Original Article

Complications Associated with First-trimester Surgical Abortion at Ain-Shams Maternity Hospital over the period from January 1, 2016 to December 31, 2017

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ABSTRACT

Background: First trimester surgical abortion is a common obstetric procedure with some known complications.
Objective: The aim of this study was to examine the incidence of major complications of first trimester surgical abortion in Ain-Shams Maternity Hospital.
Patients and Methods: Retrospective record-based case series in which records of patients who underwent first trimester surgical abortion in the period from January 1st, 2016 till December 31st, 2017 were examined.
Results: A total of 1003 patients underwent first trimester surgical abortion. The overall major complication rate was 18.2%. There was a higher incidence of one or major complications in patients with previous abortions (*P-value <0.002*), valve replacement (*P- value 0.001*), missed and septic abortions, those requiring cervical dilatation, less hemoglobin, higher total leucocytic count, higher PTT.
Conclusion: First trimester surgical abortion is a relatively safe procedure with hemorrhage being the most common complication.

Key Words: First trimester abortion, surgical abortion, surgical evacuation

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INTRODUCTION

Vitamin Abortion is a safe, common procedure, as one third of women are estimated to have at least one abortion by the age of 45, with less than 0.3% of patients hospitalized with complications. Medical abortions with mifepristone and prostaglandins have increased in recent years, yet 74% of all first-trimester abortions are surgical.[1]

First trimester has a 99% efficacy rate.[2] The procedure entails dilation of the cervix, which can be achieved medically, mechanically or both, and emptying of the uterine contents, either using ring forceps or suction curettage.[3]

The overall major complication rate for first trimester abortions is 0.5%. Complications include incomplete evacuation, hemorrhage, sepsis, and uterine perforation. The complications increase with increasing maternal age, parity and gestational age.[4]

Prompt anticipation, identification and management of these complications makes first trimester surgical abortion a safe and effective procedure.

PATIENTS AND METHODS

This retrospective case series was conducted at Ain-Shams University Maternity Hospital. The records over a 2-year-period (January 1st, 2016 till December 31st, 2017) were examined. All women who underwent surgical abortion before 12 weeks of gestation were included. Their medical and surgical history was thoroughly revised, as well as the demographic data, obstetric history, indication for surgical evacuation, physicw examination and ultrasound scans. Preoperative administration of prostaglandins for cervical ripening was recorded. Intraoperative details for the method of surgical evacuation, use of ultrasound and any intra-operative complications were gathered as well as any post-operative complications.

Ethical Aspects :

The procedures described in this study protocol were presented for approval by the research Ethics Committee and The council of Obstetrics and Gynecology department at Ain Shams University. This is a record-based study, so subjects' consent was not required.

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Statistical methods:

Data were analyzed using IBM© SPSS© Statistics version 23 (IBM© Corp., Armonk, NY).

Continuous numerical variables were presented as mean and SD and inter-group differences were compared using the unpaired t-test.

Discrete numerical variables were presented as median and range and inter-group differences were compared using the Mann-Whitney test. Categorical variables were presented as number and percentage and differences were compared using Fisher's exact test. Ordinal data were compared using the chi-squared test for trend. Two-sided *p-values <0.05* were considered statistically significant.

RESULTS

A total of 1003 records of patients who underwent surgical first trimester abortion were reviewed. The demographic characteristics of patients are shown in Table 1.

The preoperative investigations done by patients showed hemoglobin level ranged from 6 to 13 (g/dl) with a mean ± SD of 10.8 ± 1.7 (g/dl) and median (interquartile range) of 11 (10 to 12) (g/dl). The total leucocytic count ranged from 3 to 28 (k/mm^3) with a mean ± SD of 9.1± 3.6 (k/mm^3) and median (interquartile range) of 8 (7 to 11) (k/mm^3). The level of platelets ranged from 60 to 752 (k/mm3) with a mean ± SD of 268.5 ± 84.7 (k/mm^3) and median (interquartile range) of 261 (216 to 310) (k/mm^3).

Figure 1 demonstrates the frequency of categories of index abortion in the studied cases. Figure 2 shows the different techniques used for surgical evacuation. The number of misoprostol doses used for cervical ripening by patients ranged from 0 to 10 tablets with a mean ± SD of 4.2 ± 2.5 tablets and median (interquartile range) of 4 (4 to 6) tablets and the total dose of misoprostol ranged from 0 to 2000mg with a mean ± SD of 835.2 ± 492.0 mg and median (interquartile range) of 800 (800 to 1200) mg.

The overall incidence of major complications of first trimester surgical abortion was 18.2% one or more major complications occurred, while no major complications occurred in 81.8%. Figure 3 shows the incidence of intra-operative major complications and Figure 4 shows the incidence of post-operative complications.

Table 1: Demographic characteristics of the study population

Variable	Valid N	Min.	Max.	Mean	SD	Median	IQR
Age (years)	1003	17	51	30.2	6.2	30	26 to 35
GA (days)	903	50	86	68.1	10.8	70	59 to 77

Valid N = valid number, Min. = minimum, Max. = maximum, SD = standard deviation, IQR = interquartile range.

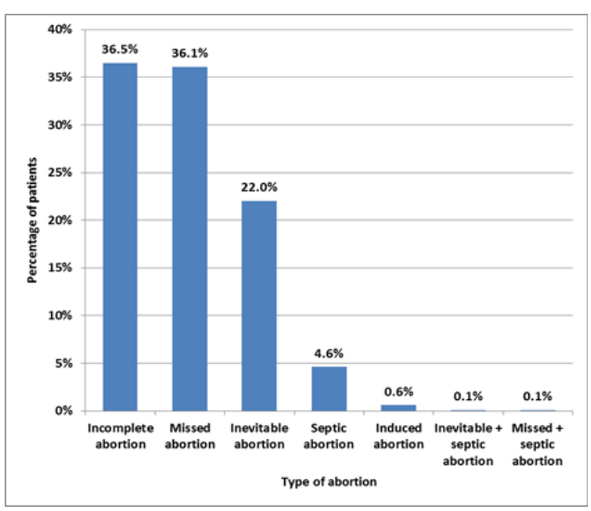

Fig. 1: Types of abortion

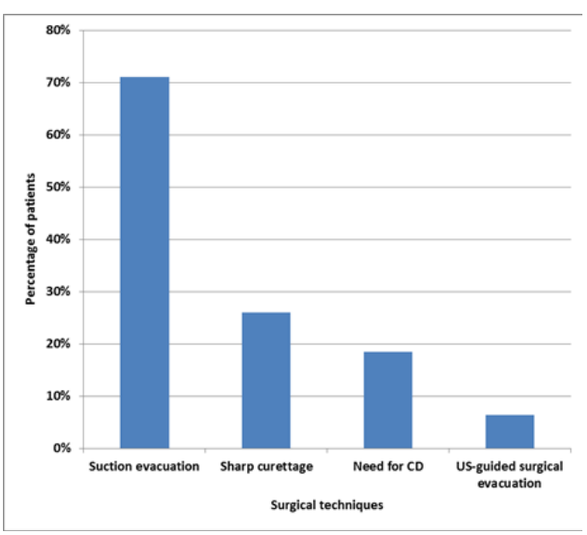

Fig. 2: Technique of surgical evacuation

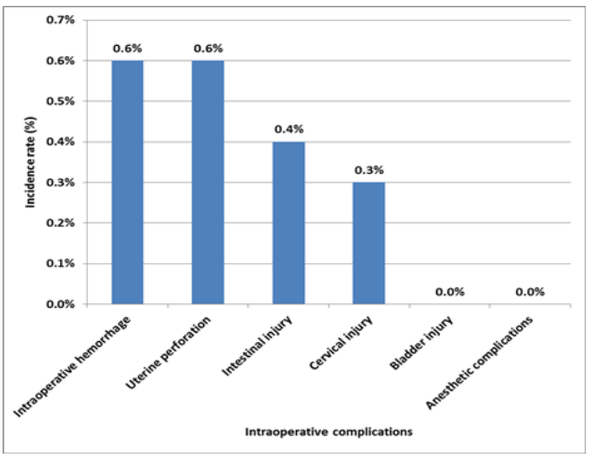

Fig. 3: Intra-operative complications

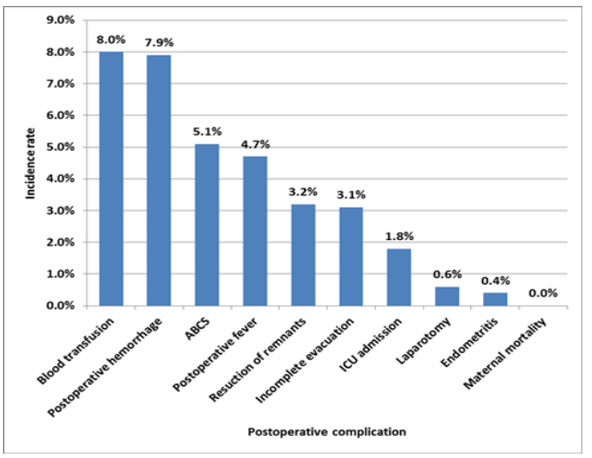

Fig. 4: Post-operative complications

Table 2 : Comparison of patient characteristics and incidence of complications:

		No major complications (n=820)		One or more major complications (n=183)		
Variable		N	%	N	%	P-value*
Age	≤35 years	647	78.9%	147	80.3%	0.763
	>35 years	173	21.1%	36	19.7%	
Parity	P0	155	18.9%	27	14.8%	0.365#
	P1	192	23.4%	46	25.1%	
	P2	204	24.9%	47	25.7%	
	P3 or more	269	32.8%	63	34.4%	
Previous LSCS	Nil	440	53.7%	112	61.2%	0.251#
	1 CS	146	17.8%	27	14.8%	
	2 CS	148	18.0%	21	11.5%	
	≥3 CS	86	10.5%	23	12.6%	
Previous abortions	Nil	493	60.1%	84	45.9%	0.002#
	1 abortion	141	17.2%	45	24.6%	
	2 abortions	92	11.2%	23	12.6%	
	≥3 abortions	94	11.5%	31	16.9%	
Medical history	Hypertension	64	7.8%	10	5.5%	0.348
	DM	55	6.7%	10	5.5%	0.621
	SLE	13	1.6%	1	.5%	0.486
	RHD	59	7.2%	17	9.3%	0.354
	Hypothyroidism	8	1.0%	1	.5%	1.000
	DVT	13	1.6%	2	1.1%	1.000
	Epilepsy	2	.2%	0	0.0%	1.000
	Bronchial asthma	30	3.7%	8	4.4%	0.668
	Toxoplasmosis	3	.4%	0	0.0%	1.000
	Rheumatoid arthritis	12	1.5%	2	1.1%	1.000
	Breast carcinoma	2	.2%	0	0.0%	1.000
	Stroke	4	.5%	2	1.1%	0.301
	ESKD on regular HD	2	.2%	1	.5%	0.454
	Thalassemia	1	.1%	1	.5%	0.332

Current medications	Antiplatelets	130	15.9%	28	15.3%	0.911
	Anticoagulants	80	9.8%	22	12.0%	0.346
	Steroids	45	5.5%	11	6.0%	0.725
	L-thyroxine	14	1.7%	2	1.1%	0.750
	Long-acting pencicillin	19	2.3%	2	1.1%	0.400
	Insulin	32	3.9%	6	3.3%	0.832
	Alpha-methyldopa	40	4.9%	6	3.3%	0.437
	Bronchodilators	3	.4%	0	0.0%	1.000
Past surgery	LSCS	380	46.3%	71	38.8%	0.071
	Hysterotomy	16	2.0%	7	3.8%	0.166
	Myomectomy	28	3.4%	9	4.9%	0.383
	Tonsillectomy	44	5.4%	12	6.6%	0.482
	Cholecystectomy	19	2.3%	7	3.8%	0.299
	Appendectomy	44	5.4%	7	3.8%	0.461
	Laparoscopic ovarian cystectomy	16	2.0%	0	0.0%	0.093
	Thyroidectomy	8	1.0%	1	.5%	1.000
	Hemorrhoidectomy	4	.5%	0	0.0%	1.000
	PUH repair	4	.5%	0	0.0%	1.000
	Laparoscopy	20	2.4%	1	.5%	0.151
	Brain surgery	0	0.0%	1	.5%	0.182
	Spine surgery	3	.4%	0	0.0%	1.000
	Splenectomy	2	.2%	0	0.0%	1.000
	Valve replacement	0	0.0%	4	2.2%	0.001
US	Positive fetal pole	234	70.1%	29	65.9%	0.603
	Positive fetal echocardiography	6	1.8%	0	0.0%	1.000
Type of abortion	Inevitable abortion	177	21.6%	44	24.0%	0.490
	Missed abortion	329	40.1%	33	18.0%	<0.001
	Septic abortion	21	2.6%	25	13.7%	<0.001
	Incomplete abortion	289	35.2%	77	42.1%	0.090
	Induced abortion	3	0.4%	3	1.6%	0.078
	Inevitable abortion complicated with septic abortion	1	0.1%	0	0.0%	1.000
	Missed abortion complicated with septic abortion	0	0.0%	1	0.5%	0.182
Surgical technique	Need for cervical dilatation	129	15.7%	57	31.1%	<0.001
	Suction evacuation	583	71.1%	130	71.0%	1.000
	Sharp curettage	214	26.1%	47	25.7%	1.000
	US-guided surgical evacuation	47	5.7%	17	9.3%	0.093

Data are number and percentage (%).
*Fisher's exact test unless specified.
#Chi-squared test for trend.

Table 3: Comparison of patients discrete variables and incidence of complications:

	No major complications (n=820)			One or more major complications (n=183)					
Variable	N	Med.	Range	N	Med.	Range	U	Z	*P-value**
Parity	820	2	0 – 9	183	2	0 – 7	72730.5	-0.663	0.507
Frequency of previous LSCS	820	0	0 – 4	183	0	0 – 4	70221.5	-1.496	0.135
Frequency of previous spontaneous abortions	820	0	0 – 5	183	0	0 – 7	68609.0	-2.139	0.032
Frequency of previous missed abortions	820	0	0 – 5	183	0	0 – 3	70239.5	-2.427	0.015
Frequency of previous induced abortions	820	0	0 – 1	183	0	0 – 0	74572.5	-1.058	0.290
Frequency of previous septic abortions	820	0	0 – 1	183	0	0 – 1	74803.0	-0.677	0.498
Frequency of previous surgical abortions	820	0	0 – 1	183	0	0 – 1	70386.0	-2.051	0.040
Frequency of all previous abortions	820	0	0 – 10	183	1	0 – 8	64449.0	-3.336	0.001
Number of doses of misoprostol	226	4	0 – 10	30	4	0 – 10	3062.5	-0.933	0.351
Total dose of misoprostol (µg)	226	800	0 – 2000	30	800	0 – 2000	3062.5	-0.933	0.351
Duration of hospital stay (days)	820	1	1 – 8	183	1	1 - 10	46052.0	-14.847	<0.001

Data are median (Med.) and range.
*Mann-Whitney test.

Table 4: Comparison of patients continuous variables and incidence of complications:

	No major complications (n=820)			One or more major complications (n=183)			
Variable	N	Mean	SD	N	Mean	SD	*P-value**
Age (years)	820	30.1	6.2	183	30.2	6.0	0.831
GA (days)	751	67.9	10.9	152	68.9	10.4	0.302
Hemoglobin (g/dl)	664	11.1	1.5	170	9.6	2.1	<0.0001
TLC (k/mm^3)	664	9.0	3.3	170	9.8	4.4	0.008
Platelets (k/mm^3)	664	270.7	81.3	170	260.2	96.4	0.151
PT (s)	356	14.2	2.8	87	14.7	3.7	0.123
PTT (s)	356	36.7	3.9	87	40.6	18.3	0.0002
Mass (mm)	377	39.2	12.5	128	41.2	14.9	0.150
GSD (mm)	67	25.4	11.2	5	24.2	9.6	0.819
CRL (mm)	234	17.7	11.5	29	20.2	12.0	0.282

Data are mean and standard deviation (SD).
*Unpaired t-test.

Table 5: Relation between occurrence of intraoperative or postoperative hemorrhage and possible risk factors

	No intraoperative or postoperative hemorrhage (n=923)		Intraoperative or postoperative hemorrhage (n=80)		
Risk factor	N	%	N	%	P-value*
Previous LSCS	422	45.7%	29	36.3%	0.127
Hypertension	70	7.6%	4	5.0%	0.507
DVT	15	1.6%	0	0.0%	0.624
Stroke	4	0.4%	2	2.5%	0.076
Valve replacement	3	0.3%	1	1.3%	0.283
Antiplatelet	148	16.0%	10	12.5%	0.522
Anticoagulants	94	10.2%	8	10.0%	1.000

Data are number and percentage (%).
*Fisher's exact test.

DISCUSSION

This study aimed to examine the prevalence of minor and major complications associated with surgical methods of first trimester abortion and to assess the morbidity and the maternal mortality rate at Ain-Shams Maternity Hospital between (January 1, 2016 and December 31, 2017). We collected 1003 files of patients to whom surgical evacuation was indicated for first trimestric abortion, we found that 221 cases (22.0%) were inevitable abortion, 362 cases (36.1%) were missed abortion, 366 cases (36.5%) were incomplete abortion, 46 cases (4.6%) were septic abortion, 6 cases (0.6%) were induced abortion and there were 2 cases of abortions complicated with septic abortion. It is to be noted that all surgical abortions performed at our institute are due to medical indication, not elective abortions on patient's demand.

We found that the percentage of first-trimester surgical abortions that required interventions for minor complications was very low, as 0.3% of procedures resulted in cervical laceration needing sutures. Additionally, repeat aspiration was resorted to in 3.2% of cases and the proportion of patients requiring antibiotics to treat the infections was 5.1% of cases. In a large Canadian office-based study of 2, 908 abortions, reported one cervical laceration[5], while in another study done in the Finnish registry data using ICD-10 code for injury reported 0.6% incidence of complications, but their classification included cervical laceration as well as uterine perforations and other surgical interventions.[6]

In this study, the incidence of one or more major complications was 18.2%. The incidence of intraoperative hemorrhage was 0.6%, uterine perforation was encountered in 6 cases (0.6%), cases with perforation underwent laparotomy where intestinal injury was found in 4 cases and no bladder injury or anesthetic complications. In a study done in 2002 to investigate serious complications arising from aspiration abortions before 13 weeks, no complications were reported in 97%; 2.5% had minor complications that were handled at the facility and less than 0.5% had more serious complications that require some additional surgical procedure.[7] Another study reported that uterine perforation in which additional interventions were necessary occurred in ≤0.1%[8] and a study of 34, 755 first trimester aspiration abortions performed in California between 2009-2010 found that only 0.1% of procedures required hospitalization.[9] On the other hand, the incidence of bowel injury has been reported from 5 to 18% cases in different studies.[10]

In our study, the range of incomplete evacuation was 3.1%. In another retrospective study conducted from 1998 to mid-2000 over 1132 women with first trimesteric surgical abortion using suction procedure, 17 women had incomplete evacuation, representing a failed abortion rate of 15 per 1000 (95% CI: 9-24) for the total study population and 23 per 1000 (95% CI: 14-37) for women with follow-up.[11]

In our study, there was no maternal mortality although septic abortion was 4.6% while a previous study reported that in a tertiary rural hospital in North Bengal between 2005 and 2008, 22% of those presenting with septic abortion died as a result.[12]

In this study, there were 79 cases (7.9%) with postoperative bleeding, 31 cases (3.1%) of incomplete evacuation, 4 cases (0.4%) with endometritis, 47 cases (4.7%) with postoperative fever, 18 cases (1.8%) with ICU admission. The amount of hemorrhage increased with increase the size of the remnant mass and it is important to note that there were no to minimal bleeding of the cases of incomplete evacuation (3.1%) which may be due to completely attached remnants with no opened sinuses. This finding is important to point out that the postoperative transvaginal ultrasound shouldn't be limited to only cases with moderate to severe bleeding post evacuation but it seems reasonable to be done on a routine basis for all patients who underwent surgical evacuation. In our study, the need for blood transfusion was 8.0%, use of antibiotics was 5.1%, re-suction of remnants was 3.2%. Laparotomy was done in 0.6% of cases due to suspected uterine perforation

Our study showed there was a higher incidence of one or more major complications in patients with previous abortions, valve replacement, missed and septic abortions, less hemoglobin, higher total leucocytic count, higher PTT and those requiring cervical dilatation. Complications are expected to be higher in those requiring cervical dilatation due to vigorous blind entry of the dilator through the cervix.

CONCLUSION

In this study we found that the postoperative major complications of first trimester surgical abortion were rare, the most common complication was bleeding then incomplete evacuation.

CONFLICT OF INTEREST

There are no conflicts of interests.

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