

FEMALE STERILIZATION: A COMPARISON OF MINILAPAROTOMY AND CULDOSCOPY

ATIQUUR RAHMAN KHAN 1
 HALIDA HANUM AKHTAR 2
 HOSN ARA ALI 3
 BETTE DIXON 4

1. Population Section, Planning Commission, Bangladesh
2. Johns Hopkins School of Hygiene
3. Mohammadpur Fertility Services and Training Centre, Dacca, Bangladesh
4. International Fertility Research Program, Research Triangle Park, North Carolina, U.S.A.

ABSTRACT

Data are presented from a comparative study of minilaparotomy and culdoscopy procedures. There were significant differences in surgical difficulties or complications or in postoperative complications. The most noticeable difference between the two procedures was in surgical time, with minilaparotomy requiring nearly twice as long as culdoscopy. The results suggest that contrary to what is expected, culdoscopy may be as effective and even as fast to perform as minilaparotomy when the clinic or hospital is properly equipped and the operator is experienced.

INTRODUCTION

Voluntary sterilization has become an increasingly acceptable method of contraception throughout the world. In 1977, sterilization surpassed the pill as the most popular contraceptive worldwide, with approximately 80 million acceptor couples¹. In Bangladesh, the national fertility program expects female sterilization to play a significant role in the reduction of fertility^{2, 3}.

Recent gains in the popularity of female

sterilization are partly due to advancements in technology, with the invention and use of new and simpler techniques. The two approaches most often used at the Mohammadpur Model Clinic in Dacca, Bangladesh, are minilaparotomy and culdoscopy. An earlier report presented results of both methods⁴ but the data did not come from a true comparative study. In the current study, minilaparotomy and culdoscopy were randomly assigned to a group of women who came to the clinic seeking sterilization to limit their family size⁵. The study was a cooperative effort between the Bangladesh and the International Fertility Research Program.

PATIENTS AND METHODS

Sociodemographic Characteristics

Data on 135 cases of minilaparotomy and 134 cases of culdoscopy performed from September 1976 to January 1978 at the Muhammadpur Model Clinic are analyzed. All women admitted to the study had terminated their last pregnancy at least six weeks prior to sterilization. The women randomly allocated to the two procedures were similar with respect to various sociodemographic characteristics (Table I). The mean age of women in both groups was 29.9 years, comparable to that of women sterilized in other studies^{6, 7}. More than half the women and nearly one third of their husbands in each group had no formal education. About 97% of all patients lived in urban areas, and 90% were of the Muslim faith.

Reproductive history and contraceptive practice, shown in Table II, were also similar. Women were asked to report their contraceptive use for the three months prior to sterilization. About 50% in each

Table I
Sociodemographic characteristics of 269 women undergoing female sterilization (Minilaparotomy and culdoscopy) at Mohammedpur Model Clinic

	Minilaparotomy (N = 135)		Culdoscopy (N = 134)	
	No.	%	No.	%
Age (years)				
20-24	7	5.2	2	1.5
25-29	44	32.6	48	35.8
30-34	64	47.4	66	49.3
35-39	17	12.6	18	13.4
40+	3	2.2	0	0.0
Mean	29.9		29.9	
Median	29.9		29.9	

Table II
Contraceptive and reproductive history of 269 women undergoing female sterilization (Minilaparotomy and culdoscopy) at Mohammedpur Model Clinic

	Minilaparotomy (N = 135)		Culdoscopy (N = 134)	
	No.	%	No.	%
Contraceptive practice prior to sterilization				
None	82	60.7	79	59.0
Condom	1	0.7	4	3.0
IUD	3	2.2	6	4.5
Oral contraceptives	43	31.9	42	31.3
Other	6	4.4	3	2.2
No. of live births				
1	1	0.7	2	1.5
2	48	35.6	37	27.6
3-4	42	31.1	52	38.8
5-6	28	20.8	36	26.9
7-8	16	11.8	7	5.2
9+				
Mean	5.7		5.6	
Median	5.3		5.5	

group reported use of no contraceptive. Most of the remaining women had taken oral contraceptives. The mean number of live births was 5.7 for minilaparotomy patients and 5.6 for culdoscopy patients. It is worth noting that more than half of the women (55.5%-57.5%) had 5-10 living children and thus had already contributed generously to the high fertility rate. The average age of the youngest living child for each group was about two years.

Medical History and Examination

Most of the women reported no previous surgery or complaints (Table III). Nine (6.7%) minilaparotomy and six (4.5%) culdoscopy patients had previous pelvic surgery, or cases of abortion. Pelvic examination prior to surgery revealed that five women had adhesions or cysts. Three (one minilaparotomy, two culdoscopy) were diagnosed as having chronic pelvic infections.

Surgical Method

Minilaparotomy is widely used in Bangladesh as a standard procedure for female sterilization, but culdoscopy is generally limited to the Mohammedpur Model Clinic. For minilaparotomy, the patient was placed in the Trendelenberg position and a 2.5-4.0 cm incision made near the symphysis pubis. For the culdoscopy procedure, the patient is placed in the knee-chest position and the tubes were visualized by a culdoscope introduced into the

abdominal cavity via an incision in the posterior fornix of the vagina. The culdoscope was fitted with a fiber optic light source. The technique of tubal occlusion used for all patients in this study, regardless of procedure, was the modified Pomeroy (ligation and excision of a loop of the tube). The anaesthesia, administered intravenously, was pethidine (100 mg), seduxem (100 mg) and phenergan (50 mg). Patients who appeared restless or uncomfortable were given additional seduxem and/or phenergan.

RESULTS

Technical Failures

A technical failure is defined as a case in which the planned procedure or technique could not be completed. In four (3.0%) cases in which culdoscopy was the planned procedure, a change to minilaparotomy was made because of difficulty in entering the cul-de-sac or in visualizing the tubes. There were no technical failures in the minilaparotomy series.

Surgical Difficulties and Complications (Table IV)

Only three (2.1%) difficulties were encountered during surgery for the minilaparotomy procedures: there was one instance each of adhesions, bladder interference and difficulty in closing the incision. Surgical difficulties were somewhat more frequent

Table III
Medical history and history of pelvic examinations of 269 women undergoing female sterilization (minilaparotomy and culdoscopy) at Mohammedpur Model Clinic

	Minilaparotomy (N = 135)		Culdoscopy (N = 134)	
	No.	%	No.	%
No previous surgery or complaints	117	86.7	120	89.6
Previous pelvic surgery (abortions)	9	6.7	6	4.5
Previous abdominal surgery	1	0.7	0	0.0
Pelvic infection	1	0.7	2	1.5
Systemic disease	1	0.7	0	0.0
Abnormal pelvic examination				
Adhesions	6	4.5	1	0.7
Fibroid	0	0.0	1	0.7
Cyst(s)	1	0.7	4	3.0
Uterus deviated to right	0	0.0	1	0.7
Tubercles on tubes	1	0.7	0	0.0
Burns	1	0.7	0	0.0

(6.0%) with the culdoscopic procedures, with two instances each of adhesions, difficulty in visualizing the tubes, difficulty in entering the cul-de-sac and difficulty in closing the incision. An additional 5.2% of the culdoscopic patients were reported as uncooperative during surgery, probably a combined result of inadequate anaesthesia and the awkward knee-chest position.

No surgical injuries arose during the minilaparotomy procedures. One culdoscopic procedure resulted in a torn tube and another in a torn, bleeding tube.

The cysts found at preoperative examination were fimbrial (4 cases) and ovarian (1 case). In none of the patients did the cyst create any complications, and the sterilization proceeded without difficulty.

Postoperative Complications and Complaints (Table V)

Postoperative complications and complaints were analyzed by the time of occurrence: during the recovery period prior to discharge within 7-21 days after discharge from the hospital, and at six and 12 months post-sterilization (Table V). During the recovery period, one woman in each group complained of abdominal pain, and one in each group experienced nausea/vomiting.

None of the complications/complaints reported at the 7-21 days follow-up was serious. One fifth (20%) of the minilaparotomy patients, compared to

3.1% of the culdoscopic patients, had infection or discharge from the incision. Abdominal pain was the complaint of 17.8% of the minilaparotomy group and 29.2% of the culdoscopic group. A total of 42.4% of the minilaparotomy group and 40.8% of the culdoscopic group had complications/complaints at the first follow-up. One woman in each group had developed pelvic inflammatory disease by the six-month follow-up similar proportions of women in each group complained of abdominal pain at the six- and 12-month follow-ups. No pregnancies were reported for patients in either the minilaparotomy or the culdoscopic group.

Surgical and Hospitalization Time (Table VI)

Surgical time, measured from initial incision to closure, was significantly longer for minilaparotomy. Mean surgical time for this procedure was 22.2 minutes, compared to 11.2 minutes for a culdoscopic procedure.

The number of nights of hospitalization after sterilization was similar for the two groups. Most (97.8%) of the women in each group stayed only one night.

DISCUSSION

The data reported here reflect the differences and the similarities between two approaches to female sterilization, minilaparotomy and culdoscopic, when the two are randomly allocated to a group of women.

Table IV
Surgical difficulties and complications of 269 women undergoing female sterilization (minilaparotomy and culdoscopic) at Mohammedpur Model Clinic

	Minilaparotomy (N = 135)		Culdoscopic (N = 135)	
	No.	%	NO.	%
Difficulties				
Adhesions	1	0.7	2	1.5
Visualizing tubes	0	0.0	2	1.5
Entering peritoneum	1	0.7	0	0.0
Entering Cul-de-sac	0	0.0	2	1.5
Bladder interference	1	0.7	0	0.0
Closing incision	1	0.7	2	1.5
Inadequate anaesthesia	0	0.0	7	5.2
Complications				
Torn tube without bleeding	0	0.0	1	0.7
Torn tube with bleeding	0	0.0	1	0.7

Table V
Postoperative complications and complaints of 289 women undergoing successful* female sterilization (minilaparotomy and culdoscopy) at Mohammedpur Model Clinic

	Minilaparotomy (N = 135)		Culdoscopy (N = 134)	
	No.	%	No.	%
Prior to discharge				
Complications				
Vomiting/nausea	1	0.7	1	0.7
Complaints				
Abdominal pain	1	0.7	1	0.7
Total women with complications/complaints	2	1.5	2	1.5
7-21 day follow-up		(N = 132)		(N = 130)
Complications				
Incision infection/discharge	27	20.0	4	3.1
Incision pain	2	1.5	2	1.5
Prolonged bleeding	1	0.7	0	0.0
Complaints				
Abdominal pain	24	17.8	38	29.2
Weakness	2	1.5	6	4.6
General pain	0	0.0	3	2.3
Total women with complications/complaints	56	42.4	53	40.8
Six-month follow-up		(N = 109)		(N = 112)
Complications				
PID	1	0.9	1	0.9
Change in volume of menstrual flow	5	4.6	2	1.8
Dysuria	1	0.9	1	0.9
Complaints				
Vaginal discharge	1	0.9	1	0.9
Abdominal pain	15	13.8	17	15.2
Total women with complications/complaints	20	18.3	22	19.6
12-month follow-up		(N = 117)		(N = 124)
Complications				
Change in volume of menstrual flow	5	4.3	5	4.0
Delayed menses	1	0.9	0	0.0
Cervical erosion	2	1.7	0	0.0
Dysuria	2	1.7	3	2.4
Complaints				
Vaginal discharge	3	2.6	3	2.4
Abdominal pain	13	11.1	15	12.1
Total women with complications/complaints	25	21.4	23	18.5

*Technical failures are excluded from follow-up tables

Table VI
Surgical and hospital time for 269 women undergoing female sterilization
(minilaparotomy and culdoscopy) at Mohammedpur Model Clinic

	Minilaparotomy (N = 135)		Culdoscopy (N = 134)	
	NO.	%	No.	%
Surgical time (minutes)				
< 10	0	0.0	67	50.0
10-19	52	38.8	61	45.5
20-29	53	39.6	2	1.5
30-39	23	17.2	2	1.5
40+	6	4.5	2	1.5
Mean		22.2		11.2
Postoperative hospitalization (nights)				
0	2	1.5	2	1.5
1	132	97.8	131	97.1
2	1	0.7	0	0.0
7+	0	0.0	1	0.7
Mean		1.0		1.2

The women in this study varied little in socio-demographic characteristics and contraceptive and reproductive histories. The rates of surgical difficulties and complications were only slightly higher for the culdoscopy procedure than for the minilaparotomy procedure. Follow-up complications and complaints were also similar for the two groups, except for a higher rate ($\alpha < 0.01$) of incision infection/discharge for minilaparotomy patients at the 7-21 days follow-up.

The biggest difference between the two procedures was in mean surgical time. The culdoscopic sterilizations required, on the average, only half the time required for minilaparotomy. This can be of considerable importance in locations where demand for sterilization exceed the physician's/clinic's capabilities for providing services. Nearly all the women in both groups would recommend their method to a friend, which indicates that female sterilization can play a major role in the government's fertility reduction program.

The results presented here vary from what is usually found for culdoscopic procedures⁶. The study suggests that for places that are equipped and for physicians who are experienced in the operation, culdoscopy is an effective method of female sterilization and can, in fact, be faster than other supposedly easier methods.

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