

«BASHKIR STATE MEDICAL UNIVERSITY»  
MINISTRY OF HEALTH OF THE RUSSIAN FEDERATION

Stages of

# ***Diabetic*** retinopathy

Students Scientific  
Society of  
the Department of  
Ophthalmology

**Zelenina A.V.**

student of the 6th course of 606 a group

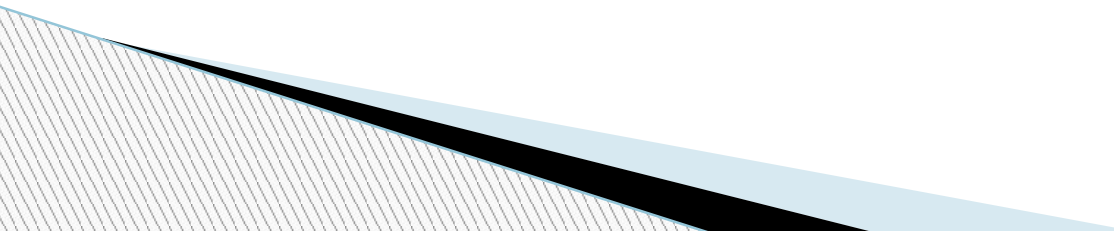


# Diabetic retinopathy



**Diabetic retinopathy — one of the heaviest complications of diabetes, the manifestation of diabetic microangiopathy striking vessels of a retina of an eyeball**

# Stages of Diabetic Retinopathy

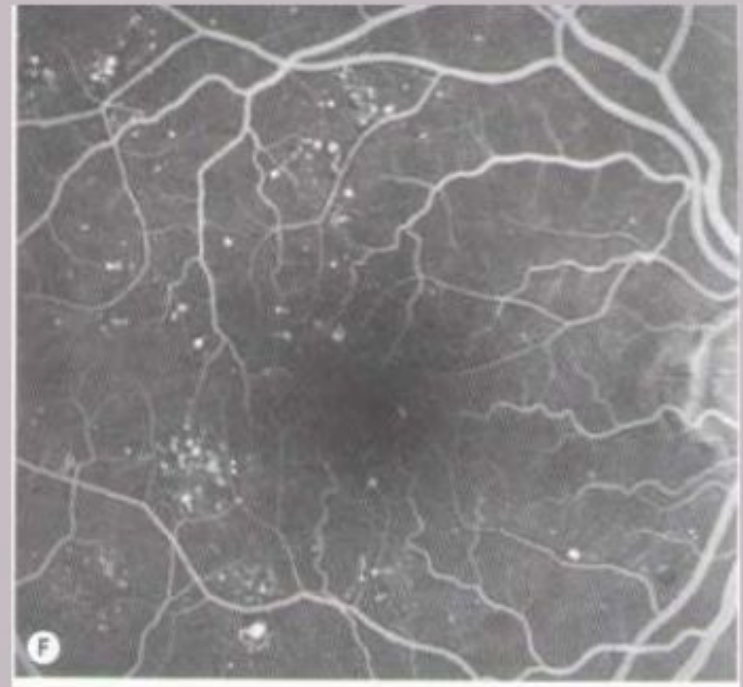
- **Nonproliferative stage**
  - **Preproliferative stage**
  - **Proliferative stage**
- 

# Nonproliferative stage

- microaneurysms;
- hemorrhages;
- macular edema;
- exudates.

# Nonproliferative stage

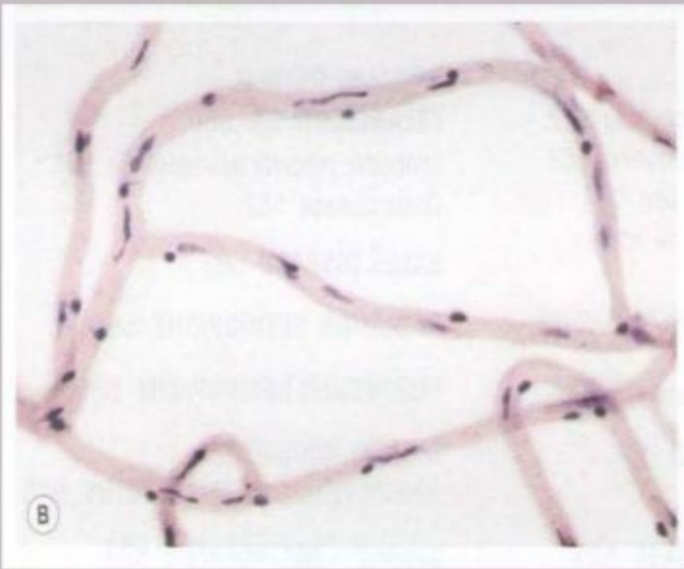




## **MICRO ANEURYSMS**



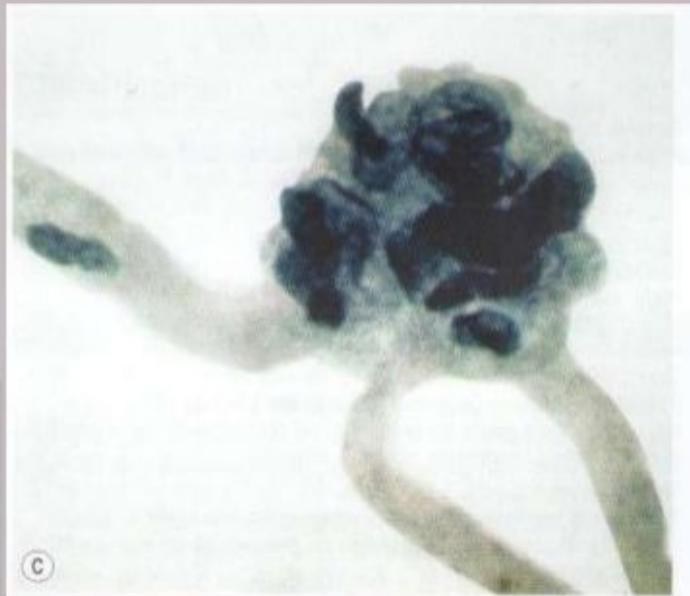




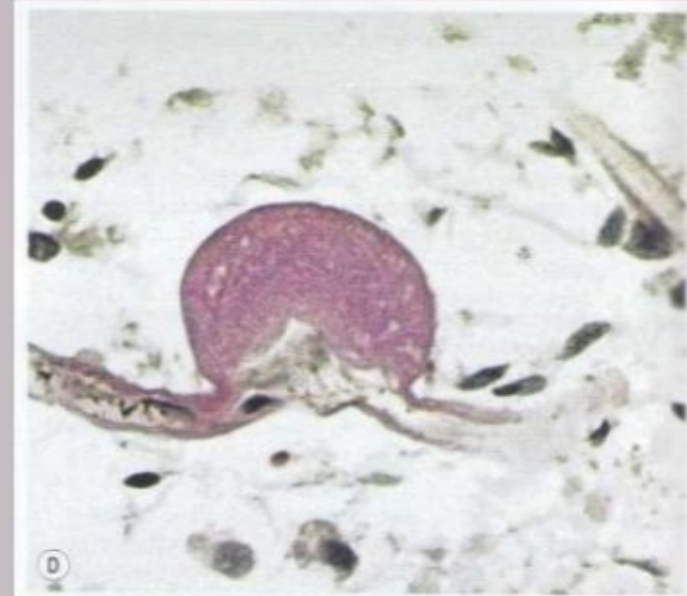
**NORMAL CAPILLARIES**



**PERICYTE LOSS**



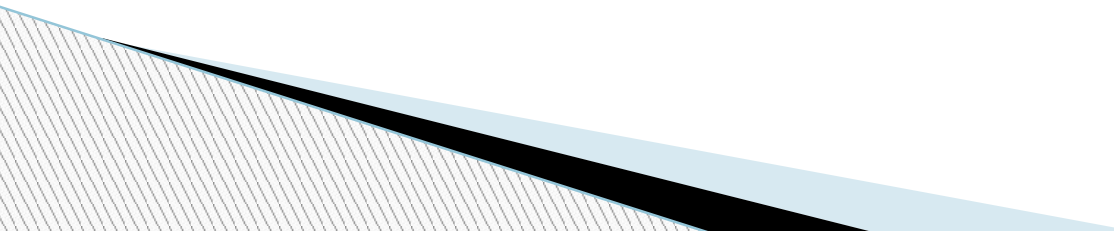
**MICRO ANEURYSM**



**THROMBOSED  
MICRO ANEURYSM**

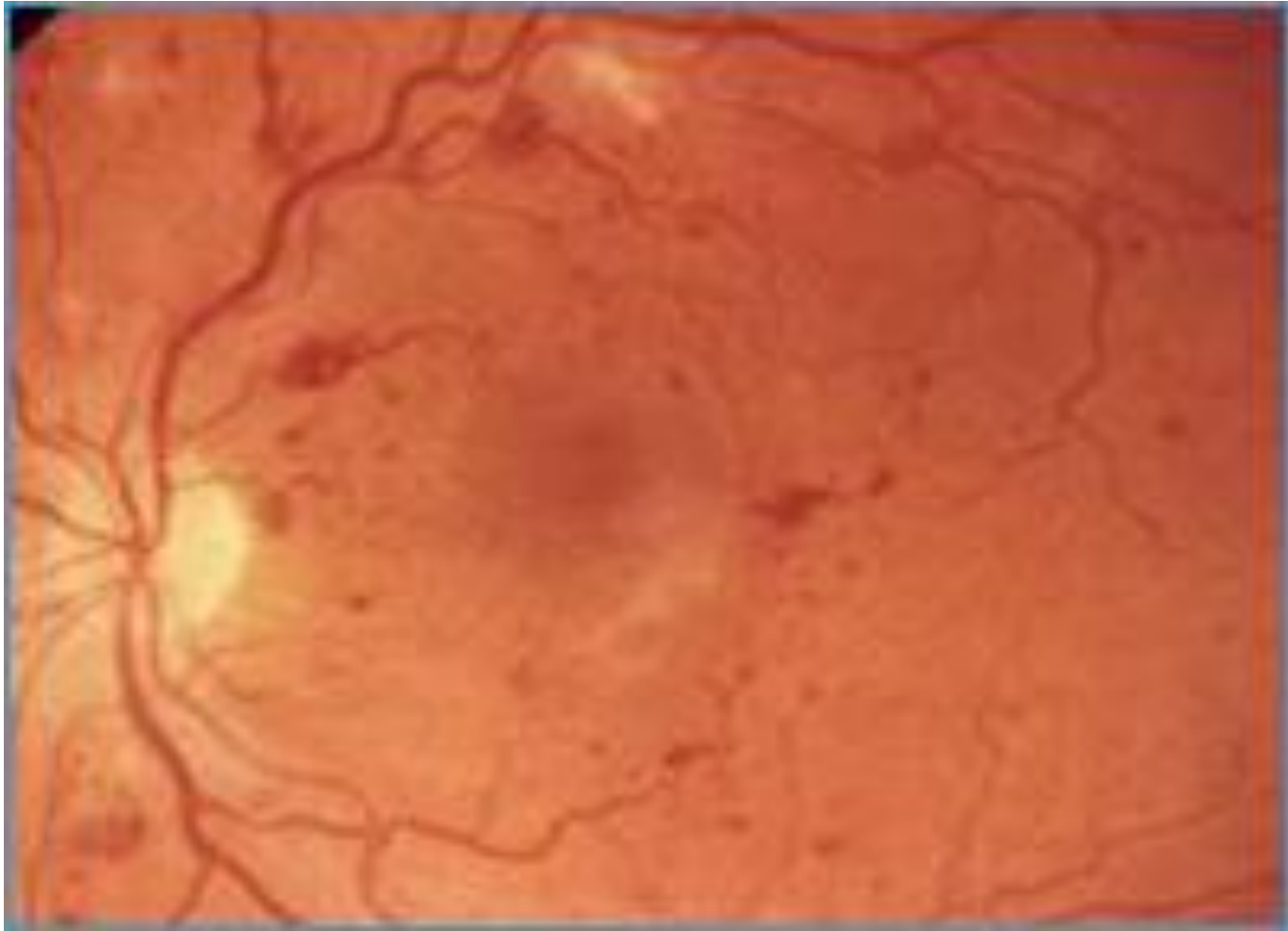


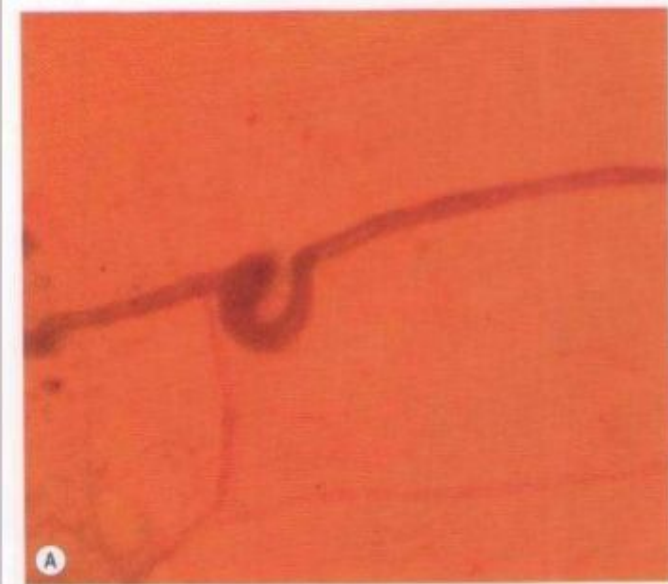
# Preproliferative stage

- venous changes (venous loops, venous segmentation, venous beading);
  - large amount of hard exudates;
  - large amount of hemorrhages;
  - ischemic zones of a retina.
- 

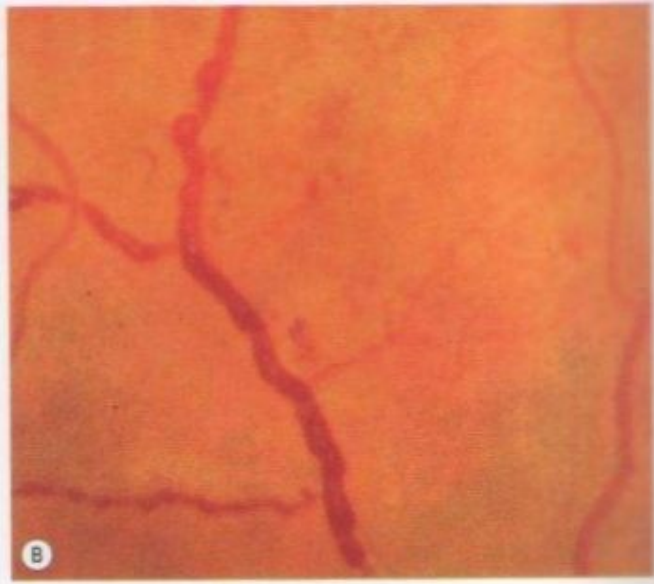


# Preproliferative stage

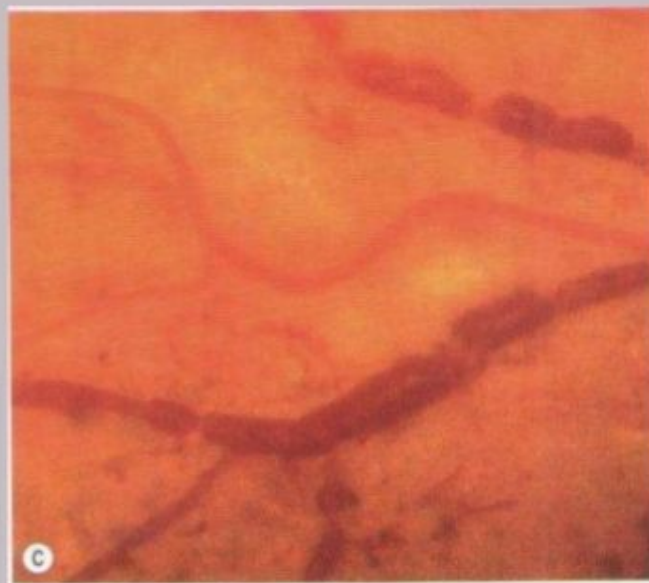




**Venous Loop**



**Venous Beading**



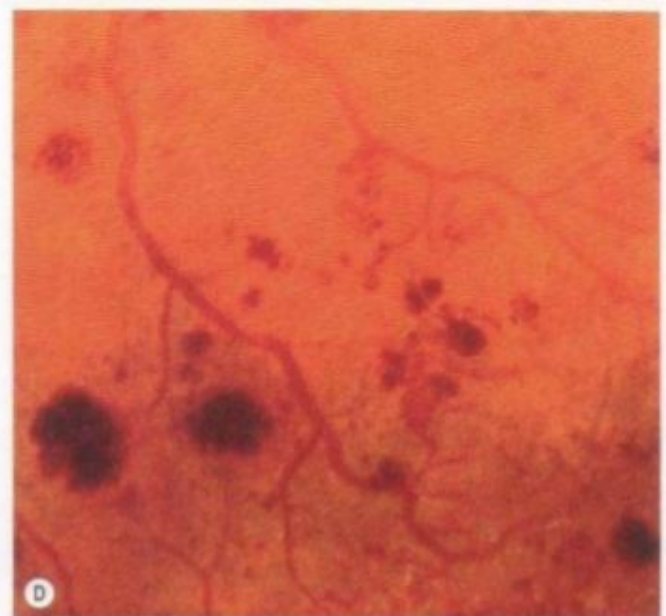
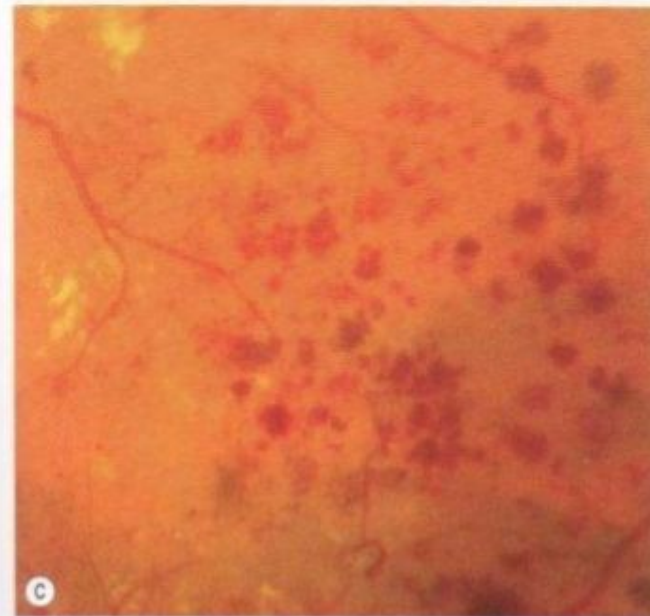
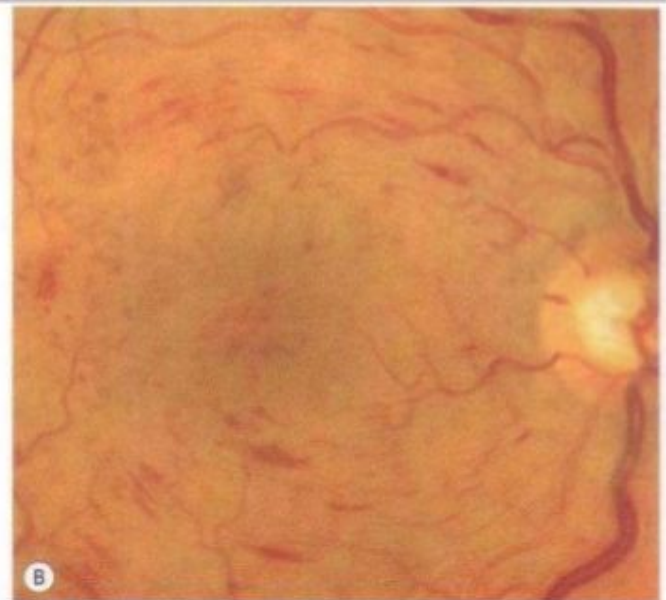
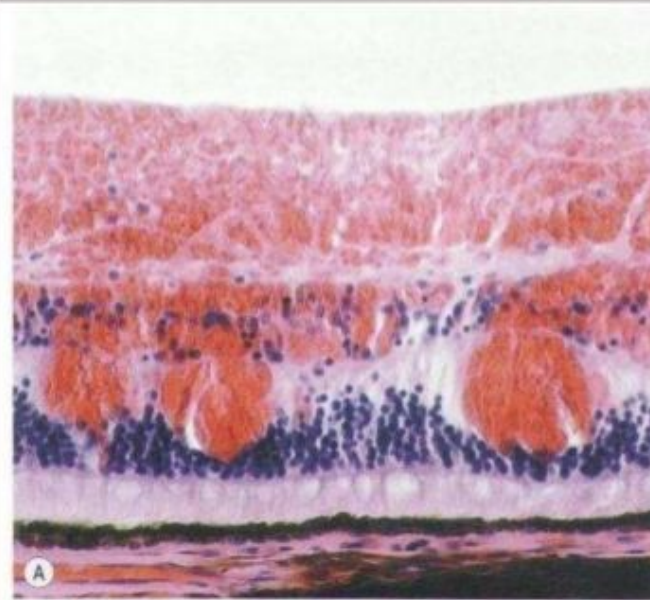
**Venous Segmentation**



**Retinal arteriole obliteration**



# INTRARETINAL HEMORRHAGES

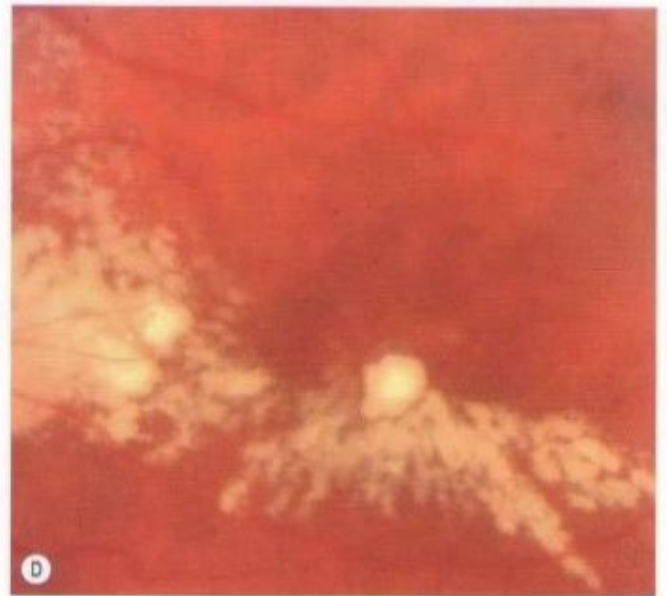
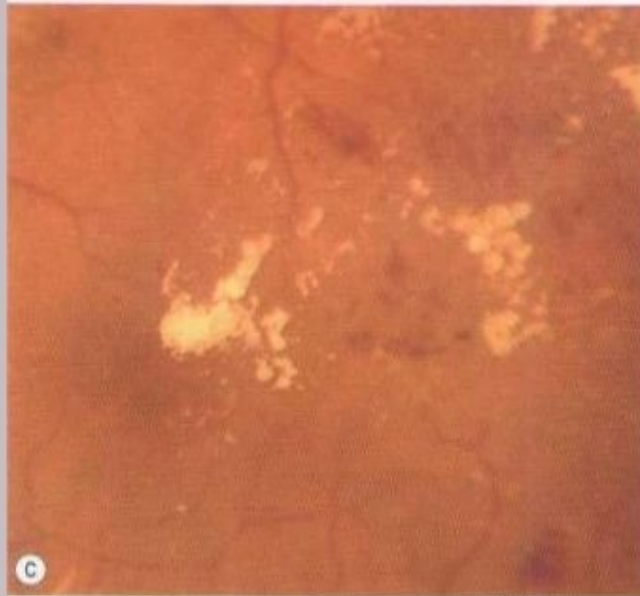
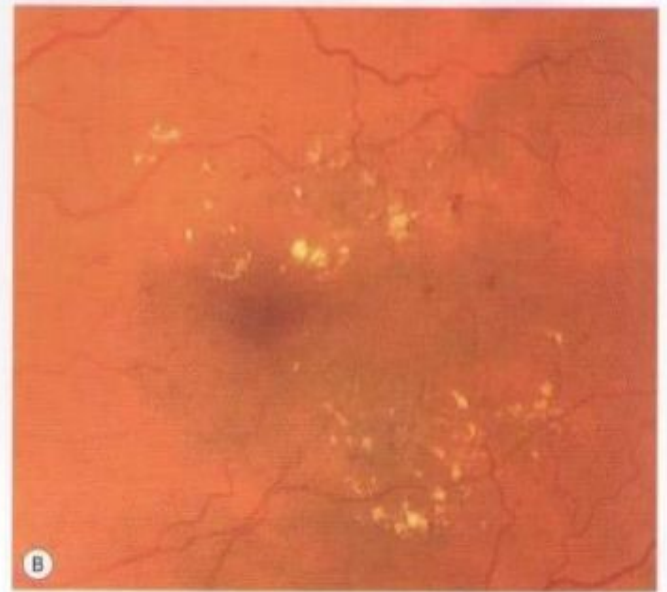
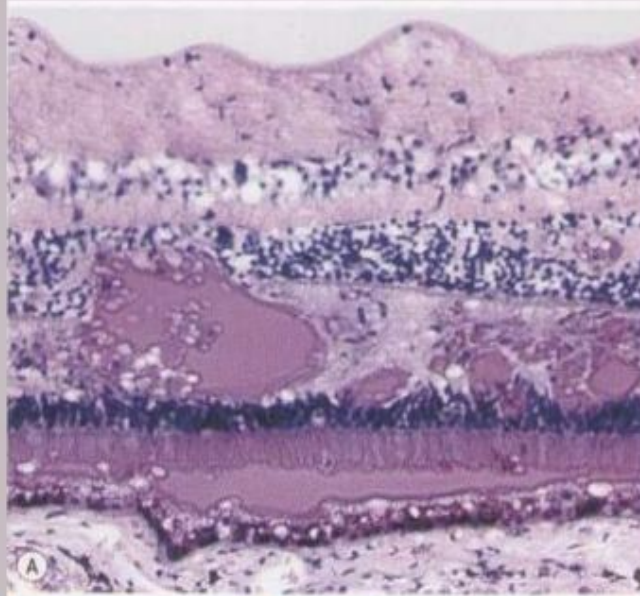


**Fig. 13.5** Retinal haemorrhages. (A) Histology shows blood lying diffusely in the retinal nerve fibre and ganglion cell layers and as globules in the outer layers; (B) retinal nerve fibre layer haemorrhages; (C) deep dot and blot haemorrhages; (D) deep dark haemorrhages

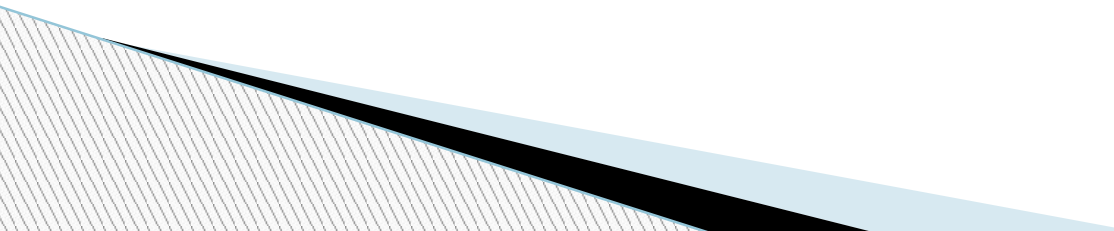




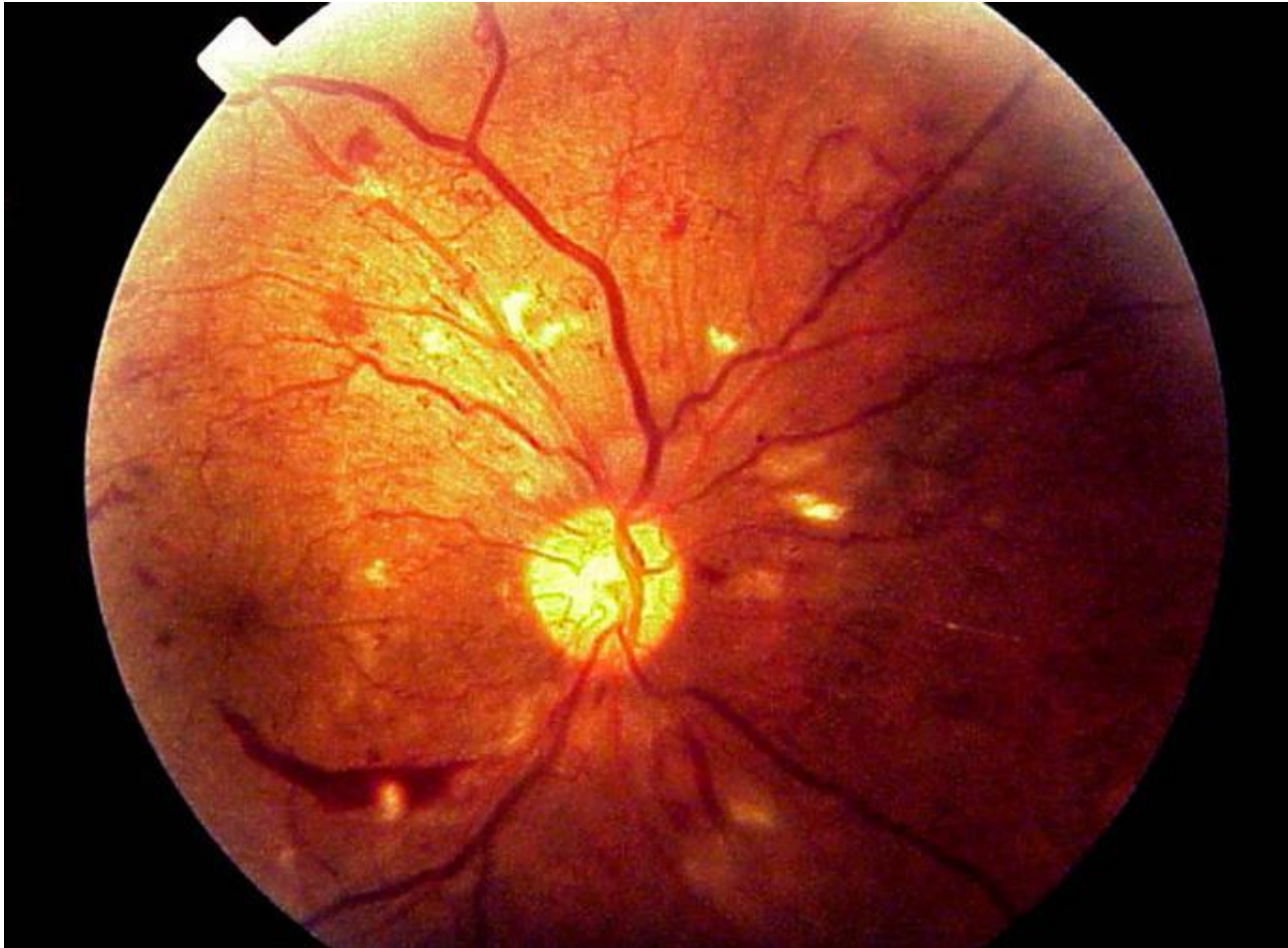
# EXUDATES (HARD)



# Proliferative stage

- hemorrhages in a vitreous;
  - neovascularization;
  - neovascular glaucoma;
  - retinal detachment.
- 

# Proliferative stage





# PROLIFERATIVE DR

NEO  
VASCULARIZATION  
: DISC

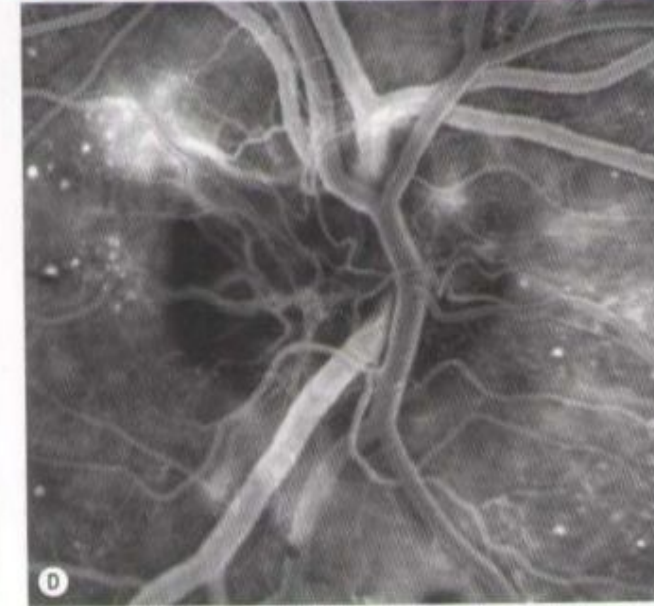
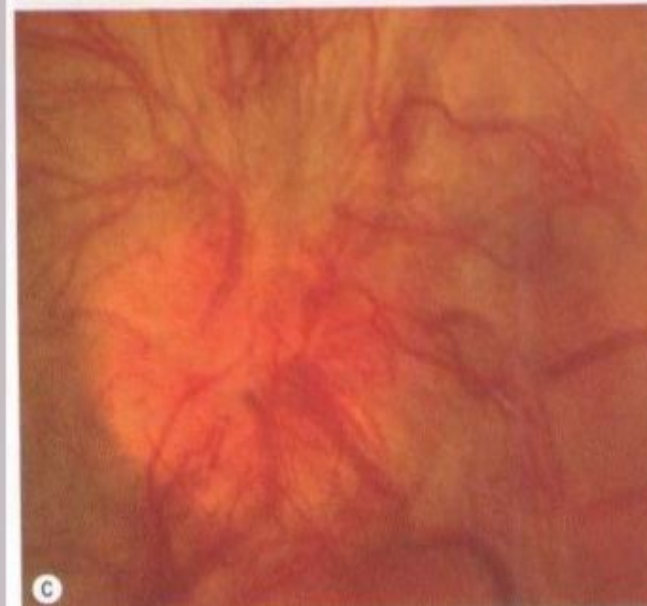
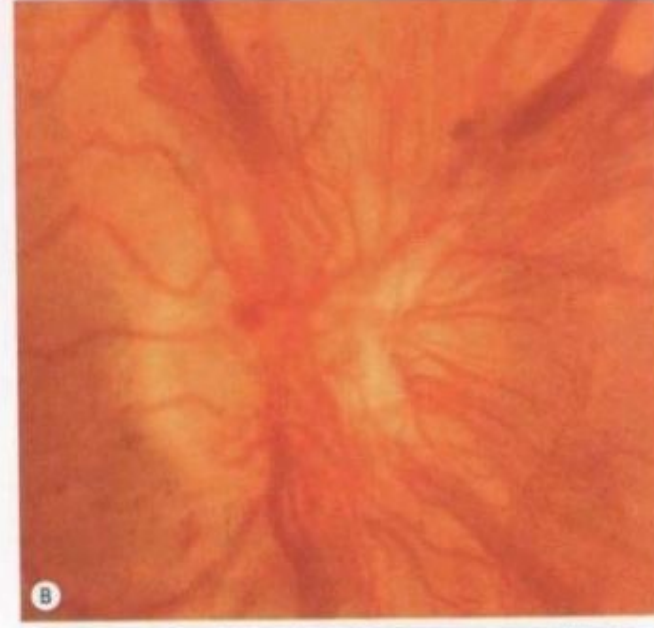


Fig. 13.16 Disc new vessels. (A) Mild; (B) severe; (C) very severe; (D) FA early phase highlights the vessels



**Thank you for your  
attention**

**Zelenina A.V.  
yyyyeee@mail.ru**