

# DECIDUAL CHANGES IN UTERINE CURETTING IN FIRST TRIMESTER SPONTANEOUS AND INDUCED ABORTION\*

by

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Pathogenesis of abortion continues to be elusive. Epithelium, glands and stroma of endometrium under the influence of progesterone become receptive and undergo further remarkable changes as a result of nidation of fertilised ovum. Necrosis, haemorrhage and leucocytic infiltration are a common feature noted in curettings in abortion. These very changes have been observed also in normal pregnancy. With liberalisation of legal abortion, extent of these changes in decidua in normal pregnancy can be compared with those in spontaneous abortion.

## Material and Methods

In the present study, histopathology of decidua in first trimester was studied in 180 cases of normal pregnancy terminated by suction evacuation and 180 cases of spontaneous abortion. Tissue obtained on curettage after products had been evacuated was fixed in 10% buffered normal saline for 24 hours and processed for paraffin section. Haemotoxylin and eosin

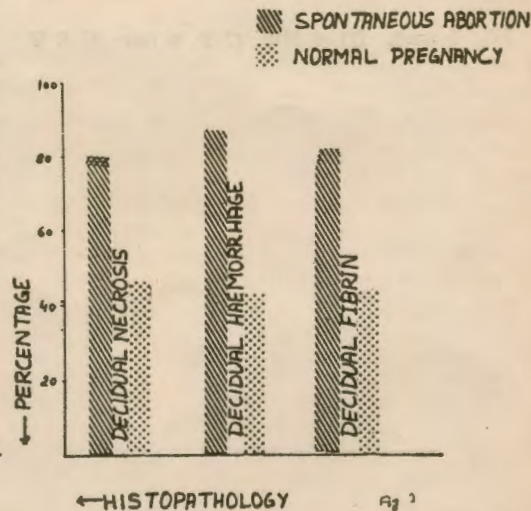
stained slides were studied under low and high power of microscope.

## Observations

In 9 cases of spontaneous abortion only, proliferative endometrium was obtained.

Necrosis in the decidua was seen more frequently in spontaneous abortion than in normal pregnancy, (83.9% and 46.1% respectively) and the difference is statistically highly significant ( $P < 0.01$ ) (Fig. 1 and Table I). Difference in the degree

COMPARISON OF HISTOPATHOLOGICAL CHANGES IN DECIDUA IN SPONTANEOUS ABORTION AND NORMAL PREGNANCY



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TABLE I  
Decidual Changes in First Trimester Abortions

Histological change	Spontaneous abortion (180)		MTP (180)		P value less than
	No.	%age	No.	%age	
1. Decidual necrosis	151	83.9	83	46.1	0.01
2. Decidual haemorrhage	156	86.8	78	43.3	0.01
3. Decidual fibrin	149	82.8	81	45.0	0.01
4. Infiltration predominantly small mononuclear	157	87.2	82	45.6	0.01
5. Infiltration predominantly neutrophilic	141	78.9	74	41.1	0.01

TABLE II  
Combined Decidual Changes in First Trimester

	Spont. Abortion		MTP	
	180	100%	180	100%
Necrosis alone	151	83.9	83	46.1
Necrosis with haemorrhage	140	77.7	62	34.4
Necrosis with leucocytic infiltration	146	81.8	50	27.8

in both groups was also statistically significant (Table III). Frequency of decidual necrosis was observed to decrease with increasing period of gestation but this difference was not statistically significant (Table IV). No change in frequency of necrosis was seen in both groups with varying age and gravidity. Frequency of necrosis increases steadily with increase in duration of symptoms (Table VI).

Haemorrhage in the decidua was seen in 86.8% and 43.3% cases of spontaneous

TABLE III  
Quantitative Comparison of Decidual Changes in First Trimester of Pregnancy and Spontaneous Abortion

Histology	Spontaneous abortion (n 171)		MTP (n 180)	
	No.	%	No.	%
1. Necrosis				
Nil	20	11.7	97	53.9
Two plus	119	69.6	—	—
2. Haemorrhage				
Nil	15	8.8	102	56.7
Two plus	78	45.6	20	11.1
3. Fibrin deposition				
Nil	22	12.8	99	55.0
Two plus	64	37.4	5	2.7
4. Lymphocytic infiltration				
Nil	14	8.2	98	54.4
Two plus	65	38.1	7	3.9
5. Neutrophil infiltration				
Nil	22	16.9	106	58.9
Two plus	67	39.2	15	8.1



TABLE IV  
*Decidual Necrosis in Relation to Period of Gestation*

Period of gestation	Less than 8 week		8-10 week		10-12 week	
	No.	%	No.	%	No.	%
I. Sp. abortion	66	100	55	100	50	100
Necrosis +	61	92.3	46	86.3	44	100
II. MTP cases	118	100	48	100	14	88
Necrosis +	59	50	20	41.7	4	28.6

TABLE V  
*Fibrin Deposition in Decidual in Relation to Period of Gestation*

Period gestation	< 8 weeks		8-10 weeks		10-12 weeks	
	No.	%age	No.	%age	No.	%age
I. Spontaneous abortion	66	100	55	100	50	100
Fibrin deposit +	61	92.3	48	87.3	40	80
II. MTP	118	100	48	100	14	100
Fibrin deposit +	52	44.5	23	47.9	6	42.9

abortion and normal pregnancy respectively. The difference in the 2 groups in frequency and degree was statistically highly significant (Table I and III). No significant change is seen in frequency of decidual haemorrhage in both groups with varying period of gestation, age and gravidity. It was also seen to increase with increasing period of symptoms and was most commonly associated with necrosis (Table VI and II, Fig. 2).

Fibrin deposition in the decidua was significantly higher in spontaneous abor-

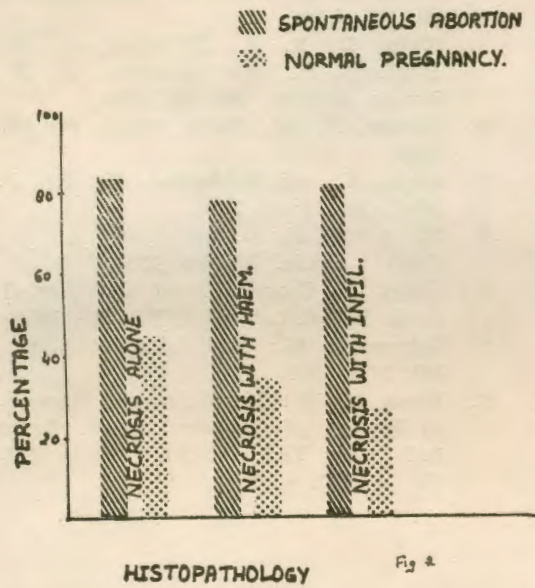
tion than in normal pregnancy in both frequency and degree, percentages being 82.8% and 45.0% respectively (Fig. 1, Table I). In both groups, fibrin deposition was seen to decrease with increasing period of gestation but this difference was not statistically significant. No variation with age and gravidity was seen.

Leucocytic infiltration in the decidua can be small mononuclear tissue infiltration or neutrophilic exudation. Both small mononuclear infiltration as well as neutrophilic exudation were more in degree

TABLE VI  
*Frequency of Decidual Necrosis, Haemorrhage and Leucocytic Infiltration in Relation With Duration of Symptoms in Spontaneous Abortion*

Duration of bleeding in days	Necrosis		Haemorrhage		Small mononuclear infiltration		Neutrophilic exudation		Total number of cases	
	No.	%age	No.	%age	No.	%age	No.	%age	Case%	N
<2	30	62.5	42	87.4	35	72.9	22	45.8	48	100
2.5	63	98.4	61	95.3	62	96.9	60	93.8	64	100
>5	58	98.2	58	98.2	59	100	59	100	59	100

CASES SHOWING DECIDUAL NECROSIS WITH  
HAMORRHAGE AND INFILTRATION IN SPONTANEOUS  
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and extent in spontaneous abortion than in normal pregnancy and this difference was statistically highly significant (Table I and III). No correlation of leucocytic infiltration with period of gestation age or gravidity was seen. Small mononuclear infiltration as well as neutrophilic exudation was most often associated with necrosis and increased steadily with increasing duration of symptoms (Table II and VI).

#### Comments

Decidual necrosis and haemorrhage was considered to be a feature of conceptus in abortions (Hertig, 1949) though later studies indicate that these changes may be observed in minimal degree even in normal pregnancy in first trimester (McComb and Craig, 1964). Present study revealed that these two changes often co-exist, are not specific of abortion,

are often seen even in normal pregnancy, but frequency and extent is more pronounced in spontaneous abortion. McComb and Craig (1964) suggested immunological basis for decidual necrosis and haemorrhage observed in normal pregnancy. Kistner, 1959, found necrosis in pseudopregnancy where progesterone administration was deficient. Osborn, 1968, also considers progesterone deficiency to be the basic cause of decidual necrosis. Decrease in frequency of decidual necrosis with increase in period of gestation from 8-10 weeks to 10-12 week was observed in both normal pregnancy as well as spontaneous abortion, but it was not found to be statistically significant. In abortion cases, frequency and extent of decidual necrosis and haemorrhage increased with the duration of symptoms of abortion prior to curettage. Fibrin deposition in decidua was seen in normal pregnancy, it was significantly more frequent and extensive in spontaneous abortion cases, same has been noted by many workers previously (Kirby *et al*, 1964; Wynn, 1968). In advanced pregnancy, increased deposition of fibrin has been noted in toxæmia and diabetes (Fox, 1969).

It does appear that leucocytic infiltration as a reaction to necrosis is a physiological event in decidua in normal pregnancy. It may be mononuclear or neutrophilic. It may be caused by hormonal changes or as part of immune reaction. Liban and Salyberger (1976) considered it as aseptic inflammatory reaction set up by dead fetal tissue. Two plus mononuclear infiltration and neutrophil exudation is found only in spontaneous abortion cases. Leucocytic infiltration is related to duration of symptoms prior to curettage. It is also associated with decidual necrosis,



in pregnancies terminated by intrauterine saline.

### Summary

Necrosis and haemorrhage in decidua is observed to be frequent and extensive in spontaneous abortion. Fibrin deposition and leucocytic infiltration is minimal and infrequent in normal pregnancy. It increases with increasing duration of bleeding prior to abortion.

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