCS Urol (urology) along with an MS, PhD or MSc qualification
- Be on the *Specialist Register*
- Should have a track record of microsurgical operations for vasectomy reversal
- Will be a member of the *Royal College of Surgeons*, the *British Association of Urological Surgeons* and also be recognised as a specialist by the *General Medical Council* (GMC)

How you we obtain the vasectomy reversal testimonials that we publish on the web site? Can we show the originals? We receive testimonials from a number of sources. Any individual testimonial may have been by one of the below:

- Letters from patients / partners: In recent years these have been scanned as proof of receipt, but previously there were not retained.
- Cards from patients / partners: These often have a baby picture attached! These have also been scanned in recent years as proof of receipt.
- Emails: These are saved and can be seen on request when in clinic or when in hospital. We cannot share original email addresses.
- More recently we have enlisted the services of 'TrustSpot', an on-line company. TrustSpot collect testimonials and effectively offer independent verification. Currently, the numbers are low as we only started in September 2016. These tend to relate to the day of admission early post-op recovery, as opposed to describing a pregnancy etc., as they tend to be sent out shortly after the reversal. These can be viewed on the front landing page of *Reverse My Vasectomy*.

Is microsurgery really better? Yes. Microsurgical techniques have been shown to improve overall reversal outcomes:

- Positive sperm counts (the patency rates) occur in 85-90% after microsurgery vs 80% without any visual enhancement
- Pregnancy rates of 50-70% with vs 20-40% without
- Improved durability: post-surgery sperm counts are more likely to deteriorate over time after the non-micro surgical approach, most probably because of scarring at the join site

Does a physical examination matter before a reversal? Yes. We can tell a lot from examining you. We would prefer this to be in clinic beforehand, but it can be done on the day as it will not usually be the 'deal breaker' that determines 'yes' or 'no'. You will also need to be further examined during the operation. So what can we detect?

- A higher sited vasectomy can lead to improved results, as the calibre of tubing is better. It may also provide greater protection against back pressure effects (such as 'tubal blowouts' and scarring)
- A sperm granuloma on the tube is a good sign (protects from back pressure)
- Evidence of a hernia scar or previous scrotal surgery (especially surgery to bring down the testes down in childhood)
- The size of testes as one or both may be very small (fertility can be hit if the testes hasn't developed or has shrivelled)
- The length of gap between the vas ends - (larger gaps are more awkward, although we can get around this)
- Are there two testes? This sounds obvious but not all men mention it. We always try to reverse both sides

Do you reverse one or both sides? Both (unless there are major reasons why we cannot, such as a missing testicle). You may only need one side to actually work in order to re-start your family, but by reversing both sides it can only increase your

chance of success. It takes longer to perform the surgery, but that isn't a problem as you are fast asleep and completely oblivious anyway!

Is a vasectomy reversal cost effective? American-based research shows vasectomy reversal is cost effective when compared to assisted conception (ART) techniques - especially for younger couples. A successful reversal allows a couple unlimited attempts at pregnancy by way of regular sex; the opportunities are unlimited. In contrast, ART tends to be limited by the number of available eggs. It is true to say that if you take couples across all ages having either ART (often more than one attempt) or a vasectomy reversal, the success rates are about equal, but ART is more expensive than a reversal procedure in the UK.

There are occasions when ART may be a better option for example, where the woman is in her 40's because:

- The interval between vasectomy and reversal is often longer in older couples so the success rates will be reduced to a degree
- The chances of further pregnancies after the first child is lower where the female is 40yr or older as she will be older still when in a position to try again for her next pregnancy
- The time it takes for an older man to produce a pregnancy is longer than for a younger man

Is there any value 'sperm harvesting' at the time of my vasectomy reversal? This refers to the extraction and storage of sperm obtained from the cut end of the vas tubing at the time of surgery, and for use at a future point in time should the operation prove unsuccessful.

The American research showed this was *not* cost effective for the majority of couples. Their study confirmed that the cost of sperm harvesting was greater (average fee \$ 1200 - \$1760) than the cost of doing so for only those men where the reversal had failed and where their sperm count remained negative (average fee \$768). When you consider that a high proportion of reversals work anyway, adding the extra expense of preserving it in case of reversal failure doesn't add up financially for most.

We can do this with prior notice. Please note: the cost varies and is not covered by the fixed price agreement.

Can a vasectomy reversal be safely performed as a day case? Yes, as long as you have been assessed by our health questionnaire, we have spoken to you and you have no major medical conditions. You will need someone to drive you home however.

If travelling a distance we would recommend you book into one of the excellent local B&Bs on the Premier Inn opposite to rest up overnight before travelling back. On the odd occasion where a patient needs to stay in overnight (long distance or longer duration of surgery) they are not charged extra.

What options are there for chronic post-vasectomy pain? There are several options if the pain is severe enough:

- We can reverse the vasectomy on the side of the pain. The success rate is about 75% in terms of pain relief. On the up side, the tube is restored to its natural condition, but on the down side your fertility may well return.
- We can remove the epididymis tubing (called an 'epididymectomy') with greater than 9 out of 10 men reporting relief of pain.
- You can see a pain specialist who can inject a nerve block to help numb the pain - often for long periods

Why is there a difference between the percentage of men who have a 'successful' reversal and those who actually get their partner pregnant? The proportion of patients regaining a positive sperm count after the reversal is known as the 'patency rate'. This differs from success rates as gauged by pregnancy rates for a number of reasons:

- Not all couples are *biologically* compatible
- Female specific factors, such as poor egg production in older female partners, may hit pregnancy rates
- Unrelated subfertility issues, such as previous pelvic inflammation or endometriosis in the woman may be a problem
- It may be difficult to contact a patient after surgery to establish if pregnancy followed

Things about you (the man) that may influence success

The man's age Partners of men aged over 40yr experience longer delays before they become pregnant. As an older man, your partner is about a third less likely to become pregnant over any 12 months if you are over 40yr, compared to if you are under 30yr. This observation may in part be explained by reduced sperm motility (swimming).

Older men also have increased numbers of DNA sperm mutations which may in part account for the increased risk of autism, schizophrenia and first trimester spontaneous abortion observed with older fathers.

Babies born to older couples have an increased risk of Down syndrome, the risk being highest where both parents are older and the mother is over 40yr.

Do anti-sperm antibodies matter? About 60% of men develop these following vasectomy and in theory they could attack and injure the sperm. However, the impact of anti-sperm antibodies was probably over estimated in the past. Indeed the American Society of Reproductive Medicine no longer recommends testing for them prior to vasectomy reversal.

Other questions you may have:

I am smoker and I would like a reversal. Does it matter? Yes, in two ways. It is true that smoking may lead to subtle changes in semen quality, but it is the effect of your smoking, effectively introducing passive smoking into the pregnancy, that is more important. Pregnant women who inhale second hand smoke have a 20% greater chance of low birthweight babies and a massive four-fold increase risk of stillborn babies if the father-to-be is a smoker. (A brand new study in the British Journal of Urology (2016) has further highlighted the adverse effects of smoking on sperm quality. Smoking causes inflammation in the (reproductive) accessory glands and in the testes which leads to DNA damage and fragmentation). Previously, it was actually recognised that smoking led to decreased sperm concentration and progressive motility (swim rate) and DNA, along with altered testosterone and other hormone (FSH and LH) levels.

How soon can I go down to the gym after my vasectomy reversal? 4 weeks. Before this time you significantly increase the risk of heavy bruising. You may also disrupt the tiny stitches that we use to hold together the ends of vas tubes. The problem is that any leg/thigh movements tend to 'bump and grind' the join; it may not feel like much, but every bit of tension on the join potentially reduces the chances of perfect healing. Remember the reversal is nothing like the original vasectomy!

I smoke weed. Is that a problem? Yes. Frequent Marijuana exposure can lower the production of male reproductive hormones and also harm sperm quality. There isn't data regarding passive smoking but it is difficult to imagine that it helps.

Can my weight influence my own fertility? Yes. You can help protect your fertility by reducing your waist line. Obesity is loosely associated with reduced male fertility.

I have diabetes. How might this affect the reversal and might I pass it on? Diabetes can lead to reduced sperm quality, but doesn't make you infertile as such unless you have specific complications, such as nerve damage to your ejaculation mechanism or erectile problems stopping sex.

Diabetes does have a genetic component but some form of additional external trigger (such as diet, infection or climate) may be needed before the condition emerges in your children. The risk of children of men with Type 1 diabetes developing diabetes is between 1/8 – 1/25. Type 2 patients who are slim also appear to run an increased risk of passing it on to their children, although the precise level of risk isn't clear.

I am a body builder and have taken steroids in the past. Does this matter? Long term use of anabolic steroids (used for body building) can affect your reproductive hormones leading to smaller testicular size and lowered (or absent) sperm production. If you discontinue, this will often correct over time.

Can my medications alter my sperm count? Clearly this depends on what you are taking. There follows below a short list of tablets that may affect either your sperm count or semen quality. It will mean little to you unless you are taking one of these through your GP. Culprits include alkylating agents, calcium channel blockers, cimetidine, colchicine, corticosteroids, cyclosporine, erythromycin, gentamicin, methadone, neomycin, nitrofurantoin, phenytoin, spironolactone, sulfasalazine, tetracycline, and thioridazine.

Are the medications I take that may scupper attempts at trying for a baby after my vasectomy reversal? Sex is the end result of a sequence of events. It involves a complex coordination of hormones (testosterone is important for sex drive and development), chemical messengers in the brain (neurotransmitters such as dopamine increase sexual function and serotonin inhibits it) and hopefully also a functioning set of sexual organs. Anything medication gets in the way of this chain can affect your love life:

- Medicines that reduce the testosterone level or its effects can reduce sex drive
- Ejaculation can be hampered by alpha blockers (used to treat prostate problems)
- Serotonin re-uptake inhibitor (SSRI) antidepressants can also affect ejaculation
- Blood pressure lowering (antihypertensive) medicines can be a problem. Some can delay orgasm whilst others cause erectile problems

I have large veins on my scrotal sac? Do they matter? They are usually due to a 'varicocele', which is a collection of swollen veins that surround the testes tubing and feel like a 'bag of worms'. A varicocele doesn't predict either a good or a bad outcome, but care should be taken trying to sort it out at the same time as a reversal as the blood supply to the testes may be compromised. We suggest completing the reversal 6 months prior to tackling a varicocele for that reason.

I have been found to have sperm in my semen analysis : how often does it occur and what does it mean? A US-based study (*Presence of sperm in the pre-vasectomy reversal semen analysis: incidence and implications Lemack and Goldstein J Urol 1996 155 (1) 167-9*) showed that up to 9.7% of men looking for a vasectomy reversal actually had sperm present in their semen on testing as part of a research project.

What does it mean for you individually? It does not mean you can avoid a vasectomy reversal but if you do have some, there is a 94% chance that sperm will be found in one or both vas tubes when analysed during the vasectomy reversal procedure.

What about vasectomy and prostate cancer risk? There is no proven link between vasectomy and prostate cancer. The reason why you are unlikely to notice any difference in your seminal appearance after a vasectomy (or for that matter following a vasectomy reversal) is because the majority of what you ejaculate (in terms of volume) does not come directly from the testes.

Vasectomy-related factors that influence success rates

The obstructive interval There is a progressive reduction in success rates over the years following vasectomy, both in terms of tubal 'patency' (positive sperm counts) and pregnancy rates. The time delay is referred to as the 'obstructive interval'.

Typical quoted outcomes are:

Interval	Patency Rate	Pregnancy Rate
Under 3yr	97%	75%
3-8yr	88%	50-55%
9-14yr	79%	40-45%
14-19yr	70%	30%
Over 19yr	40%	under 10%

These outcomes possibly reflect the increased risk of additional obstruction along the epididymis that results from 'blow outs' over time, along with reduced epididymal function that leads to reduced sperm motility.

Previous attempted Assisted Reproduction techniques If you have already tried to achieve a pregnancy by 'Assisted Reproduction' (ART) using either sperm extraction from the epididymal tubing, or by needle aspiration of the testicle, the resultant scar tissue can affect results.

As a rule, where one side has been attempted patency rates are reduced by about a quarter and after both sides by a half.

A sperm granuloma The presence of a sperm granuloma (a lump on the tube at the site of the vasectomy) at the time of surgery is a good sign. Up to 95% of men may achieve positive sperm counts when they have one, compared to 78% for men without. The granuloma area probably acts as a pressure-release valve and prevents build-up of pressure within the epididymis that could otherwise lead to blow outs.

I have already had a reversal, but it failed. Does it make it more likely this one will fail? A previous failed attempt at vasectomy makes the surgery more challenging. Repeat surgery tends to have lower success rates, about 10% lower. Depending on why the original reversal failed, you may need either a repeat vasovasostomy (vas-to-vas join) or a more challenging epididymovastomy (vas-to-epididymis join). About half of initial surgical failures result from unrecognised epididymal obstruction at the time while the other half are as a consequence of scarring / persistent obstruction at the original site of the repair.

The age of your partner is the key predictor of success for a repeat reversal after an earlier failed attempt.

Does the way my original vasectomy was performed affect success rates? It can do. The site of where the actual vasectomy was placed along the tubing can

influence outcome; an increased length of the vas tube (greater than 2.7cm) on the testicular side improving the chances of success (94% longer vs 85% shorter length).

Using heat to seal the tube (diathermy) may impact results. Where it is used sparingly it may just affect the very end of the tubes, but even then there is a chance that it can alter the blood supply further along the vas. Where it has been used as some doomsday implement that will seal *forever* it can roger the tube in several areas and/or over a long length. Even then, it may not matter unless the area of tube damaged is back towards the epididymis. In such cases, the amount of die back that results may necessitate cutting the tube back onto the very small calibre convoluted vas tubing around the testes or, worse still, even the epididymis

I was super fertile before my vasectomy 12 years ago. Does this mean I will be after a reversal? Not necessarily. Most men seeking a reversal have had children beforehand and were fertile.

Female factors

How does my partner's age influence success rates? As a woman ages, her ovarian reserve and egg quality reduce.

For women in the general population whose partners have not had a vasectomy, the statistics are as follows:

- A woman in her 20's has a 20% chance per month of becoming pregnant with regular unprotected intercourse.
- In her 30's, the chance for pregnancy falls to 10% month
- By 40yr, this reduces further to 4% per month.

For women whose partners have had a vasectomy / subsequent reversal, the following pregnancy rates have been observed:

- 67% aged 20-24yr
- 52% when aged 25-29yr
- 57% between 30-34yr
- 54% for those aged 35-39yr
- Significantly, as low as 14% where she is 40yr or over

What other things affect the success rate? Gynaecological conditions, such as inflammatory pelvic disease and endometriosis, may all impact pregnancy rates following an otherwise successful reversal.

We have had children together before the vasectomy. Surely this improves our chances? Yes, it does. Greater success has been reported for couples who have previously had children together (57% vs 49% in one study). There are a number of reasons why this may be so:

- The 'obstructive interval' between vasectomy and request for reversal may be shorter
- These couples already have a proven track record of fertility together and are *biologically* compatible
- Lastly, some have suggested that 'emotional dedication' may be a reason. These couples often have a specific reason for changing their minds, such as death a child, which had led them to reconsider

My partner had diabetes during a previous pregnancy? Is there a risk she will pass diabetes on to my children? Diabetes in pregnancy is called 'gestational diabetes' and usually resolves after delivery of the baby. The risk of her children (with you personally) developing diabetes may be 4 or 5 times higher than usual, especially if they become overweight in childhood.

Women who have had their appendix removed appear to be more fertile. Researchers from the University of Dundee found that for every 100 pregnancies in women who had had no procedures there were 134 pregnancies in women who HAD had an appendectomy.

Traditionally, doctors have worried that removing an appendix may damage female fertility. To me this was counter-intuitive as ongoing inflammation / infection from appendicitis would be a greater risk to the nearby fallopian tube than a carefully executed operation. As always, the explanation may not be that simple, as the findings may in some way also reflect sexual activity. Read the article from the Fertility and Sterility medical journal for more information. The same seems to apply if they have had their tonsils out!

IVF (ART)-related questions

Why would we discuss IVF in a booklet about Vasectomy Reversal? The answer is that for some couples it is a better option. It is not in anyone's interest to misrepresent your chances of success with surgery.

IVF will not be covered by the NHS or private insurance if with either you have had a previous vasectomy or if your partner has had a sterilisation procedure.

When discussing IVF here, we are in effect discussing the use of ART (Assisted Reproduction Technologies) to produce a pregnancy. Costs of IVF vary, but typically are a multiple (X 4-5) of those incurred by Vasectomy Reversal.

Unless a sperm donor is used, ART / IVF after a previous vasectomy requires both *Surgical Sperm Retrieval (SSR)* and a laboratory technique called *ICSI* (Intracytoplasmic Sperm Injection), where a single sperm must be injected into each egg.

Which couples might be best served by IVF /ART ? A scenario where the woman is older and the number of between vasectomy and reversal is longer.

What does IVF (ART) involve for the woman? The ovaries are stimulated to produce mature eggs, using fertility drug. The eggs are retrieved from the woman in a clinic / operating theatre and fertilised straight away with sperm in a special dish and monitored for signs of fertilisation. The best quality embryo is selected and transferred back into the uterus in a theatre.

What does IVF (ART) involve for the man? The sperm have to be retrieved, a process known as Surgical Sperm Retrieval (SSR). This is usually achieved by either:

Percutaneous Epididymal Sperm Aspiration (PESA). PESA is used to retrieve sperm from the epididymis tubing. Men who have had a vasectomy still produce sperm and the epididymis usually contains sperm. For the procedure, the testicle is numbed with local anesthetic, and the urologist puts a very fine needle through the scrotal skin directly into the epididymis and aspirates a small amount of fluid. The fluid is checked under the microscope to ascertain whether an adequate number of sperm have been removed. No stitches are necessary; the procedure takes around half an hour. If enough sperm are obtained, some of the aspirate can be frozen for future use.

OR

Microepididymal Sperm Aspiration (MESA) - MESA is performed in the operating room under general anesthesia, or under a local anesthesia block and conscious sedation. MESA allows direct visualization of the epididymis through an operating microscope. A small incision is made into the scrotum, the bag of skin that holds the testicle, and the epididymis. Fluid is removed and examined under microscope for

live sperm. Excess sperm are removed and frozen for future use. Epididymal sperm freeze and thaw better than sperm removed from the testes.

(Testicular Sperm Extraction (TESE) - TESE is the removal of sperm from the testes, where they're manufactured. This is not commonly performed after a previous vasectomy.)

What about using a sperm donor? Donated sperm obtained from a sperm bank can be used to achieve pregnancy as an alternative to undergoing sperm aspiration or extraction procedures as above.

On the up side, the cost for donor sperm is considerably less, and artificial insemination can be done at the time of ovulation without undergoing expensive IVF procedures. On the down side, the child will not be biologically related to you, unless you use a relative as the sperm donor.

What is ICSI? With ICSI (Intracytoplasmic Sperm Injection), instead of the sperm and eggs being mixed together in a test tube, a single, sperm is identified from a small sample and injected directly into the egg to fertilise it.

When would ICSI be used and what are the benefits? ICSI is the main treatment for male infertility when sperm has been retrieved surgically through as the number of sperm collected by SSR is low. ICSI directly fertilises the egg so any issues with sperm movement or number can be overcome.

Is there a way of calculating whether or not IVF may be a valid alternative for me and my partner? Yes there is, using an on-line IVF calculator, although it was designed for men who had not had a vasectomy

(<https://w3.abdn.ac.uk/clsm/opis/tool/ivf1>).

It offers an interactive guide as to how successful you may be with IVF (you need to put your own information into the boxes. Make sure you choose the ICSI box. It can also be used after a reversal where the sperm return, but no pregnancy follows (still choose the ICSI box as the non-pregnancy may be due to poor sperm motility / swimming).

Things to consider before surgery

What checks does my partner need before my reversal surgery? Usually none. Your partner does not require tests unless her own fertility is in question; in which case she should talk to her GP before you as a couple proceed. There are clues you can get on talking to her. Ask her if she is having regular periods - irregular or absent periods may mean she isn't ovulating. There may be a history of chlamydia. She can check her temperature around mid-cycle to determine if she is ovulating.

Do I need a letter of referral from my GP? No, it is not essential. If you have one, that's fine. In any event, as a courtesy we will write to your GP upon your discharge unless you tell us otherwise.

What checks do I need before surgery? Usually, you need only complete and return the health questionnaire which we will post to you. If you have high blood pressure, the hospital will want you to have an ECG (heart trace) either before admission or on the ward on the day of surgery. You do not need anti-sperm antibody testing. You may need MRSA swabs if you have been an in-patient in an NHS hospital recently.

Do I need a face-to-face consultation before admission? Ideally, but as many travel from afar this may not be practical. If you are local, you are most welcome. You will not be charged. If you are coming from further afield, you are still welcome to come prior to surgery and will not be charged. Otherwise we will meet pre-operatively on the ward before you consent to the operation.

Any other points?

- Make sure you tell us if you take medications.
- You should shave your scrotal area before you attend for your operation. The hairs are a problem on the day of surgery as they are thicker than the stitches and can really get in the way. There is evidence that shaving just before surgery can increase the wound infection rate (as it can pull hair follicles or make small cuts that irritate) but you shaving yourself several days before should be a long enough gap to allow things to settle.

On the day of your operation

What happens on the day of my admission for surgery? You should stop eating and drinking for 6 hours before the start time of surgery. You will be asleep for the operation (known as a general anaesthetic).

Am I fully asleep? Yes. Why, you ask? Well ask yourself 'How long can I keep completely still for'? Remember we are talking about microsurgery so small movements look like an earthquake down the microscope. Under general anaesthetic you can be kept completely still and comfortable. I use the services of a group of professionally trained consultant anaesthetists. I do not feel that sedation administered by either the operating surgeon or a trained nurse attendant to be a good substitute.

Where is the cut made on my sac? Usual, we operate in the midline of the scrotal sac. However, if the tubes have a wider gap or they have been destroyed by heat at the time of your vasectomy you may need two separate incisions extending from the scrotum up towards the groin on either side so as to provide enough length of tubing to allow a tension free join. The wound (or wounds) is (are) about 3-5cm long.

Do I need antibiotics? Yes. Prophylactic antibiotics (ones used specifically to prevent an infection) are of value. The groin and scrotum are prone to infection and without a prophylactic dose of antibiotic the chances of you developing a wound infection following surgery is slightly higher. If you have no allergies we tend to use Augmentin. If you have specific allergies, the exact choice will by necessity reflect this.

Do I have anything to stop me getting a clot on my legs? Yes. We use fitted, compression stockings, along with anti-embolus intermittent compression boots on your calves while you are asleep. If you have a previous history of clots, we will also use an injection to thin your blood out (but this can cause a lot of bruising).

What does the operation aim to do? Reconnect the two ends of the vas tube back together (called *vasovasostomy*). Sometimes it is necessary to use an area of the epididymis to connect to the vas (known as an *epididymovasostomy*).

Is there any value 'sperm harvesting' at the time of my vasectomy reversal Usually not. American research concluded that it was *not* cost effective for the majority of couples. Where couples do specifically request this option we can arrange this by using a friendly IVF service who will attend the operating room to process, freeze, transport and store the sperm. Please note this adds additional expense and it needs to be agreed ahead of time on an individual basis.

Do you inspect the tubal fluid for sperm whilst I am asleep? If the obstructive interval is very long this can be of value and we do look. For shorter periods, it probably makes little difference as the risk of an (otherwise undiagnosed) epididymal obstruction is low and, from a pragmatic standpoint, we will still aim to reverse the vasectomy even if we cannot see sperm in the fluid. For men with short obstructive intervals and where no sperm are seen there is still about a 60% success rate following reversal, compared to zero if we abandon the procedure.

What types of stitches are used? We use two types of stitches:

- For your scrotal skin closure, we use dissolvable *Vicryl Rapide* stitches. We perform an 'invisible' stitch line so that, apart from the knot at one end, it is unlikely you will see any stitches at all. They are designed to last 3 weeks before dissolving away on their own.
- For the tubal join (anastomosis) we use very small *Prolene* stitches. These look like really thin nylon string and are shiny and blue. Prolene is a 'monofilament' stitch that is designed to glide through tissue with minimal trauma. This is permanent and lasts forever. It is inside so will not be visible to you.

Lastly it is worth knowing that we also use a series of supporting stitch layers around the anastomosis so as to take any tension off the stitch. As a result, you may feel a swelling above the testes on either side which is where these have gathered up tissues around the vas tubing. This is nothing to worry about if you feel one.

Do the stitches fall out naturally? Yes, the dissolvable stitches in the skin last about three weeks.

Will I wake up in pain? No, not usually. Towards the end of the surgery we place local anaesthetic into your wound that will last for about 4 hours. The anaesthetist will also prescribe you pain killers to take home with you. If necessary, you can use additional pain killers such as ibuprofen for a few days after the short supply we give you finishes.

Returning home and beyond

Can I drive home? No. Arrange someone to drive you home. Even if you feel OK you would not be covered under the law because you have had a general anaesthetic. You should be able to go home that same day.

Do I get a sick note? On request, the nursing staff will advise you on the correct paperwork before leaving. We can also write on your behalf if you wish.

How quickly can I go back to work after my vasectomy reversal? We advise you to take it really easy (legs up, TV, pampered etc.) for 1 week and then plan to phase your return back to normal activity after that.

No sex for 4 weeks. No gym, football nor workouts for 4 weeks. No cycling for at least 4 weeks. If you have an office job you should be able to return to work 10 days after. If you have a job that involves manual work take at about 2 weeks off and trying to reduce your level of activity when first back.

After returning home what should I do? Wear the support supplied (or similar close fitting underwear) for 2 weeks. The stitches dissolve on their own. If you need to use additional pain killers, then use Ibuprofen. We will send you home with some that contain paracetamol.

When can I start riding my bicycle again after surgery? Try to avoid bicycle seats for 4 weeks. Even then, be careful with competitive cycling as these bikes use a firmer seat and you will tend to sit forwards, onto the wound and tubes.

Do I need to see my family doctor? No, not unless you have a problem. We will write to your GP to say that you have been in and, if you have travelled from afar, to request he / she arranges a post-op sperm count at 3 months.

Are there complications of reversal? The reversal may not work; this isn't a complication but rather a limitation. The sperm count may well be lower than it was before the vasectomy and they may not swim as well as they should, known as 'reduced motility' (this is more obvious after a long obstructive interval and is probably due to poor epididymal function). The sperm count can even disappear over time after an initially successful reversal in up to 25% of men.

Happily, complications rarely follow vasectomy reversal but it is important to realise that any operation carries some degree of risk. The most common include bruising and discomfort following the procedure. This may last for a couple of weeks. It is unusual to develop an infection, as we use a large dose of a 'peri-operative' antibiotic on the day of surgery. Fluid can accumulate in the sac that surrounds the testes (a *hydrocele*) even months later as a reaction to surgery. Only a very small number of men experience any long-term pain in the area of the scrotum.

Surgery is performed under general anaesthesia and whilst happily complications are very rare, they can occur and include breathing trouble, heart problems and nausea.

Does the semen appearance change after? No. Most of the semen volume is made up by secretions from the prostate gland. That is why after the original vasectomy you probably didn't notice any change in the first place.

Does the scrotal sac look different? No, not usually. The wounds should heal well. Sometimes you may be bruised for a while, especially if we have moved the tubing around to bridge a gap. The orientation of one or both testicles may also differ if we have moved things around.

Does a reversal affect sex drive? No

I can feel a testicular lump after my vasectomy reversal If you had your reversal recently it is very likely you are feeling a small swelling above the testicle itself which is where the tubes have been joined and 'wrapped' with supporting stitches that take the tension off the tissues. Much less frequently it may be due to a small collection of blood inside the wound under the skin as a result of sperm leaking from the join site.

Note that if your surgery was a long time ago it would be worth having your GP check you out.

How often should we have sex after reversal to give ourselves the best chance of success? Having regular sex every two to three days increases your chance of achieving a pregnancy compared to having sex only once a week. Why? Well, the egg is only around at certain times of the monthly cycle and unless you time it carefully, the sperm may be around (and up for fertilisation) at the wrong time. By having sex at 2-3 day intervals it provides the best exposure of viable sperm to the egg when eventually released.

When should I have my sperm count checked? Semen samples should be produced at 3 months.

- Should you choose to perform the test through ourselves, we will send you the paperwork to book a sperm count at our nearest lab, the Cambridge IVF Unit. This is an accredited laboratory that specialises in fertility. You use the form to book the appointment directly with the lab. You only need to produce one sample. The results are posted to us a day or so later and we will write to you with the results directly after.
- If you wish to use a local hospital, please tell us and we will arrange this by writing to your GP, asking him to make the referral at 3 months.

We cannot give out results over the phone for reasons of confidentiality but will be more than happy to discuss by phone or in person any queries that arise from the results letter subsequently. Again you will not be charged for any appointment that follows should you need one.

How long will it take for my sperm count to recover following a successful vasectomy reversal? If, after 12 months no sperm have reappeared, the operation should be considered to have failed. This is not 100% correct but a reasonable benchmark for success. Generally, the *quality* of the sperm count in terms of numbers of sperm and swimmers will progressively improve over the first 12 months after surgery. However, recovery of true physiological fertility can take as long as 2 years, especially if the reversal was performed after a prolonged interval (over 10 years) because of impaired epididymal function and therefore reduced motility.

What does a good sperm count look like after reversal? Several parameters will be assessed (also see next chapter if you need more detail):

- Number of *sperm/ml* of semen - important. Technically any (swimming) sperm seen after a vasectomy reversal constitutes a positive result. In theory, this is reasonable because you were previously a fertile man before the vasectomy and just a few may be enough to achieve a pregnancy. In practice however, it is a case of the more the merrier and ideally you want millions /ml.
- Percentage of *motile sperms* seen to be swimming. Often, following a reversal the numbers swimming (*motility*) is lower. This is more often the case if there followed a long 'obstructive interval between original vasectomy and reversal.
- Percentage of sperm with *progressive motility* reflects how many look as if they would actually be up to seeking out the egg. This is a useful predictor of chances of success.

How long do sperm last? The life span on sperm is quite short outside the body and usually most are dead by the time the sperm has dried. Inside the female they can survive for up to 7 days, although their ability to function may not be that great later on. If sperm meet dry 'hostile' cervical mucus in the neck of the uterus on their way up to meet the egg they will struggle. If they have healthy fertile-quality cervical mucus to swim in then sperm can last a couple of days. It takes sperm about 45 minutes to reach their destination.

How long does the female egg last? 12 -24 hours

Can sperm ever disappear after an initially successful reversal? Yes. It is estimated that sperm may disappear in 10-25% of cases after an initially 'successful' reversal. This is usually due to obstruction or scarring at the reversal site.

Will we be eligible for IVF if I have a successful reversal, but it does not result in a pregnancy? The answer is nearly always 'no'. Not all successful vasectomy reversals end in pregnancy.

There are a number of restrictions regarding the availability of NHS-funded IVF treatment IVF treatment. In practice, there is a little variation from one region of the country to another. A major common sticking point is where one of other partner has had a previous sterilisation (be it a vasectomy, as in your case (the man) or fallopian tube surgery in a woman). Under these circumstances, IVF will not be funded by the NHS. Exceptions can and do apply, but these are few and far between and specific funding requests need to be made to the relevant local NHS funding body.

The post-vasectomy reversal sperm count

We recommend waiting 3 months after surgery before checking your count

How to interpret it A recent paper has helped clarify this question (*Vasectomy reversal semen analysis: new reference ranges predict pregnancy. Majzoub A et al Cleveland Clinic US Fertil Steril. 2017 Apr;107(4):911-915.*)

This study found significantly lower post-reversal semen parameters may be sufficient in previously fertile men after reversal to produce a pregnancy, compared with the normal population. It established a reference range for post-reversal semen tests to identify the minimum values associated with subsequent pregnancy.

Spontaneous pregnancy was reported for men with:

- *LOWER SPERM COUNTS : 15% pregnancy with a sperm concentration of <5 million/mL*
- *LOWER MOTILITY : 21.3% pregnancy with a sperm motility of <10%*
- *INCREASED ABNORMAL SHAPED SPERM : 14.8% pregnancy for men with a normal morphology of <1%*

To put it another way... the lowest value at which pregnancy followed was:

- *SPERM CONCENTRATION was 3.56 million /ml*
- *TOTAL MOTILITY was 4.45%*
- *TOTAL MOTILE SPERM CONCENTRATION was 0.58 million / ml*
- *NORMAL MORPHOLOGY was 0% (in other words it doesn't matter)*

Compared to WHO standard NORMAL values:

- *VOLUME OF SEMEN 1.5ml*
- *SPERM CONCENTRATION was 15 million /ml*
- *TOTAL MOTILITY was 40%*
- *NORMAL MORPHOLOGY was 4%*

Improving your chances by helping yourself

Stress When you are stressed you reduce your chances, not least as you will be less likely to try for a baby if you are stressed out or tired, but also because severe stress can potentially alter your sex hormones.

Smoking Smoking may harm your sperm count a little, but much more importantly increases the risk to your unborn child should a pregnancy happen because of the effects of second hand smoke on the mother-to-be.

Booze Men who drink heavily are more likely to under-perform sexually. The problems identified range from lower sexual desire and reduced arousal, to difficulties achieving an orgasm.

Sleep Men with poor sleep patterns (typically less than 5 hours a night on regular basis or with very interrupted sleep patterns) have lowered levels of testosterone, which in turn can reduce sex drive.

Recreational drugs These are increasingly used by men of fertile age. Frequent marijuana usage can lower the production of reproductive hormones and also sperm quality. Cocaine seems to affect ejaculation and also, to a degree, sex drive and maybe even sperm production. Currently the effects of the newer 'legal highs' and designer drugs are not clearly understood but their effects will do doubt become more obvious over the next few years.

Your trusty laptop The testes are on the outside of a man's body for just one reason - to keep them cooler. When sitting with a laptop on your knees the heating effect is amplified for two reasons: men will tend to close their legs when using a laptop in order to balance it and also because the laptop itself generates heat which can raise the temperature a couple of degrees further

What about diet? Increasing your water intake is a simple way of improving your chances following a successful vasectomy reversal. Semen fluidity is reliant on water content. Drinking more water will increase your volume of ejaculate (semen). It may even help improve actual sperm production as well.

Eating good quality food can only help. A better diet is a better life style choice rather than using supplements to prop up eating rubbish. There are problems with research data that is often used to say one diet is better than the other, as men who have a poor diet may also have unhealthy lifestyles with respect to exercise, smoking or alcohol intake. That aside, the following foods are worth a mention:

- *The Good* – pomegranates, walnuts, dark chocolate, tomatoes, lentils, pumpkin seed and blueberries
- *The Bad* – coffee
- *The Downright Ugly* - Diet drinks that use sweeteners

Sex

Frequency of sex Have regular sex, ideally every 2-3 days. As the fertile time varies, you can't usually accurately pinpoint the exact time, so just have sex three times a week throughout the month. Inside the female sperm can survive for up to 7 days, although their function tends to sag as they age, and the egg lasts 12 -24 hours

What about predicting when she ovulates? Ovulation prediction kits can help you both find out when she is most fertile if you prefer to focus on certain points in her cycle.

What is Egg White Cervical Mucus? This term describes the change in appearance of a woman's cervical mucus at the time of the month when she is most fertile and when your sperm have the best chance of surviving their passage along the vagina, upwards and onwards towards the egg. The very same hormones that trigger the ovaries to release the egg in the first place also lead to other changes designed to increase the chances of pregnancy, such as mucus change and alterations in the position and the softness of the cervix. The cervical mucus changes from a sticky consistency to a creamier appearance typically 1-2 days before ovulation.

Are any sex positions better than the others? There isn't really strong scientific evidence as to whether the position matters, but researchers using MRI have scanned (carefully selected) volunteers whilst having intercourse and found the 'missionary' position and the 'doggy' position allow for deeper penetration, and in doing so place the sperm nearer to the woman's cervical canal. The missionary position hits the front of the cervix whilst the doggy position gets to the back of the cervix. It isn't yet clear if either increase the chances of her falling pregnant however.

Get her to orgasm first. When a woman climaxes any time between 1 minute before and 45 minutes after her man ejaculates she will retain more sperm. This is known as the weirdly titled '*upsuck hypothesis*,' whereby strong muscular contractions on orgasm create a partial vacuum, which helps to suck the sperm from the vagina to the cervix, putting them in a better position to reach the egg

What is the 'Shettles Method' of selecting a boy after a vasectomy reversal? You may come across the 'Shettles Method' on your travels. This involves timing of intercourse, the principle being that the closer to ovulation intercourse occurs, the higher the likelihood you will have a boy. There is a rationale behind this in that male sperm are faster than female sperm, and will likely reach the egg first.

In the context of post-vasectomy reversal, you should be trying to have sex around when you think ovulation is anyway in order to optimise your chances of producing a pregnancy.

What can you predict about your futures heirs?

A number of the features that we take for granted are actually determined by our genes and are beyond our control. These genes are, in turn, made from fragments of the DNA that makes each one of us (and our children) unique. Both parents contribute half of the genetic makeup of their children by 'gametes'. The male gamete is the sperm and the female's is the egg. Sperm contain either an X chromosome (female) or a Y chromosome (male), making each sperm cell either female or male.

Blue eyes or brown There are two genes that control eye colour - the brown colour gene is the more powerful ('dominant') and the blue is weaker ('recessive'). The blue gene also controls grey and light green eye colour, whilst the brown gene also controls hazel eye colour.

- Where both parents have brown eyes the children have a 3 in 4 chance that their eyes will be brown and 1 in 4 chance their eyes will be blue.
- Where both parents have blue eyes there is a 100% chance the children will all have blue eyes
- Where one parent has brown eyes and the other blue eyes then as a rule half of the children will have blue and half will have brown eyes

Height Successive generations of children are getting taller. Britons are now on average 4 inches taller than 100 years ago. The final height our children achieve depends upon a whole range of factors, such as their gene make-up, good nutrition, enough sleep, hormones and the avoidance of major illnesses that could potentially stunt growth in childhood. You can make a fairly good educated guess at final adult height by:

- *measuring your own height*
- *measuring your partner's height*
- *add both together*
- *add 5 inches (13 cm) for boys or subtract 5 inches (13 cm) for girls*
- *lastly divide by two*

for example:

- *for a boy - dad is 202cm tall, mum is 180cm tall = $382 + 13 / 2 = 197\text{cm}$*
- *for a girl - dad is 202cm tall, mum is 180cm tall = $382 - 13 / 2 = 184\text{cm}$*

Your children will usually be within 4 inches (10cm) of this value.

Intelligence of our offspring Between 20- 40% of a child's intelligence is inherited. It appears that there are many genes contributing to intelligence in children, with each having a small but cumulative effect. IQ in later life is a good predictor for lifespan, educational achievement and adult income.

A boy or a girl Unfortunately, you cannot predict the sex, but it is worth pointing out some interesting facts that may help you make a guess as to the sex of your future child.

Favouring a girl:

- The older your partner is when she conceives
- If you, the father, are over 40yr
- If she has two or more children already
- If she conceived after your first year of marriage
- If she was on a low calorie diet when she fell pregnant
- If you, the father, work as airline pilot, deep sea diver, work on a submarine, in a timber mill or in a flour mill!
- If she fell pregnant in winter
- If she was both born in a tropical climate *and* was also living in a tropical climate when she fell pregnant
- If she needed ovarian stimulation to help her fall pregnant (using clomiphene)
- If she is having really bad morning sickness (severe enough to warrant going into hospital)

Favouring a boy:

- If she conceived in the first year of marriage
- You are very slightly more likely to have a boy if you were living together when you conceived.
- If she was on a high calorie diet when she fell pregnant
- If she was under stress when she fell pregnant
- If she fell pregnant in summer

Why should these be?

- Hormones: older women's hormones alter in favour of a girl, as they would if she needed ovarian stimulation or had had multiple pregnancies before. Morning sickness may reflect hormone changes that favour a girl.
- Frequency of sex: the longer you are married/living together, the less sex you tend to have, which in turn means you are less likely to conceive close to when you ovulate. As male sperm don't live as long as female sperm infrequent sex favours longer-lasting female sperm.
- Age: male sperm from older fathers are fewer in number and swim slower so are less likely to reach the egg first.
- Diet: some say the female body favours a boy (more fragile and are statistically less likely to survive) when food is no problem. During famine the female body favours a girl.
- Occupation: stress and pollutants may perhaps predispose to girls.
- Stress: more boys are born at times of stress, maybe due to increase in maternal hormones such as testosterone and cortisol.
- Time of year: lots of theories but none convincing.

Effect on birth dates on sporting performance You may be aiming to breed the next master race after your vasectomy reversal. Well, trying to time the birth of your offspring at certain times of the year has recently been gaining popularity due to the 2016 Olympics. Several winning UK athletes (Sir Chris Hoy, Sir Mo Farah, Sir Steve Redgrave and Jason Kenny) shared a common birthday on 23rd March! Surely a conspiracy! Actually not; sharing birth dates (the actual day of the year one is born) is very common. Indeed, if you placed 100 random people in a room, there is a 97% probability that two would share a birthday. Logically, you would imagine it to be about 30%, but it is actually much higher. A recent BBC article looked at this in detail.

Are girls more expensive to raise than boys? It is fair to say that whilst data has been published, it isn't overly convincing either way. One study by Lovemoney.com found girls more expensive (clothing is more expensive, more parties and toys targeted at girls are 7% more expensive). A US-based web site, Moneytips.com, stated girls are more expensive, quoting an extra \$2000 per year up to the age of 18yr. In contrast, another review by the Halifax found boys 11% more expensive up to the age of 11yrs (sport in early teens and things wearing out and boys also eat more food -especially during puberty). The Telegraph recently reported that boys cost £12,000 more to raise boys than girls up to late teens. After the age of 18yr, boys are more likely to move back home and to get financial help from their parents. Something to look forward to!

Notes