

# Morbidity and Mortality in Patients Presenting with Septic Miscarriage at a Tertiary Care Hospital



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## Abstract

**Background:** The study aimed to determine the frequency of maternal morbidity in terms of uterine perforation, peritonitis, and mortality in women presenting with septic miscarriage.

**Methods:** This Descriptive cross-sectional was conducted at the Obstetrics & Gynaecology department of Nishtar Hospital, Multan-Pakistan, from 1st September 2019 to 31st March 2020. A total of 240 females presenting with septic miscarriage having parity < 5 were included in the study. A pelvic ultrasound was done to find any retained products of conception and to see uterine perforation and any free fluid in the peritoneal cavity. Where uterine perforation was found, laparotomy was performed. Retained products of conception were evacuated by dilatation and curettage. Data regarding maternal morbidity (uterine perforation and peritonitis) and mortality was recorded.

**Results:** In this study, the mean time of miscarriage to admission was  $37.30 \pm 9.24$  hours. Regarding parity, 83.8% of females were with parity of 0-2, and 16.3% of women had a parity of 3-4. Around 38.8% of females had a medical termination of pregnancy, and 61.7% underwent surgical evacuation. Peritonitis and uterine perforation were seen in 25% and 13.3% of the patients. However, death was recorded in 7.5% of patients.

**Conclusion:** It is concluded that septic miscarriage is a frequently encountered gynecological complication, necessitating hospital admission and treatment. It adversely affects women's health and quality of life, leading to mortality.

**Keywords:** Septic miscarriage, maternal morbidity, peritonitis, uterine perforation

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## Introduction

Approximately 120 million unintended pregnancies are encountered each year. Of these, almost 60% result in abortions that are mostly unsafe, resulting in maternal death. (1) The pregnant state predisposes a woman to risk of illness and even death. (2) The risk increases many folds if the woman has an unwanted pregnancy and opts for abortion without safe services. (3)

Abortion is the termination of pregnancy before the age of viability by using any means, and septic abortion results from unsafe abortion. According to WHO, unsafe abortion is defined as a procedure used to terminate unwanted pregnancy, performed by an untrained person or performed in an environment without minimum medical standards or both. (4) Unsafe abortion results in the colonization of the upper genital tract by various microorganisms after the termination of pregnancy. This commonly occurs because of direct inoculation of microorganisms from poorly sterilized instruments or infections ascending from the lower genital tract during unsafe abortion. Septic abortion is a significant contributor to both maternal morbidity and mortality. (5)

Approximately half a million maternal deaths occur worldwide every year, (6) and approximately one-quarter to one-third are attributable to complications arising from unsafe abortion. (7)

Septic abortion is particularly a significant public health concern in developing countries. Although a mass movement regarding the promotion of family planning policies has been in process, the prevalence of contraception remains only 34% in Pakistan, and the total fertility rate is still 3.6. It has not significantly changed over the previous few years. (8) In 2017-18, the demographic health survey carried out in Pakistan identified that among married females, 42% do not desire to conceive. However, only 25% avail family planning methods, and the remaining 17% avoid using any method. This enormous size population then resorts to abortion to avoid unintended birth.

The survey by the population council shows that the number of abortions conducted for unwanted pregnancies is on a constant rise in Pakistan. (9) On an annual basis, 890,000 abortions are carried out, which shows that almost 1 out of 6 pregnancies are terminated by induced abortion, and that too in an unsafe manner. In a study by Ikram et al., the frequency of peritonitis was 39.83%, and maternal mortality was 10-12% in women presenting with septic miscarriage in Pakistan. (10) Therefore, it is necessary that the actual burden of morbidity associated with septic abortion should be measured, so appropriate strategies should be formulated to address the high morbidity and mortality associated with septic miscarriage, especially in underdeveloped countries.

## Methodology

A descriptive case study was conducted at the Obstetrics and Gynecology department of Nishtar hospital Multan from 1st September 2019 to 31st March 2020. Ethical approval was obtained from an independent ethics committee, and the study was conducted following the Declaration of Helsinki. Informed consent was obtained from each subject before enrollment in the study. With the help of the WHO calculator, the sample size of this study is 240 cases using a 95% confidence level, a margin of error of 5%, and taking an expected percentage of mortality in septic abortion at 19%, as reported by Finkielman et al. (11)

A total of 240 women presenting in an emergency, between 20-35 years and < 5 parity, were included in the study. Subjects with a history of hypertension, diabetes, liver, and renal disease were excluded from the study. Data was collected on a pre-designed structured questionnaire, and basic demographics like parity, age, weight, and socioeconomic status were recorded. Pelvic ultrasonography was done to locate any retained products of conception for any evidence of free fluid in the peritoneal cavity and uterine perforation. Laparotomy was performed in case of uterine perforation. Dilatation and curettage were performed to evacuate retained products of conception, and data regarding maternal mortality and morbidity, including peritonitis and uterine perforation, was recorded.

Data was analyzed on SPSS version 22.0. Mean and standard deviation were calculated for quantitative variables like age, weight, height, BMI, and time of the abortion. For qualitative variables like mortality, parity, morbidity (uterine perforation peritonitis), the poor socioeconomic status and procedure for abortion, frequency, and percentage were calculated. Effect modifiers were controlled by stratification to see their impact on uterine perforation and peritonitis.

## Results

The mean age of subjects in this study was  $29.41 \pm 2.85$  years, the mean time of abortion to admission was  $37.30 \pm 2.94$  hours, and the mean BMI was  $29.55 \pm 4.87$  kg/m<sup>2</sup>. The frequency of unsafe abortion among unmarried and married women was 9.6% and 90%, respectively. Regarding parity, 83% of women had a parity of 0-2, and 16.3% with parity of 3-4. Regarding socioeconomic status, 21.7% of patients belonged to poor economic status. Surgical procedure was the method of abortion in 61.7% of patients, and 38.3% underwent a medical procedure. Among the complications, peritonitis was seen in 25% of patients, uterine perforation in 13.3% of cases, and overall mortality was 7.5%.

Stratification of peritonitis with respect to age, parity BMI and poor socioeconomic status showed no association of these factors with peritonitis. Moreover, no association of uterine perforation was observed with age, parity, BMI, and procedure for abortion. Stratification of mortality for age, parity BMI and time of abortion to admission (Hours) showed a significant association of time of abortion to admission with mortality.

**Table 1: Demographic characteristics of the study population.**

Variable	N(%)	
Age	20-27	46(19.16)
	28-35	194(80.83)
Parity	0-2	201(83.75)
	3-4	39(16.25)
BMI	≤25	64(26.66)
	≥25	176(73.33)
Poor Economic Status	Poor	52(21.7)
	Middle	188(78.3)
Parity	0-2	39(16.3)
	3-4	201(83.8)
Procedure for Abortion	Surgical	148(61.7)
	Medical	92(38.3)
Maternal Morbidity	Peritonitis	60(25)
	Uterine Perforation	32(13.3)
Maternal Mortality	18(7.5)	

**Table 2: Stratification of peritonitis with respect to patient characteristics.**

Variables	Peritonitis			p-value
	Yes N(%)	No N(%)		
Age	20-27	7(15.2)	39(84.8)	0.088
	28-35	53(27.3)	141(72.7)	
Parity	0-2	49(24.4)	152(75.6)	0.613
	3-4	11(28.2)	28(71.8)	
BMI (kg/m <sup>2</sup> )	≤25	9(14.1)	55(85.9)	0.18
	≥25	51(29)	125(71)	
Procedure for abortion	Surgical	41(27.7)	107(72.3)	0.220
	Medical	19(20.7)	73(79.3)	

**Table 3: Stratification of Uterine Perforation with respect to patient characteristics.**

Variables	Uterine Perforation			p-value
	Yes N(%)	No N(%)		
Age	20-27	4(8.7)	42(91.3)	0.303
	28-35	28(14.4)	166(85.6)	
Parity	0-2	26(12.9)	175(87.1)	0.680
	3-4	6(15.4)	33(84.6)	
BMI (kg/m <sup>2</sup> )	≤25	9(14.1)	55(85.9)	0.841
	≥25	23(13.1)	153(86.9)	
Procedure for abortion	Surgical	16(10.8)	132(89.2)	0.145
	Medical	16(17.4)	76(82.6)	

**Table 4: Stratification of mortality with respect to patient characteristics.**

Variables	Mortality		p-value	
	Yes N(%)	No N(%)		
Age	20-27	1(2.2)	45(97.8)	0.127
	28-35	17(8.8)	177(91.2)	
Parity	0-2	17(8.5)	184(91.5)	0.201
	3-4	1(2.6)	38(97.2)	
BMI (kg/m <sup>2</sup> )	≤25	4(6.2)	60(93.8)	0.658
	≥25	14(8)	162(92)	
Time of abortion to admission (Hours)	≤48	5(2.4)	204(97.6)	0.000*
	≥48	13(41.9)	18(58.1)	

## Discussion

Our study showed that septic abortion is a major contributor to morbidity and mortality in young to middle age women and is usually preceded by induced and unsafe abortion. Although the average abortion rate is almost identical in both developed and underdeveloped countries, unsafe abortion is more frequent in developing countries. Abortion in Pakistan is illegal unless it is induced to save the life of pregnant women. Nevertheless, many clandestine (illegal) abortions have untoward effects on the health and may claim the lives of women. (12)

In our study, we noticed that the age range for women was 20 to 35, with a mean age of  $29.14 \pm 2.85$  years. The mean age of patients in the study of Adenuga et al. was  $27.4 \pm 6.2$  years. (13) Acosta et al. reported that 51% of women had an age range between 25 to 34 years of age, (14) while Jalilvand et al. reported that the women had an average age of 32.58 years. (15) These results are concordant with our results. In our settings, 83.8% of women had a parity of 0-2, and 16.3% had a parity of 3-4. Another study conducted by Alam et al. has congruent findings. (16)

Furthermore, we have found that 61.7% of patients had undergone surgical procedures while 38.3% of patients had medical termination. Jatlaoui et al. have noticed that up to 24.6% of all abortions were performed using medical measures, and 64.3% were carried out by surgical procedure. (17) Peritonitis was present in 25% of septic abortion cases, which is almost similar to that reported by Jalilvand et al. (16), where the authors reported that peritonitis is present in 10% of cases. 5% had ruptured the uterus, and mortality was 2.5%. A Pakistani study by Ikram et al. found diffuse peritonitis in 39.83% of cases. (10) However, few other studies indicate a high frequency of peritonitis in septic abortion. Two Indian studies conducted by Srilakshmi et al. (18) and Singh et al. (19) found that the frequency of peritonitis was 50% and 62.5%, respectively. In our understanding, this gross difference in the occurrence of peritonitis in the studies mentioned above is because of poor health facilities in third-world countries like India and Pakistan. Almost similar results are obtained from another study conducted in another underdeveloped country like Bangladesh, showing the occurrence of generalized peritonitis in up to 11.6% of cases and pelvic peritonitis in 25% of cases. (20)

We have noticed uterine perforation in 13.3% of septic abortion cases. Few other Pakistani studies suggested that the most common complication was uterine perforation, i.e., 11% in the setting of septic abortion. (21,22) In another study conducted in Nigeria, Abiodun et al. reported that uterine perforation was present in 12.5% of the women. (23) In a study done in Bangladesh, perforation of the uterus was noticed in 10% of cases. (20) All these results are concordant with our study results. However, Shah et al. from Karachi reported uterine perforation in 30% of study cases. (24) Such a high frequency of uterine perforation identified by Shah et al. raises questions regarding the health care system in a metropolitan city.

In our study, 7.5% of cases with septic abortion succumbed to death. In the Bangladeshi study (20), mortality was noticed to be 8.33%. The case-fatality rates secondary to septic abortion are incredibly variable in various tertiary centers, ranging from 5% to 25% in many developing countries. (25,26) In an Argentinian study, mortality specific to septic abortion was 19% (11). The case fatality for septic abortion in another Pakistani study was 10%. (27) Pal et al. reported an 18.17% case fatality rate for septic abortions. (28)

Keeping in view the catastrophic consequences of septic miscarriage, it is the need of the hour that necessary action, including the legalization of abortion, free availability of contraceptive services, and training of midwives and health professionals at the primary and secondary levels should be done to minimize associated morbidity and mortality.

## Conclusion

COVID-19 infection is equally common in men and women of Lahore, Pakistan. Whereas the number and the type of COVID-19 symptoms could vary across the gender. Understanding these gender disparities in terms of symptomatology may help to guide the local health authorities in allocating the available resources more efficiently.

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