



## RESEARCH ARTICLE

### INCIDENCE OF RETINOPATHY OF PREMATURETY AMONG PRE-TERM BABIES IN CIVIL HOSPITAL AHMEDABAD

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#### ABSTRACT

**Background:** An important cause of avoidable childhood blindness is retinopathy of prematurity (ROP) in developing countries. The aim of this study is to determine the incidence of ROP among pre-term babies in Civil Hospital (tertiary care hospital) Ahmedabad.

**Method:** All pre-term babies (<37weeks) admitted to the neonatal unit of the Civil Hospital, Ahmedabad in year 2017 were enrolled into the study. Ophthalmologic examinations were started at 6 weeks after birth. All the examinations were performed by a single experienced ophthalmologist.

**Result:** The incidence of ROP was higher with lower gestational age (GA) and lower birth weight (BW). Birth weight <1500 gm and gestational age <32 weeks were the main risk factors for ROP.

**Conclusion:** The incidence of ROP of any stage in Civil Hospital, Ahmedabad was determined to be 11.3% among pre term babies enrolled in this study.

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## INTRODUCTION

Retinopathy of prematurity (ROP) affects vasculature of premature infant's eyes. This disease can occur in mild and aggressive forms. No visual sequelae are seen in the mild form, while aggressive type is associated with neovascularisation and leads to retinal detachment and blindness. The prevalence of ROP has increased because of decreased mortality of preterm infants. Retinopathy of Prematurity was reported in India over a decade ago. Available data for blindness vary between 2.3% to 3.35% in premature children. With low birth weight & low gestational age as primary factors governing development of ROP, children with birth weight less than 1500gm have been found to have 20% to 50% risk of developing ROP. In our country clinical diagnosis is very late because of unawareness amongst ophthalmologists as well as neonatologists. An early and prompt management offers increased success rate. Treatments generally advocated being are Cryo applications, laser photocoagulation and surgical interventions (vitrectomy and scleral buckling). The present study reports the incidence of ROP among all pre- term babies admitted to Civil Hospital, Ahmedabad in year 2017.

## MATERIALS AND METHODOLOGY

This was a prospective study, after taking informed consent from their parents, all pre-term babies (<37weeks) admitted to the neonatal unit of the Civil Hospital, Ahmedabad from Jan.2017 to Dec.2017 were enrolled into the study. The study population included 115 pre-term babies. Approval was obtained from institutional ethics committee for study. Efforts were made to remain true to guidelines of Declaration of Helsinki Principles. The ophthalmologic examination commenced at 6 weeks after birth and/or at time of discharge from the neonatal unit whichever was earlier. The purpose of the initial examination at time of discharge was to detect and enroll the babies with ROP. In cases where the retina was not fully vascularised, ophthalmologic examination was repeated every 2 weeks until full vascularisation occur. If ROP was present, weekly examinations were carried out. The end-stage for ophthalmologic examination was complete vascularisation of retina or fully regression of ROP (spontaneous or with treatment). A number of drugs can be used for pupillary dilatation including Tropicamide, Phenylephrine, and Cyclopentolate eye drops. We used the combination of Tropicamide 1.0% and Phenylephrine 2.5% eye drops, used thrice at 15-minute intervals. Tropicamide is preferred because of its lack of systemic side effects, where as GIT & central nervous system disturbances are common with Cyclopentolate.

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**Table 1. Stages of ROP by birth weight**

Birth weight	Total	Non ROP	ROP	Stage I	Stage II	Stage III	Stage V
<1500 g	63(54.79%)	50(79.37%)	13(20.63%)	4(6.35%)	3(4.76%)	2(3.17%)	4(6.35%)
>1500 g	52(45.21%)	52(100%)	0(0%)	0	0	0	0
Total babies	115	102	13	4	3	2	4

**Table 2. Stages of ROP by Gestational Age (GA)**

GA	Total	Non ROP	ROP	Stage I	Stage II	Stage III	Stage V
<28 wks	9(7.83%)	5(55.56%)	4(44.44%)	1(11.11%)	0	0	3(33.33%)
28-32 wks	66(57.39%)	57(86.36%)	9(13.64%)	3 (4.55%)	3(4.55%)	2(3.03%)	1(1.52%)
>32 wks	40(34.78%)	40 (100%)	0(0%)				
Total babies	115	102	13	4	3	2	4

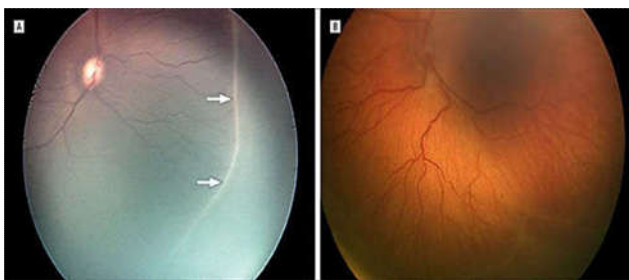
A single Ophthalmologist performed all examinations. Retinal vascular changes were recorded in accordance with the international classification of ROP.

## RESULTS

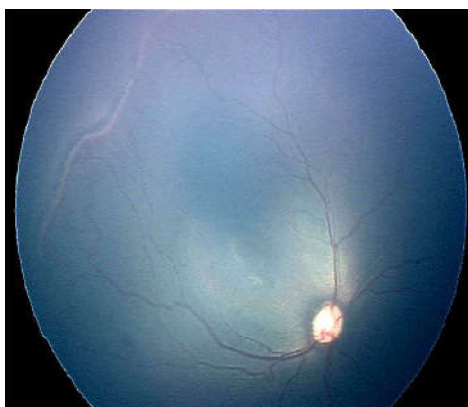
The incidence of ROP in the pre-term babies was analyzed according to GA, BW and the severity of ROP. The incidence of ROP was higher with lower GA and lower BW. ROP at any stage was detected in 13 of 115 babies. This leads to an incidence of 11.3%. Among the 13 babies, 4 babies (30.77%) had Stage 1 ROP, 3 babies (23.08%) had Stage 2 ROP, 2 babies (15.38%) had Stage 3 ROP, and 4 babies (30.77%) had Stage 5 ROP. None of the patients developed Stage 4 ROP. The mean birth weight was 1217 gm amongst the babies positive for ROP. Among the infants with a BW <1500 gm, of ROP (any stage) was 20.63% (13/63). The incidence of ROP was 44.44% (4/9) in babies <28 weeks of GA, 13.64% (9/66) from 28 to 32 weeks of GA and 0% in those >32 weeks. Among the babies <28 weeks of GA at birth, the incidence of ROP at stage V was 33.33% (3/9) as in Table 2.

### Stages of Retinopathy of prematurity

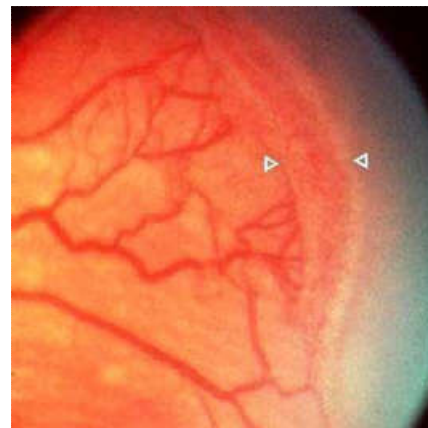
#### Stage1-Demarcation line



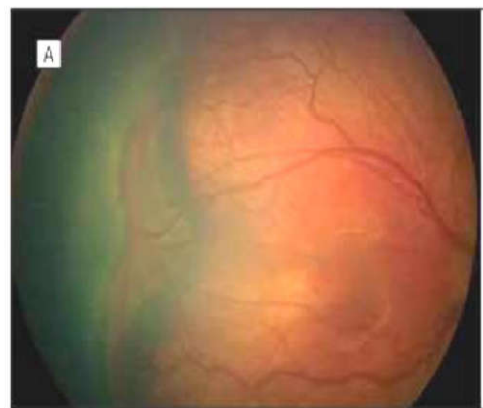
#### Stage 2 –Ridge formation



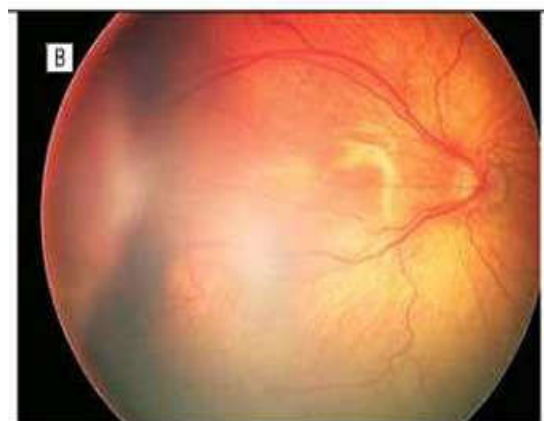
#### Stage 3-Extra retinal fibrovascular proliferation



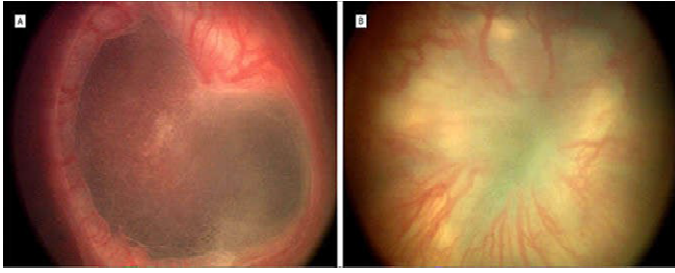
#### Stage 4a-partial retinal detachment (macula spared)



#### Stage 4b-Partial retinal detachment (macula involved)



### Stage 5 –Total Retinal detachment



## DISCUSSION

The incidence of ROP is on the increase due to improved survival of low- birth weight babies. Screening of low birth weight babies is essential to detect ROP. Palmer has recommended screening examination at 7 to 9 weeks of age post partum. The American academy of pediatrics has recommended the same between 7 and 8 weeks post partum. In the Multicentre Trial CRYO-ROP study infants were first examined between 4 and 6 weeks after birth. In a study conducted at PGIMER Chandigarh by Charan and Dogra initial examination was done at 6 weeks after birth and/ or at discharge. The mean age at which ROP was detected was 7 weeks after birth. Individual preferred methods exists regarding to medication for pupillary dilatation and use of speculum or scleral depressor. No standard recommendation exists. We dilated these infants included in our study with Tropicacyl (0.8%) and phenylephrine (2.5%) eye drops. Proparaciane 0.5% eye drops was used as an anesthetic agent. We used 20Diopter convex lens with infant wire speculum and scleral indenter for detailed peripheral retina examination. So far the largest multicentre study of Cryo therapy for ROP conducted between Jan 1982 to Nov 1987 in US screened 4099 babies, 15% of the babies were <1250 gm in this study and 65.8% eyes of the participant infants developed ROP in this natural history study. ETROP (Early treatment for ROP trial) screened 7000 babies up to 1250 gm for 2 year period found similar results. The incidence of ROP in western population has been reported to vary between 21 to 65.8%. Indian studies

conducted by Azad R *et al* found that infants with birth weight less than 1500gms have almost 20-50% chances of developing any stage of ROP. Another study by Charan and Dogra *et al* screened 165 babies with a birth weight less than 1700 gms found an incidence of 47.27%.

## Conclusion

The incidence of ROP (any stage) in pre-term babies (<37weeks) admitted to the neonatal unit of the Civil Hospital, Ahmedabad in year 2017 was 11.3% (13 out of 115 babies)

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