

Vasectomy and Vasectomy Reversal

Mini Topic Review:

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Vasectomy began with a questionable history as a tool for eugenics, criminal punishment, and rejuvenation¹, but today it has become a common surgical procedure and one of the most reliable methods of birth control in the world used by an estimated 42 million men. Although traditionally viewed as a permanent procedure, vasectomy is neither irreversible nor without failure.

Vasectomy procedure

Vasectomy is usually done under local anaesthesia. Single or bilateral 1cm incisions are made in the scrotum over the vas deferens which is then held with forceps and pulled into the wound forming an inverted 'U'. The adventitia is stripped away, 1-2cm of the vas removed, and the lumen cauterised. The ends of the vas are separated into different tissue planes and dropped back under the skin. Sutures are often not used and it is not necessary to send the vas for histological examination, although the couple need to be advised to use contraception until negative semen samples are obtained.

In many places the traditional scalpel method has been replaced by the 'no scalpel' vasectomy (NSV). This technique, also known as the 'Li' method, uses very pointed forceps which are capable of breaching the skin without the use of a scalpel. Other variations include fascial interposition, vasal ligation, and the use of clips instead of, or in addition to, intraluminal cautery.

Follow-up

By convention in the UK, two specimens of semen are examined at 16 and 18 weeks after vasectomy to confirm the success of the operation. Most men will have no sperm in the samples (azoospermia) at these points. The risk of pregnancy following two negative results is about 1 in 2-3000 due to late recanalisation of the vas². There have been isolated cases of post-vasectomy fatherhood even after persistent negative semen analysis³. This has been confirmed by DNA analysis of the father and child thus excluding the "milkman" factor. In this situation the odd sperm will have been getting through due to recanalisation but has not shown up on any of the tests. Successful clearance may also be given to men who have less than 10,000 sperm at 7 months⁴, although a recent paper has suggested this could be extended 100,000 immotile sperm/ml in a sample at 3 months⁵. This would allow 96% of men to be cleared by this time. Although it is not essential in the UK that wives or partners sign the operation consent form, many surgeons prefer that they do.

Complications

The main complication following vasectomy is scrotal pain. One study found that 11.7% of previously asymptomatic patients had some degree of scrotal discomfort at seven months after the NSV operation⁶ (with higher rates for the traditional scalpel method). Rarer complications include bleeding, infection and scrotal haematoma⁷⁻⁸. Although there have been suggestions of a link between vasectomy and prostate cancer, the evidence does not show proof of any association⁹⁻¹⁰.

Reversal of vasectomy

The most common reason for a reverse vasectomy is to regain fertility when entering a new relationship or following a marriage breakdown. Reported pregnancy rates following reversal vary widely from as low as 20% and up to 80%. This range is explained by the presence of several factors such as time since vasectomy, type of reversal operation, age, and a potential effect of circulating antisperm antibodies which are present in about 60% of men following bilateral vasectomy¹¹. The fertility potential of the partner is another confounding factor. The operation is also sometimes used in an attempt to relieve scrotal discomfort.

Vasovasostomy

Incisions are made to provide access to the old vasectomy site and the scarred ends of the vas are excised. Fluid is then removed from the testicular end and examined microscopically for the presence of sperm. Depending on the motility of the sperm and the colour and consistency of the fluid, the surgeon can now decide which reverse vasectomy operation to use. If there is sperm present in the fluid a vasovasotomy is usually performed.

Vasovasostomy involves bypassing any scarred tissue and anastomosing the two ends of the vas back together. Two main variations are used; the modified one layer anastomosis or a two-layer anastomosis. Most surgeons today will use an operating microscope to assist during the operation.

Vasoepididymostomy

If there is no sperm present in the fluid then the more surgically demanding vasoepididymostomy should be performed. This involves connecting the abdominal end of the vas up to a much narrower epididymal tubule. This should be done using an operating microscope. Because the choice of procedure is best made during the operation (once the testicular vas fluid has been checked for sperm), reverse vasectomy should only be carried out when there is a surgeon present who is comfortable performing vasoepididymostomy. Both presence of sperm in semen and pregnancy rates are lower following vasoepididymostomy than vasovasostomy. Complications are rare for both procedures.

Conclusion

Vasectomy remains a reliable method of birth control, but it is not free of complications. All patients and their partners must be made aware of the small possibility of vasectomy failure leading to pregnancy. Reversal of vasectomy may be possible but success and subsequent pregnancy cannot be guaranteed.

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