

## PREGNANCY OUTCOME FOLLOWING PREVIOUS ABORTION

by

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### *Introduction*

A woman generally feels insecure in her reproductive capability when she loses her first pregnancy in abortion. Her sense of insecurity mounts up when consecutive pregnancies are wasted in similar manner. Indeed, some of them become permanently infertile (Chakravarty and Gun, 1974) while others conceive and somehow manage to continue till term with utmost care and caution.

The purpose of the present communication is to evaluate the underlying cause of such unwanted foetal wastage with a view to ascertain the extent to which preconceptional and prenatal care can provide protection against recurrence of this type of obstetric hazard.

### *Material and Methods*

Two hundred and eighty cases have been followed through and in all of them the previous pregnancy ended in spontaneous abortion either in first or in the second trimester. Some of them had more than one consecutive abortions.

These cases were followed and treated under our personal care in the department of Obstetrics and Gynaecology of N.R.S. Medical College, Calcutta during the period from 1st January, 1970 to 31st

December, 1974. Out of 280 cases studied, 183, had only abortions and pregnancy in these cases never continued beyond 28 weeks. The remaining 97 had few still-births or only one full-term live birth in between several abortions.

### *Grouping of cases*

For the purpose of analysis, these 280 cases have been grouped into three categories.

*Group 'A':* This group consisted of cases who had only abortions and no full term deliveries. This group consisted of 183 cases.

*Group 'B':* Forty-two cases belonged to this group. They had still-births or neonatal deaths followed by one or several abortions.

*Group 'C':* The cases in this group had abortions either preceded by or in between one live birth. There were 55 cases in this group.

Probable etiological factors of previous abortion have been assessed mainly on history and clinical examination supplemented by few special investigations. Some of the cases could be followed since 2 or 3 previous conceptions and hence these cases could be investigated and treated before commencement of the present pregnancy.

### *Total Number of conceptions and Foetal Wastage*

Table I shows the total number of

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foetal wastage. Out of 553 conceptions in 280 cases, 498 pregnancies (90.05%) were lost either in abortions or still-births and neonatal deaths. *Number of Abortions* Two cases in Group 'A' and one in Group 'C' had six consecutive abortions. Maximum number of cases in each group

TABLE I  
*Total Number of Conceptions and Foetal Wastage*

	No. of cases	No. of conceptions	Foetal wastage	Foetal survival
GROUP 'A'	183	279	279	—
GROUP 'B'	42	115	115	—
GROUP 'C'	55	159	104	55
TOTAL	280	553	498 (90.05%)	55 (9.95%)

#### *Maternal Age*

Fertility diminishes with increasing maternal age. Hence mothers of age group more than 30 become extremely anxious when they loose their first pregnancy by abortion. Beyond 30, there were 39 cases (21.3%) in group 'A' and 17 (40.4%) in group 'B' who had no experience of a succesful pregnancy before. The oldest patient was 41 in Group 'A' and she had hypothyroidism (Table II).

had only one abortion. This was followed by those who had two abortions (Table III).

#### *Gestational Age of Previous Abortions*

'Combined' group indicates cases who had abortions in both first and second trimesters. First trimester abortion was most frequent in all the groups. There was however, slight increase in the total incidence of combined and second trimester abortion over first in those who had history of still-births or neonatal deaths.

TABLE II  
*Age*

	Total Number of cases	Less than 20	20-30	More than 30
GROUP 'A'	183	6 (3.27%)	138 (75.4%)	39 (21.3%)
GROUP 'B'	42	Nil	25 (59.5%)	17 (40.4%)
GROUP 'C'	55	Nil	39 (70.8%)	16 (29.2%)

TABLE III  
*Number of Abortions*

	No. of cases	One abortion	Two abortions	Three or more abortions
GROUP 'A'	183	116 (63.4%)	46 (25.2%)	21 (11.4%)
GROUP 'B'	42	22 (52.4%)	14 (33.3%)	6 (14.3%)
GROUP 'C'	55	27 (49.1%)	16 (29.1%)	12 (21.8%)



TABLE IV  
Gestational age of Previous Abortions

Gr. of cases	No. of cases	1st trimester	2nd trimester	Combined
GROUP 'A'	183	122 (66.6%)	46 (25.1%)	15 (8.2%)
GROUP 'B'	42	20 (47.6%)	13 (30.9%)	9 (21.4%)
GROUP 'C'	55	39 (70.9%)	10 (18.2%)	6 (10.9%)

TABLE V (a)  
Systemic Maternal Abnormalities

Maternal abnormalities	Groups of cases		
	A	B	C
Diabetes	2*	4*	Nil
Hypothyroidism	2*		
Hypertension	Nil	1*	Nil
A B O incompatibility	4		
Rh incompatibility	3	Nil	Nil
Urinary tract infection	1	3	Nil
Pulmonary tuberculosis	1		
Positive VDRL test	Nil	2	Nil
Coarctation of aorta	1	Nil	Nil

TABLE V (b)  
Local, Endocrinal and Foetal Congenital Factors

Abnormal factors	Groups of cases		
	A	B	C
Cervical incompetence	29*	15*	11
Uterine malformations	4	Nil	Nil
R. V. uterus with impaired mobility	3	Nil	Nil
Uterine fibroid	4	Nil	2
Uterine synechiae	1	1	1
Foetal congenital malformations	2	3	Nil
Probable luteal deficiency	108	Nil	11
Undetermined	20	15	30

*Etiological Factors of Previous Abortions*

There has been overlapping in the figures marked with asterisk. Cervical incompetence, in Group 'A', was found in association with hypothyroidism plus diabetes in one and only diabetes in the other. In Group 'B' this defect was

detected in addition to diabetes in one and hypertension in the other.

From Table V (a) it is evident, that while systemic abnormalities were generally infrequent, such abnormalities were significantly absent in Group 'C' who had at least one live birth.

Some of the findings were incidental which were either related or unrelated to previous abortions. One case of recurrent urinary tract infection with recurrent abortion had one non-functioning kidney and other one was affected by Hydronephrosis (Fig. 1). Exploration revealed congenital fibromuscular band obstructing the ureters at the pelvi-ureteric junction on either side. Blood group incompatibility was responsible for abortion in 4. In these cases, the mother belonged to Group 'O' and the father, either to Group 'A' or Group 'B'. Rh incompatibility, positive VDRL test, pulmonary tuberculosis and coarctation of aorta were associated findings and these conditions by themselves usually do not lead to abortion.

Of the local factors, cervical incompetence was found to be the commonest cause in all the groups (Table V(b)). Two cases of embryonal defects were detected in Group 'A' while in Group 'B', 3 cases had foetal congenital malformations. In Group 'A', histopathological section of the products showed hydropic degeneration of chorionic villi in 1 and evidences of degenerative changes of the villi along with marked proliferation of the trophoblastic cells in the other (Figs. 2 and 3). In Group 'B' one case had a congenital cardiac lesion, one had hydro-

cephalus and the third had clinical evidences of typical 'D' Group (13/14/15/) autosomal defect (Fig. 4). There were 108 cases in Group 'A' where luteal deficiency was believed to exist. This presumption was made partly on cytological index and partly on response to the lutetrophic hormone therapy. In quite a large number in each group, the exact etiological factor remained undetermined.

#### Treatment

It will be observed from Table VI(a) that a number of cases had preconceptual Palmar Lash operation for anatomical defect of the cervix. Such a procedure had to be undertaken because the cervix was badly traumatised by previous delivery and Shirodkar's operation proved to be ineffective when attempted during previous conception.

Table VI(b) reveals that 2 cases had Shirodkar's operation during pregnancy in addition to Palmer Lash operation performed in the preconceptual period.

Four additional Shirodkar's operations were performed in Group 'A' where subsequent caesarean section proved existence of uterine malformation (Table VI (b); but anyway, they continued safely through pregnancy with the circlage operation.

TABLE VI (a)  
Preconceptual

Treatment	Groups of cases		
	A	B	C
Myomectomy	4	—	2
Gilliams'	2	—	—
Palmar-Lash	4	4	3
Adhesionolysis	1	1	1
Antisyphylitic	—	2	—
Antitubercular	1		



TABLE VI (b)  
Postconceptional

Treatment	Groups of cases		
	A	B	C
Shirodkar	29	13	8
Shirodkar on Palmar Lash	1*	—	1*
Eltroxin	2	—	—
Antidiabetic	2	—	—
Gestanin and rest	138	22	41

Some of the cases recorded here as diabetes had elevation of postprandial blood sugar only during pregnancy but in the non-pregnant state, they remained normoglycaemic. Hence, specific antidiabetic treatment (insulin) was necessary in two cases only, others did well with diabetic regime and treatment for associated defects.

Irrespective of other treatments, almost all cases had Gestanin (Allyloestrinol) in variable doses continued for a variable period of another abortion. One hundred and thirty-eight cases in Group 'A', 22 in Group 'B' and 41 in Group 'C' were entirely on Gestanin and rest and they did not require any other specific-treatment.

#### Complications during Present Pregnancy

Table VII is a record of the significant complications which developed during current pregnancy. It is apparent that 75 cases (26.5%) had symptoms of

threatened abortion and all of them were treated with rest and heavy doses of Gestanin.

An escalating dose of Gestanin was prescribed for those who had persistent or recurrent bleeding during the first half of pregnancy. The case with hypothyroidism who had symptoms of threatened abortion received the maximum number of tablets (16 per day) though for a short period, in addition to 3 tablets of Eltroxin (0.01 mgm) daily. Pregnancy in this case could be continued upto 34 weeks and elective section had to be performed for intractable pre-eclamptic toxæmia.

#### Termination

One hundred and eleven cases (39.6%) were delivered by elective caesarean section while emergency section was performed on 3. Besides other factors, bad obstetric history formed the single important consideration for caesa-

TABLE VII  
Complications During Present Pregnancy

Complications	Number of cases	Percent
Threatened abortion	75	26.5
Pre-eclamptic toxæmia	18	6.4
Premature rupture of membranes or onset of premature labour	7	2.4
Urinary tract infection	6	2.1
Degeneration of fibroid	1	.35
No Significant Complications	173	61.7

rean section in most of the cases. There were 7 cases, who had spontaneous premature delivery between 28 to 36 weeks. Seven patients with initial symptoms of threatened abortion ultimately terminated in inevitable abortion (Table VIII).

congenitally defective. The defects observed were suspected microcephaly, pyloric stenosis and congenital megacolon. The mother of the microcephalic baby was frankly diabetic and had two still-births and two abortions before. The

TABLE VIII  
Termination

Types of Termination	Total No. of cases	Groups of cases		
		A	B	C
Normal and Forceps	142 (50.7%)	97 (68.3%)	9 (6.4%)	36 (25.3%)
Elective C.S.	111 (39.6%)	72 (39.3%)	27 (64.3%)	12 (21.9%)
Emergency C.S.	3 (1.07%)	1 (.54%)	2 (4.8%)	Nil
Premature delivery (Including one set of twins)	7 (2.5%)	3 (1.6%)	2 (4.8%)	2 (3.6%)
Inevitable abortion	7 (2.5%)	5 (2.7%)	1 (2.4%)	1 (1.8%)
No record	10 (3.57%)	5 (2.7%)	1 (2.4%)	4 (7.2%)

*Foetal Salvage*

Out of 280 cases, 263 could be followed upto the viable age (7 ended in abortion and 10 were lost for follow up). Of 263, 252 babies (96%) survived while 3 others, though surviving at birth, were

baby had retarded development during the first year of life, but since then has been progressing steadily. One of the other two defective babies died in the neonatal period.

TABLE IX  
*Foetal Salvage*

Foetal outcome	Total No. of cases	Groups of Cases		
		A	B	C
Alive and well	252 (96%)	167 (91.3%)	37 (88.04%)	48 (87.3%)
Still-born	1 (3.5%)	1 (.54%)	Nil	Nil
Neonatal death	7 (24.7%)	3 (1.62%)	2 (4.76%)	2 (3.6%)
Congenital malformations	3 (10.5%)	2* (1.08%)	1* (2.38%)	Nil
	263	173	40	50

Figures marked by asterisk were born alive and one of them in Group 'A' died in the neonatal period.



### Discussion

There are two broad groups of etiological factors for spontaneous abortion *viz.*, general and the local.

A number of factors considered to be 'general' may cause a spontaneous abortion. Endocrinal, chromosomal, immunological and systemic maternal disorders are considered to be important contributory factors. Nesbit *et al* (1961) consider progesterone deficiency as an important cause of first trimester abortion. Various methods have been advocated for estimation of this hormone during pregnancy but each procedure has its limitations. Indirect assessment by vaginal cytology is the simplest of all methods (Nesbit *et al*, 1961; Sinha and Roy, 1970; Purandare *et al*, 1967; Kishore and Agarwal 1957). One hundred and eight cases in the present series were believed to have hormonal deficiency determined by vaginal cytology. All of them were treated prophylactically with Gestanin (Allyloestrinol). This hormone is leutotrophic and in addition causes moderate stimulation of HCG production in early pregnancy. Greenhill (1966) however, does not put much reliance on hormone administration in cases of threatened abortion.

Hertig and Sheldon (1943) have observed embryonic defect in 40-50 per cent cases of spontaneous abortion. Two cases in the present series who had more than two abortions showed such abnormalities on microscopic examination.

Carr (1968) believes that chromosomal anomaly rather than embryonic defect is the underlying cause of spontaneous abortion. This defect is not necessarily related to habitual abortion and according to Carr (1968) majority of abortions due to chromosomal defect are sporadic events. One of the two cases recorded

here had a normal baby subsequently. Some authors (Schmid, 1962; Wingate, 1965) have suggested that habitual abortion can be caused by structural change in the chromosomes of groups D and G. Three patients in the present series delivered congenitally malformed babies and one of them had 5 consecutive abortions. Her previous baby who died in the neonatal period had clinical evidences of 'D' Chromosome anomaly.

Evidences are accumulating which suggest that A B O incompatible blood groups may be responsible for spontaneous abortion (Matsunga and Itoh, 1958; Pande *et al*, 1973; Shah *et al*, 1972). Hirszfield (1945) observed that couples with father of Group 'A' and mother of Group 'O' had higher incidence of abortion and still-birth as compared to couples with 'O' group father and 'A' group mother. Four cases in the present series had incompatible blood group.

Maternal hypothyroidism is an important cause of abortion (Man *et al*, 1958; Roy *et al*, 1974). Two such cases have been recorded in the present study. Unless the patients are kept euthyroid by administration of increasing dosage of Eltroxin (demand increases during pregnancy) spontaneous abortion is likely to follow.

Abortion is not more frequent in diabetes. One of the cases in the present series had hypothyroidism and cervical incompetence in addition to diabetes. Abortion in this case was perhaps due to the associated conditions rather than for diabetes. Ditzel and Duckers (1957) have pointed out that microscopic vascular changes may occur in relations of known diabetes as well as in the very early juvenile diabetes. If this concept is correct then there is no reason to deny



diabetes as a potential cause for spontaneous abortion.

Of the local defects, cervical incompetence in the present series constituted the major factor for spontaneous abortion. There is now a general agreement that the diagnosis of cervical incompetence is based primarily on the previous obstetric history. Clinical and radiological findings are regarded as corroborative evidence. Barter (1964) has postulated that there are two schools of thought on the etiology and treatment of cervical incompetence. The first group believes that incompetence is due to physiologic inability of the cervix to contain the products of conception and a true anatomic defect is not always found. They believe in Shirodkar's operation during pregnancy between 14-18 weeks gestation. The other school headed by Lash, believes that an anatomic defect exists in the cervix secondary to some form of trauma and a surgical correction is best done when the patient is not pregnant.

In the present study, 29 cases (Table V(b)) had no history of delivery at the viable gestational age and in these cases the incompetence must have been congenital. The remaining cases had deliveries of either viable or still-born babies and in them the anatomic defect could be explained by a previous trauma. But, irrespective of etiological factors, Shirodkar's operation was performed in all cases. When such a procedure failed to retain the pregnancy, Lash operation was done subsequently in the non-pregnant state. In 2 cases, Shirodkar operation was performed during pregnancy in addition to Lash operation, because in these cases Lash operation was believed to be inadequate.

Cause effect relationship between abortion and uterine synechia has been well

established (Asherman, 1950; Wood *et al*, 1964). In the present study, 3 such cases were detected (Fig. V); one in each group. Vigorous curettage following abortion may lead to synechia. Intra-uterine bands, thus produced perhaps, do not become accommodative to the expanding contents of the uterus which may lead either to abortion or premature labour.

Even with meticulous care in the pre-conceptional and prenatal period, 75 cases (Table VIII) had symptoms of threatened abortion. With primary advice of absolute rest (in the true sense of the term) supplemented by hormones, most of these cases could be steered through safely till the baby reached viable age. Potter (quoted by Greenhill, 1966) is of different opinion. He believes that pregnancy after threatened abortion will continue irrespective of treatment provided there are no foetal abnormalities. It is difficult to withhold treatment only on this ground because hypoplastic uterus, abnormal shape and position of the uterus and hormonal deficiency are few amongst others which are equally responsible for spontaneous abortion (Pantelagis *et al*, 1973) and they need specific treatment.

#### *Summary and Conclusion*

The outcome of subsequent pregnancy has been estimated in 280 women who had history of one or more previous abortions. The common etiological factors for previous foetal wastage were hormonal deficiency and cervical incompetence. Maternal hypothyroidism and diabetes, uterine synechia, recurrent urinary tract infection due to congenital deformity, foetal congenital malformations and few others were also noted to be responsible for previous unsuccessful pregnancies. Though rare, they are worth recording, because unless these possibilities are kept in mind,



they are liable to be overlooked.

Elective caesarean section was performed on 111 cases (39.6%) mainly on consideration of high risk involved in these pregnancies. Corrected foetal salvage was 90%. Preconceptional screening, prenatal monitoring and above all, patients co-operation were the factors which individually contributed for the remarkable success achieved in this series.

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See Figs. on Art paper I-II