

ABORTION — ITS INCIDENCE AND RELATIONSHIP TO MATERNAL AGE, PARITY, GESTATION PERIOD AND SEASONAL VARIATION

by

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Abortion means the termination of intrauterine pregnancy during the twenty-eight weeks following the last menstrual period. It is the commonest complication of pregnancy and is attended with serious risks to the maternal life and health. It is an accepted fact that the incidence of abortion is related to the period of gestation, seasonal variation, age and parity of the mother. With a view to determine these relationships, a pilot investigation was carried out on a study of consecutive 2,690 abortions which occurred during the years 1956 and 1957. These cases were collected from the Maternity Section of four Medical College Hospitals of the city of Calcutta, namely, (i) Calcutta Medical College, (ii) R. G. Kar Medical College, (iii) Nil-ratan Sircar Medical College, and (iv) Calcutta National Medical College. The majority of the patients were of the lower income group and thus could be regarded as belonging to the lower standard of nutrition and poor socio-economic status. Almost all these cases were admitted

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as emergencies to the hospitals and thus they were non-booked patients. The gestation period was calculated from the first day of the last menstrual period.

An attempt has been made to study the cases of the present series in the following order:

- (1) Incidence of abortion in hospitals.
- (2) Relation of maternal age to abortion.
- (3) Relation of abortion to parity of the mother.
- (4) Relationship of the period of gestation to abortion.
- (5) Clinical types of abortion and their incidence.
- (6) Methods of treatment adopted in these cases.
- (7) Maternal mortality and morbidity.
- (8) Seasonal variation and its relation to the incidence of abortion.

1. *Hospital Incidence of Abortions*: It is a long recognised fact that the hospital statistics in an absolute sense do not reveal the true picture of the incidence of abortion in the gravid female population as mainly the complicated cases are sent to the hospitals. Even the general figures

are not reliable as abortions are not notifiable and the condition can be easily concealed and many early abortions are not recognised or are falsely diagnosed, when a delayed period is followed by bleeding. Brews (1948) gives the incidence rate as 20 per cent and Stallworthy (1955) states that about 15 per cent of pregnancies end in abortions. In the present series, the incidence of abortion was 5.84 per cent in relation to total obstetric admissions to the hospitals (Table 1).

TABLE 1
Incidence of Abortion

Total number of obstetrical admissions	46,058
Total number of abortions	2,690
Incidence rate	5.84%

2. *Abortion and Age of Mother:* In this series, the minimum age of the mother was 15 years and the upper age limit was 45 years. The maximum percentage of abortions (28.95%) occurred in 21-25 years age group and the minimum percentage (2.04%) was noted in the 40 years and above age group. It is further observed that more than half of the cases (54.37%) aborted while the age of the mothers ranged between 21 to 30 years, i.e. the most fertile period of reproductive life (Table 2, Graph 1). Collins (1951) pointed out that most abortions were in patients aged 20-35 years who had not previously given birth to a live infant. Rucker (1952) was of the opinion that the frequency of abortion increased progressively with age, especially after 30 years.

TABLE 2
Abortion and Age Incidence

Age groups	No. of cases	Percentage
15—20 years	475	17.65
21—25 years	779	28.95
26—30 years	684	25.42
31—35 years	469	17.43
36—40 years	228	8.47
above 40 years	55	2.04



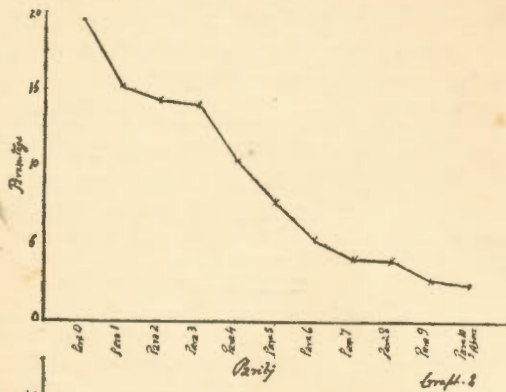
Graph 1

3. *Parity and Frequency of Abortion:* The present investigation showed that the abortion was most frequent (19.59%) in those who were pregnant for the first time. It was further interesting to note that the frequency of abortion decreased progressively with increased order of parity (Table 3, Graph II). The

TABLE 3
Parity and Abortion

Parity groups	No. of cases	Percentage
Para 0	527	19.59
Para 1	410	15.24
Para 2	385	14.31
Para 3	378	14.05
Para 4	278	10.33
Para 5	206	7.65
Para 6	141	5.24
Para 7	112	4.16
Para 8	110	4.08
Para 9	76	2.82
Para 10 and above	67	2.49

highest order of parity noted in the present series was a case of 16th para. Berger (1955) also showed that in most of the cases of his series, first pregnancies ended in abortions.

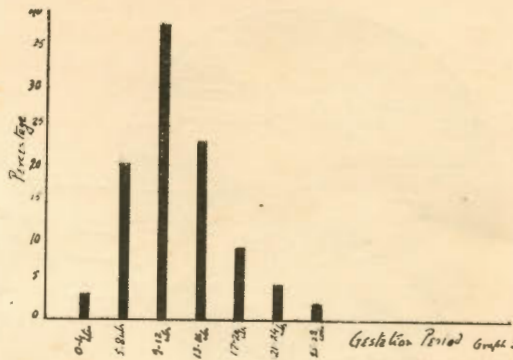


Graph 2

4. *Abortion and Its Relationship to Gestation Period:* It is a well-known fact that abortion occurs more frequently in the first three months of gestation and mostly during the third month. The present analysis showed that the highest incidence rate (38.28%) of abortion was marked when the gestation period was between 9-12 weeks. More than 60% abortions took place during the first twelve weeks of pregnancy. It was further observed that there was a gradual rise in incidence rate of abortions up to 12 weeks of gestation and then there was a progressive fall in the incidence upto 28 weeks, the lowest incidence (1.89%) being noted during the 25-28 weeks gestation period (Table 4, Graph III). Brews (1948) revealed that about 80 per cent of abortions occurred during the second and third months of pregnancy, about 10 per cent during the fourth month and about 10 per cent during the fifth and sixth months.

TABLE 4
Abortion and Period of Gestation

Gestation period	No. of cases	Percentage
0—4 weeks	86	3.19
5—8 weeks	537	19.96
9—12 weeks	1030	38.28
13—16 weeks	612	22.75
17—20 weeks	246	9.14
21—24 weeks	128	4.75
25—28 weeks	51	1.89



Graph 3

5. *Abortion—Its Clinical Varieties:* The cases under the present survey were grouped into seven clinical types: (i) threatened, (ii) inevitable, (iii) incomplete, (iv) complete, (v) missed, (vi) habitual, and (vii) septic. Incomplete abortion proved to be the commonest (51.52%) variety and inevitable one was the second common type (Table 5, Figure 1). Webster (1951) revealed that the abortions in progress, classified as incomplete and inevitable, constituted 60.9% of his series and the incidence of sepsis was 16.4 per cent. Collins (1951) showed that 19 per cent of his cases were septic abortions.

6. *Management of Abortion:* The management of abortion depends, first, on the stage at which it is seen,

TABLE 5
Clinical Types of Abortion

Types	Number of cases	Percentage
1. Threatened	411	15.27
2. Inevitable	516	19.18
3. Incomplete	1386	51.52
4. Complete	165	6.13
5. Missed	42	1.56
6. Habitual	20	0.74
7. Septic	150	5.57

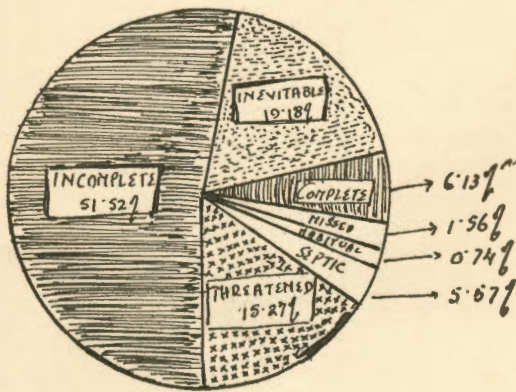


Fig. 1

and second, on the presence of factors such as haemorrhage and infection. An early pelvic examination, collection of cervical material for the bacteriologic study, a catheter sample of urine and a haemoglobin estimation are very important. Patients with severe haemorrhage or exsanguination after prolonged bleeding require blood replacement. So, blood grouping and cross-matching should be undertaken without delay and should immediate operation be required, blood transfusion should be started before the patient is anaesthetised. The treatment of abortions might be active, with immediate emptying of the uterine cavity, conservative or expectant. Availability of chemotherapy and

antibiotics and the liberal use of whole blood have altered the necessity of extreme conservatism in treatment. Active treatment with evacuation of the uterine cavity in the afebrile patient with incomplete or inevitable abortion shortens hospital stay, lessens blood loss and is without danger. Table 6 represents the methods of treatment employed in the present series with the number and percentage of cases against each of them.

TABLE 6
Treatment of Abortions

Methods	Number	Percentage
1. Conservative	485	18.02
2. Spontaneous	287	10.66
3. Dilatation and curettage	292	10.85
4. Dilatation and evacuation	1474	54.79
5. Dilatation with laminaria tents and evacuation	74	2.75
6. Pitocin-saline drip infusion	19	0.706
7. Abdominal hysterotomy	5	0.001
*8. No treatment	54	2.007

* Patients got themselves discharged on 'risk-bond'.

7. *Mortality and Morbidity:* Few women die from haemorrhage during abortion. If the bleeding is long continued, the unavoidable small loss during the abortion may prove fatal. Death is more commonly due to external infection and operative trauma. The outlook for the mother has considerably improved in recent years. The decrease in maternal mortality and morbidity is attributed to liberal use of chemotherapy and antibiotics, availability of blood

for transfusions and recognition and prompt treatment of complications. Modern therapy has largely eliminated infections as a direct cause of death. However, there are still some infections in the post abortal period that can be controlled only with difficulty or not at all by broad spectrum antibiotics; and renal failure has become the most dreaded complication of postabortal sepsis. There were 15 deaths in the present series, the mortality rate being 0.55 per cent and the morbidity rate was 7.76 per cent (Table 7). The mortality rate in Collins' (1951) series was 0.46 per cent. Webster (1951) reported two deaths (0.11%) in his series and both patients died of uncontrollable infection. The morbidity rate was 3.4 per cent in the series studied by Berger (1955).

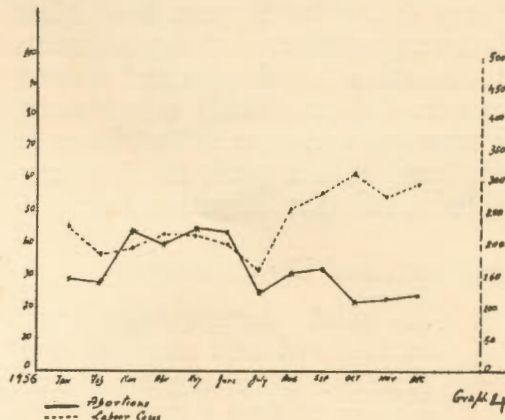
TABLE 7
Results

Results	Number of cases	Percentage
Mortality	15	0.55
Morbidity	209	7.76

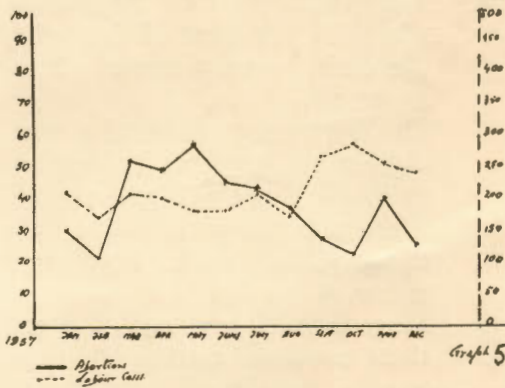
The maternal deaths in the present analysis were due to sepsis, shock, haemorrhage, renal failure and afibrinogenemia. The morbidity figures comprised of postabortal pyrexia, parametritis, anaemia, cervical tears and placental polypi.

8. *Abortion and Seasonal Variation:* It is said that the incidence of abortion has got some relation with seasonal variation. With a view to find out the association between them, a 3-year study (1956-1958) has been made on a small series of cases available from one of the above mentioned hospitals. The cor-

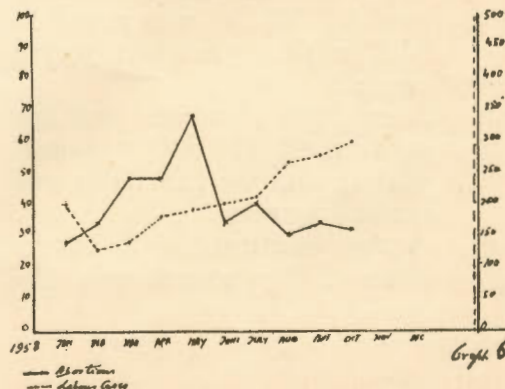
relation may be observed from the following graphs which also reveal the frequency distribution of labour cases (Graphs IV, V and VI)



Graph 4



Graph 5



Graph 6

It was noted that there was increased incidence rate of abortion during the spring and summer seasons (March-June), the peak of incidence being in the month of May. Maximum number of confinements on the other hand occurred during October. Collins (1951) also observed seasonal variation in incidence of abortions, with a peak in May, correlated with that of pregnancy.

Summary and Conclusions

1. A pilot investigation was carried out on a study of consecutive 2,690 abortions with a view to find out its certain correlations.
2. The incidence of abortions was 5.84 per cent of the total obstetrical admissions into hospitals.
3. The frequency of abortion was highest in patients belonging to 21-25 years age group and there was a progressive fall in incidence with increased order of parity.
4. More than 60 per cent of abortions occurred during the first twelve weeks of pregnancy and the maximum incidence rate (38.28%) was noted in 9-12 weeks gestation period group.
5. Incomplete abortion was the commonest (51.52%) clinical variety and the inevitable one ranked second.
6. Active treatment with evacuation of the uterus was the

commonest method of management employed.

7. The mortality rate was 0.55 per cent and the morbidity rate was 7.76 per cent.
8. Seasonal variation was observed in the incidence of abortions with a peak in the month of May.

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