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TUBAL LIGATION VS HYSTERECTOMY

by

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A Thesis

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Sterilization, by definition is the prevention of further, procreation and applies equally to the male or the female. The question has often been asked if sterilization is to be done, who should be subjected to this procedure, the husband or the wife? While vasectomy in the male is certainly the simpler procedure, it is usually the wife who presents the indications for sterilization and thus most frequently is the one sterilized.

Hysterectomy, either with repeat cesarean section or by the vaginal route two or three months post partum, has become popular for sterilization in certain parts of the country. The latter is done at Duke University, and also at the Grady Hospital in Atlanta, Georgia, where the incidence of cervical cancer is high in their indigent population. Several chairmen of Departments of Obstetrics and Gynecology in university hospitals feel that patients should be sterilized either by cesarean hysterectomy, vaginal hysterectomy, or abdominal hysterectomy and will not permit tubal ligation by any method to be performed in their hospitals. This is true, because, they simply believe it is a poor procedure. On the other hand, tubal ligation, either immediately post partum (within a few days following delivery) or on an elective basis two or three months post partum, is still the popular method of choice for sterilization among numberable Obstetrics and Gynecology departments.

It is the purpose of this report to examine the hospital records of patients at University of Nebraska Hospital from 1960 to 1965 undergoing elective tubal ligation, reviewing the indication for sterilization, type of procedure employed, and the post operative course in order to obtain an idea of the morbidity and mortality findings for comparison with studies from other institutions revealing morbidity and mortality results on various series of hysterectomies employing the vaginal, abdominal, or cesarean hysterectomy technique.

The hospital records of the 72 cases of elective tubal ligation (6 weeks or more post partum) performed at University of Nebraska Hospital from January, 1960 through December, 1965 were reviewed. The Pomeroy technique for tubal ligation was used exclusively. The procedure involves isolating a loop of the mid-portion of the fallopian tube with forceps, and then placing a No. 1-0 or 2-0 catgut suture tie snugly around the tube, and then excising a knuckle of the tube. The catgut, which is absorbable suture material, provides only hemostasis at the time of the procedure. After it is absorbed, the muscularis retracts and the peritoneum covers over the cut edges of the tube.

The age at which the procedure was performed ranged from 15 to 45 with the age distribution by five year periods listed immediately in Table I., on the next page.

Table I.

Age Distribtuion by Five Year Periods
(72 Patients)

Age	Years	Patients
15—	19	2
20—	24	4
25—	29	25
30—	34	23
35—	39	15
40—	44	<u>3</u>
Total		72

Both of the women under 20 years of age were operated on for medical indications, severe sickle cell anemia and history of habitual abortion. All the women in the 20-24 year group were operated upon for the indication of multiparity and/or socioeconomic reasons. In the group with ages 25-29, one patient had a medical indication of severe debilitating lung disease and the rest had multiparity and/or socioeconomic reasons. The next group including ages 30-34 had multiparity and/or socioeconomic indications in 21 of the cases, while the other two had repeat cesarean section as the indication in both instances. In the 35-39 group a medical reason and repeat cesarean section were indications in singular cases while the remaining 13 cases included multiparity and/or socioeconomic reasons, as did all of the 40-44 age group.

The multiparity and/or socioeconomic indication provided the largest group of patients (66, 90%) in this series. Although multiparity and socioeconomic handicaps are ordinarily allied, one may, however, exist without the other. For instance, it could be agreed to sterilize a woman with six or more children because of a greater risk with future pregnancy, without this number of children necessarily representing a financial hazard for a particular family. Pure economic reason for sterilization, however, is the phase of sterilization about which great controversy exists and one which, by itself, is seldom an acceptable indication. At University of Nebraska Hospital where there is a significant percentage of indigent patients, the indication usually includes multiparity and socioeconomic factors combined. Technically the patient must have had six or more pregnancies, and the patient's request must be accompanied by that of her husband in writing in order to satisfy University of Nebraska Hospital criteria for indications on grounds of multiparity and/or socioeconomic reasons. The patient usually proposed the request for sterilization in these cases.

The category of medical indications represent a quite small group (4, 6%) of patients in this series with varied causes for sterilization.

These cases do present the least controversial indications for termination of child bearing, because the procedure is used in order to safeguard maternal health or to prevent repetitive fetal wastage. Approval by the Obstetrics and Gynecology staff plus a consultant from the appropriate department is usually obtained for these cases.

Indications for sterilization on the basis of repeated cesarean sections also comprises a small number (3, 4%). Each of these patients had a history of three or more cesarean sections. In the past, there generally has been a more ready agreement to the request by women in this group. More recently, however, as the number of patients in this category in their late teens or early twenties has increased, it has become necessary to individually access each case. This attitude has been brought forth in a report by Norris where he notes the greatest request for sterilization has been expressed by women who were young, indigent, with fewer children, and Catholic, at the time of sterilization for a reason other than those included in the medical category.

It is of passing interest to note that there were no elective tubal ligations performed in the last five years at University of Nebraska Hospital because of Eugenic¹ reasons. This indication is usually established by a so called Eugenics Board of a state in

which case the procedure is performed under court order, patient approval is neither necessary or valid. A circumstance like this concerns primarily mental incompetants or social derelicts. At this time, 27 states have passed Eugenic laws of some type which, under certain circumstances and conditions, make sterilization mandatory without the consent of the patient.

The hospital course of the 72 patients in this series includes an average hospital stay of 6.6 days. There were no fatalities among this group. A total of 31 ancillary operations were performed at the time of tubal ligation. These various procedures are listed below in Table 2. Coincidental or simultaneous appendectomy was the most common additional operation performed (27, 37.5%).

Table 2.

Ancillary Operations at time of Tubal Ligation (72 patients)	
Ancillary Operation	Patients
Appendectomy	27
Repair of Umbilical Hernia	2
Repair of Inguinal Hernia	1
Repair of Inguinal Hernia; Appendectomy	1
Total	31

Table 3.

Effect of Simultaneous Appendectomy on Post Operative
Complications following Elective Tubal Ligation

Cases of Elective Tubal Ligation with:	Number Cases	Number Complications	
Simultaneous Appendectomy	27	3	11.1
No Simultaneous Appendectomy	<u>45</u>	<u>12</u>	<u>26.6</u>
Total	72	15	20.8

In the entire group that had an ancillary operation at the time of tubal ligation, post operative complications were found in only three instances. These were fevers of unknown origin in each case and occurred in patients that underwent coincidental appendectomy in each case as well. Table 3, above, indicates the effect of coincidental or simultaneous appendectomy on surgical post operative complications in this series of cases of elective tubal ligation.

The criteria for post operative complications used in examining the hospital records of the 72 patients in this series included defining hemoglobin equal to or less than 11.5 grams as anemia and defining fever as a temperature of 38. 2 °C or higher on any two days post operatively, excluding the day of operation. The sum total of post operative complications found in the 72 cases are listed in Table 4 on the following page. Post operative peritonitis

or evidence of true infection was not found, although eight cases of fever of undetermined origin did occur. A total of fifteen post operative complications were found in the series resulting in an incidence of 20.8% (15,72).

Table 4.

Post Operative Complications
(72 Patients)

Complications Following	Patients
Tubal Ligation:	
Wound Infection	1
Wound Hematoma	3
Wound Hematoma with Partial Separation	1
Anemia	1
Pneumonia	1
Fever of Undetermined Origin	8
Total	15

Table 5.

Significant Past Medical History
(72 Patients)

Significant Past Medical History	Patients

Table 5. (con't.)

Medical History Prior to Admission

for Tubal Ligation:

Previous Abdominal Surgery	24
Heart Disease	4
Renal Disease	12
Diabetes	1
Pulmonary Disease	6
Thrombophlebitis	2
Anemia (Hgb=11.5 or less)	52

Actual morbidity was determined on the basis of the definition used at the Mayo Clinic. That is, any patient with an elevation in temperature to 100.4°F (38.2°C) or higher on any two days subsequent to the first 24 hours after operation was considered morbid.⁵ This definition corresponds exactly with the definition of fever included in the criteria for post operative complications heretofore eluded to. The incidence of morbidity among the patients undergoing elective tubal ligation was found to be 11% (8,72) in this series of elective tubal ligations. Ancillary operations at the time of tubal ligation did not affect the morbidity rate in the series. The incidence of mortality is zero in this five year period of elective tubal ligations employing the Pomeroy technique and including 31 ancillary operations simultaneously. No failures

were found in examination of each patient's chart for a record, or obstetrical history of pregnancy subsequent to the date of elective tubal ligation by the Pomeroy method.

Significant medical history prior to admission for elective tubal ligation in terms of previous abdominal surgery, history of heart disease, renal disease, pulmonary disease, diabetes, anemia or episodes of thrombophlebitis or embolism is listed in Table 5 on page 9. It is of interest to note the very significant number of patients with a history of anemia prior to admission. The great majority of these 52 cases were iron deficiency anemia and associated with pregnancy. Correlation between past medical history prior to admission for elective tubal ligation and the ensuing post operative complications was not observed in any of the cases (15, 20.8%) resulting in post operative complications.

Turning attention to the literature, two of the largest reported modern day series of vaginal hysterectomies and abdominal hysterectomies respectively, were reviewed. Particular attention was centered on morbidity and mortality findings in each of the studies. The purpose of this review was to provide figures in order to obtain an idea of the comparable morbidity and mortality of these procedures for comparison with the elective tubal ligation

procedure. Both studies defined the term morbidity as elevation of temperature to 100.4°F or more on any two days after the day of operation, which corresponds exactly to the definition utilized in the study of tubal ligations resulting in a morbidity of 11%.

Pratt compiled a study of vaginal hysterectomy consisting of 1 218 cases which he had performed during eight of the twelve years from 1949 through 1961. The average morbidity was reported to be 22.9%.⁶ The overall mortality reported was approximately 0.1%. A study including 230 cases of vaginal hysterectomy on private patients by Gallaway⁹ revealed an incidence similar to Pratt's work.

Pratt and his group at Mayo Clinic also recorded morbidity findings in a series of 323 cases of abdominal hysterectomy resulting in an average morbidity of 27.2%. It was noted by Pratt that incidental appendectomy did not affect the morbidity in this series. No deaths were reported in the series.

It must be noted that morbidity, defined in this manner, is not entirely accurate in representing true operative complications of a certain procedure as the study described in this report exemplifies, but, is certainly helpful in comparing series of cases or establishing an idea of how the incidence of morbidity tends to occur in various studies under comparison, as is the case here.

In examining the incidence of morbidity from the data accumulated in the series of elective tubal ligations reviewed (incidence=11%), and the reported average morbidity findings in a large series of patients who had vaginal hysterectomy (average incidence=22.9%), and a group of 323 patients who had abdominal hysterectomy (average incidence=27.2%), it is apparent that the morbidity risk involved in the procedure of elective tubal ligation tends to be significantly less than the same in vaginal or abdominal hysterectomy.

A series of 84 cesarean hysterectomies by Ward and his group in New Orleans was also examined to obtain morbidity and mortality figures on such a procedure. In all of these cases, the cesarean section was done solely to provide an avenue of approach to the uterus for sterilization or removal of the uterus for other elective reasons. Using the same definition of morbidity as in all other studies mentioned above, an incidence of thirteen percent (11, 84) morbidity was found. No mortalities were recorded in either the mothers or the infants. This incidence of morbidity is also greater than that found in the study of elective tubal ligations. The surprisingly low incidence of morbidity in this series of cesarean hysterectomies does, however, tend to make one consider that when sterilization is to be done at, or soon after, the termination of pregnancy, and when there is a degree of uterine malfunction (making

hysterectomy more desirable), cesarean section hysterectomy may not be far removed from good obstetric practice at all.

Reviewing the incidence of mortality in the series of tubal ligations, vaginal hysterectomies, abdominal hysterectomies, and cesarean hysterectomies, reveals almost a negligible incidence in all the studies.

CONCLUSIONS

The morbidity and mortality findings from this small series of elective tubal ligations tend to make one consider the procedure of tubal ligation, when sterilization is indicated, as the most safe risk in terms of post operative morbidity and mortality compared to the various methods of sterilization via hysterectomy mentioned in this report.

The low incidence of morbidity and mortality in the small series of cesarean hysterectomy eluded to previously, however, does tend to make one consider this procedure as a good obstetrical method of sterilization when there is a degree of uterine mal-function present (making hysterectomy more desirable) and careful screening and selection of patients is carried out.

Morbidity was not adversely affected in the 31 cases of elective tubal ligation accompanied by a simultaneous ancillary operation.

No incidence of failure, using the Pomeroy technique in all cases was found, however, it must be pointed out this is based on investigation of patient charts who have continued University of Nebraska Hospital care, and not a follow up via direct communication with patients regarding subsequent pregnancies.

The incidence of multiparity and/or socioeconomic reasons was the most frequent reason for sterilization, followed by medical indications and repeat cesarean sections.

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