

SURGICAL TREATMENT OF FEMALE INFERTILITY

A Case of Bilateral Hydrosalpinx and Cornual Block

Case Report

Presented by Doctor Tan Chee Yong.

Regd. No. 2746B. L.C.K. Aet 32. Chinese. Married 14 years.

Menarche 13 years. Periods regular. duration 7 days

Husband alive (aet 50). Occupation: Housewife.

Status: Secondary wife

HISTORY:

First seen in Infertility Clinic with symptoms of dysmenorrhoea, lower abdominal pain, backache and leucorrhoea—added as an after-thought that she wished to conceive.

Was quite well before her marriage. 1 year after marriage she was stricken with a "severe illness" which lasted 1½ months and consisted of fever, rigors and blood tinged leucorrhoea. She recovered from this "severe illness" but not completely, for in the wake of this illness followed dysmenorrhoea, persistent low back pain and leucorrhoea.

Husband left her after 5 years of barren marriage but resumed union during the whole of the past 1 year.

HUSBAND:

Tradesman by occupation. Fond of wines and nicotine. Admits frequent exposure to venereal diseases. Had chancre and urethral discharge 3 years before second marriage. No children by 1st wife. Attending Social Hygiene Clinic for 1 year. Clinically in good health. Penile scar present. No other stigmata Treponematoses. Seminal Analysis:—Subfertile specimen.

PHYSICAL EXAMINATION OF WIFE:

General condition good. Feminine habitus. No clinical evidence of en-

docrinopathy. No goitre.

Heart and Lungs = N.A.D.

Uterus size of 10 weeks pregnancy, R.V., R.F. Fixed and displaced to Left.

Mass size of golf ball anterior and to the Left of the uterus.

Cervix healthy.

Hysterosalpingogram: Screening and films showed uterus displaced to Left, acutely anteflexed with bilateral cornual block.

Kahn Test — Positive.

G. C. F. T. — Positive.

AT OPERATION:

Laparotomy: Gross Adhesions of pelvic viscera. Fixed uterus. Bilateral Hydrosalpinx with tubo-ovarian cyst on Left.

Surgery: 1. Left salpingo-oophorectomy.

2. Cuff Salpingostomy — with probe, distal tubal block demonstrated. Resection of occluded portion with implantation of resected end into uterine cavity, after polythene rod has been threaded through tubal lumen. Right ovary conserved.

3. Vento-suspension and appendicectomy.

Discussion

Doctor Y. M. Salmon gave a dissertation on the aetiology of female infertility.

Infertility is one of the oldest human problems, almost as old as man himself. and although advances in knowledge have been made, the subject is still in its infancy.

Meaker in 1934 defined sterility as "the inability to initiate the reproductive process." Sterility is absolute, though not necessarily irreversible. On the other hand, fertility and infertility are relative states.

The female prerequisites for conception are the production of normal mature ova, which escape at ovulation from the ovary, active healthy tubal fimbriae, normal patent Fallopian tubes with normal peristalsis, a healthy endometrium under effective hormonal influence and a cervical and vaginal secretion not hostile to the spermatozoa. The female factors of infertility can best be discussed as they affect these various stages.

I. PHYSIOLOGICAL FACTORS IN INFERTILITY:

- (1) *Reproductive power.* Apparently healthy individuals differ widely in reproductive power.
- (2) *Age.* Duncan in 1884 showed that the maximum fertility was between the ages of 20 and 24 years, and that after 39 years fertility declined very rapidly.
- (3) *Stage of menstrual cycle*—Fertility varies greatly according to the stage of the menstrual cycle, and there is evidence that the ovum after ovulation remains capable of fertilisation for a few hours only.

II. INTERFERENCE WITH UNION OF OVUM & SPERM.

(A) *Vulva & Vagina.*

- (1) *Thickened hymen.*
- (2) *Congenitally small vaginal introitus and vaginal strictures.*
- (3) Other causes of *Dyspareunia* viz: vulvitis, vaginitis, vaginismus inflammation of Bartholin's glands, urethral caruncle.

(B) *Cervical barriers*:—these are primarily physiological.

(1) *Abnormal cervical mucus.*

The character of the cervical mucus may be altered by an unhealthy cervix as evidenced by endocervicitis, erosion or polypi. The mucus becomes purulent and is inimical to the spermatozoa.

Or the mucus may be in the form of a thick tenacious cervical plug, or it may be completely absent. These factors hinder ascent of the sperm.

- (2) *Marked congenital elongation of the cervix with a pin-hole external ostium* has in the past been thought to prevent sperm ascent, but this is improbable. More significant are the findings of genital hypoplasia which may also be present.
- (3) *Utero-vaginal prolapse and enterocele* have also been indicated as causative factors by the absence of the seminal pool and by their aiding extrusion of the fluid soon after its deposition.

(C) *Uterine conditions.*

- (1) *Displacement*—Mobile retroverted uteri are not a significant cause of sterility. Fixed retroversions, however, which are associated with chronic salpingitis, pelvic peritonitis, or endometriosis are a common cause of sterility.
- (2) *Uterine Fibromyomata* are found in 3 to 5% of women complaining of infertility. According to Read, cornual or submucous tumours may cause infertility by occlusion of the tubes, distortion and enlargement of the uterine cavity and their association with chronic endometrial hyperplasia.
- (3) *Hypoplasia of the uterus* associated with hypoplasia of the vagina, cervix and ovaries is an important cause of sterility, all the more so, because in some cases it may be prevented. The cause may be anything that retards the growth of the endocrine glands during embryonic life, infancy, childhood or puberty.
- (4) *Disordered uterine action.* Attention was first drawn to the relation of this functional disturbance to infertility by Stallworthy, who described the female genital tract as the most hysterical portion of a woman's anatomy. This is manifested in undue uterine and tubal irritability, as can be demonstrated by tubal insufflation of hysterosalpingography.

(D) Fallopian Tubes.

(1) *Functional causes.* These are most important, and must always be excluded before organic obstruction is diagnosed. Tubal spasm with irritable uteri, prevailing in nervous and anxious patients may cause complete occlusion at the utero-tubal junction. The spasm is usually not maintained.

(2) *Infection.* This may be pyogenic, gonococcal or tuberculous. The pyogenic type is usually post-abortal or puerperal in origin. The prognosis as regards reproduction is less favourable in the gonococcal group as compared with the pyogenic. Tuberculous salpingitis with endometritis occurs in from 2-8% of women complaining of infertility. Only about 50% of tuberculous tubes are occluded, but in many of the remainder there is thickening and stenosis. Peritoneal adhesions resulting from acute appendicitis with peritonitis may also isolate the abdominal ostium from contact with the ovary.

(3) *Peritoneal haemorrhage* resulting from a ruptured follicle or corpus luteum or ruptured ectopic gestation may provoke adhesions and tubal blockage.

(4) *Fibromyomata and ovarian tumours*, if these be in the broad ligament, may distort, elongate and occlude the tubal lumen (Read).

(5) *Congenital causes.* Hypoplastic tubes in association with genital hypoplasia is an important cause of infertility.

III. INTERFERENCE WITH IMPLANTATION OF ZYGOTE.

1. Submucous fibroids.
2. Adenomyosis of the uterus.
3. Tuberculous endometritis.

IV. INTERFERENCE WITH PRODUCTION OF OVA.

Any condition which prevents ovulation must cause sterility e.g. destruction of ovaries by operation, or disease or

undue exposure to irradiation; old-standing salpingo-oophoritis, endocrine dysfunction, constitutional defects.

In conclusion, it is important to appreciate that in any one case, sterility is not due to just a single defect, but to a combination of several causative factors.

Doctor A. C. Sinha spoke on the surgical treatment in female infertility.

It has been said that the treatment of sterility begins in utero—and sterile mating results from impaired fertility on the part of one or both partners each of whom contributes some factor which may or may not be remediable.

In considering any surgical procedure in female infertility, it is important to realise that permanent restoration of patency of an occluded tube by surgical measures is successful in only a limited number of cases. It is quite common to operate—restore patency of tube and some months later to find the tubes are closed again. Finally one cannot guarantee that pregnancy will follow any surgical procedure with any degree of certainty.

Before surgery can be undertaken certain conditions must be fulfilled:—

- (1) Husband should be 100% normal
- (2) Woman must be within the reproductive phase of her life.
- (3) All evidence of pelvic inflammation must be cured.
- (4) Evidence of cervical infection must be corrected.
- (5) Finally diagnosis of tubal block must be confirmed both by Rubins test and salpingogram.

On the question of *Diagnosis of tubal block* one must exercise a great deal of caution and patience to prevent enthusiasm from publishing reports which are sometimes incredibly optimistic. I particularly refer to Cornual occlusions, the incidence of which today shows a sharp decline when compared to figures of older writers.

It has been proved that cornual occlusion is either:—

- (1) Functional
or
(2) Organic.

Functional Tubal spasm is a frequent finding in cases where Rubin's test is performed for the first time in a nervous and tense patient without anaesthetics. It can be avoided in some cases by the use of antispasmodics. Then again spasm is likely to occur at time of ovulation.

Sharman in 1944 reported that out of 116 patients who became pregnant, 29 were diagnosed as having non-patent tubes following one insufflation.

Spasm will sometimes relax after a pressure of 200 mm. Mercury having been maintained for 2 minutes.

Cornual Isthmial Ampullory Fimbrial

Hamant	40%	—	—	60%
Rubins	18%	—	—	82%
Kennedy	30%	—	—	70%
Palmer				
(1950)	32%	16%	—	52%

Stallworthy—at Oxford has been responsible for clarifying many of the fallacies linked up with the diagnosis of tubal occlusion. He says the incidence of tubal blockage has fallen since 1932 when the popular figure varied from 26%-50%. To-day the figure is round about 6.25% and the incidence of "hard core" cases where Cornual block alone can be blamed only 1.56% of all cases attending the infertility clinic.

Organic occlusion: This may arise from a variety of causes:—

1. Post abortal and puerperal.
2. Gonorrhoeal.
3. Tuberculosis.
4. Endometriosis.
5. Developmental.
6. Following chemicals introduced into uterus with a view to procuring abortion.
7. Sterilising operations.

Having thus given some idea of the difficulties in arriving at a definite diagnosis, I shall now discuss the Surgical treatment.

Surgical Treatment: A variety of surgical treatment has been tried in the past, including such procedures as:—

1. Salpingostomies.
2. Tubo-uterine implantation.
3. Estes operation of ovarian transplants.

None of them has met with any degree of success and in fact all had fallen into disrepute due to their very low success rate.

Greenhill in 1937 collected statistical figures derived from an all American wide questionnaire which included 107 leading Gynaecologists and published these figures which painted a dismal picture:—

56% of the Gynaecologists condemned all plastic operations on the tube.

44% of the rest had performed 818 operations with 54 pregnancies (6.6%) and of these 36 babies were born alive (4.4%).

The rest either aborted or had ectopic pregnancies

Green-Armytage called this report of Greenhill's the death warrant which sealed the fate of tubal plastic operation. However, the progress of science opened up a fresh era in widening the scope of this operation with a greater measure of success

Raoul Palmer (1951) of Paris was the first to stage a comeback with 37.5% of pregnancy success rate with tubal implantation, and only 11% with salpingostomies.

Green-Armytage speaks of 40% success rate with tubal implantation.

This brings me now to the actual operations and their techniques.

The various types of operations that have been in vogue for plastic tubal repairs are:—

1. Fimbrioplasty.
2. Salpingostomy—
 - (a) Cuffing type.
 - (b) With slight eversion.
 - (c) Dorsal slit.
 - (d) With allantoid membranes.
 - (e) With human foetal membrane.
3. End to end anastomosis with or without splinting.

4. Tubal Implantation:

- (a) By bivalving the uterine fundus.
- (b) Implantation following coring out of interstitial portion of tube—without splinting.
- (c) Implantation following coring out of interstitial portion of tube—with splinting.

The principles involved in operative treatment were twofold (i) to avoid infection, (ii) to promote epithelial regeneration.

Since Greenhill's report there have been several advances, e.g.

- (1) Improved techniques.
- (2) Use of antibiotics.
- (3) Use of polythene material.

Thus the percentage of patent tube following operation is now higher, but the percentage of successful pregnancies is not so encouraging. This probably is due to:—

- (1) Shortening of the tube.
 - (2) Interference with tubal peristalsis.
- Choice of operation will depend on the site of block, e.g.—

(1) *Obstruction due to Peri-tubal adhesion only.*

Salpingolysis is usually sufficient.

(1) *Obstruction at Fimbriated and ampullary end.*

Here results are unsatisfactory, and various types of salpingostomies have been performed. Mulligan and Rock however have devised a new method whereby they use a polythene hood and obturator to maintain patency of fimbriated ends. They claim the best results by this method as compared to others, e.g. 24% success rate. However, there is the disadvantage that a second operation is necessary to remove the "hood."

(3) *Obstruction in Isthmic portion:*

The commonest cause is tubal ligation and the fimbriated ends are healthy. End to end anastomosis over a polythene catheter yields good results.

The best report was by Milner (1950) with a 66% success rate.

- (4) *Obstruction in the interstitial portion:* This type seems to have drawn much attention and publication during recent years through the energetic work of Mr. Green-Armytage. However the best results can only be obtained in strict cases of cornual block with no other abnormal adnexal pathology. Variations in technique have been great but the best and simplest method is that of:

- (1) excision of the occluded portion of tube.
- (2) burrowing a tunnel through the interstitial portion of uterus.
- (3) transplanting the proximal end of tube into the new tunnel.

In 1952 Mr. Green-Armytage did not use any splinting device.

In 1954 he used polythene rods which he left in situ for 7-8 weeks and by so doing was able to get a higher percentage of tubal patency and his pregnancy rate was 35%.

Doctor Sinha said that he had tried this operation on a number of cases with disappointing results. All of these might show patency soon after operation, but all eventually showed blockage after a period of 6-8 weeks post-operative.

Professor B. H. Sheares expressed doubts as to whether plastic surgery for organic tubal blockage was worthwhile. Block in the utero-tubal junctions, he found, was very often due to polypoid growth of the lining endometrial epithelium at these points. The successes reported after tubal transplantation, he ventured, were due to the simultaneous removal of the polypus incidental to the boring. Why polypi should grow here in preference to other sites was a subject he was investigating.

Doctor T. W. Roddie said that he had no views to offer as he had never seen an operation involving tubal transplantation.

Doctor M. D. Manion disagreed with much of what he called "textbook etiology" given by Doctor Y. Salmon. He did not think that modern gynaecologists paid as much attention to anatomical causes of

female infertility as previously. He quoted fibroids as a case. With fibroids, infertility was usually due to consistent salpingitis or dysfunctional bleeding rather than the fibroid itself. He said the tube had more functions than the mechanical transport of the ovum; modern views gave credence to the special part played by an enzyme secreted by the tubal epithelium which denuded the ovum thus preparing it for the penetration of the sperm cell. Regarding the diagnosis of organic obstruction he thought that it was extremely difficult. As to the use of polythene rods he said some were of the opinion that it might have adverse effect.

Doctor T. K. Chong quoted Stallworthy in pointing out that the surgeon should exclude those women who, for some other reasons (e.g. a systemic disease that was inimical to pregnancy) were unsuitable for therapy, even though her lesion per se was suitable for plastic operation. Regarding etiology he agreed with Doctor Y. Salmon that there were usually multiple factors responsible in most cases. He also discredited cervicitis and other individual conditions as having an etiological significance. He said it was not uncommon to find cervicitis in a pregnant woman and

women with known T.B. endometritis had conceived.

Doctor M. D. Manion stressed on the importance of a thorough investigation before operation.

Doctor A. C. Sinha thought that cases becoming pregnant after such plastic surgery might require L.S.C.S. as there was a danger of weakness of uterine wall at the site of anastomosis.

Professor B. H. Sheares stressed on the importance of excluding the presence of polypi at the utero-tubal junction before subjecting the woman to tubal implantation. He also said that healthy tubal epithelium was a prerequisite to conception.

Doctor M. D. Manion gave an instance to illustrate the difficulty of diagnosing organic tubal block: a certain case had 5 insufflations and 3 hysterosalpingograms and was put up for operation to remove the "organic block." But insufflation under General Anaesthesia in the theatre showed that the tube was after all patent!

As there was no one else to speak, the meeting adjourned at 4.30 p.m.