

## AN EVALUATION OF TWO TECHNIQUES IN MICROSURGICAL TUBAL REANASTOMOSIS\*

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### SUMMARY

In this controlled experimental study in dogs, single layer microsurgical reanastomosis has been compared to two layered reanastomosis. Two layered technique is better as judged by patency rates and incidence of structural abnormalities, though it is more difficult and time consuming.

Conventional naked eye method of tubal anastomosis has not yielded desired results (Sekie *et al* 1977; Bhatt 1979). Microsurgical techniques have consistently given better results (Patterson and Wood 1974; Gomel 1977; Fayez and Suliman 1982). Desired results can be achieved only by use of meticulous technique, fine sutures together with atraumatic tissue handling.

After having confirmed superiority of microsurgical tuboplasty over unaided naked eye reanastomosis (Singh and Tahiliani 1985), in this study we have attempted a controlled experimental comparison between two techniques of microsurgical tubal reanastomosis; single layer vs two layered.

### Method

The experiments were carried out on 20 adult female dogs. Under general anaesthesia and with all aseptic precautions the abdomen was opened by a lower midline incision. Tubectomy was done on both sides in the ampullary portion of the fallopian tube, and one cm. segment of the tube was excised. Immediate reanastomosis was done under X25 magnification of a Carl Zeiss OPMI operating microscope, using 8/0 monofilament nylon sutures. In each animal, the right tube was anastomosed in single layer, whereas two layered anastomosis was carried out on the left tube. In single layer technique, 8-10 seromuscular stitches were placed circumferentially, taking care not to include the mucosa. For two layered anastomosis, first layer of interrupted, equidistant sutures aligns the mucosa and a second layer of seromuscular sutures reinforces it. Care was taken to place the second layer of sutures

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in the interval between the first layer of sutures. No splints were used. Abdomen was closed monoblock by nonabsorbable sutures. Except for parenteral antibiotics, no other drug was given.

### Results

Six weeks later the abdomen was reopened and explored. Peritubal adhesions were mild in all cases. Hysterosalpingography was done by the same technique as in our previous study. The vagina was slit open in the midline anteriorly and through the cervical canal a cannula was passed into the uterus. A suture was tied over the intravaginal portion of the cervix to prevent leakage of dye into the vagina 4-5 ml. of Meglumine iodide was injected and skiagram taken.

TABLE I  
Findings of Hysterosalpingography

Type of anastomosis	Patent	Blocked
Single layer	15 (75%)	5 (25%)
Two layered	18 (90%)	2 (10%)

That segment of tube which was reanastomosed was then taken out for serial histological examination under a light microscope.

TABLE II  
Findings on Histology

Findings	Single layer	Two layered
Patent	16 (80%)	18 (90%)
Blocked	1 (5%)	1 (5%)
Stricture	38 (15%)	1 (5%)
Mucosal abnormalities	5 (25%)	0
Suture granuloma	0	1 (5%)

### Discussion

The advent of stereo-optical magnifying aids has brought in a new wave of optim-

ism in the field of tubal recanalisation (Oven and Pickettheaps 1977; Diamond 1979; Goldard *et al* 1983). We concur with the above workers (Singh and Tahiliani 1985).

Patency rates are higher (90%) when the fallopian tube is reanastomosed in two layers, than when single layer anastomosis is carried out (patency 75%).

The fallopian tube has a complex histology, which varies in different parts viz. ampulla, isthmus, and intramural portions (Sojo *et al* 1983). The long ciliated mucosa is thrown into multiple folds containing secretory and supportive cells capable of great variation in cell size and functions in response to menstrual cycle hormonal activity. The cilia exhibit an unidirectional movement aiding the transfer of ova towards the uterus. The musculature of the tube also shows peristaltic activity arising at the cornu.

Binding of the tube by external adhesions, structural abnormalities, incoordinated muscular activity or ciliary action are likely to hinder the normal function of tubes resulting again in infertility or in ectopic pregnancy. Failure may be due to misalignment of mucosal folds in which the ovum may be trapped (Halbert and Patton 1979).

In our controlled study the mucosal abnormalities were totally lacking when mucosa was carefully aligned. In the other group (single layer anastomosis group), mucosal abnormalities were much common (25 per cent) and they were in the form of metaplasia, crypt formation, inclusion cysts, and irregular lumen.

The number of cases in this series though not sufficient for statistical analysis yet, the advantages of two layered microsurgical anastomosis are apparent when the patency rates and the incidence of

mucosal abnormalities are considered. However, two layered anastomosis has its limitations. It is more difficult requiring patience and endurance on the part of the surgical team. Time required is more, the averages being 35 mins. and 55 mins. respectively for single layer and two layered anastomoses.

#### References

1. Bhatt, R. V.: J. Obstet. Gynaeco. India, 29: 18, 1979.
2. Diamond, E.: Fertil. Steril. 32: 370, 1979.
3. Fayed, J. A. and Suliman, O. S.: Fertil. Steril. 37: 73, 1982.
4. Goldarb, J. M., Utian, W. H. and Weiss, R.: Fertil. Steril. 40: 1983, 1983.
5. Gomel, V.: Fertil. Steril. 28: 72, 1977.
6. Halbert, S. A. and Patten, D. L.: Fertil. Steril. 32: 687, 1979.
7. Oven, E. R. and Pickett Heaps, A. A.: Aust. N. J. Surg. 47: 300, 1977.
8. Patterson, P. and Wood, C.: Fertil. Steril. 25: 757, 1974.
9. Sekie, K., Eddy, C. A. and Pauerstein, C. J.: Fertil. Steril. 28: 1215, 1977.
10. Sojo, D., Pardo, J. D. and Nistal, M.: Fertil. Steril. 38: 707, 1983.
11. Singh, A. K. and Tahiliani, N. D.: J. Obstet. Gynaeco. India (in press), 1985.