



Effect of Abortion on the Uterus of Adult Females between the Ages of 19-25 Years

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Abstract		Review Article
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Abortion is a common reproductive health procedure worldwide, but it can have significant effects on the uterus. Particularly in young adult women understanding these effects is critical to preventing complications and safeguarding reproductive health. This study aimed to evaluate the effects of abortion on the uterus of adult females aged 19–25. A cross-sectional study was conducted among 50 women who had undergone abortion. Ultrasonographic examination was performed to assess uterine structure, presence of fluid in the pouch of Douglas (POD), endometrial changes, and other abnormalities. Data were analyzed using frequency distribution, chi-square tests, and associations between age, uterine effects, clinical impressions, and implications were examined. The most common uterine effects observed were retroverted non-gravid uterus with fluid in the POD (22%), fluid in POD alone (18%), and anteverted bulky uterus with acystic mass (18%). Ultrasound impressions included hormonal-induced dysfunctional uterine bleeding (22%), ectopic pregnancy (18%), and retained products of conception (18%). The major implications for uterine health were heavy menstrual bleeding affecting ovulation timing (22%), severe bleeding threatening fertility and life (18%), and incomplete abortion potentially causing infertility (18%). Age was not significantly associated with the effects of abortion ($p=0.785$). However, strong associations were found between specific uterine effects and both clinical impressions and implications ($p<0.001$), indicating predictable patterns of complications based on ultrasonographic findings. Abortion can lead to structural and functional changes in the uterus, including fluid accumulation, uterine distortion, and menstrual or fertility disturbances. Timely intervention, careful monitoring, and safe abortion practices are essential to minimize complications and preserve reproductive health in young adult women.

Keywords: Abortion, Uterus, Reproductive Health, Young Adult Women.

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INTRODUCTION

Abortion is a major public health concern and a potentially life-threatening condition in pregnancy.

The World Health Organization defines abortion as the complete expulsion of products of conception before 20 weeks of gestation or, when gestational age



is uncertain, the delivery of a fetus weighing less than 500 g (Hoffman et al., 2020; Tchienkam et al., 2021). Globally, an estimated 73 million induced abortions occur annually, nearly 45% of which are unsafe, with 97% taking place in developing countries (Pradhan et al., 2019; Harris and Grossman, 2020; Anand et al., 2022). Earlier estimates reported approximately 19 million unsafe abortions worldwide in 2000, resulting in about 70,000 deaths (Grimes et al., 2006; Augustin et al., 2013). Other reports indicate 30-50 million induced abortions globally, and highlight first-trimester surgical abortion as one of the most commonly performed procedures in the United States, with 853,485 cases recorded in 2001 (Augustin et al., 2013).

Unsafe abortions occur predominantly in rural areas of developing countries, where procedures are frequently carried out in poorly equipped settings by untrained individuals using non-sterile instruments, leading to significantly increased morbidity and mortality (Jhobta et al., 2007; Augustin et al., 2013). Affected women often present with fever, abdominal pain, and vaginal bleeding and may develop severe complications such as incomplete abortion, uterine rupture, and traumatic genital tract injuries. Unsafe abortion has been linked to approximately 7.9% of maternal deaths and, in some reports, accounts for nearly one-third of all maternal mortalities, underscoring the urgent need for prompt recognition and intervention (Pradhan et al., 2019; Harris and Grossman, 2020; Anand et al., 2022).

In settings with safe services, first-trimester surgical abortion is highly safe, with minor complication rates as low as 0.846% (Hakim-Elahi et al., 1990; Augustin et al., 2013). Professional bodies such as the Royal College of Obstetricians and Gynaecologists and the World Health Organization advise that abortion can be safely performed without routine ultrasound, yet many services use ultrasound routinely for gestational age dating because it can confirm an intrauterine pregnancy, exclude an ectopic pregnancy, and assess fetal viability. The first definite ultrasound evidence of an intrauterine pregnancy is the presence of the yolk sac, which should be evident by 6 weeks after the last menstrual

period; however, as abortion services seek to reduce unnecessary delays, women may present at very early gestations when the yolk sac is not yet apparent, and providers may be reluctant to proceed because they cannot exclude ectopic pregnancy or may fear terminating a non-viable pregnancy (Heller and Cameron, 2015; Schmidt-Hansen et al., 2020).

Although abortion is generally safe in developed settings, second-trimester procedures carry higher mortality than first-trimester abortions (Grossman et al., 2008). Common methods include dilatation and evacuation (D&E) and medical induction with mifepristone and/or misoprostol; D&E involves gradual cervical dilation followed by evacuation, often under ultrasound guidance, to reduce the risk of trauma and perforation (Grimes et al., 1984; Grossman et al., 2008). Spontaneous abortion may result from chromosomal abnormalities, endocrine disorders, uterine anomalies, antiphospholipid antibody syndrome, thrombophilias, immunologic factors, environmental exposures, or infections (Levy et al., 2018; Oliveira et al., 2020).

Unsafe and induced abortions remain a significant public health concern, particularly among young women in developing countries, where complications can lead to severe morbidity and mortality. Despite the availability of safe abortion services in some settings, both first- and second-trimester procedures may affect uterine health, yet there is limited data on the specific structural and functional impact of abortion on the uterus in adult females aged 19-25. Understanding these effects is critical for developing strategies to minimize complications and improve reproductive health outcomes in this vulnerable population.

MATERIALS AND METHODS

Research Design

This study adopted a retrospective cross-sectional descriptive research design to examine the prevalence and patterns of reproductive complications associated with abortion. The retrospective approach enabled the review and analysis of existing medical records, while the cross-

sectional design allowed for the assessment of uterine outcomes within a defined period.

Study Area and Population

The study was conducted in Port Harcourt, Rivers State, Nigeria. Data collection was carried out in selected health facilities within Port Harcourt where women of reproductive age access reproductive health services. Rivers State is one of the most populous and urbanized states in Nigeria, making it a suitable setting for studying reproductive health outcomes due to the high utilization of healthcare services. The target population comprised adult females aged 19–25 years who had undergone abortion and received care in the selected health facility.

Selection Criteria

For this study, only adult females between the ages of 19 and 25 who had undergone abortion within the past five years (2021–2026) and received medical care at Palmars Hospital Limited, Port Harcourt, were included. Participants were selected based on the availability and completeness of their medical records. Individuals who did not meet the age requirement, had not undergone abortion within the specified period, or had incomplete or missing medical records were excluded from the study.

Sampling

A total of 50 participants were selected from Palmars Hospital Limited, Port Harcourt, using a

convenience sampling technique. This method involved selecting eligible participants whose medical records were readily accessible and met the study inclusion criteria.

Methods of Data Collection

This study utilized existing medical records of women who had undergone abortion and received medical care at Palmars Hospital Limited, Port Harcourt. The hospital records provided detailed information on patients' socio-demographic characteristics, reproductive history, and abortion-related complications as documented by attending physicians. These records served as the primary source of data because they offered reliable, clinically verified information without the need for direct patient contact. A total of 50 medical records that met the inclusion criteria were reviewed, and the data extracted from these records formed the basis of the analysis and results presented in this study.

Data Analysis

The obtained data were statistically analyzed using IBM Statistical Package for the Social Sciences (SPSS) version 25 for both descriptive and inferential statistics. Descriptive statistics, including frequencies and percentages, were used to summarize the data and presented in charts. The Chi-square test of independence was applied to examine the association between the effects, impressions, age, and implications of abortion. A p-value of less than 0.05 was considered statistically significant.

RESULTS

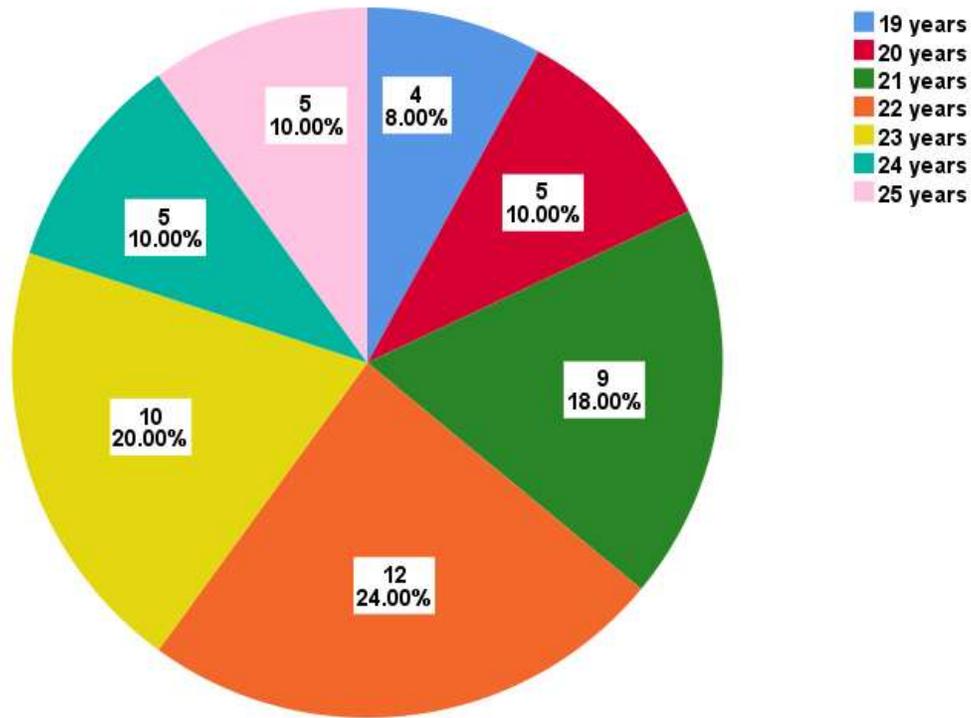


Figure 1: Age frequency and percentage of study participants

Table 1: Frequency distribution of the effects of abortion on the uterus.

Effects	Frequency	Percent	Cumulative Percent
Fluid in POD	9	18.0	18.0
Endometrial anechoic fluid, fluid in POD and non-gravid uterus	8	16.0	34.0
Endometrial anechoic fluid, fluid in POD, non-gravid uterus and myomas	7	14.0	48.0
Anteverted non-gravid uterus and Endometrial anechoic fluid	6	12.0	60.0
Anteverted bulky uterus, with acystic mass	9	18.0	78.0
Retroverted non-gravid uterus and fluid in POD	11	22.0	100.0

Total	50	100.0
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POD= Pouch of Douglas

Table 2: Frequency distribution of the impressions of abortion on the uterus.

Impressions	Frequency	Percent	Cumulative Percent
Suggestive of RPOC	9	18.0	18.0
POD fluid and Hematometra	8	16.0	34.0
Uterine Myoma and Hematometra	7	14.0	48.0
Intracavitary Hematometra	6	12.0	60.0
Ectopic Pregnancy	9	18.0	78.0
Hormonal Induced Dysfunctional Uterine Bleeding	11	22.0	100.0
Total	50	100.0	

POD= Pouch of Douglas; RPOC= Retained Product of Conception

Table 3: Frequency distribution of the implications of abortion on the uterus.

Implications	Frequency	Percent	Cumulative Percent
Incomplete Abortion, can cause Infertility	9	18.0	18.0
Failed Abortion, may affect fertility	6	12.0	30.0
Uterine Fibroid, Heavy Menstrual Pain and Infertility	7	14.0	44.0
Infertility	2	4.0	48.0
Succesful Abortion	6	12.0	60.0
Severe Bleeding, Threat to Fertility and Life	9	18.0	78.0
Heavy Menstrual Bleeding, Affects Ovulation Timing	11	22.0	100.0
Total	50	100.0	

Table 4: The association between age and the effects of abortion in the uterus.

Effects	Age (years)							Total	X ²	p-value	Inf.
	19	20	21	22	23	24	25				
Fluid in POD	1	0	1	2	2	2	1	9	23.71	0.785	NS
Endometrial anechoic fluid, fluid in POD and non-gravid uterus	1	2	1	1	2	0	1	8			
Endometrial anechoic fluid, fluid in POD, non-gravid uterus and myomas	0	1	2	3	1	0	0	7			
Anteverted non-gravid uterus and Endometrial anechoic fluid	0	0	1	4	1	0	0	6			
Anteverted bulky uterus, with acystic mass	0	1	3	1	2	1	1	9			
Retroverted non-gravid uterus and fluid in POD	2	1	1	1	2	2	2	11			
Total	4	5	9	12	10	5	5	50			

POD= Pouch of Douglas; X²= Chi-Square; NS= Not Significant; Inf= Inference

Table 5: The association between the effects and impressions of abortion on the uterus

Effects	Impression						Total	X ²	p-value	Inf.
	Suggestive of RPOC	POD fluid and Hematometra	Uterine Myoma and Hematometra	Intracavitary Hematometra	Ectopic Pregnancy	Hormonal Induced Dysfunctional Uterine Bleeding				
Fluid in POD	9	0	0	0	0	0	9	250.00	0.000	S
Endometrial anechoic fluid, fluid in POD and non-gravid uterus	0	8	0	0	0	0	8			

Endometrial anechoic fluid, fluid in POD, non-gravid uterus and myomas	0	0	7	0	0	0	7			
Anteverted non-gravid uterus and Endometrial anechoic fluid	0	0	0	6	0	0	6			
Anteverted bulky uterus, with acystic mass	0	0	0	0	9	0	9			
Retroverted non-gravid uterus and fluid in POD	0	0	0	0	0	11	11			
Total	9	8	7	6	9	11	50			

POD= Pouch of Douglas; X²= Chi-Square; S= Significant; RPOC= Retained Product of Conception; Inf= Inference

Table 6: The association between the effects and implications of abortion on the uterus.

Effects	Implication							Total	X ²	p-value	Inf.
	Incomplete Abortion, can cause Infertility	Failed Abortion, may affect fertility	Uterine Fibroid, Heavy Menstrual Pain and Infertility	Infertility	Successful Abortion	Severe Bleeding, Threat to Fertility and Life	Heavy Menstrual Bleeding, Affects Ovulation Timing				
Fluid in POD	9	0	0	0	0	0	0	9	250.00	0.00	S
Endometrial anechoic fluid, fluid in POD and non-gravid uterus	0	6	0	2	0	0	0	8			
Endometrial anechoic fluid, fluid in POD, non-gravid uterus and myomas	0	0	7	0	0	0	0	7			
Anteverted non-gravid uterus and Endometrial anechoic fluid	0	0	0	0	6	0	0	6			

Anteverted bulky uterus, with acystic mass	0	0	0	0	0	9	0	9			
Retroverted non-gravid uterus and fluid in POD	0	0	0	0	0	0	11	11			
Total	9	6	7	2	6	9	11	50			

POD= Pouch of Douglas; χ^2 = Chi-Square; S= Significant; RPOC= Retained Product of Conception; Inf= Inference

DISCUSSION

Study by Grossman et al., (2008) reported in the medical induction group, the complications The findings of this study reveal that abortion has varied effects on the uterus, as demonstrated in Tables 1–3. Among the 50 participants, the most frequent uterine effects included retroverted non-gravid uterus with fluid in the pouch of Douglas (POD) (22%), fluid in POD alone (18%), and anteverted bulky uterus with acystic mass (18%). Endometrial anechoic fluid combined with POD fluid and non-gravid uterus was observed in 16% of participants. The impressions derived from ultrasound findings similarly reflected these effects: hormonal-induced dysfunctional uterine bleeding (22%), ectopic pregnancy (18%), and retained products of conception (RPOC) (18%) were the most commonly observed. Regarding the implications of abortion on the uterus, heavy menstrual bleeding affecting ovulation timing (22%), severe bleeding with threats to fertility and life (18%), incomplete abortion potentially causing infertility (18%), and uterine fibroids associated with pain and infertility (14%) were prominent.

Statistical analysis (Tables 4-6) showed no significant association between age and the effects of abortion on the uterus ($p=0.785$), indicating that these uterine changes were broadly consistent across the age range of 19–25 years. However, strong significant associations were observed between specific effects and both impressions ($\chi^2=250.00$, $p<0.001$) and implications ($\chi^2=250.00$, $p<0.001$) of abortion. For instance, fluid in the POD was consistently associated with RPOC and incomplete abortion, whereas anteverted bulky uterus with

acystic mass was linked to severe bleeding and threats to fertility. Retroverted non-gravid uterus with fluid in POD was strongly associated with hormonal-induced dysfunctional uterine bleeding and heavy menstrual bleeding. These associations indicate that particular ultrasonographic findings can reliably predict clinical consequences of abortion, aligning with the pathophysiology of retained tissue, uterine trauma, or hemorrhage.

These results are consistent with previous literature on abortion-related uterine complications. Grossman et al. (2008) reported that women undergoing medical induction occasionally experienced retained placental tissue requiring instrumental removal, fever, and delayed complications, similar to the retained products and hematometra observed in this study. Autry et al. (2002) also reported that retained products were more frequent with medical induction compared to D&E, reflecting the high frequency of RPOC in our findings. Moreover, unsafe abortions, particularly in developing countries, have been widely associated with incomplete abortion, hemorrhage, uterine perforation, and damage to the genital tract, as shown in studies from Pakistan where maternal mortality reached nearly 34.9% due to uterine perforation and sepsis (Shah et al., 2011; Shaikh et al., 2010; Anand et al., 2022). The current study confirms that complications such as fluid accumulation in the POD, intracavitary hematometra, and structural changes like bulky or retroverted uteri are common sequelae of abortion, which can compromise fertility and overall uterine health.

Furthermore, the study highlights broader public health concerns noted by Anand et al. (2022), including unsafe abortion practices, ethical considerations, and socio-cultural factors contributing to illegal abortion. The observed complications, including incomplete abortion, severe bleeding, and hormonal-induced dysfunction, underscore the necessity for timely and safe abortion practices, careful ultrasonographic assessment, and post-abortion monitoring to prevent long-term reproductive morbidity. Collectively, these findings reinforce prior evidence that abortion, particularly when unsafe or inadequately managed, has significant structural, functional, and reproductive implications for the uterus.

CONCLUSION

Abortion can have significant effects on the uterus of women aged 19–25, including fluid accumulation, structural changes, and menstrual or fertility disturbances. Specific uterine changes are linked to complications such as retained tissue, bleeding, and hormonal dysfunction, highlighting the importance of safe abortion practices, careful monitoring, and timely interventions to protect reproductive health.

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