

RETINAL HAEMORRHAGES IN THE NEWBORNKedar Nemivant¹, Abha Bhalerao²**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: **AIM:** To study incidence of retinal haemorrhages in newborn. **MATERIALS AND METHODS-** The record of mother was done as age, parity, obstetric history, past medical history, drug intake history. The babies were examined with birth weight, mode of delivery, weight, maturity. **RESULT:-** The greater incidence of retinal haemorrhages were noted in preterm and post term babies as compared to normal babies.

INTRODUCTION: Retinal haemorrhages in the newborn are a fairly common occurrence with estimates of their frequency ranging from 2.6% reported by Chace et al (1950) to 50% of all births as reported by Vancea (1941).

The credit for first recording and illustrating retinal haemorrhages in the newborn goes to Von Jaeger (1861). Subsequently several observers have studied its incidence and its correlation with various factors to arrive at a probable mechanism of causation.

Thus, a spate of studies has sought to ascribe it to a capillary fragility, the Rh factor, lack of substances of retinal haemorrhages in newborns and to assess the importance of various factors like parity, mode of delivery, duration of labour etc. in their causation.

AIMS AND OBJECTIVES:

1. To study the incidence of retinal haemorrhage in the newborns born.
2. To correlate the incidence of retinal haemorrhage with maternal factors such as parity, drug intake, anaemia, toxemia, blood group, systemic disease etc. The mode of delivery and duration of labour and focal factors such as Aoxia, weight of baby, maturity etc.

Historical Background: Jaeger in 1861, is generally credited, as the first clinician to report retinal haemorrhages in the newborn, shortly after the introduction of the direct ophthalmoscope.

Frequency of Occurrence: Systemic studies of the eye grounds on large numbers of newborn infants leave no doubt concerning the frequency of retinal haemorrhages. Estimates of the frequency of their occurrence vary from 2.6% (Chace et al, 1950),¹ to 50% (Vancea 1941),² of all births.

There has been no apparent increase in skill in observation or decline in frequency with change in obstetric technique or perinatal care. The following studies show frequency of retinal haemorrhages Falls and Jarrow (1946)³=32.4%, Cook and Glasscock (1951)⁴=4.8%, Giles (1960)⁵=40%, Kauffman's,⁶ study was remarkable in that it extended over a period of twenty-five years, 1931 to 1956, in which he observed a varying incidence of retinal haemorrhages ranging from 14.1 to 25.2% with an average of 18.2% in different years. Baum and Bulpitt,⁷ in their study found thirty-three infants out of two hundred and thirty examined had retinal haemorrhages which was bilateral in twenty cases. In the thirteen unilateral cases the haemorrhages were smaller and less extensive.

Time of Examination after Birth: Comparison between different series is quite unreliable, but comparisons made within a particular series may be highly significant. This is particularly relevant when considering the varying incidence of retinal haemorrhage with time of examination after birth. Jacobs (1924),⁸ found that of twenty-two cases examined within six hours after birth four showed retinal haemorrhages, while of thirty-four examined between six and twelve hours seven showed haemorrhages, of fifty-five examined between twelve and eighteen hours seven showed haemorrhages, while of forty-six examined between eighteen and twenty-four hours only one showed retinal haemorrhage.

Parity: Richman (1936),⁹ found an incidence of 17.5% in first borns as compared with 9.2% in subsequent deliveries. Most authors noted the incidence of retinal haemorrhages in children of primiparous mothers to be twice as high as those in multiparas – McKeown (1941),¹⁰ 51.6% against 26%, Gonzalez (1947) 33.3% against 19.3%, Jain and Gupta 1965),¹¹ 36.6% against 22.7% and Sezen (1970),¹² 19.9% as against 11.3%.

Duration of Labour: Richman (1936),⁹ found an overall incidence of retinal haemorrhages in 12.2% while in case delivered by forceps the incidence was 20.6%. Schenker and Gombos (1966),¹³ noted the following relationship between retinal haemorrhages and the mode of delivery-0% with caesarean, 8.3% with breech extraction. While Sezen (1970),¹² noted the greatest number of retinal haemorrhages after vacuum extraction 40.3%, while those for caesarean were 0.8% and for spontaneous deliveries only 14.2%. Besio et al (1979),¹⁴ Retinal haemorrhages occurred in 38% of spontaneous births, 25% of 36 forceps deliveries and 2.6% of 38 Caesarean.

Mother's Age: Sezen (1970) 15 mpted tjat 20/6% of mothers of affected children were over 30 years of age while in the corresponding control group, there were only 10.9%.

Birth Weight: Sicherer and Stumpff as also Jiler found most cases of retinal haemorrhages in lighter children, while Edgerton (1934)⁵ found a greater frequency in heavier children. Critchley (1968)¹⁷ found a higher incidence among larger birth weight babies than among smaller birth-weight babies. This he attributed to his ability to examine larger birth-weight babies more thoroughly as he found it difficult to examine the smaller babies.

Sex of Child: Stumpff contended that a greater frequency of retinal haemorrhages would be found in males because their cephalic measurements were more. Edgerton (1934),¹⁵ in his series of 238 males and 220 females found a slightly higher frequency in males. McKeown (1941),¹⁰ found the incidence among boys was slightly higher than in girls – 47.9% as against 37.1%, Chace et al (1950),¹ as well as Baum and Bulpitt (1970),⁷ noted no significant difference for sex of child. Critchley (1968)¹⁶ noted a marked difference with male to female ratio being 21:8.

Prematurity: Chace et al (1950),¹ noted a general incidence of retinal haemorrhages in 2.5%, while among prematures this was 4.5%. Kauffman (1958),¹⁷ found no difference, while Sezen (1970)¹⁵ mpted that 24/6% of premature infants showed retinal haemorrhage while his overall figure was 18.9%.

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Causal Factors: The prenatal period of an infant life is often a strenuous one from the moment that labour begins. In normal labour of a primipara the dilatation of the parts is accomplished by the uterine forces acting through the foetus whose head serves as a battering ram to force the passage.

In turn the head is greatly compressed and suffers a moulding of the bones in its passage through the parturient canal. A multigravida with a roomy pelvis and relaxed tissues offers little resistance to the passage of the foetus. With deformed pelvis or where an instrumental delivery is necessary the pressure is greater and is perhaps maintained longer and the danger is correspondingly increased.

No doubt trauma is one cause of the greatest number of cases of retinal haemorrhages. It can be looked for in all cases of forceps delivery, breech presentation and difficult and long labours especially in primiparas.

A contracted pelvis may play a contributory role. While Jacobs (1924),⁸ found an incidence of 10% of newborn infants with retinal haemorrhages were delivered through contracted pelvises, Eades (1929)¹⁷ reported an incidence of 20%. Koengstein (1881)¹⁸ theory of active hyperaemisation of the eye with the first cry now seems obsolete. Thomson and Buchanan (1903)¹⁹ assumed an aetiological importance of an increased fetal blood pressure due to interference with cord or placental circulation during intrauterine life.

Types of Retinal Haemorrhages: Coburn (1904),²⁰ found haemorrhages mainly in the equatorial region and upto the ora serrate, the posterior part particularly the macular region presenting much fewer extravasations. In one case the blood had penetrated the vitreous. Detachment of the retina in the papillo-macular fold was generally observed and where other detachments were noted they were usually linear following the course of the vessels.

Jacobs (1924)⁴ found haemorrhages arranged radially around the disc in eight of his nineteen cases, which were striate in character. Larger haemorrhages of circular form and deeper ones of irregular contour were also noted.

Richman (1936),⁹ stated that the haemorrhages were of three main types:

1. Bright red, flame shaped extravasations in the nerve fibre layer, commonest and were most rapidly absorbed.
2. Dull red, diffusely round haemorrhages lying in the deeper layers of the retina, and were more slowly absorbed.
3. Very dark red and well circumscribed with a tiny reflex at the summit, these pre-retinal collections of blood were the longest lasting.

MATERIAL AND METHODS: The present study includes the fundus examination of fifty newborns carried out. This included newborn infants delivered by all types of deliveries i.e., spontaneous, abnormal presentations, with and without assisted procedures such as forceps delivery and also delivery by caesarean section.

The babies that were examined was divided into two board groups (i) High risk group (ii) Normal group. The high risk group included all babies in whom there was an increased likelihood of retinal haemorrhages being present. The factors given weightage depended on the observations of previous workers like babies born to primigravidas assisted deliveries and birth trauma, premature

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and asphyxiated babies etc. The normal group included all babies in whom a correspondingly lower incidence of retinal haemorrhages was expected.

A record of the mother and the baby was maintained in the following manner:

Mother:

1. Age and parity of mother.
2. Regular antenatal check-up or not. The term regular antenatal check-up was taken to denote one in which the initial examination included a thorough general and systemic examination with a determination of the blood group (including the Rhesus factor) and the serological tests to exclude syphilis. Subsequent checks done at two to four weekly intervals including recording of weight gain blood pressure, abdominal examination to determine the 'lie' of the foetus as also the growth, an estimation of the haemoglobin concentration and a routine examination of the urine.
3. Complaints during pregnancy.
4. Obstetric history including history of abortions, perinatal deaths, assisted or difficult labour and weights of previous children at time of birth.
5. A past medical history of any systemic disease like hypertension, diabetes, syphilis, pre-eclamptic toxemia or tuberculosis.
6. A history of any drug intake during pregnancy.
7. General and systemic examination of the mother.

Baby: All the babies were examined within 4 to 12 hours of birth.

1. Birth history including sex, weight, gestational age and head circumference.
2. The mode of delivery i. e. spontaneous, episiotomy given or not, or assisted viz forceps, or a caesarean section and indication for the same. The presentation and the duration of labor (second stage) and whether a cord was present around the neck or not.
3. Apgar scoring was done immediately after birth as follows:

Sign	0	2	2
Heart rate	Absent	Slow (below 100)	Over 100
Respiratory effort	Absent	Slow Irregular	Good
Muscle tone	Flaccid	Some flexion of extremities	Action motion
Reflex irritability	No response	Cry	Vigorous cry
Colour	Blue, pale	Body pink, extremities blue	Completed pink

4. Examination of child to note whether moulding was normal or excessive and whether a cephal haematoma was present or not. In addition, the baby was examined by a paediatrician to exclude any congenital anomalies.
5. Ocular examination.

Total immobilisation of the newborn was done in the recumbent position after draping the lower body in a sheet with the hands trucked inside the sheet. The newborn infants were examined at the earliest after delivery. The eyelids were separated gently with index finger and thumb, care being taken not to press over the orbit. The use of any type of retractor was found unnecessary as the fundus was adequately visible and no sedative was used all through the examination.

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Direct ophthalmology was done with the Helne specialist ophthalmoscope. Phenylephrine (Drosyn) 5 percent was used as a mydriatic to dilate the pupil one drop in each eye one hour before the examination. The mydriasis obtained in this manner was found to be uniformly effective and no side effects were noted.

Examination of the anterior segment of the eye for subconjunctival haemorrhage, hyphaema of Haab striae was done with a powerful torch light. The findings of the anterior segment were verified with the +20 diopter lens incorporated in the Keeler ophthalmoscope.

All infants who were found having retinal haemorrhage were examined at 24 hours intervals till the haemorrhage disappeared. The pattern of clearing was noted. Cases where no haemorrhage could be detected were not re-examined.

Grade 1:	Subependymal haemorrhage with no inferior or lateral extension of blood beyond the most lateral border of ventricle.
Grade 2:	Downward extension basal nuclei on at least one side or involvement of caudate to genu of ventricle posteriorly on parasagittal scan.
Grade 3:	Large haemorrhage with any degree of extension laterally or superiorly into cerebral parenchyma.

OBSERVATIONS: In this study fifty newborn infants were examined. Out of 50 newborns, 19(6) newborn infants were found to have retinal haemorrhage giving an overall incidence of 12.01 percent. In the normal group incidence of retinal haemorrhage was 12.2 in the high risk group an incidence of 14.27 percent. A definite increase in incidence of retinal haemorrhage in the high risk group was thus noted.

The retinal haemorrhages found in these newborns were divided into four groups:

Splinter Haemorrhages: These haemorrhages were small, linear dull red and were found at or near the optic disc margins running parallel to the vessels. These haemorrhages showed a rapid clearing disappearing within two days. This type of haemorrhage was found in only one case giving an incidence of 10.52 percent of cases of retinal haemorrhage.

Flame Shaped Haemorrhages: This type of haemorrhage was found near the posterior pole mostly in the area between the macula and the optic disc. They were bright red in colour and showed a flame shaped configuration with striated or serrated margins, generally extending along the blood vessels. They were found to disappear within four days' time. They were by far the commonest types of haemorrhage forming 72.67 percent of cases with retinal haemorrhage.

Dot and Blot type of Haemorrhage: This was also a fairly uncommon type of haemorrhage Dense darker and more deeply placed with a circular configuration occurring in the region of the posterior pole not near the blood vessels. These haemorrhages were found in only one case, incidence 10.52 percent. They showed a clearing within four to six days.

Most of the retinal haemorrhages were found in the posterior part of the fundus in the region of the optic disc and seldom around the macula. However, by the method of examination employed in this study it was not possible to examine the region of the retina anterior to the equator.

In no case was a choroidal haemorrhage or a hyphema found.

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Influence of Age of Mother: The mothers whose infants were examined were distributed over a spectrum of ages at time of delivery ranging from 18 years to 32 years. They were divided into three groups with a class interval of 5 years and the incidence of retinal haemorrhages in infants born to mothers in each group was compared (Table I).

Age groups of members	Total numbers	Total cases with Retinal Haemorrhages	Incidence
18 – 22 years	14	2	14.2%
23 – 27 years	26	3	12.2%
28 – 32 years	10	1	10.8%

Table 1

The first figure in each case represents 'Normal' group while the second represents 'High risk' group.

The incidence was found to significantly higher in the younger age group.

Relationship with Parity: The mothers were divided into four broad groups:

(1) Primiparas, (2) Para 2, (3) Para 3, (4) Para 4 and above and the incidence of retinal haemorrhages in infants born to mothers in the various groups was compared (Table 2).

Parity of Mothers	Total numbers	Total cases with retinal haemorrhages	Incidence
Primipara	16	2	25%
Para 2	18	2	21.1%
Para 3	9	1	8.2%
Para 4	7	1	7.1%

Table 2

The first figure in each case represents 'Normal group while the second represents 'High risk' group.

There was a significantly higher incidence among primipara and also among the second paras. The incidence was negligible in para 3 and grand multiparas.

Correlation with Duration of Labor: The duration of labor related only to the second stage of labor as it afforded a more definitely identifiable period based on the findings of the examining gynaecologist/midwife rather than on the first stage of labor, which is an ill identified period relying partly on the statement of the patient (i. e. time of onset of labor pains).The patients were divided into four groups –(1) 15 to 30 minutes, (2) 30 to 45 minutes, (3) 45 to 60 minutes and (4) more than 1 hour.

Duration and labor (in hrs)	Total number	Total Cases with Retinal Haemorrhages	Incidence
¼ - ½ hr.	13	1	7.6%
½ - ¾ hr.	11	1	9.9%
¾ - 1 hr.	14	2	14.2%
> 1 hour	12	2	16.6%

Table 3

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Same convention as followed in earlier tables.

It is observed that the longer the duration of the second stage of labor the greater the frequency of retinal haemorrhages.

Correlation with Delivery Technique: The subjects were divided into 4 groups: (1) Normal delivery, (2) Normal with episiotomy, (3) Forceps delivery and (4) Caesarean section. (Table 4).

Mode of delivery	Total number	Total cases with retinal haemorrhages	Incidence
Normal	11	1	9.99%
Normal with episiotomy	9	1	13.11%
Forceps	14	4	28.5%
Caesareansection	16	0	0

Table 4

Same convention as followed in earlier tables.

The incidence in normal delivery without an episiotomy was found to be slightly higher than in normal with episiotomy. The incidence of retinal haemorrhages was found to be significantly higher in cases delivered by forceps, there being no significant difference in incidence between these two mode of delivery. The incidence in cases of caesarean section with found to be zero despite the majority of these cases being undertaken as an emergency measure.

Correlation with Gestational Age: To study the correlation of retinal haemorrhage with the gestational age of the infants, they were divided into the following groups: (1) 36–38 weeks, (2) 38–40 weeks, (3) 40–42 weeks. Since the class boundaries (i. e. upper limit of one group and lower limit of the next group) coincided with each other, the lower limit was respected for purpose of inclusion in a particular group (Table 5).

Gestational Age in Weeks	Total number	Total Cases with Retinal Haemorrhages	Incidence
36 – 38 weeks	8	1	12. 25%
38 – 40 weeks	12	1	7. 3%
40 – 42 weeks	31	4	13. 33%

Table 5

Same convention followed as in earlier tables.

It is observed that in pre-term infants the incidence of retinal haemorrhages is significantly higher. The incidence in post-term infants also shows a higher percentage than in term infants.

Correlation with sex of Baby: The relative incidence of retinal haemorrhages in male and female babies was studied.

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Sex of child	Total number	Total cases with retinal haemorrhages	Incidence
Male	28	4	14.2%
Female	22	2	9.01%

Table 6

Same convention followed as in earlier tables.

Correlation with Birth Weight: The infants were divided into three groups: (1) 2 to 2.5 kg., (2) 2.5 to 3 kg., (3) More than 3 kg. The class boundaries being common the upper limit was respected for the purpose of inclusion within a group.

Birth weight in Kgs	Total number	Total cases with retinal haemorrhages	Incidence
2 – 2.5 kg	10	1	11.2%
2.5 – 3 kg	14	2	12.2%
> 3 kg	26	3	14.2%

Table 7

A significantly higher incidence of retinal haemorrhages was observed in the higher birth weight groups.

DISCUSSION: An examination of the fundus of fifty newborn infants was carried out with a view to identify possible risk factors in the causation of retinal haemorrhage in the newborn.

The overall incidence of retinal haemorrhages in this study was 12.67 percent. This was in keeping with the frequency as observed by Konigstein (1881) 10%, Jacobs (1924) 12.1%, Richman (1937) 12.2% and Baum and Bulpitt (1970) 15.5%. However, it was much higher than the figures obtained by Chance et al (1950) 2.6% and Glasscock (1951) 4.8% and significantly lower than the figures obtained by Vancea (1941) 50% and Giles (1960) 40%.

The incidence of retinal haemorrhages in the 'high risk' group at 14.67% was only marginally higher than that found in the 'Normal' group at 10.67%. The 'high risk' group was composed of mothers who were primiparas, Rh negative or with pregnancy induced hypertension and babies born by assisted deliveries, premature, with asphyxia. Frequently more than one of these variables was present in a single patient making it difficult to interpret how much weightage should be given to each individual factor.

In no case was a choroidal haemorrhage or a hyphaema found nor was a haemorrhage into the vitreous detected. This was in keeping with the findings of Naumhoff (1890), Wintersteiner (1899), Coburn (1904) and Jacobs (1924) who seldom or never obtained the above findings in their series. In the rare case where it was detected it was a grave prognostic indicator.

The haemorrhages were bilateral in 9 cases (47.9%) and present in the right eye only in 6 cases and in the left eye only in 4 cases with an incidence of 31.58% and 21.05%, respectively. In accordance with the findings of Baum and Bulpitt, when retinal haemorrhages were unilateral they were fewer, less widely spread and tended to clear up earlier.

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The normal fundus of the newborn showed a retinal background hue that was much paler than normal which may have partly been caused by the orbicularis spasm when prising the eyelids open. The retinal haemorrhages stood out prominently against this pale background. The optic disc was seen as a bluish grey colour and the macula was a deeper red than the rest of the fundus with no foveal reflex being visualised.

The haemorrhages found were mainly located at the posterior pole, to the findings of Coburn (1904) who found them mainly in the equatorial region, the classification of the four types of haemorrhages was the same as adopted by Baum and Bulpitt (1970) and if splinter haemorrhages are excluded as a group it is identical with the classification of Richman (1936) and McKeown (1941). The fourth group of subhyaloid haemorrhages as described by Kauffman (1958) was not found in the present study. The relative frequency of these haemorrhages, their rate and mode of clearance was also the same as described by those workers. All the haemorrhages in the present series were found to have cleared up completely without any residual effect by the eight day.

Juler's (1926) contention that the most common distribution of blood is in thinnish sheets in the nerve fibre layer which being of a similar colour as the choroid may escape notice, was not borne out in the present study where only a single case of lake or geographical haemorrhage was seen. This was despite the facts that Beum and Bulpit (1970) stated that these types of haemorrhages were more clearly recognisable in infants of Asian or Negroid extraction where they showed up clearly against the pigmented choroid.

The higher incidence of retinal haemorrhages found in infants born to younger mothers is probably due to the greater frequency of primiparas in these age groups. However, McKeown (1941) found no difference in the incidence of retinal haemorrhages with the age of the mother. This may be attributed to the differing social customs in communities regarding early marriage and early childbirth, which is the norm in India.

This is in keeping with the findings of Richman (1936), McKeown (1941), Jain and Gupta (1965) and Sezen (1970) who noted the incidence of retinal haemorrhage in children born to primiparas to be twice as high as those in multiparas.

Giles (1960) had suggested that in poorly controlled and precipitous delivery of the head the pressure gradient is high and the chances of retinal haemorrhage developing is high. However, in his study as in that of Richman (1936) the length of labor did not show any correlation with the incidence of retinal haemorrhage. In the present study, it is observed that the longer the duration of labor the greater the frequency of retinal haemorrhage. This corroborates well with the findings of McKeown (1941) who found a greater frequency of retinal haemorrhage the longer the duration of labor. This in spite of the fact that McKeown's study related to the 1st stage of labor.

In the present study the incidence of retinal haemorrhage in normal delivery at 12.0% was higher than in normal deliveries where an episiotomy had been employed, 7.69%. There are no corresponding figure available for the same in the literature as they were both designated under one group as spontaneous deliveries. There was a significant increase in the incidence of retinal haemorrhages where vaccum or forceps had been used (36.36% and 33.33% respectively) with no significant difference between the groups. This correlated well with the findings of Richman (1936), Schenker and Gombos (1966), Sezen (1970) and Besio et al (1979). The negligible incidence of retinal haemorrhages in infants delivered by Caesarean section noted by these workers was also borne out by the present study inspite of the fact that in the majority of cases (13 out of 16) it was undertaken as an emergency measure.

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No significant difference in the incidence of retinal haemorrhages was noted with regard to the sex of the baby, the incidence in males at 12.04% being marginally higher than in females at 11.94%. Surprisingly, the incidence of retinal haemorrhages in babies with a smaller head circumference was greater than those with weight where heavier babies showed a greater frequency of found a greater frequency of haemorrhages in males because of their greater cephalic measurements and the same result was highlighted by Critchley (1968) who obtained a marked difference, the male-female ratio being 21:8. However, the findings were in keeping with the results obtained by Edgerton (1934), McKeown (1941) and Baum and Bulpitt (1970) who noted no difference in the incidence with regard to sex of the baby. As regards birth weight, the greater frequency in larger birth weight babies was in conformity with the findings of Edgerton (1934) and Critchley (1968).

Davis (1926) expressed the view that in the majority of labor the left side of the face is directed towards the sacral promontory and pressure is likely to develop in this region, thereby giving an increased frequency of retinal haemorrhages in the left eye. Juler (1926), however, did not find any significant increase in the haemorrhages in a particular eye depending on the position of the presenting vertex. In the present study all haemorrhages were found in the vertex presentation with anterior positions of occiput, non-being found in the posterior positions, nor were any found in Breech and face presentations. There was no significant difference in the relative position of the presenting part.

A greater frequency of retinal haemorrhages in pre-term and post-term babies was noted as compared to term babies. Earlier studies by Chance et al (1950) showed a slightly increased incidence in prematures, while Kauffman (1958) had found no difference and Sezen (1970) had noted a significant increase in incidence.

In conclusion it may be said that a general consideration of retinal haemorrhage in the newborn emphasizes the fact that the condition is often a complex disease syndrome and that it is due not to any simple cause but to many causes which may be found in the circumstances governing labor.

SUMMARY: A study of fundus examination of fifty newborns is presented.

The causes were studied with a view to find out the incidence of retinal haemorrhages in newborn infants and to study the probable cause of the haemorrhages.

All infants were examined ophthalmoscopically within a short time of delivery after dilatation of the pupil with phenylephrine 5 percent.

The incidence of retinal haemorrhage in these newborn infants was found to be 12.67%. The difference in incidence of haemorrhages in 'Normal' and 'High risk' groups was only marginal.

In all cases the haemorrhages disappeared completely within eight days without leaving any trace.

The incidence of retinal haemorrhages was found higher in infants born to younger mothers, in primiparas, in delivery by forceps and with longer duration of labor.

No significant effect was noted based on the sex of baby, with asphyxia or with maternal hypertension.

No correlation could be established between the existence of retinal haemorrhages and intracranial haemorrhages.

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CONCLUSION: Fundii of newborn infants delivered by various methods were studied and the incidence of retinal haemorrhages was observed as 12.57%. The factors affecting retinal haemorrhage that were studied were age of mother, parity, duration of labor, delivery technique, presentation, gestational age, sex and weight of infant. The correlation between retinal and intracranial haemorrhage was also studied.

A significant correlation was found between age, parity, duration of labor, delivery by forceps and the incidence of retinal haemorrhages.

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APPENDIX 'A':

Sex of Child:		Birth weight	
Gestational age:		Hear circumference:	
Particulars of Mother:			
Name		Age:	
Parity:			
Regular antenatal check up/not:			
Complaints during pregnancy:			
Past medical History:			
Past obstetrical history:			
H/o Drug intake during pregenancy:			
General examination:			
Systemic examination:			
Bp		Hb%	Urine RE
Blood group		S. T. S.	
1. Type of delivery			
a) Normal episiotomy given/not given			
b) Assisted – forceps Indication.			
c) Caesarean Indication.			
2. Presentation and position.			
3. Duration of labor.			
4. Apgar score at birth.			
5. Moulding: Normal/Excessive.			
6. Cephalhaematoma.			
7. Eyes Hyphaema			
Proforma Adopted in Present Study			

Fundus examination at birth and subsequently.

ORIGINAL ARTICLE

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