AN EVALUATION OF VAS REANASTOMOSIS DONE BY MICROSURGERY

*Arun Kumar Singh, M. S. **N. D. Tahiliani M. S., F. A. C. S.

Vasectomy is an effective and reliable method of family planning. Most individuals undergoing vasectomy are content and dwell happily. However, there are many patients is whom reconalisation is warranted for various reasons.

The conventional method of vas reanastomosis has not given the desired results. The important causes for failure being a strictured anastomosis leading to back pressure, oliguria or aspermia. The recent introduction of stereo opotical magnifying aids has raised new expectations.

The present study has been done with the aim of evaluating microsurgical vas reanastomosis, comparing it with the conventional method and to find its draw backs if any.

This controlled study has been done in 25 mature male mongrel dogs. Dog has been chosen as the model animal because its reproductive system resembles that of humans and also because of its easy availability.

The animal was deliced and deticked before taking up for study. It was anaesthetised by a slow intravenous injection of pento-barbitone (20-25 mg/kg body weight). The operation site was shaved and properly prepared. Taking all aseptic precautions the vas was exposed on either sides by a paramedian incision. Vasectomy was done and a one Cm. segment excised.

This was followed by immediate end to end anastomosis. The right vas in each animal was anastomosed under microsurgery. Magnification used was x 25. A single layer anastomosis was done. Care was taken not to include the mucosa in the stiches) 8-10 stitches of 8/0 monofilament nylon were placed equidistantly all along the circumferance.

On the left side we adopted the conventional technique to serve as control. Unaided naked eye anastomosis was done employing 6/0 monofilament nylon sutures. Care was taken not to pierce the mucosa. 6-8 such stitches had to be placed to achieve proper cooption of edges.

The vas were then reposited back in the scrotal wound and closure done in 2 layers. Fine catgut stiches brought together the subcutaeneous tissues, whereas skin was stitched by interrupted linen sutures.

No intravasal splints were used. No antibiotics or other drugs were given in the post operative period. Stitches were left to be extruded by themselves.

6 weeks later, the animal was reanasthetised, was reexposed and vasography done by the method of Paulson et al (1978). Thereafter, the anastomosed segment of vas was taken out for serial histology. Sections were cut at 10 b and studied under light microscope (stained by H & E stains). Slides were specially examined for

**The Postgraduate Department of Surgery, M. L. N. Medical College, Allahabad

* Presently at Department of Plastic Surgery, King George Medical College, Lucknow

luminal alterations, mucosal abnormalities and reaction to suture material.

Results

Forty vas anastomoses have been done is 20 dogs. The right vas have been anastomosed microsurgically and the left side by the conven tional method.

Analysis of results has been shown in table 1 16 out of 20 (80%) vas were patent on vasography whereas 4 (20%) showed no passage of dye beyond the anastomosed segment. On the left side, where conventional technique was adopted, the patency rate was 35% (7 out of 20 being patent), and 65% (13 vas) were blocked.

Serial histology revealed a patent lumen in 15 vas (75%) anastomosed microsurgically. One showed a strictured anastomosis (5%) and 4 had complete obliteration of the lumen. Comparable figures for the left side were 8 (40%), 6 (30%) and 6 (30%) respectively.

Table 1

Showing radiological and histological findings.

	Microsurgical (Rt. Side)	Convetional (lf. Side)
Vasography-Patent	16 (80%)	7 (35%)
Blocked	4 (20%)	13 (65%)
Histology-Patent	15 (75%)	8 (40%)
Blocked	4 (20%)	6 (30%)
Structure	1 (5%)	6 (30%)
Suture granuloma	1 (5%)	9 (45%)
Mucosal abnormalities	2 (10%)	5 (25%)
Sperm granuloma	–	1 (5%)

Mucosal abnormalities were more frequently seen with the conventional technique than with microsurgery, being in 9 cases (45%) and in 1 case (5%) respectively. Changes in the lining epithelium were observed in the from of squamous metaplasia, psuedocyst formation and irregularity.

Reaction to suture material evidenced as a granuloma formation was found in one case where 8/0 nylon was used. With 5/0 nylon it was observed in 5 out of 20 vas (25%). In one case (5%) belonging to the conventional group we noticed a sperm granuloma formation.

Discussion

Inspite of much work done on vassectomy reversal many basic questions have still remained unanswered. The problem with human studies are, firstly, an adequate number of cases are not available. Secondly, the sterilisation procedure and its subsequent reversal operation is usually not done by the same individual, or at the same centre, and a varying time interval exists between the two, hence a cotrolled trial is not possible. Furthermore, presterilisation fertility status of the individual is not known. Vasography post operatively is discouraged due to risk of chemical or infective epididymitis, and formation of haematoma, stricture or sperm granuloma. Moreover, changes at the anastomosis site cannot be studied at the cellular and subcellular levels due to obvious resons.

This necessitates carrying out controlled experimental studies in animal models so as to standardise the operation techniques. Also, they provide opportunity for training before using then in human beings. At the same time it must be borne in mind that animal studies are not devoid of their shortcoming.

An effort has been made to make this study a controlled one by performing vas reunion under magnification on the right side and by the unaided eye on the left side.

Success following recanalisation procedure has been judged by vasography. Following conventional vasovasostomy patency rate was 35%. Similar figure for microsurigical anastmosis was 80% Friend et al (1978) have also reported similar results following microsugical vasovasostomy. Betterment of results has also been noted by Dorsey (1973), and Taneja et (1978) using a magnifying lovpe. However, Phadke and Phadke (1967) have achieved satisfactory results using only the conventional technique. Microsurgical anastomosis is better because—

1. It is performed under magnification,
2. Visualisation of lumen, mucosa and muscular layers is aided and therefore sutures can bc placed accurately,
3. It involves gentle handling of tissues, and
4. Since fine suture materials areemployed tissue reaction is minimised.

Histological findings did not always correlate with radiological findings. Only 8 out of 20 vas anastomosed by naked eye showed a normal limen. Remaining were either stricturd or totally blocked (6 each). In the microsurgical group 15 out of 20 (75%) vas were patent, one was strictured and only 4 (20%) had no trace of lumen. Mucosal abnormalities are more frequent when naked eye anastomosis is done. Toneja et al (1978) have also made similar observations on canine models. He also observed that inflamatory changes in the vas are more marked of the lumen is blocked.

Time taken for conventional vasovasostomy was 25-35 mins. It was nearly one and half hour for microsurgical vasovasostomy. Later, with more practice it came down to 1 hour and 10 mins. Microsurgical vasovasostomy is a more time consuming method requiring greater surgical skill and patience. It requires proper orientation and practice. Mere access to the instrument does not guarantee good results. Furthermore, it is possible only at developed centres where adequate facilities exist.

Summary

A controlled experimental study of microsurgical vas reanastomosis has been done and compared with the conventional method. The superiority of microsurgical methods has been demonstrated, even though the procedure is more time consuming.

References

1. Dorsey, J. W. (1973) : Surgical correction of post vasectomy sterility. J. Urol. 110 : 54.
2. Friend, D. S., Galle, J. and Silber, S. J. (1976) : Fine structure of human sperm, vas deferens epithelium and testicular biopsy specimens at the time of vasectomy reversal. Anat. Rec. 184 : 584.
3. Hamadania, A. and Beck, D. (1978) : Effect of vasostomy on the fine structure of the vas deferens in rats. Fertil. & Steril. (Abstract Supplement) 31 : 327.
4. Paulson, D. F., Lindsey, C. M. and Anderson, E. E. (1974) : Fertili & Steril. 25 : 906.
5. Phadke, G. M. and Phadke, A. G. (1967) : Experiances in the reahastomosis of vas deferens. J. Urol 97 : 888.
6. Silber, S. J. (1977) : Microscopic vasectomy reversal Fertil & Steril. 20 : 1191.
7. Taneja, O. P., Tagore, N. K., Tagore, V. and Gulati, S. M. (1978) : Recanalisation of vas after vasectomy evaluation of various techniques in dogs. Br. J. Urol. 50 : 342.