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The Management of Sterility

An Analysis of Sixty-seven Cases in Private Practice*

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No phase of the subject of sterility has been untouched in the literature. There should, however, always be room for further analyses of carefully kept records, and for suggestions drawn from a painstaking study of a considerable group of cases.

The material for this paper has been gathered from the records of sixty-seven married women who have presented themselves as office patients with the complaint of sterility. We have analyzed our records with no attempt to prove or disprove any preconceived notions, nor do we suppose that the study of so small a group of cases can be in its analysis more than suggestive. We are not attempting to establish dicta, but simply wish to present for what it is worth our conception of the outcome of the study and treatment of a group of sterility cases in private practice. With no attempt at completeness, we will touch on certain important points on which we hope our experiences may prove helpful.

The diagnosis of sterility has been found justified in every case, with the possible reservation that the time elapsed has not always been sufficient to meet the minimum of certain authorities in the definition of the term sterility (four cases under two years). We do not eliminate these for the reason that they constitute a certain percentage of the usual private practice in this specialty. It is our intention to indicate what may be expected from the conscientious treatment of a complete group of this sort rather than from the stereotyped and more easily controlled practice of the sterility clinics. On the other hand, we have not included instances in which some simple suggestion, such as an alkaline instillation, high or low ejaculation, etc., has relieved the condition.

We accept Polak's conception of sterility as absolute and relative, with relative sterility comprised of primary and secondary types. The absolute group shows anomalies which obviously cannot be overcome by treatment. Under relative sterility, the primary type is that in which no pregnancy has occurred, and the secondary that in which pregnancy has been followed by a prolonged period of inability

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GROUP STATISTICS

TABLE I.
Age.

	No. Cases	Oldest	Youngest	Average Age
Absolute.....	8			
Relative Primary....	50	41	18	28.1
Relative Secondary..	17	40	22	30.8
Group.....	67	41	18	29.4

TABLE II.
Duration of Sterility.

	No. Cases	Longest Duration	Shortest Duration	Average Duration
Relative Primary.....	50	20	1	5.2
Relative Secondary..	17	12	7	4.5
Group.....	67	20	1	4.8

to conceive. Of sixty-seven patients studied, three were shown in the course of examination to have tubes occluded at the cornual ends. The condition of the semen of five husbands precluded the possibility of pregnancy. Thus, we are actually dealing with only fifty-nine cases of infertility potential for gynecologic treatment.

Results in the entire group: The gross statistics for the series will be noted in Tables I to V inclusive and Table XII. The women were practically all of a relatively high social and economic status. There were forty-two primary and seventeen secondary cases of relative sterility. The average age for the series was 29.4 years, the secondary group averaging slightly over a year older than the primary. The oldest was 41 and the youngest 18. There were no successes in the age group over 35 (eight patients). The average age in the successful cases was 27. The average duration of the sterility was about five years in both primary and secondary groups. The longest duration of a sterility which was relieved was ten years.

The percentage incidence of pregnancy in the fifty-nine cases of relative sterility (infertility) was 42 per cent (Table III). This percentage was slightly higher in the forty-two primary than in the seventeen secondary sterilities. This figure embraces all of the cases in which there was the remotest chance of pregnancy, and does not exclude those who have lapsed or refused certain phases of our advice and treatment. It substantiates our theory that as good results may be had in this sort of group as in clinic practice.

TABLE III.
Successes.

	No. Cases	No. Pregnancies	Percent Success	No. Not Pregnant	Percent Failure
Relative Primary.....	42	18	43	24	57
Relative Secondary....	17	7	41	10	59
Group.....	59	25	42	34	58

TABLE IV.
Cooperated

TABLE V.
Did not cooperate.

	No Cases	No. Pregnant	Percent Success	No. Cases	No. Pregnant	Percent Success
Relative Primary.....	18	15	83	22	2	9
Relative Secondary.....	14	8	57	5	0	0
Group.....	32	23	71	27	2	7

We have rearranged the cases, regardless of outcome, under the headings: "Complete examination and treatment" and "incomplete examination and treatment" which would correspond roughly to those who cooperated and those who did not. We find 71 per cent of successes in the cooperative group as opposed to 7 per cent in the noncooperative. These figures constitute a clear indication of the value of cooperation on the part of the patient. They have been helpful in convincing other patients of the necessity of carrying out our instructions. In this latter group are the few successes which we have had in fairness to assign rather to chance than to any given therapeusis.

We have been able to improve our records by the use of a printed form (figs. 1 and 2). This has been devised to assure our making a complete report in every case, and we find that it serves admirably as a detailed questionnaire. A faithful adherence to some such formulation of the data at hand is almost an essential to the successful conduct of sterility cases in private practice. Moreover, the scientific value of the record is greatly enhanced.

A detailed discussion of this record form would entail a consideration of almost the complete subject matter on sterility, and cannot be undertaken here. Certain points, however, may require elucidation, and furnish a pretext for suggestions which we have found helpful. For example, in regard to the use of contraceptives, it is important not only to know how long they have been employed, but also how long they have been discarded, and whether

HISTORY

Duration of Sterility — Duration of Marriage — Duration of Former Marriage
Primary or Secondary — Former Pregnancy
Contraceptives — When? — How Long
Type? — When Discontinued?
Desired Pregnancy Since — Frequency of Intercourse
Miscl.

WIFE:
Age — Occupation
Social Status
Former Marriage — Preg.

Desires Children
Coitus:

Mental Att.
Satisfaction
Vaginisms — Dysmenorrhea
Distaste — Frigidity
Orgasm

Masturbation
Homosex. tend.
X-ray Exposure
Radium Treatment

Previous Diseases:
Mumps — Age — Type
Gonorrhea: Date: From — To
Irritation — Urin. Symptoms
Discharge
Pelvic Pain — Tenderness
Bartolin Gl. — etc.
Thyroid — Hypo — Hyper
Syphilis — Date
Other Diseases

Operations: Tubes
Ovaries — Uterus

Known Retroversion
Menses: Began
Interval — Regularity
No. Days — Amt. Flow
Character Flow
Pains Since — Cause of
Onset — Type: Dull
Cramping
Worse on — Day of Period
NOTE:

HUSBAND:
Age — Occupation
Social Status
Former Marriage — Children

Desires Children
Coitus:

Mental Att.
Satisfaction
Distate — Erection
Ejaculation — Early — Late
Region of
Mechanical Difficulty
Withdrawal
Masturbation
Homosex. tend.
X-ray Exposure
Radium Treatment

Previous Diseases:
Mumps — Age — Type
Gonorrhea: — Exposure
Discharge — Irritation
Pain — Ing. Glands
Date: From — To

Thyroid — Hypo — Hyper
Syphilis — Date
Other Diseases

Orchitis — Prostatitis
Hernia — Hydrocele
Varicocele — Undescended Testicle

Circumcision

NOTE:

(NOTE: Attach report of consultation by urologist.)

Fig. 1. Facsimile of history form for special sterility case record (Mathieu and Schauffler).

EXAMINATION

General: (Complete routine Ex.)
(Note especially adipose dystrophy, masculin habitus, hirsute tendency, thyroid anomaly, acromegalic tend., etc.)

Genitalia: Vaginismus
Pubic Hair Type
Dev. of Labia
Funnel Pelvis
Hymen Type Rupt.
Senile Change Fibrosis
Introitus
Vagina Sensitive
Depth Redundancy
Clitoris
Cervix: Axis Discharge
Tears
Cysts Erosion
Endocervicitis
Angulation Stenosis

Fundus: Size Shape
Consistency Tenderness
Motility Position
Attachments Tumors
Adnexae: Tubes

Ovaries:
Congestion Prolapse

NOTE:

Complete record of treatment to be recorded in progress record.

SPERM: Condom spec. *Date
Time Taken M. Time Exam. M.
Gross Amt. Consistency
Color Odor
Microscopic: No. Sperm, Loaded
Mod. No. Few None
Size Shape
Length Tails Motility
Motility Retained**
Pus Blood
Crystals Bacteria

Stained Smear: Morphology:

Bacteria Cells:

Vaginal Spec.: Time of Coitus M.
Time Examined M. No. Sperm
Motility Motility Retained**
Reaction Gross Characters

Cervical Spec.: Time of Coitus
M. Time Examined M.
No. Sperm Motility
Motility Retained**
Reaction Gross Characters

Tubal Insufflation: Date
Menstrual Phase
Sounds Passed? Cannula
Easily Inserted? Cervical Angulation
Gas Through: Early Late
At mm. Hg. Freely? Slowly?
Amt. Gas: Large? Small?
Stethoscope Test Shoulder Pain, Early Late
Mild Severe Other Sequellae
Benzyl, Benzoate, Atropine, etc.

Lipiodol Examination;
Date Hour M.
Antispasmodic Mens. Phase
Tension Required Amt. Lip
Complication
NOTE:

*Reports of subsequent tests to be attached to progress record.
**At room temperature.

Fig. 2. Facsimile of physical and special examination form for special sterility case record (Mathieu and Schauffler).

the past use of such methods might be a present factor in the sterility. Douches, suppositories, etc. may have affected the mucous membranes or secretions of cervix or vagina unfavorably. Even the use of condom or tent pessary may determine a so-called "habitual" inaptitude toward conception which may persist after its discontinuance. Withdrawal or other forms of coitus interruptus not infrequently determine a relative sterility, due to certain types of "impotentia." The button or stem pessary is a notorious cause of chronic endocervicitis, and so forth.

A statement in regard to the frequency of intercourse will rarely be volunteered, yet it is important, if only to give the mere mathematical probabilities. Sterility is frequently due to impotence consequent upon too frequent intercourse, and on the other hand, very infrequent indulgence will automatically reduce the probability of pregnancy.

Certain points which are brought up in such a questionnaire may seem wide of the mark in a given instance. We must remember, however, that every contingency must be covered for every case. For example, it may not seem important in an individual instance to record the patient's social status. In analyzing a group of cases, however, at some later date, such information will be of definite practical as well as academic value. Again, it may seem superfluous and even embarrassing at times to attempt to record the emotional and psychic reactions to intercourse. It is possible even that our treatment will be in no way affected by such data. The fact remains that only by detailed questioning and with the patient's entire confidence can we hope to arrive finally at a complete comprehension of the problem in all its phases.

In working up a record with such a form, it is not intended that it be laid on the desk, and the questions asked by rote. Nothing more artificial or embarrassing could be imagined. By degrees, however, and for the most part on the patient's own initiative, the various questions can be gone over, simply by the use of mild suggestion. A too formal attitude or the atmosphere of hurry will surely impede progress. To gain an insight into the actualities of such problems may require the utmost in patience and understanding sympathy on the part of the specialist.

Often knowledge will be imparted by a husband or wife, which, if carelessly displayed before the other member, may be the cause of untold misfortune. Yet it may be necessary to transmit in some guise knowledge of this sort. For example, a husband is careless or brutal in the performance of the sexual act with resultant physical and psychic antagonism in his partner; or the sexual effort on the part of the husband may be inadequate, due simply to lack of knowledge of his partner's normal mechanism of reaction. Such faults may perhaps be easily corrected, but it will require the maximum of tact and discretion to arrange this without embarrassment or wounded feelings.

The question of what to tell a wife whose husband is the victim of venereal disease (and vice versa) often arises. To tell a woman flatly that her husband is impotent is again perhaps a dangerous procedure from the standpoint of her resultant psychic reaction. There are a thousand and one questions which may arise which will require the utmost in wisdom and tact from the physician. We believe that only by constant exercise in problems of this type can a physician become trained to handle them adequately. It is only a further argument in favor of the creation of the field of sterility as a limited specialty. The problems, both psychic and technical, require an intensive study and a vast experience as well as a natural aptitude for their proper solution. The field of sterility, which even at the present day is not infrequently invaded by the charlatan, should certainly be elevated to the level of a restricted specialty.

In glancing through the suggestions in regard to the history, one will note reference to the question of x-ray exposure. The sterilizing effect of large or prolonged doses of x-ray or radium is well known, and technicians as well as those who have had radiotherapy are apt to be affected. We wish to call attention also to the recent successful use of small so-called stimulating doses, which apparently have overcome certain types of sterility and menstrual disturbance, dependent upon ovarian dysfunction. Recent reports on this work are sufficiently favorable to merit serious attention.

General conditions, such as debility and organic or blood disease, will scarcely be overlooked. However, special attention may well be focused on the internal secretory glandular system. The thyroid especially is of interest, as its function is so closely associated with that of the ovary. Sterility is known to occur frequently as the result of either hyper- or hyposecretion. With the present day exact methods of diagnosis, this type of pathology should not be overlooked.

In the physical examination certain of the suggested notations may also seem to be rather of

an academic nature. Such data, however, will be found of value in later classification and record analysis. The masculine type may be indicated by such findings as the arrangement of the pubic hair, underdeveloped labiæ or a funnel pelvis, etc. Occasionally it will be noted that the hymen or perineum is of such a sort that actual intercourse has been impossible. Such a condition not infrequently comes to our attention and may not be understood by either the wife or husband. An apparent cause of sterility which has been noted by us in three instances has not, to our knowledge, been given careful consideration in the literature. This is the deep and very redundant vagina. During the examination for the complaint of sterility it will be noted that the ordinary speculum will not serve to expose the cervix. Indeed, even the giant speculum will seem scarcely to unfold the redundant wall of such a deep vagina. Apparently such a condition is occasionally a cause of sterility, especially in conjunction with an inadequate male organ. Here we would find a quite definite indication for artificial insemination.

A description of the clitoris may seem unessential. In the course of a careful examination of this organ, however, we occasionally find a phimosis or dense preputial adhesions. The correction of such a condition, while not bearing directly on the problem of the sterility, may have a psychic effect which will influence favorably the patient's sexual physiology.

Our interest in the study of the semen in these cases was stimulated by the work of Williams and Savage, and later by Moensch. For some time past we have not only carefully studied the condom specimen, but also postcoital specimens of both vaginal and cervical material containing sperm (Huhner test). Finding the fresh preparations unsuitable for studies of the morphology of the sperm, we have made routine special stains of all of these

TABLE VI.

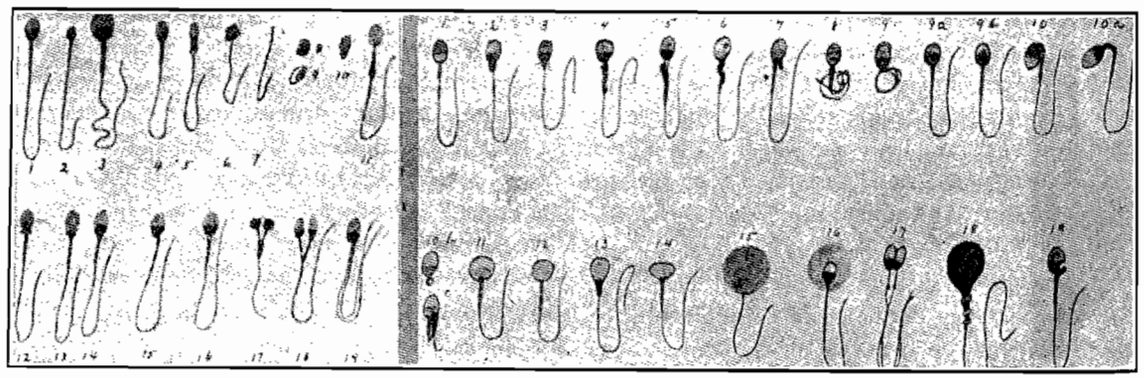
	Fresh Unstained Preparation	Fixed Stained Preparation
Numbers	Best index	Fair index
Motility	Best	No good
Morphology	Fair	Best
Spermin Crystals	Best	No good
Epi. cells	Fair	Best
Pus cells	Fair	No good
Blood cells	Good	No good
Mucus	Good	No good
Bacteria	Poor	Good

Table showing comparative value of fresh unstained preparations and fixed stained preparations of semen.

preparations by the technic of Williams. These stains give a clear differential color between the heads and tails, but allow only rather an inaccurate study of the internal structure. Differences in size and shape, gross variations in morphology and a rough estimate of the relative number of sperm maybe noted.

Epithelial cells and bacteria stain fairly well by this method, but pus shows well only when it is protected in a group of epithelial cells, mucus or other debris. Blood cells are destroyed by the method, as are most of the spermin crystals. These points were determined by using both methods on identical preparations and by special stains of pus, blood, epithelial cells, etc. (Table VI).

We are reproducing a plate showing some of the abnormalities of the sperm, as sketched by Moensch (fig. 3), as well as several microphotographs of our own preparations (figs. 4, 5 and 6). In observing these slides it is well to remember that, while certain important points are thus brought out, still the older method of the unstained fresh specimen is more reliable in certain departments. The fresh specimen will give the best index of relative numbers, motility and gross consistency, as well as the amount of pus, blood cells and the character of the spermin crystals. Information may



(Moensch) Fig. 3. Drawings of normal and abnormal sperm forms. (Williams)

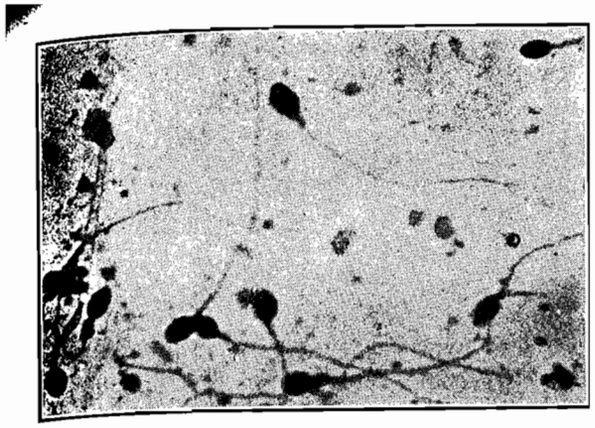


Fig. 4. Microphotogram of stained spermatozoa from vaginal material, taken one-half hour postcoitum. Essentially normal types.

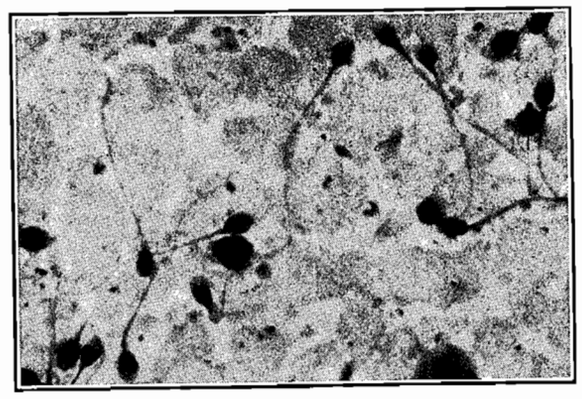


Fig. 5. Microphotogram of stained spermatozoa from cervical secretion taken one hour postcoitum. Note bacteria and epithelial cells. Normal morphology.

Fig. 6. High power of normal spermatozoa. The actual morphology is clearer under the lense than in the reproduction, but it is not entirely satisfactory at best.

be gathered from either method which we cannot afford to neglect and, therefore, it behooves us to do both.

It is important to remember that studies of the condom specimen alone will not answer all the questions in regard to the semen. We are able with safety to go farther and determine the effect of both the vaginal and cervical secretions, and also to study the condition of the sperm at least as high as the internal os. This is done by having the patient report immediately following intercourse, at which time the vaginal and cervical secretions are secured and studied (fig. 7). Further samples are taken at stated intervals and similar studies made, and in this way it can be determined when and in what condition the sperm arrives at the internal os.

In cases where the fault can be placed in the region of the vagina and cervix, even if the harmful influence cannot be definitely isolated, the indication will be clear for artificial insemination. Also data may be forthcoming which will indicate the proper channel of attack. For instance, if the sperm appear to exist normally in the vagina, but are found dead at all times in the cervical secretion, we natur-

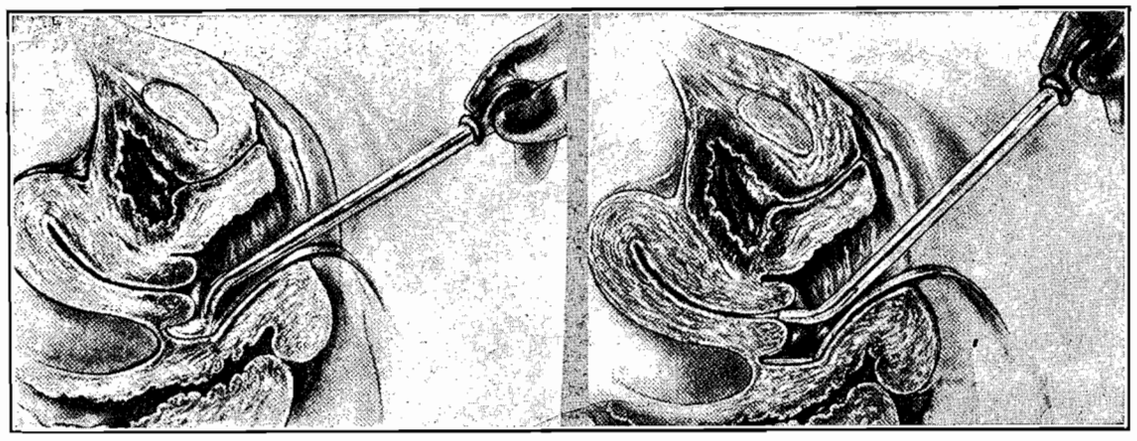


Fig. 7. Technic of procuring material for Huhner test of spermatozoa in the vagina and cervix (Dickinson).

TABLE VII.
Results of Rubin test.

	No. Cases	Percent Rubin Tested Cases	Percent Selected Group
Number patients tested	50	100	85
Number patients Rubin +	44	88	75
Number patients Rubin —	6	12	10
Pregnancy due to Rubin	5	10	8
Pregnancy due to Rubin plus other treatment	1	2	15
Pregnancy due to other treatment plus Rubin	6	12	10

TABLE VIII.
Success of the Rubin test in patients having one, two and three tests respectively.

No. Tests	No. Cases	No. Pregnant	Percent Success
1	36	1	2.7
2	6	1	17
3	8	3	38

ally think of the latter as the harmful factor. These are only a few of the important points which may be elicited by conscientious study in this single phase of the problem of sterility.

In studying these records we have been impressed with the outstanding importance of certain procedures used in the management of various apparent causes of sterility. We will discuss briefly our results with (1) the Rubin test, (2) lipiodal visualization, (3) the conservative treatment of pelvic infections, (4) linear cautery, (5) correction of retroversion.

Therapeutic value of Rubin test. The diagnostic value of this test has been established beyond dispute. We hoped in studying these records to be able to add to the evidence for or against its value in assisting the occurrence of pregnancy. Our cases are obviously too few to be conclusive, but added to existing reports should be of value.

In this series the Rubin test has been used 71 times on 50 patients (Tables VII to IX). It was positive in 51 and negative in 20 instances, 41 patients proving Rubin-positive and 6 Rubin-negative. There were 7 successes which might have been ascribed to the method, but it was thought that the favorable result was probably due to treatment of the endocervix in 2 of these.

Five pregnancies were thought clearly due to the test, since in two (three and six year cases of primary sterility) the pregnancy followed the third

TABLE IX.
Table showing apparent relation between sequence of results of three Rubin tests and subsequent pregnancy.

No. Cases	1st Rubin	2nd Rubin	3rd Rubin	Preg. due to Method	Percent Success
4	—	—	+	3	75
3	+	+	+	0	0
1	—	+	+	0	0

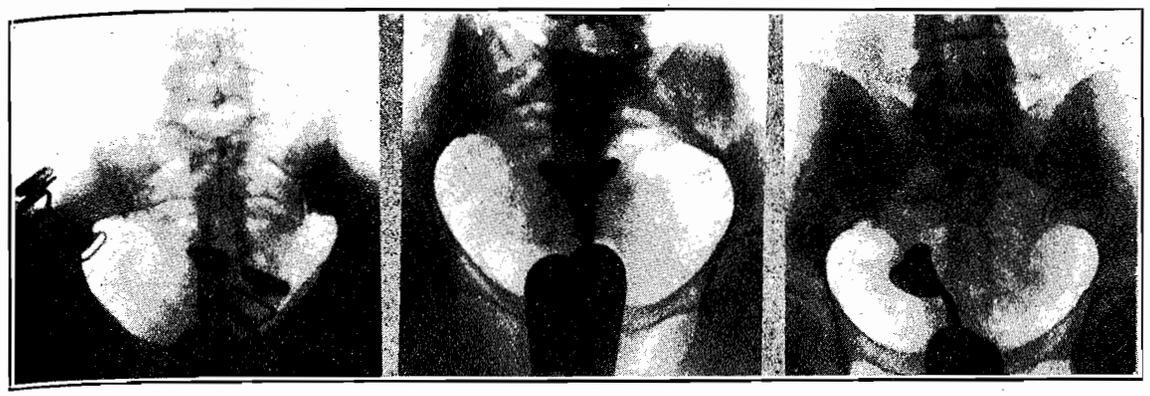
TABLE X.
Results in group having linear cauterization of the cervix.

	No. Cases	Percent Cauterized Group	Percent Entire Sel. Group
Total No. treated	31		
No. suitable for statistics	24	100	46
Pregnancy due to cautery alone	8	33	13
Pregnancy due to cautery plus other treatment	3	12	5
Pregnancy due to other treatment plus cautery	4	17	6
Failures	10	42	17

and only positive test almost immediately, the first two tests having been negative, and in a third, showing the same sequence of result (neg., neg., pos.) there was no other therapeusis used. This was a primary sterility of two and a half years duration, in which cautery had been used to clear up an endocervicitis. But the interval of many months which elapsed between this treatment and the successful result, during which time the tubes were Rubin-negative, and the early onset of pregnancy following the first positive Rubin test point to the insufflation as the probable causative factor.

In a fourth case a primary sterility was relieved immediately following a single positive insufflation with no other treatment; and finally, a relative secondary sterility was changed to a pregnancy two months after the second Rubin. Both tests were positive but air passed at 70-90 mm. of mercury in the second, as opposed to 170 in the first test.

It is interesting to note that, while 36 cases had a single Rubin test (Table VIII), 31 of which were positive, only one pregnancy could be fairly ascribed to the test in this group (2.7 per cent). Two tests were made in only 4 cases (seven positive tests) with one success attributable (14 per cent). However, out of the 8 cases in which three tests were made (Table VIII), there were the three successes mentioned above, each following the third and only positive test (38 per cent). From this it seems fair to deduce that repeated tests in the



a b c

Fig. 8. Three cases of absolute sterility in which lipiodal visualization showed tubes occluded at the cornual ends. The first patient (a) had been **subjected three times to dilatation and curettage as treatment for her sterility.**

Rubin-negative cases might give a higher percentage of successes attributable to the method.

Lipiodol visualization. One of the authors has used this method in a large series (NORTHWEST MEDICINE, May, 1928). It is indicated for sterility chiefly in patients with persistently negative Rubin tests, where further information concerning one or both tubes or the uterine cavity is desired. In this series three patients were shown to have tubal occlusion at the cornual ends (fig. 8). The diagnostic and prognostic value of such findings should not be minimized. We were able to tell these patients with certainty that their sterility was of a type which was not amenable to treatment, and thus to save them a great deal of time and trouble. Radiography of the tubes may indicate the advisability of plastic operation (transplantation, salpingostomy). We have not been called upon to perform these operations, and share the general opinion to the effect that they offer only a very slender hope of subsequent pregnancy (fig. 9).

The technic of this procedure (hysterography, salpingography) is simple, and the contraindications sufficiently clear to make the method generally available. Care must be used, however, to obtain exact results. The determination of tubal occlusion by the Rubin test has been substantiated by radiography in the cases in which both methods have been used in this series. We recognize the presence of temporary (spasmodic) closure of the tubes noted by either method. The use of atropine or benzyl benzoate does not appear to relieve this in our experience. It seems reasonable to place more confidence in the evidence of occlusion to lipiodal than to gas, since the criteria are more obvious.

We have shown in several instances that lipiodal passes freely in spite of an apparently well developed sphincter of Kennedy (fig. 10). In one case, in-

a b

Fig. 9. a. Lipiodal visualization of tubes occluded at fimbriated ends. Plastic operation might restore patency (not our case). b. Sketch of gross specimen from same case (not our case).

jected by an interne, the oil appeared not to pass, yet at operation the tubes were proven patent by the reverse insufflation of Curtis. To avoid such a possibility we now make it a practice to take a twenty-four hour plate to determine whether there has been later leakage of oil into the peritoneal cavity. Many cases at subsequent operation have proven the reliability of the radiographic observations. It must be borne in mind, however, that the method is new, and that considerable reserve is still advisable in passing final judgment from the plates. The real necessity at present is the development of diagnostic acumen in the reading of the films.

The therapeutic effect of the passage of the oil is doubtless similar to that of gas. In connection with the studies of Buckley and Mathieu in regard to the antiseptic action of iodized oils, the question arose in regard to a possible harmful effect of the oil, if present, together with the ascending sperm (fig. 10). It is definitely established that there is no deleterious effect by the oil upon the tubal mucosa. Buckley and Mathieu are at present publishing bacterial studies which seem to establish the entire absence of bactericidal action.

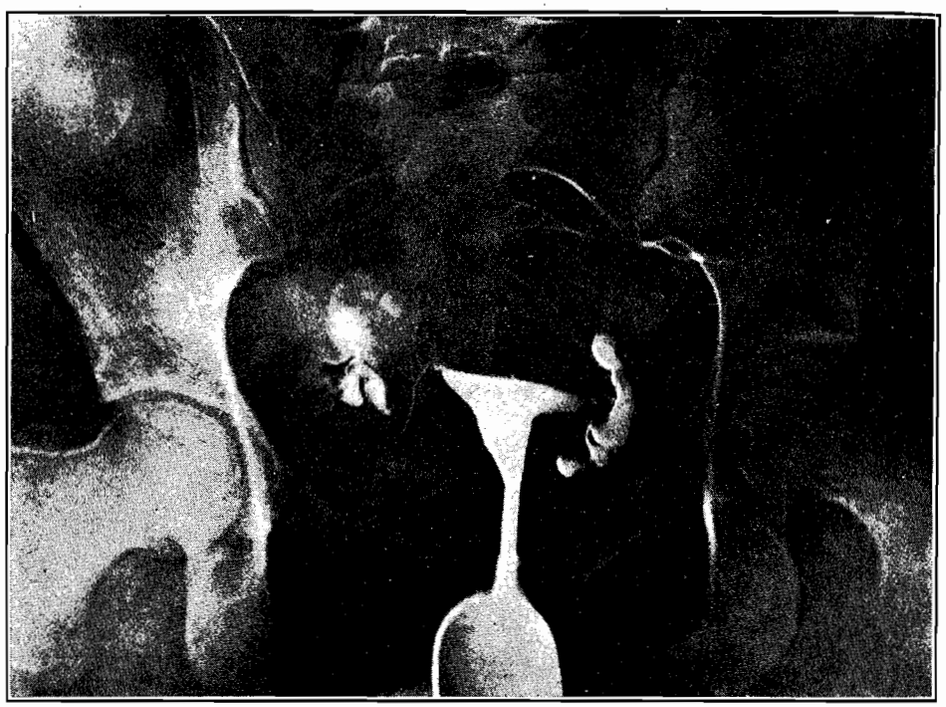


Fig. 10. In this case the differential diagnosis was between acute appendicitis and acute right salpingitis. Salpingoscopy showed a normal tube. At operation the tube was proven normal and the appendix diseased. The so-called sphincter of Kennedy at the cornual ends of the tubes is well shown, yet there was free passage of the oil. Pregnancy followed very shortly, indicating the innocuousness of the injection in this regard. There was a normal delivery of a healthy baby at term.

It remained only to study the effect of lipiodal applied directly to a normal specimen of semen. The details of our experiments are unessential. There appeared to be an initial harmful effect on the spermatozoa in the region of the oil globules. This, however, was transient, possibly even an artefact, and later the active organisms were seen actually to penetrate the oil globules with impunity and to emerge with unabated motility. Not only was the motility maintained as well as in the non-treated preparations, but stained smears of both preparations showed no morphologic defect in the spermatozoa exposed to the lipiodal. This seems to remove any contraindication to the use of lipiodal on the basis of its possible harmful effect on the spermatozoa.

We wish to call attention to the finding of tubes permeable to lipiodal in the presence of massive acute and subacute adnexal infections (fig. 11). This repeated findings strengthen the contraindication to sterilizing operations in patients in the child bearing period. By the use of conservative methods a certain number of these patients may be restored to fertility. Two women under our care who showed massive pelvic involvements, one with practically board-like rigidity and the typical picture of adnexitis and pelvic cellulitis, were treated by rest, removal of consort, diet, diathermy and foreign protein injections, etc., together with eradication of infection in Skene's and Bartolin's glands and the cervix. In each case there followed a normal pregnancy. Both patients have since been delivered of normal healthy babies.

French investigators have suggested the use in the future of bland injections through the tubes in cases of active salpingitis, with the object of preventing occlusion and adhesions. The idea is ingenious but it will require considerable courage to prove that such a procedure may be carried out with safety.

Our results with the conservative management of pelvic infections, with the aid of diathermy and foreign protein and more especially diathermy, have led us practically to abandon operation except for patients who are not able to follow our exacting regime, or for the relief of certain sequellæ. We need hardly indicate the desirability of such methods as opposed to operation on the tubes and ovaries in the prophylaxis of sterility. If the conservative methods fail to cure or sufficiently improve the pathology (and this is unusual in our experience), their effects can do nothing but favor the prognosis of later operation. *We consider premature pelvic surgery a major cause of unnecessary sterility.*

It will be pertinent to mention here the use of a method of treatment popular in the days of the "shot gun" treatment of sterility. We refer to the

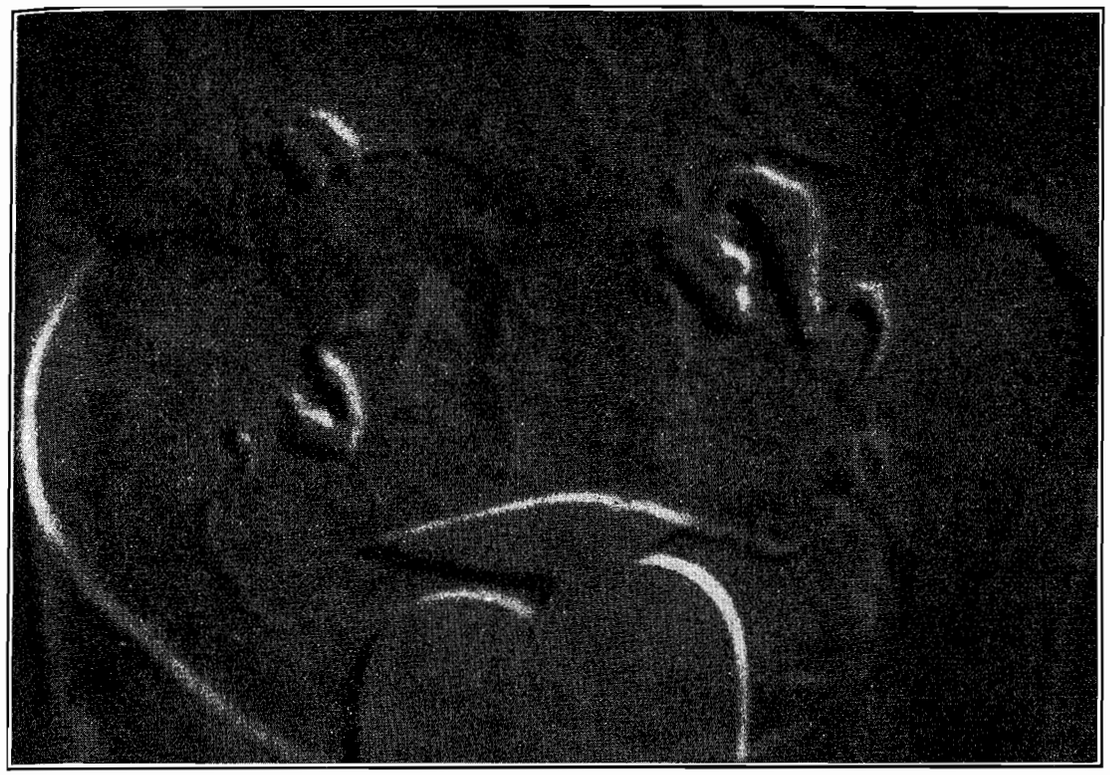


Fig. 11. There was clear cut bilateral acute salpingitis in this case. The finding of patent tubes (even at the fimbriae), as indicated by the spillage and definite dimpled rosette formation, is striking.

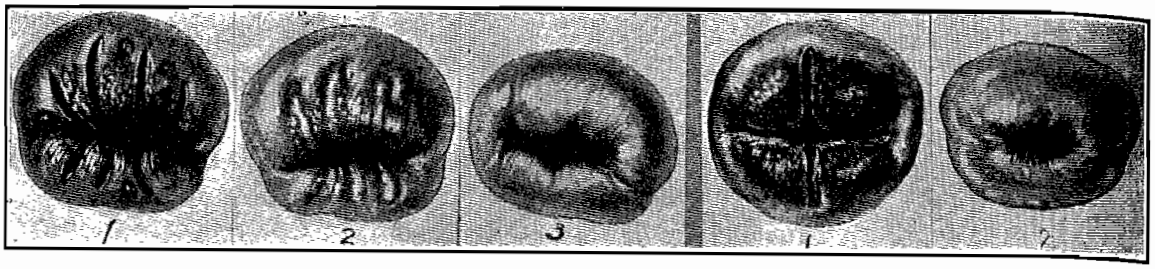
time honored practice of dilatation and currettage. We have not had occasion to use this procedure even once in the treatment of fifty-nine cases of sterility. Dilatation may occasionally be indicated, but the surprising fact is that in the present day literature combined dilatation and curettage are much more often mentioned as a cause than as a treatment of sterility (Mathieu and Schauffler, *Am. J. Gyn. and Obst.*, Aug., 1928, XVI).

Linear cauterization. The importance of linear cauterization in the treatment of cervical erosions and endocervicitis, and thus in the treatment of female sterility, has obtruded itself upon us. It is impossible to overlook in our records the frequency with which this therapeutic measure appears to be the obvious factor in the relief of the sterility. Out of the thirty-one cases which had linear cauterization in the course of treatment for sterility, seven can be excluded as obviously not suitable (unsatisfactory semen) negative Rubin, insufficient time elasped, etc.). Out of the remaining twenty-four, in which the outstanding factor seemed to be erosion generally with endocervicitis, the sterility was relieved in eleven cases (18 per cent of series). Cautery alone was held responsible in eight of these and cautery together with another factor judged less important in three. In four additional cases cautery was used but thought secondary to other therapeutic factors for rather obvious reasons. The number of failures in the same general type of case was ten. The outstanding pathology varied from small localized erosions to massive erosion with eversion and severe chronic endocervicitis. The treatment met the indication as nearly as possible.

The longest duration of the sterility in this group of cured cases was six years, the shortest two years, average 3.7 years. Four were primary and five secondary sterility. Pregnancy followed the last cautery treatment by less than one month in the shortest and by nine months in the longest interval with an average of six and one-half months. More than one subsequent pregnancy occurred in three cases.

In one case pregnancy occurred with no subsequent menstruation. We were skeptical as to the role of cautery in this case, as the optimum effect of this type of treatment can hardly be expected short of two or three months, since the healed and contracted scar is essential to the plastic result. The average lapse of six and one-half months between final treatment and pregnancy seems to us a reasonable interval for the complete restoration of the canal to normal, and the incidence of a successful impregnation.

In the light of these findings, we are convinced



a b

Fig. 12. Method and results with linear cauterization (Matthews).

TABLE XI.

Results from the correction of retroversion of the uterus.

No. cases of retroversion	13
No. satisfactorily corrected	7
Pregnancy in corrected cases	5
Pregnancy in corrected cases due to correction	2
Pregnancy in uncorrected cases	4
Percent success in corrected cases	30 (71)
Percent success in uncorrected cases	66

NOTE: Operation was not used for correction in any case.

TABLE XII.

Comparison of number successes due to various methods.

	Rubin Test	Repl. of Retrov.	Cautery	Cause Not Assigned
Relative primary	4	2	8	5
Relative secondary	1	0	3	2
Total	5	2	11	7
Percent group	20	8	44	28

that in the use of linear cauterization we have an efficient means of correcting cervical deformity, eliminating harmful cervical secretion, and thus of curing sterilities of cervical origin. We note with interest that cervical stenosis was not a factor in the delivery in any of these cases (fig. 12).

Not only has the cautery been of direct value in curing sterility of cervical origin, but also it has served repeatedly to prepare the way for the use of insufflation or lipiodal injection by clearing up potentially dangerous erosions and endocervicitis. In distinct contrast to the idea that linear cauterization may result in subsequent stenosis, we have found it of definite value in curing several cases of stenosis at the external os. It is particularly valuable where there is a fine diaphragmatic stenosis of the external os, with a dilatation of the canal above. Several radial incisions are made with the cautery, a dilator inserted and the os gently enlarged. The dilatation is repeated at frequent intervals and the result after complete healing is highly satisfactory. The nasal wire is more satisfactory for this procedure than is the heavier bladed type of cautery, because the fine linear incision results in less extensive scar.

Retroversion of the corpus uteri. This condition was present in thirteen cases (Table XI). In one instance the husband's semen was found at fault. Replacement was successful in seven cases and followed by pregnancy without other obvious contributing factors in two cases. Three other pregnancies in this corrected group were clearly due to other procedures. It is notable that *pregnancy followed in four cases in which replacement was not done or was unsatisfactory,* but in which other treatment was used. These findings seem to indicate that retroposition per se is more often the chance accompaniment, the actual cause of an existent sterility. We did not use a suspension operation as treatment of the sterility in any case, and believe our findings have justified this abstention.

In conclusion, we wish to call attention to Table XII which constitute an analysis of the twenty-five pregnancies occurring in the group of sixty-seven women who presented themselves as unable to bear children. Out of this group, the duration of the complaint was less than three years in nine instances. Among these nine there occurred five of the pregnancies. This, of course, would lower our percentage of success in the absolute definition of sterility. We wish again to emphasize, however, that we are presenting simply for what it is worth a study of the records of women coming as office patients, desiring and apparently unable to have children. We have ascribed the major part of the successes to one or another form of treatment (Table XII). On the other hand, 27 per cent could not be accurately placed. No doubt, as Polak might point out, an even greater number of the pregnancies than we realize may be the product of chance. However, with a full realization of this possibility, we hope that some of the suggestions which come from our experience may prove of general value.

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