

SURGERY IN INFERTILITY*

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There are in general two main types of infertility: the group of men without any sperms in their ejaculate at all — azoospermia — and the group with some sperms, but too few of them — oligozoospermia.

Azoospermia

If no sperms are found in the semen on several occasions, then one is entitled to call the patient azoospermic. The next step is to establish whether the factory is or is not producing sperms. Ideally, one should obtain a biopsy of the testis — but this is not an inconsiderable little operation for the patient; moreover the interpretation of the specimen calls for a good deal of experience and skill. Today this is really unnecessary, for by estimating the serum follicle-stimulating hormone (FSH) one may detect those patients with incurable testicular damage. If the FSH level is elevated, then there is no point in doing a testicular biopsy because the testis is bound to be useless; Pryor et al¹ would qualify this by adding that in addition to the elevation of the FSH it is clinically useful to feel the testicle: if it is small and soft and the FSH is raised, no useful purpose is served by a testicular biopsy..

If the FSH level is normal, then it is reasonable to obtain a biopsy. If the biopsy shows production of spermatozoa, then proceed to attempt to overcome an obstruction. The procedure will depend on the type of obstruction that is present².

Abnormal ciliary function

Some men are born with abnormal function of the ciliae of the epididymis — Young's syndrome. It is associated with recognizable defects in the ciliae on electron microscopy — and in Hendry's study was present in 50% of those patients in

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whom he attempted epididymovasostomy³. There is said to be a genetic defect in the protein called dynein which is absent from the ciliae in the bronchi as well as the epididymis: the tails of the sperms may also be unable to beat^{4,5}. In such a patient you will find apparently good testicular histology, but no sperms in the epididymis, and epididymovasostomy is a failure.

Congenital blocks

There are a variety of congenital anatomical anomalies which result in a block to the transport of semen. In some the vas is completely absent — a condition usually very easily diagnosed on palpation of the scrotum, although one may wish to explore the scrotum to make quite sure. Sometimes the vas fails to unite with the epididymis: sometimes there is a hiatus in the mid-zone of the epididymis, the upper part being distended with healthy-looking sperm, and the lower part empty and flaccid.

Traumatic causes of obstruction

Trauma to the vas deferens is not uncommon. The vas is easily damaged during hernia repair, especially when the operation is performed in a child. A patient with azoospermia and a small scar in the groin, should certainly have the vas studied with a vasogram to see whether or not there is an injury to the vas deferens, for the X-ray will identify the site of injury, and it is easy to carry out a vasovasotomy.

Vasectomy

In Britain today the most common cause of injury to the vas is deliberate vasectomy for the purpose of sterilization: it is now a common method of birth control. But occasionally the patient loses his first wife and family in some tragic accident, or divorces and marries again and wants another family. Vasovasostomy is then asked for.

Post-inflammatory obstruction

Finally, there is a group of inflammatory diseases which give rise to azoospermia. Foremost among them is gonorrhea; this, although still common, is today usually promptly and effectively treated, and we seldom see patients with the typical obstruction in the lower pole of the epididymis where the vas is attached. The diagnosis is easy to make: there is a normal testicular biopsy, a normal vasogram, and an epididymis choked with sperms.

Treatment

Vasovasostomy

What can we do for these cases? Most easy to deal with are those who have had their vas deferens divided on purpose for sterilization, or by accident at hernia repair. One only needs to expose the vasa, freshen the ends, trim back the testicular end of the vas until one comes to a lumen from which the semen oozes out like milk, and join the ends together.

Obviously it makes surgical sense to form a spatulated anastomosis so as to avoid stenosis when the scar contracts. Equally obviously it makes it easier if you use a magnifying loupe or operating microscope. The finer the suture material the less will be the foreign body reaction, and the better the chance of a good result. However almost any technique of epididymovasostomy can give good results: most experienced surgeons report that about 80% of patients regain sperms in the ejaculate, and about 50% will get their wives pregnant⁶.

Equally, 50% do not: this may be because the new wives are barren; the wives of such second marriages tend to be somewhat older. There may be a stenosis at the site of the anastomosis, and it is not uncommon for a few sperms to appear, and then to disappear in successive semen analyses. In such cases it is worth reexploring the site of anastomosis and doing it again. But in most cases the only reason one can find for failure is a high anti-sperm antibody titer⁷.

In rats the antibody titer that rises after vasectomy can be lowered if both vasa are reunited, but if one is allowed to remain obstructed, it keeps the antibody titer high, so that on these grounds it would seem logical to perform a reunion of the divided vasa on both sides at the first session.

Epididymovasostomy

When there is obstruction between vas and epididymis it is only in the typical gonococcal obstruction at the lower pole of the epididymis that one can regularly expect good results however unjust this may seem. As for the technique: now that I am getting older I use a magnifying loupe and have given up using a splint. I use 8-0 nylon for the suture line, and try to sew the outer edge of the vas to the fibrous capsule of the epididymis.

Epididymovasostomy has had a poor reputation, and some surgeons have felt that it is not worth trying. I do not share this pessimism. I have had some surprising and gratifying results, and have learned that one must not judge that the operation has been a failure too soon. One of my patients showed no sperms in his ejaculate for 6 months, and I had given up hope, when he returned 6 months later beaming with pleasure, his wife pregnant, and his sperm count more than 30 million. Silber⁸

reports a similar result in a patient in whom it took as long as 2 years for motility to return when he had anastomosed the vas to the head of the epididymis.

Sperm reservoirs

Even in those most unfortunate patients who are born without vasa, all is not lost. One may still offer them a sperm reservoir. In the technique of Jimenes Cruz⁹ a short tube made from a vascular prosthesis is sewn to the amputated stump of the epididymis. After a few weeks, it is aspirated, and in some of the lucky patients, sperms can be recovered showing excellent sperm concentration and motility. When this aspirate is injected into the cervix a small number of pregnancies have been reported. Husband and wife must be warned that on average artificial insemination needs about 10 attempts before a pregnancy is obtained even when one has a good sample of semen to work with. One must therefore be very cautious, but caution should not stop one trying: from time to time one is unexpectedly successful.

Oligozoospermia

None of the drugs so far used in the treatment of oligozoospermia have been shown to be better than control medication with a placebo, and since the careful study from the Institute of Urology on Arginine, no new drug should ever be used without a strict placebo control¹⁰.

One would think that by now surgeons would have accepted the same need for a critical appraisal of the operative treatment of varicocele in the management of infertility. Few publications have referred to any controls at all. Most of the authors who study varicoceles do so with a view to investigating their hemodynamics with Doppler and other studies, or measuring the concentration of hormones in the testicular venous blood. When one studies the semen analysis in men with and without a varicocele, no difference can be found between the two populations¹¹ and when Nilsson et al¹² carried out a careful prospective study of varicocelectomy versus no operation in a series of 96 husbands, there was no difference in the semen concentration, morphology, or progressive motility over a period of 36 to 74 months of observation. The wives of 4 out of 51 who were operated on had babies (7.8%) compared with 8 out of 45 not operated on (17.8%). Nilsson drew the cautious conclusion that these figures did not show any convincing evidence that varicocelectomy had produced a statistically significant advantage. It is a curious comment on human surgical thinking that this masterly study has never been repeated or denied: it has simply been ignored by the vast army of enthusiasts who enjoy operating on varicoceles¹³.

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