A COMPARATIVE STUDY ON THE OUTCOME OF OPEN AND LAPAROSCOPIC TUBOPLASTY ON PATIENTS WITH TUBAL FACTOR AS THE CAUSE OF INFERTILITY

J. Wanyoike Gichuhi[1], Nderitu C. M[2], Olakhi O.[3]

[1] Department of Obstetrics & Gynaecology, University of Nairobi, Kenya.

[2] Ministry of Health, Kenya.

[3] Avenue Hospital Nairobi Kenya.

Request for reprint:
J. Wanyoike Gichuhi MBChB, MMED,
Department of Obstetrics & Gynaecology,
University of Nairobi,
P.O. Box 19676 – 00202 Nairobi, Kenya.

Abstract

Objectives*: To compare the outcomes of laparoscopic and open tuboplasty among infertility patients with tubal factor.*

Design: *Retrospective cross sectional study.*

Setting: *Kenyatta National Hospital (KNH), Nairobi, Kenya.*

Methodology*: A total of 80 files of each group were retrieved by systematic stratified sampling method. The files chosen had to meet the inclusion criteria of having tubal pathology as the sole cause of infertility and the interventional tubal surgery done.*

Results: *Most postoperative complications were statistically significantly different (P<0.05) in the two groups, more in patients who were done open tuboplasty. In terms of the main outcome measures 3.7% of patients done open tuboplasty achieved a normal intrauterine pregnancy compared to 6.1% of those done laparoscopic tuboplasty. The difference was not statistically significant. 1.2% of the operated patients in the two groups had ectopic pregnancy assequel of corrective tuboplasty had miscarriage while non-in laparoscopy group. 92.7% in either group had a failure of any form of conception.*

Conclusions: *The intrauterine pregnancy rates at K.N.H afterinterventional tubal surgery is low. Laparoscopic tuboplasty has a higher desired outcome than the open tuboplasty and had less complications. The In Vitro Fertilization is a better option in view of poor tuboplasty results.*

Key words: Infertility, Tubal surgery, Laparoscopy, Laparotomy.

Introduction

Infertility is a unique medical condition because it involves a couple rather than a single individual. It is defined as the failure of a couple to conceive after 12months of frequent intercourse without contraception. (1,2).Infertility is a complex disorder with significant medical, psychosocial and economic aspects with World Health Organization (WHO)showing a prevalence of 22%) (1,3). The key cause of infertility in women in the developing country is tubal blockage and its primary cause is pelvic inflammatory disease (8). Other conditions that may interfere with tubal transport include severe endometriosis, adhesions from previous surgery or non-tubal infection and pelvic tuberculosis. (4)

In the past, reconstructive tubal surgery was the only option for women with tubal factor infertility that desired pregnancy. These procedures are performed through open abdominal incisions without magnification or through laparoscopy. The efficacy of Assisted Reproductive Technologies (ART) has improved significantly over the past decade. However tubal surgeries like tubal anastomosis, salpingostomy, and fimbrioplasty have a definite role to play in additional to other surgeries done to enhance In Vitro Fertilization (IVF) outcome. In the present era of IVF, there is still a place for expectant management, ovulation induction drugs, laparoscopy and hysteroscopy before subjecting infertility patient for IVF treatment (9).Tubal surgery is a still common operation in developing countriesas opposed to the developed countries where IVF is the key modality of managing tubal infertility.

It was therefore important to compare the surgeries used as a form of intervention in this important problem.

Methodology and Materials

This was a retrospective cross sectional study. This study was carried out at the Kenyatta national hospital (KNH), Nairobi, Kenya. The study population was patients who had infertility due to tubal factor and hadtubal infertility surgery in the same hospital. The patients had a follow up for 2 years after surgery. This involved the review of files of patients who were treated by laparoscopy or by laparotomy tuboplasty.

Stratified systematic sampling method was used to identify all the subjects who were included in the 2 study groups. After the right sample size of 80 for each group was attained, the principal investigator entered the relevant information in the data collection instrument.

The data was checked and validated by; double entry, listing all data entered and data cleaning before analysis. The cleared data was entered into a computer for analysis using the SPPSS and EP11NNFO system

Results – Tuboplasty outcome at KNH

Table1: Frequency distribution of the socio-demographic characteristics of the patients who underwent tuboplasty (OT – Laparotomy tuboplasty and L.T – Laparoscopy tuboplasty).

Characteristic	O.T (N=80)	L.T (N=80)	P value	Odds ratio (C.L)
Mean age (years)	30.94 SD±4.547	30.15 SD±4.693		
Median age	31.00	30.00		
Minimum age	20.00	21.00		
Maximum age	41.00	44.00		
Marital status				
Single/Separated	14(17.1%)	8 (9.8%)		1.8985(4.74958-
Married	66(82.9	72 (90.2%)	0.319	5.633180

Level of Education				
Non/Primary	31 (39.0%)	32 (40.2%)		0.6997(1.569-
Secondary/College	49 (61.0%)	48 (59.8%)	0.071	5.169)
Occupation status				
None	34 (42.7%)	44 (54.9%)		0.5919 (1.3307-
employed	47 (57.3%)	36 (45.1%)	0.521	0.6693)

The mean age was nearly similar for the two groups. Majority of the patients were married and had attained at least secondary education.

Table 2: Type of infertility of the patients who underwent the two versions of tuboplasty.

Types of infertility	**O.T (N=80)**	**L.T (N=80)**	**Odds Ratio (C.L)**	**P value**
Types of infertility				
Primary	48(59.8%)	49 (61.0%)	0.9490(2.937	
Secondary	32(40.2%)	31 (39.0%)	0-2.2219	0.731

Table 2 shows that majority of the patients in the two groups had primary infertility i.e. 59.8% for the open vs. 61.0% for the laparoscopy group.

Table 3: The frequency distribution of post-operative complications

Complication	**O.T (N=80)**	**L.T (N=80)**	**Odds Ratio (C.L)**	**P value**
Yes	16 (19.5%)	8 (9.9%)	2.2046 (1.49	
No	64 (80.5%)	72(90.1%)	97-5.8	0.083

Table 3 shows the occurrence of post-operative complications in the two groups. More complications were observed in the open tuboplasty group at 19.5% vs. 9.9% for the laparoscopic group.

Table 4: The type of complications encountered in the two operations.

Complication	**O.T (N=16)**	**L.T (N=7)**
Wound sepsis	2	2
Pain	5	1
Discharging sinus	1	0
Visceral injury	1	1
Hemorrhage	2	0
Ileus	2	1
Vomiting	3	2

Pain was the commonest complication in the open group with 5 patients having post-operative pain despite analgesia. Wound sepsis and vomiting were the commonest complication for the laparoscopy group.

Table 5: The percentage of conceptions after the two versions of tuboplasty

Conception	O.T (N=80)	L.T (N=80)	Odds Ratio (C.L)	P value
Yes No	6(7.3%) 74(92.7%)	6(7.3%) 74(92.7%)	1.0(2.9477- 2.4910)	 1.0

Table 5: Shows that both open and laparoscopic forms of tuboplastiy had the same rate of conception.

Table 6: The frequency distribution of the specific desired and undesired outcomes of the tuboplasty.

Outcome	O.T (N=80)	L.T (N=80)
Viable intrauterine pregnancy	3(3.7%)	5(6.1%)
Ectopic pregnancy	1(1.2%)	1(1.2%)
Abortion	2(2.4%)	0(0%)
Failure of conception (>2 Years post-operative)	74(92.7%)	74(92.7%)

6.1% had normal viable intrauterine pregnancy among the laparoscopic group vs. 3.7% for the open tuboplasty group. Failure to conceive (Whether normal or abnormal forms) which was considered if two or more years had elapsed from the time of the interventional operation was the same for the two groups i.e. 92.7%.

Table 7: frequency distribution of viable intrauterine pregnancies.

Pregnancy	O.T (N=80)	L.T (N=80)	Odds Ratio (C.L)	P value
Viable intrauterine pregnancy Yes No	3(3.7%) 77(96.3%)	5(6.1%) 75(93.9%)	0.5870(1.8237- 1.3673)	 0.475

The study supports the alternate hypothesis of laparoscopic tuboplasty having a better outcome than open tuboplasty although the difference was not significant statistically.

DISCUSSION

The desired outcome of viable intrauterine pregnancy was higher in the laparoscopic group than in the open group. The post-operative complications were fewer also in the laparoscopic group.

The mean age for the patients who underwent open tuboplasty was 30.94 SD ± 4.547 years compared to 30.15 SD ±5.96 years for the laparoscopic group. This could have partly contributed to the low success rates as this age is above the peak fertility age of 20-24 years (18). For the purpose of comparing the outcome of the interventional surgeries the age were not statistically significant different (P<0.259) between the two groups.

Among the open tuboplasty (O.T) patients 59.8% had primary infertility vs. 61.0% of the laparoscopy group (L.T). Thus majority of the patients had primary infertility and this was similar to study done in Nigeria (7). The difference in the type of infertility surgeries was not statistically significant with a P<0.731.

Open tuboplasty had 16 patients with complications post operatively compared to 7 patients who underwent laparascopic tuboplasty. The difference was statistically significant (P<0.05). The main complication in the open tuboplasty group was discharging abdominal sinus. Would sepsis and vomiting were the commonest complications in the laparoscopic group. Complications had a direct effect on the adverse or failure of the interventional surgery.

Laparoscopic tuboplasty apart from patients having shorter hospital stay, there is a lower incidence of ileus, and a faster recovery. In addition, there is less contamination of the surgical field with glove powder or lint, bleeding is reduced due to the tamponade of small vessels by the pneumoperitoneum and devitalization of tissues is minimal as surgery occurs in a closed environment. All these factors contribute to reduce postoperative adhesion formation and its associated morbidity (e.g. pain, impaired fertility, bowel obstruction) (2). This concurred with the findings of this study.

In the of the OT group 3.7% had the desired outcome of intrauterine pregnancy vs. 6.1% of the LT group, 1.2% of both the OT and the LT group had ectopic pregnancy, while 2.4%of the OT had miscarriage vs. none in the LT group. Failure of any form of conception occurred in 92.7% of either group. The differences in the outcomes were not statistically significant (P<0.475). Laparoscopic tuboplasty had a higher desired outcome in this study as in other studies (2). Laparoscopic procedures limit the risk of postoperative adhesions (2). The adhesions formation can contribute to the higher failure rate observed in open tuboplasty. Overall, the success of the tuboplast is poor and there is need to adapt to assisted reproduction techniques, which has better outcome.

CONSLUSIONS

The mean age and duration of infertility for the patients undergoing tuboplasty are nearly similar.

Patients undergoing open tuboplasty have more post-operative complications than the laparoscopic patients. The desired outcome of viable intrauterine pregnancy is higher for laparoscopic tuboplasty than open tuboplasty. The undesired outcome of tuboplasty likes ectopic and abortions are also higher in the open tuboplasy group than in the laparoscopic group. Overall, the outcome for tubal surgery in infertility is poor and Assisted Reproductive Technology – In Vitro Fertilization should be adapted.

REFERENCES

1. Sexual reproductive health. Infertility, definitions and terminology. World health Organization 2015.
2. Bruhat, M. A, Mage, G., Manhels H., Sonalhat, C Ropert. J F, and Pouly, J. L. Tubal Infertility. Acta Eur Fertile, 1983;14: 113-115.
3. Brosens I, Gurdts, S, Valkenburg M. Investigation of the infertile couple when is appropriate time to explore female infertility? Hum Reprod 2004; 19:1689.
4. Chandra A, Stephen, B. Impaired fecundity in the United States: 1982 – 1995. Fam Plann perspect 1998: 30:34

5. Tenahatoe, S.J, Hompes P.G, Lambalk, C. B Investigation of the infertile couple: should diagnostic laparascopy be performed in the infertility work up programme in patients undergoing intrauterine insemination? Hum Reprod 2003 18:8.

6. Griffith CS, Grimes DA. The validity of the postcoital test. A J Obst. Gynecol 1990: 162:615

7. Ibinaiye PO, Lawan RO, Avidemes S. Comprarative evaluation of pattern of abnormalities in Hysterosalpingography, diagnostic laparoscopy and hysteroscopy among women with infertility Zaria, Nigeria. Inter. J of Medicine and Medical sciences. 2015;7:26-35 Dol:10.5897/IJMMS2014.11.06

8. Spratt DI, Bigos ST, Bertens I. Both Hyper and Hypogonadotropic Hypogonadism occurs transiently in acute illness: Bio and Immuno reactive gonadotropins J. Clin Endocrinol metab 1992: 75: 1562.

9. Rao AR, Traditional management of infertility in the era of In Vitro Fertilization. Muller journal of Medical sciences and research. 2013;4:107-110.