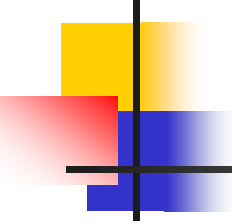


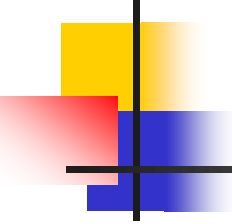
OFTALMİK ULTRASONOGRAFİ

DR. ŞENGÜL ÖZDEK



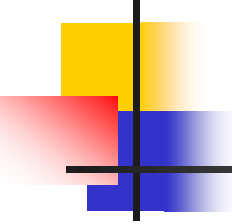
Tarihçe

- 1956: Mundt ve Hughes (A-scan)
- 1972: N. Bronson (B-scan)
- Ossoinig: Standard A-B mod USG



Endikasyonlar

- Ortam opasiteleri
- İntraoküler tm
- Enflamatuar lezyonlar
- Biyometri:
 - IOL
 - Konjenital glokom
 - Mikroftalmi
 - Nanoftalmus
 - FB
 - Myopi

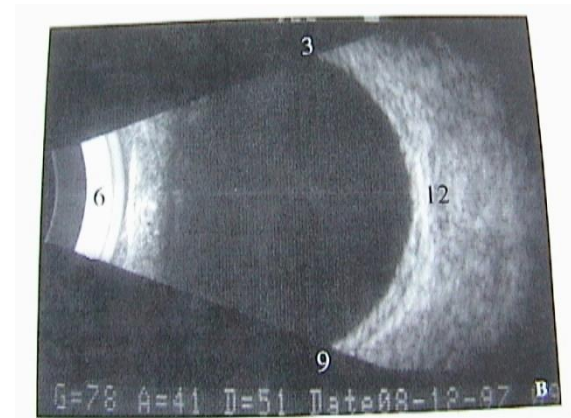
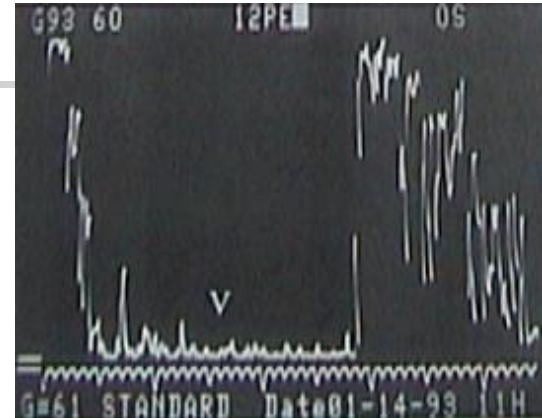


USG FİZİĞİ

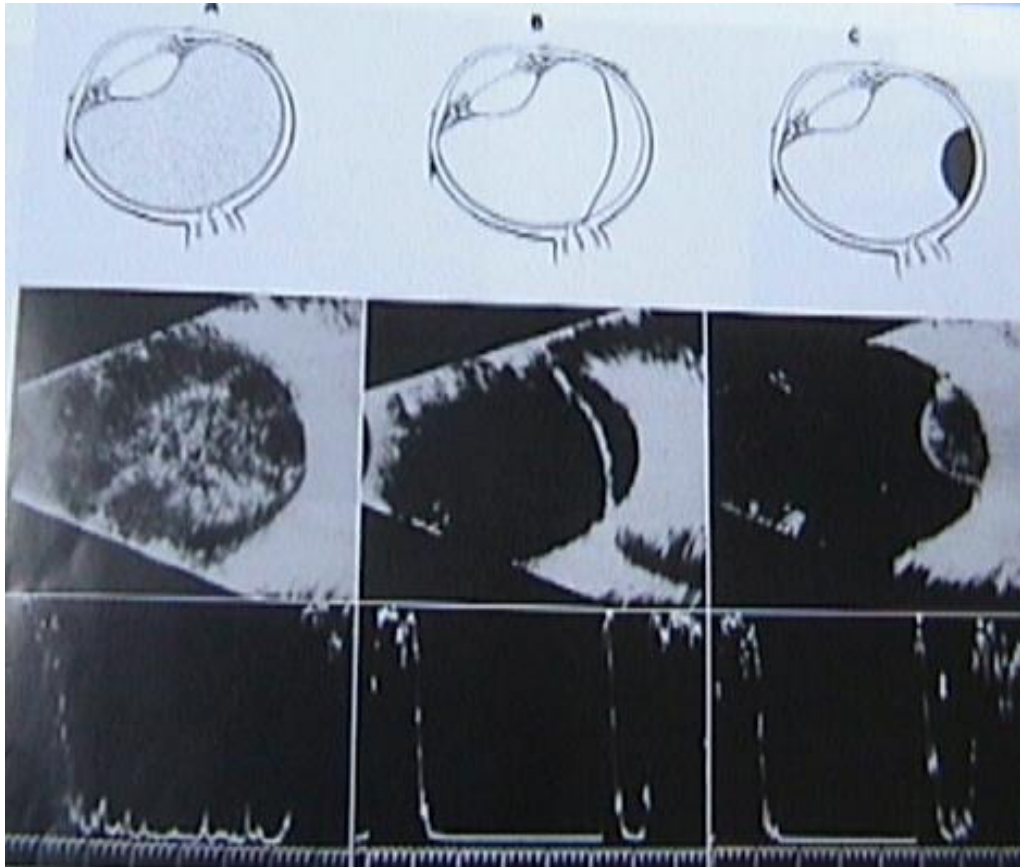
- USG dalgalarının frekansı >20 kHz (20.000 dalga/dak)
- Ses dalgaları dokulardan geçerken bir bölümü geri yansır: eko
- Oftalmik USG: 8-10MHz ($\lambda \downarrow$, yüksek resolüsyon)
- Obstetrik USG: 1-5MHz ($\lambda \uparrow$, derin doku penetrasyonu)

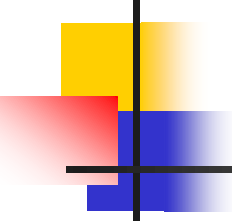
Oftalmik USG

- A-Scan: tek boyutlu
 - Eko: Vertikal spike (Amplitüd)
- B-scan: İki boyutlu (dokudan bir dilim)
 - Eko: nokta (parlaklık-Brightness)



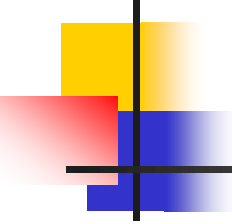
Anormal eko: 3 temel neden





Arka Segmentin değerlendirilmesi

- Temel tarama
 - A-mod
 - 8 saat kadranında limbustan fornikse
 - B mod (topografik USG)



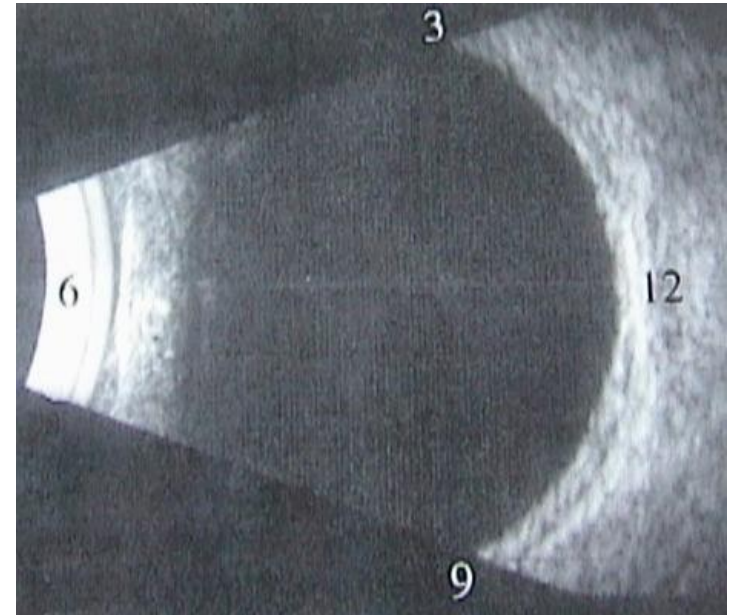
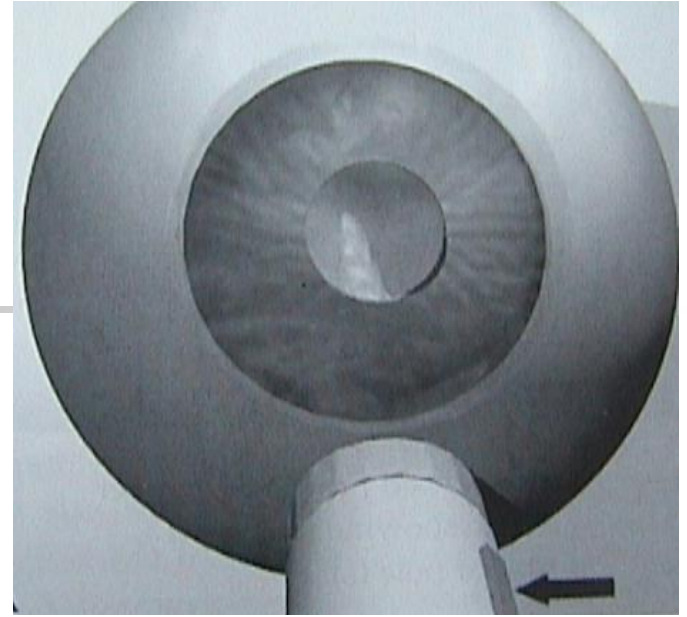
B-mod tarama

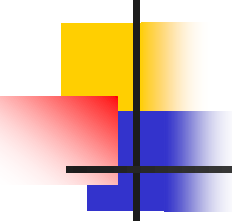
Üç temel prob yerleşimi ve tarama

- Transverse
- Longitudinal
- Aksiyel

B-mod

- Prob üzerindeki işaretin olduğu bölge ekranın superiorunda görünür.



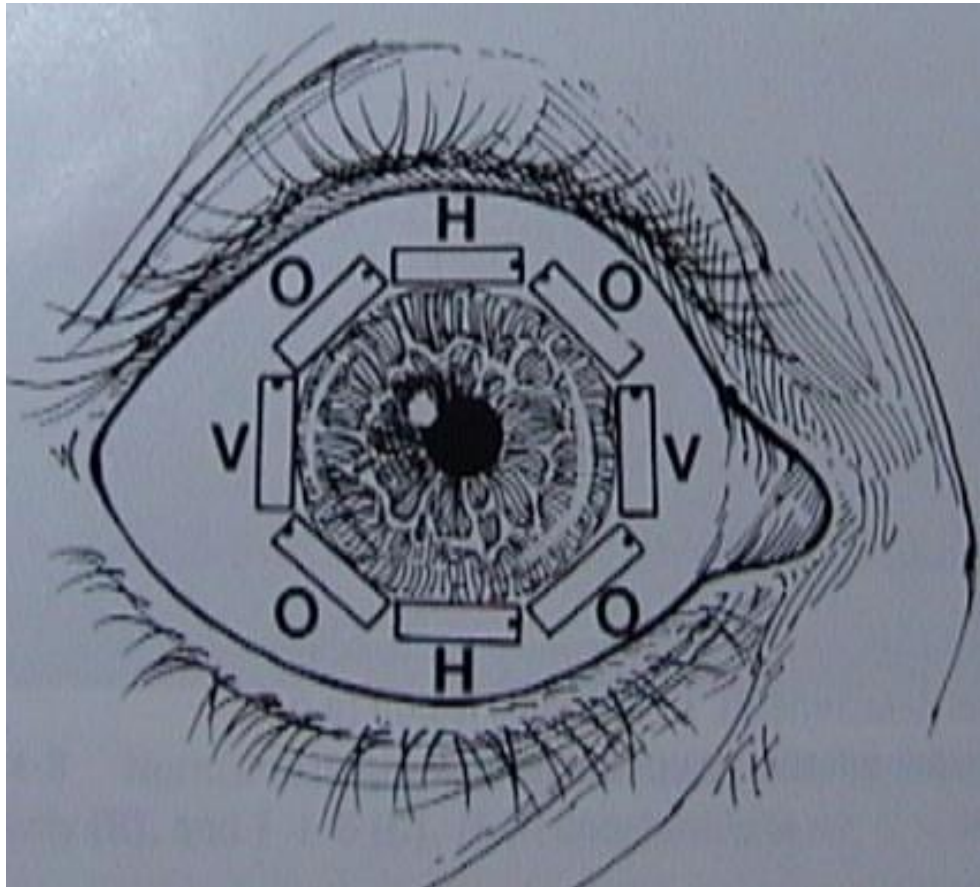


Prob yerleşimi-Tarama

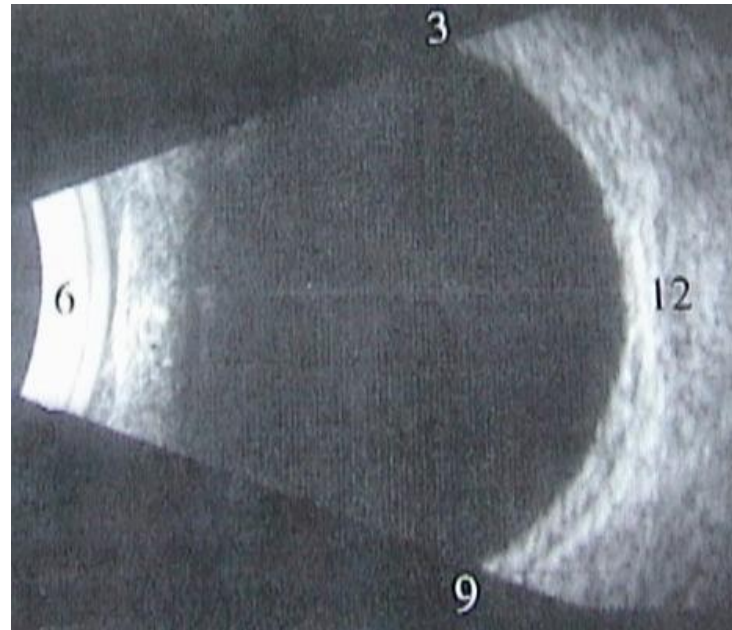
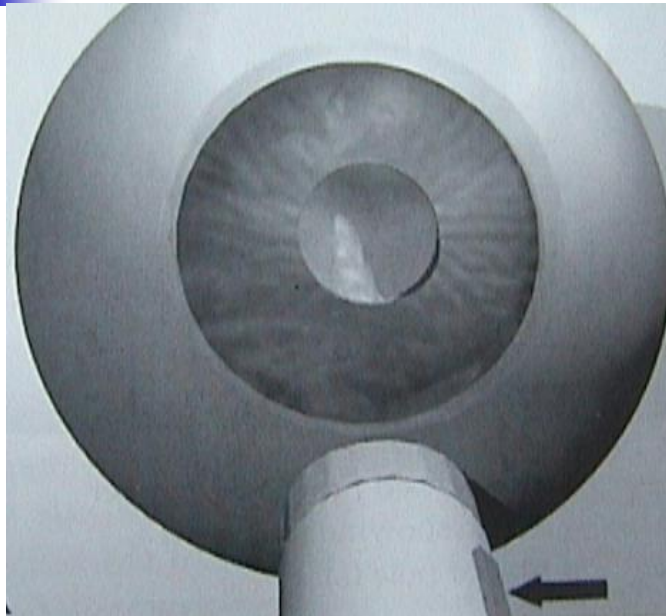
- **Transvers tarama** (karşıdaki meridyeni çaprazlayan tarama= sirküler tarama, lezyonun lateral uzanımı)
 - Horizontal (saat 6 veya 12): Marker nazalde
 - Vertikal (Saat 3 veya 9): Marker superiorda
 - Oblig: Marker globun superiorunda

Transverse B-mod

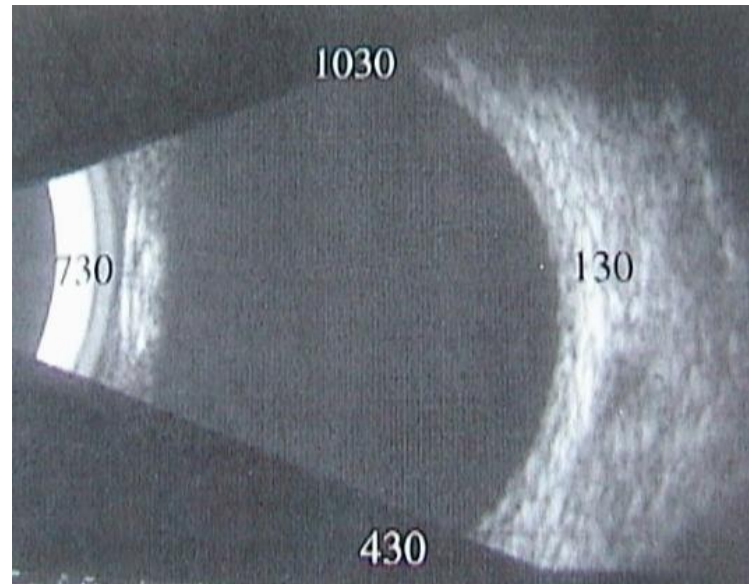
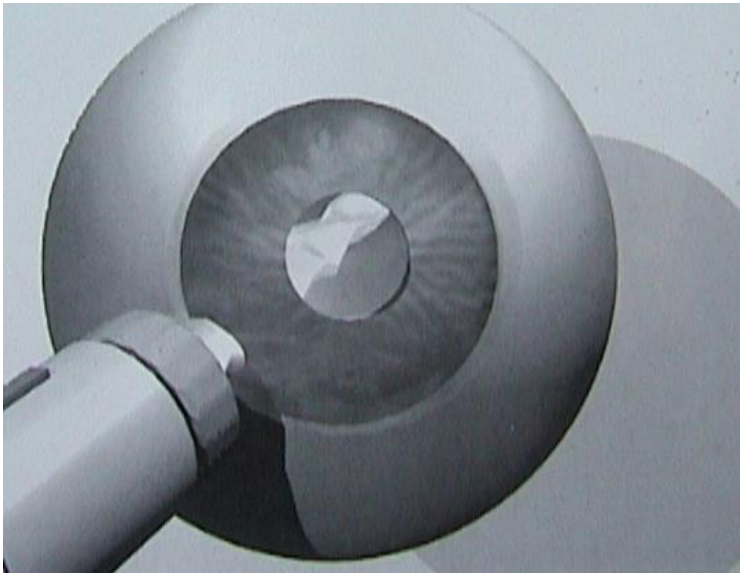
Prob marker yerleşimi



Transverse horizontal

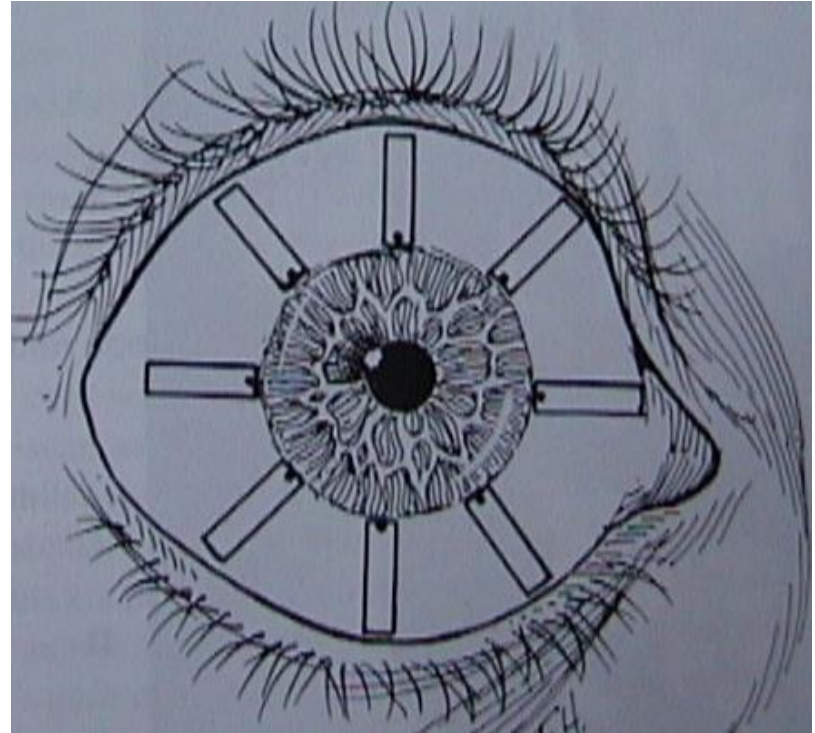


Transverse oblig

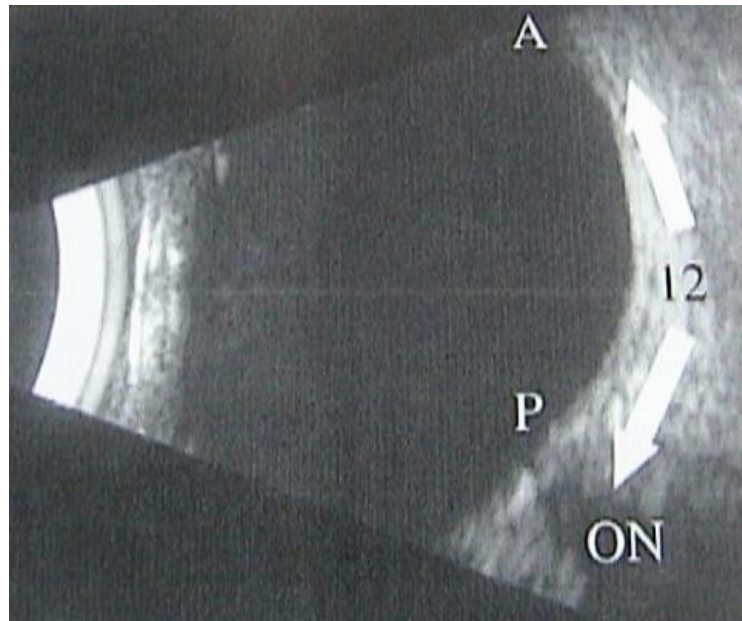
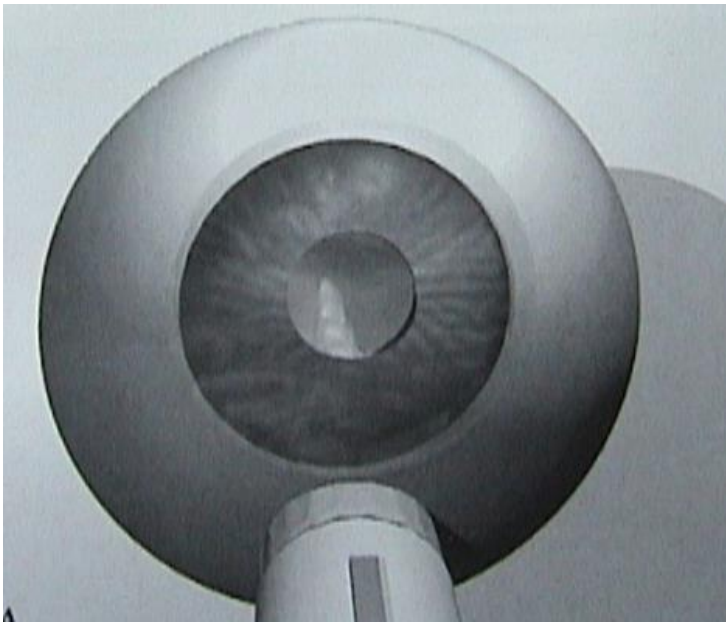


Longitudinal tarama

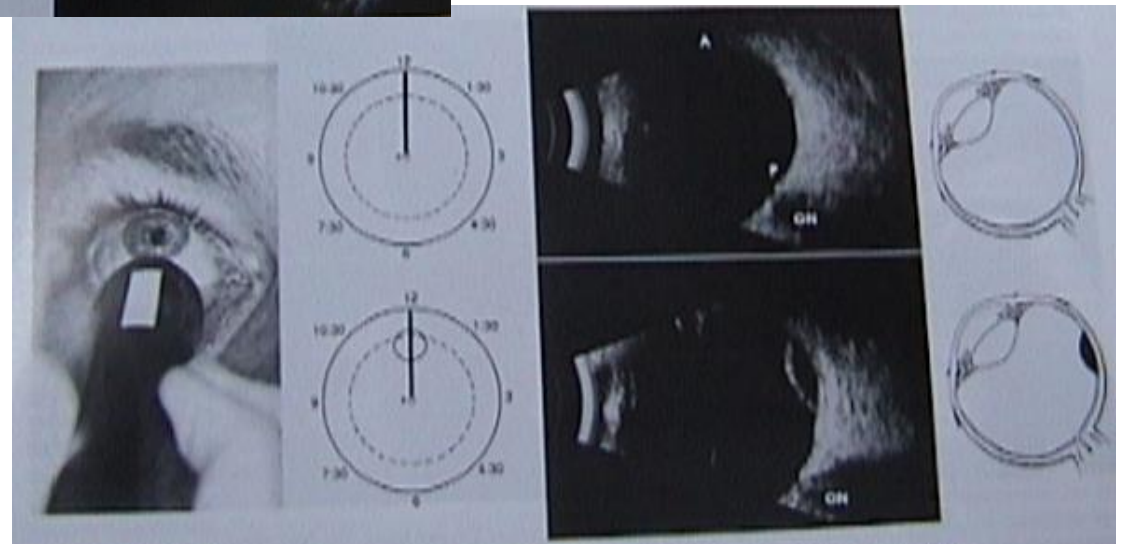
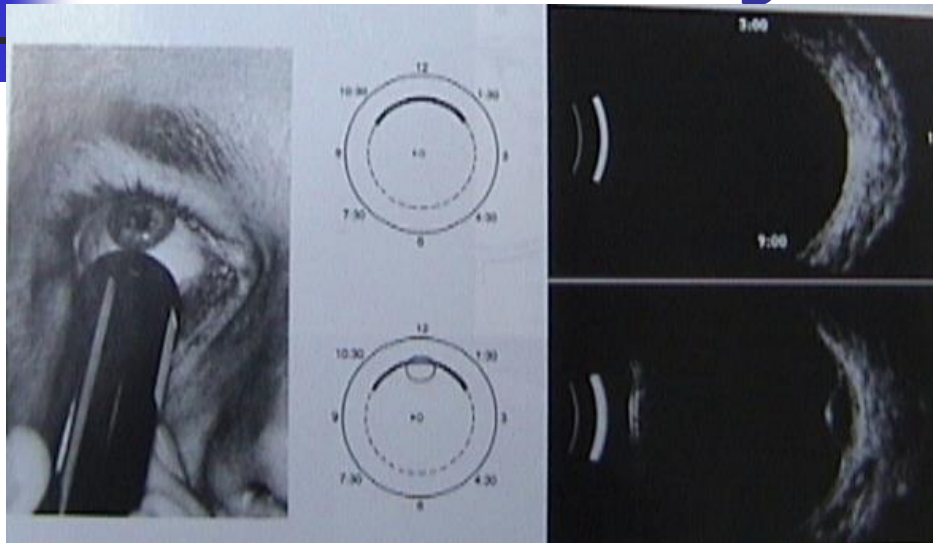
- Prob limbus kenarında ve marker hep korneaya doğru ve dik → Perifer alan superiorda görülür
- Karşıdaki meridyen boyunca tarama (radial tarama)
- Lezyonun A-P yerleşimi

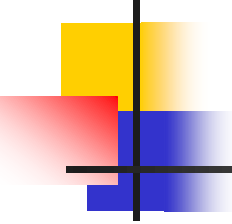


Longitudinal



Horizontal ve Longitudinal

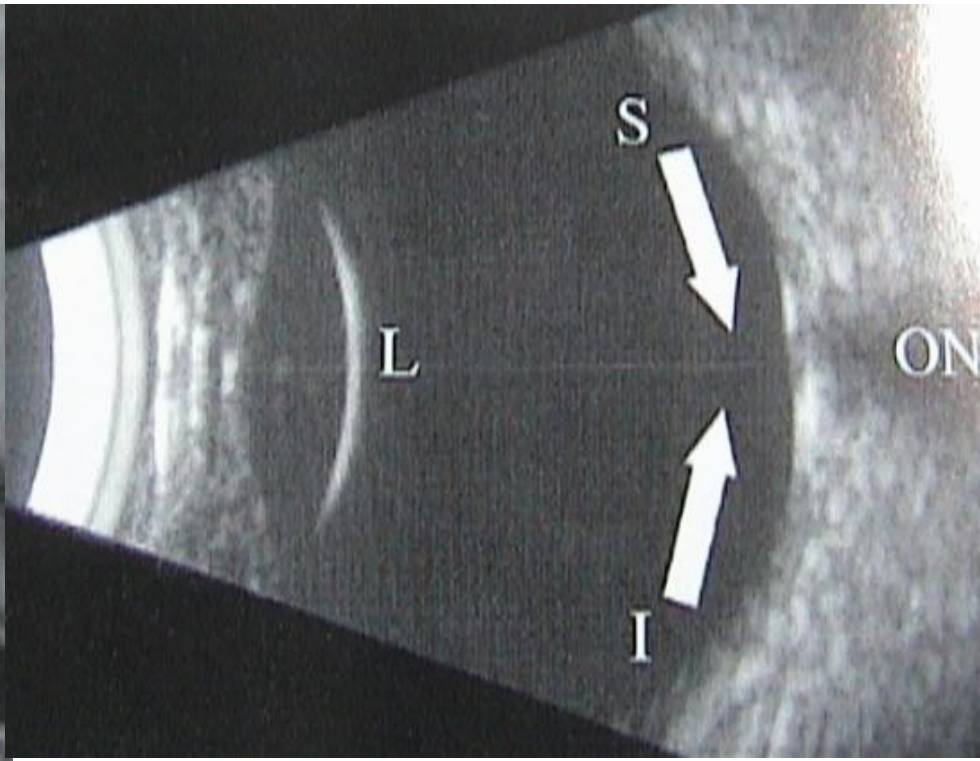




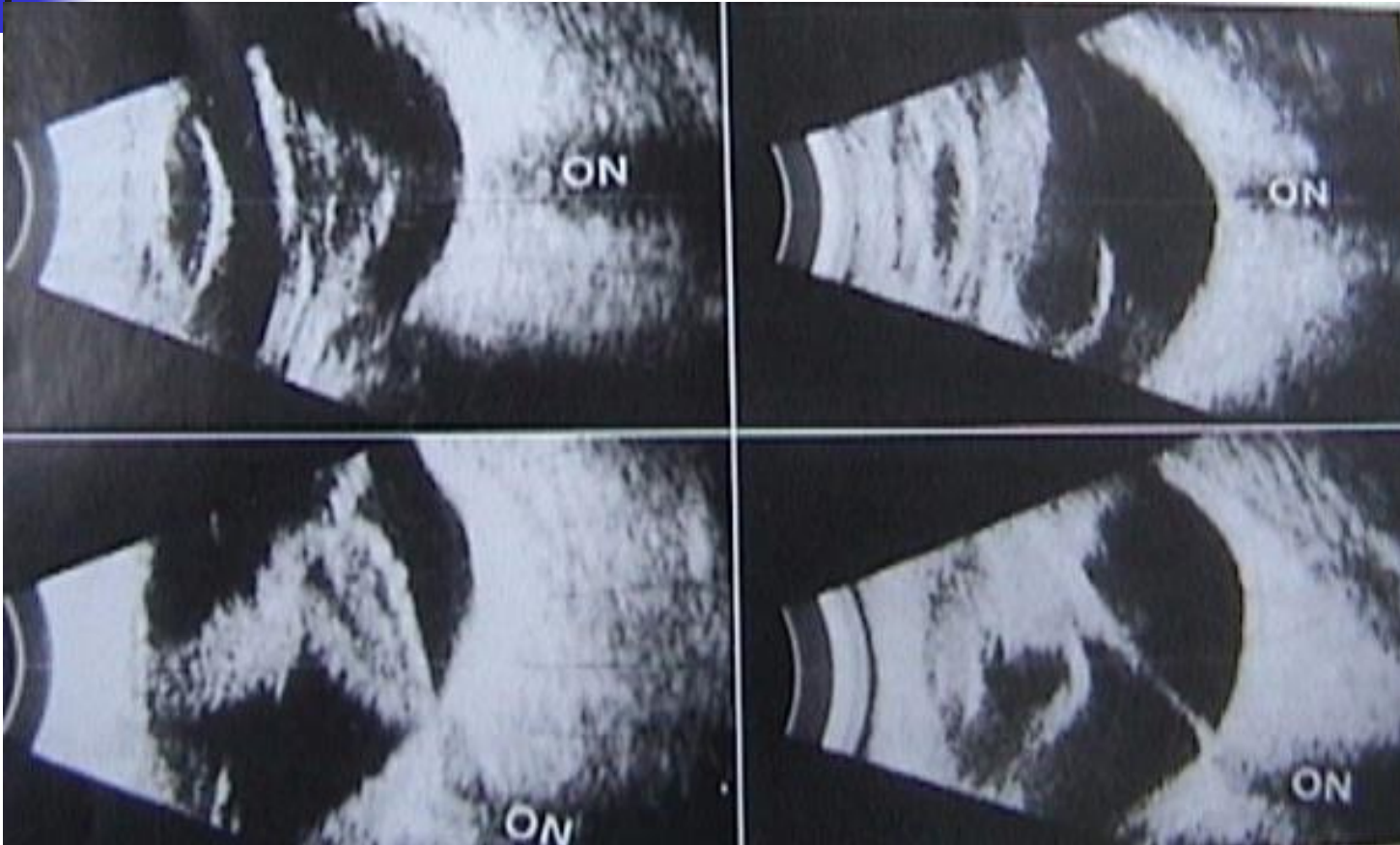
Aksiyel tarama

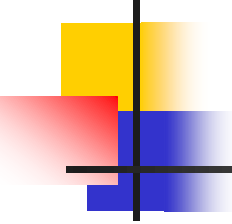
- Prob kornea merkezinde
- Lens arka kutbun resolusiyonunu azaltır.
- Lezyonların O.N ile ilişkisi
- Maküla incelemesi
- **Horizontal aksiyel**: Marker nazalde
- **Vertikal aksiyel**: Marker superiorda
- **Oblig aksiyel**: Superiorda

Vertikal Aksiyel



Aksiyel vs Longitudinal

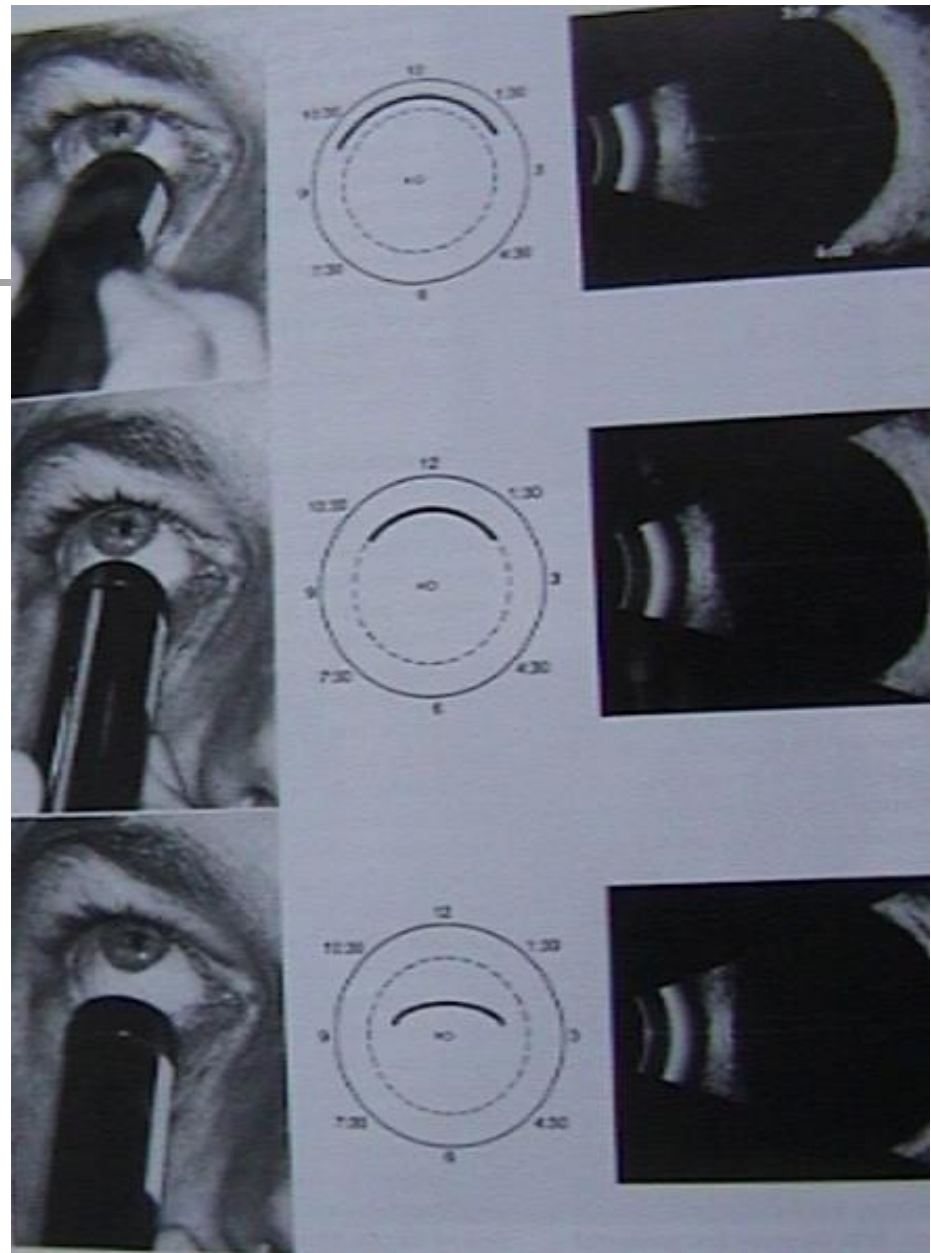




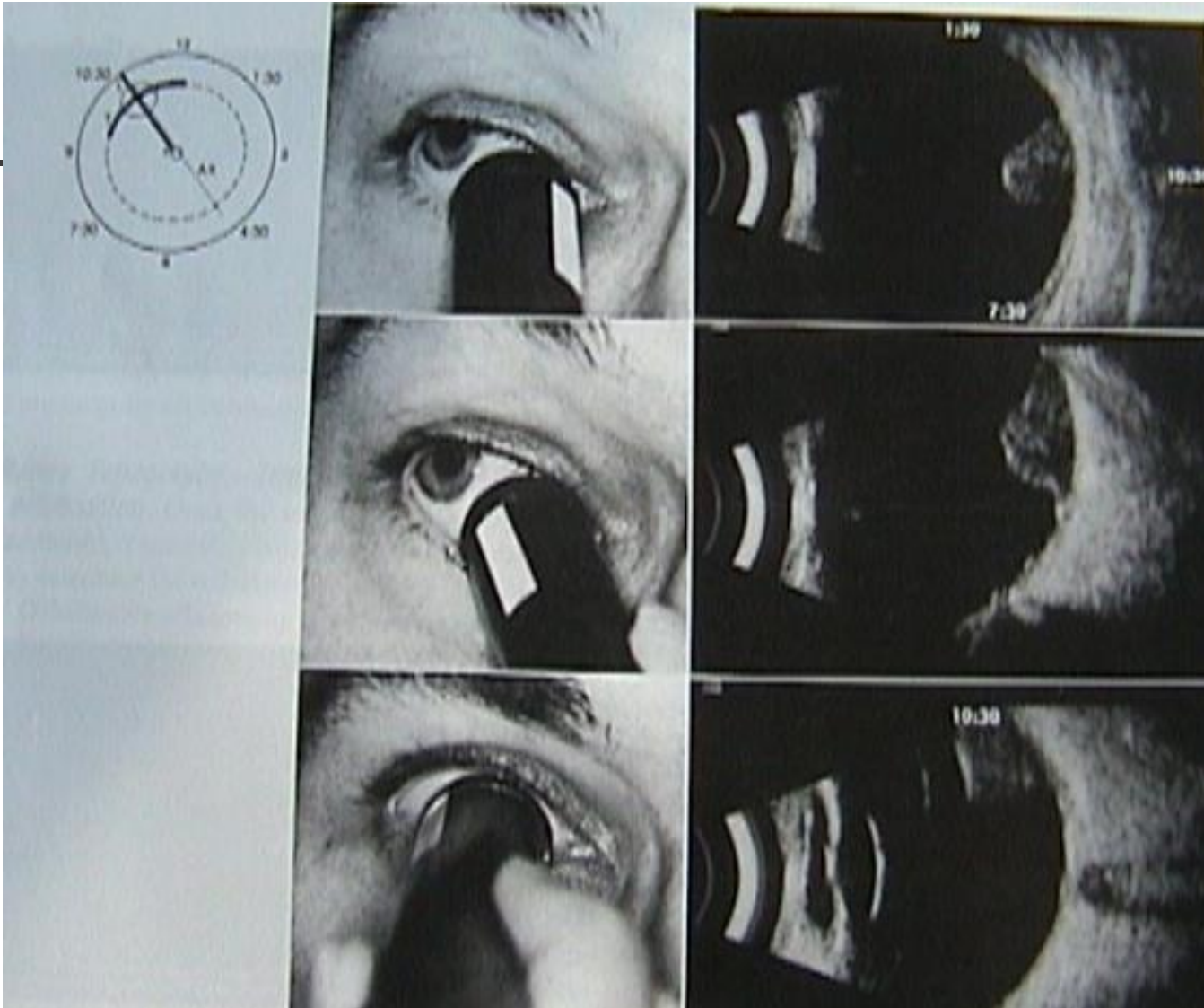
B-mod tarama

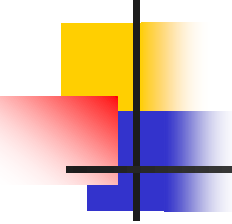
- Horizontal ve vertikal transvers taramalar
- Horizontal ve vertikal aksiyel taramalar

B-mod tarama



Lezyonun topografik incelemesi

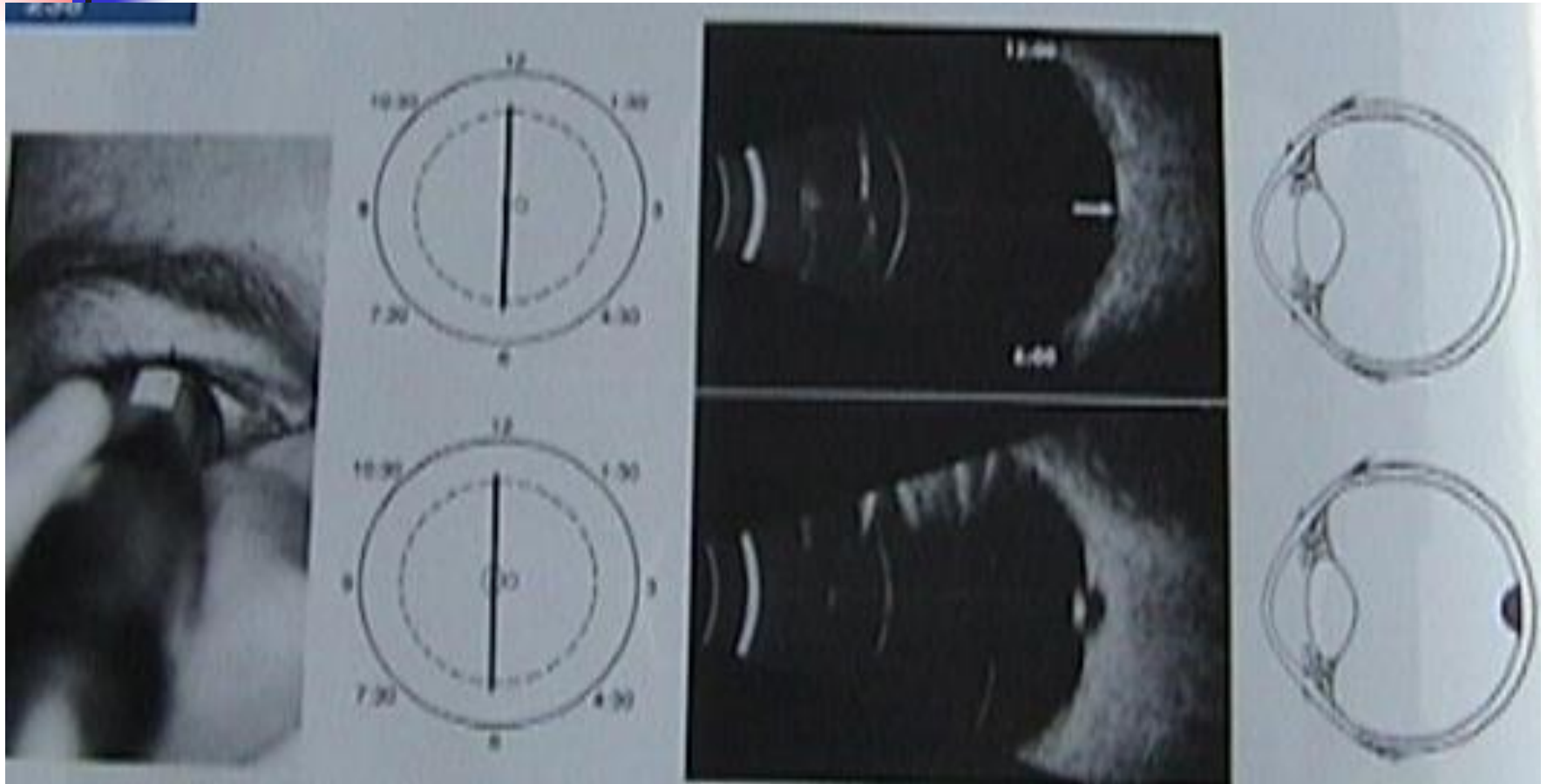




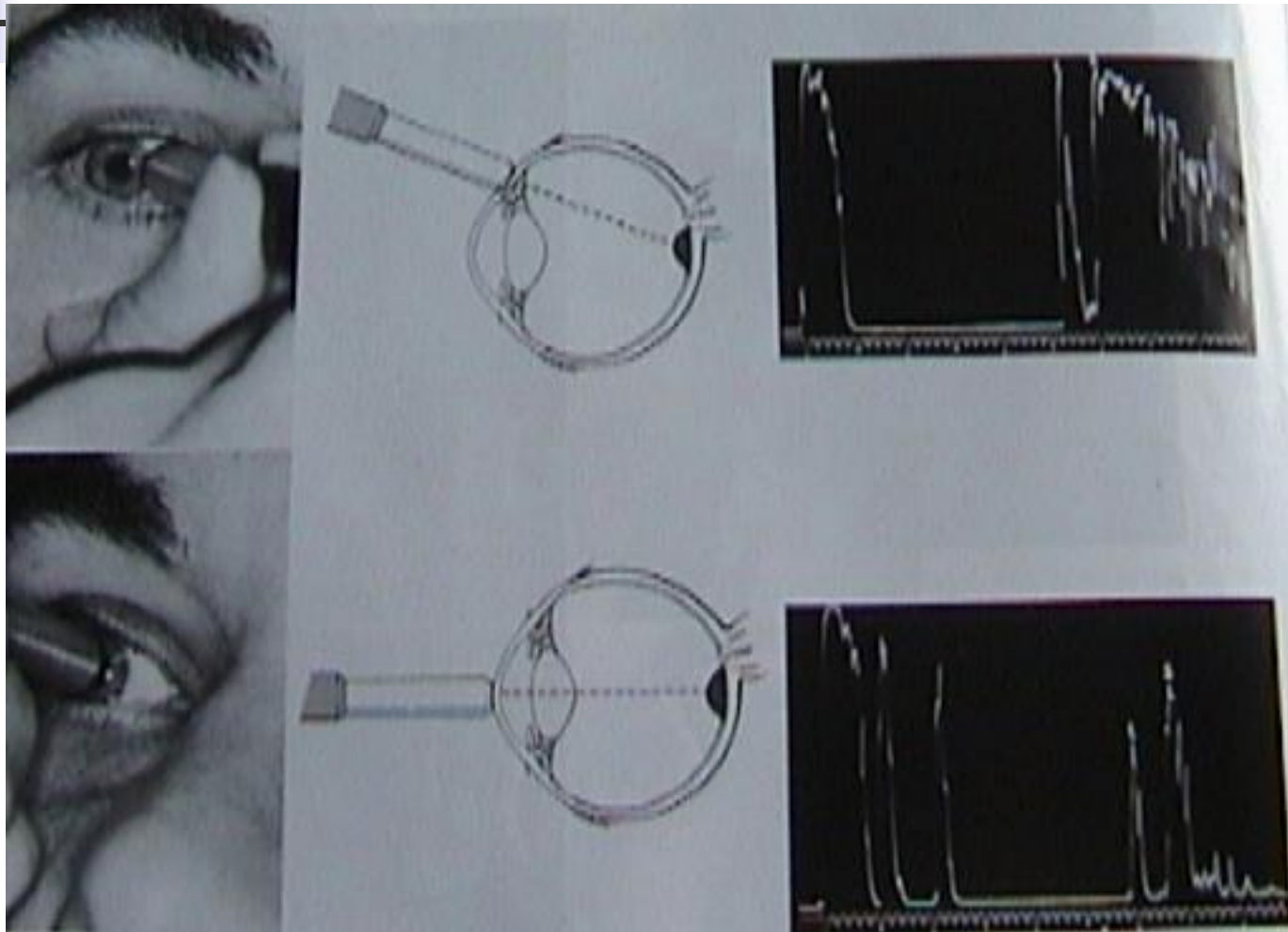
Maküla

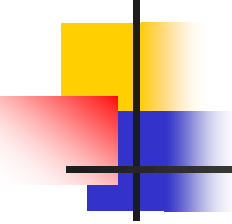
- B-mod:
 - Horizontal aksiyel (Marker 3,9)
 - Vertikal transverse (Saat 3-9, marker sup)
 - Longitudinal
 - Vertikal maküla
- A-mod:
 - Korneadan
 - Nazal limbustan

Maküla: B-mod (vertikal maküla)



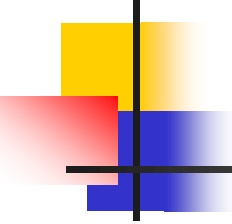
Maküla: A-mod





Kantitatif Ekografi

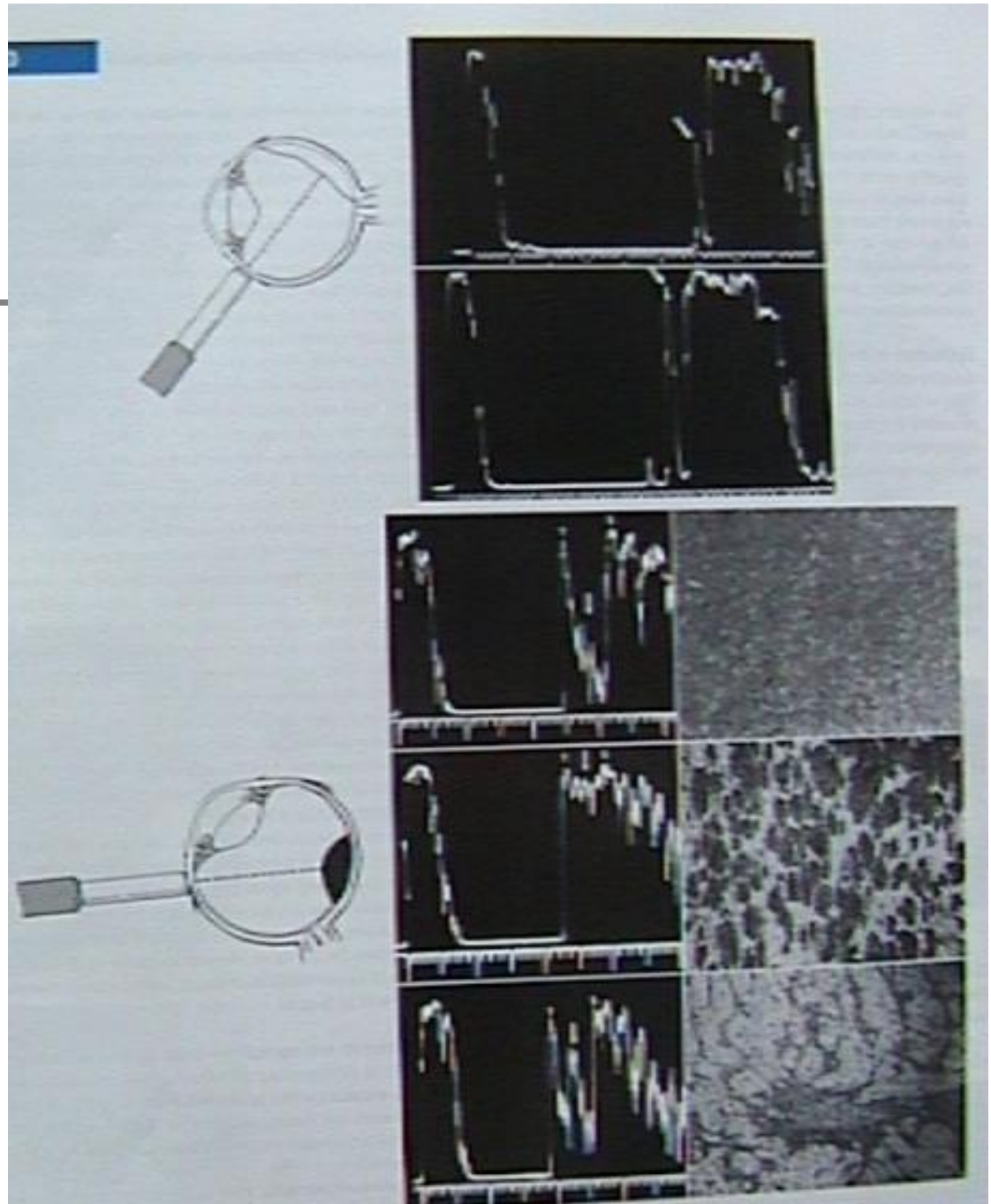
- A-mod ile
- Reflektivite=amplitüd=spike height
- Tip 1:
 - PVD vs RD
 - Melanom vs diğer tm
 - İç yapı ve ses atenuasyonu

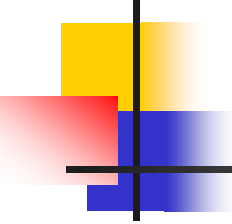


Kantitatif Ekografi- Tip 1

- İçsel yapı: histolojik yapı (tm)
 - Regüler (homojen)
 - İrregüler (heterojen)

İçsel yapı

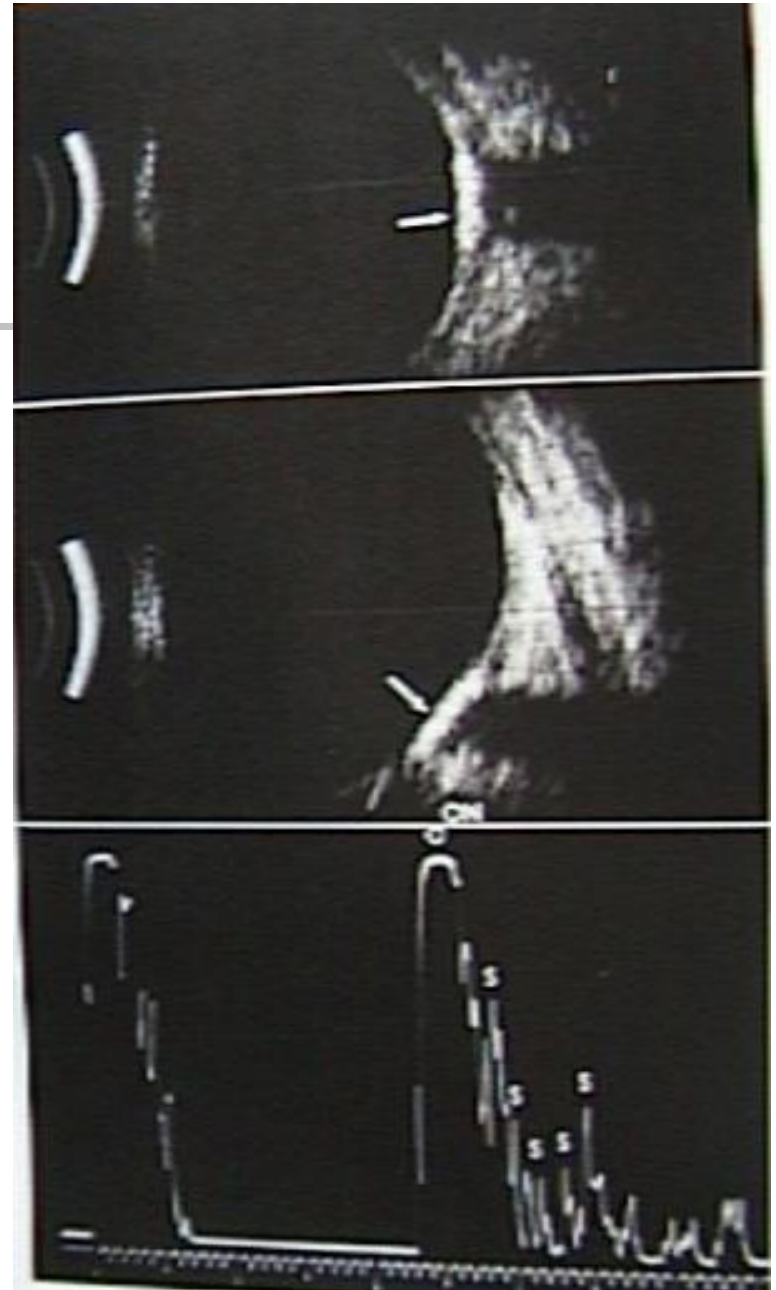


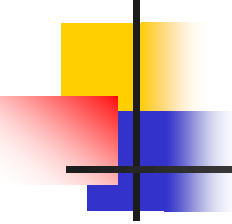


Ses atenüasyonu

- A ve B mod
 - Fazla yüksek reflektivitesi olan yapılar
 - Kemik, Ca^{++} , YC,
 - Gölgeleme

Ses atenüasyonu





Kinetik ekografi

- Kalın AVD vs RD
 - Hareketlilik (aftermovement)
- Kitle lezyonu
 - Vaskülarite (ekolarda spontan hareket):
Damar içindeki kan akımı, tm'lerde

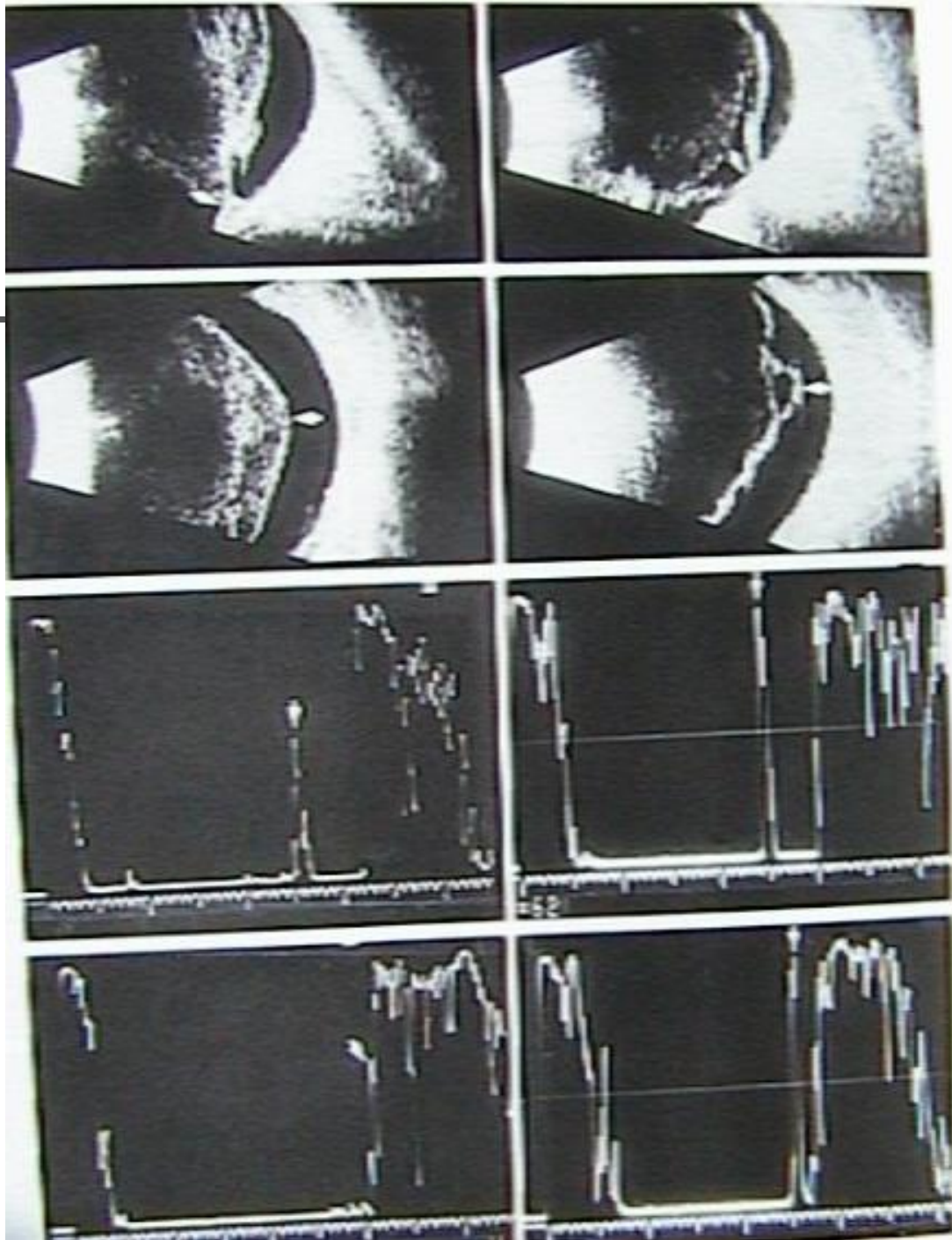
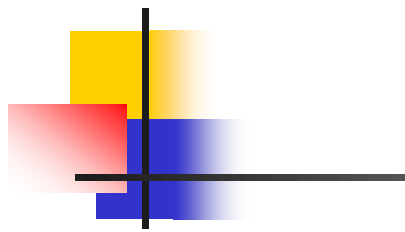


ÖRNEKLER

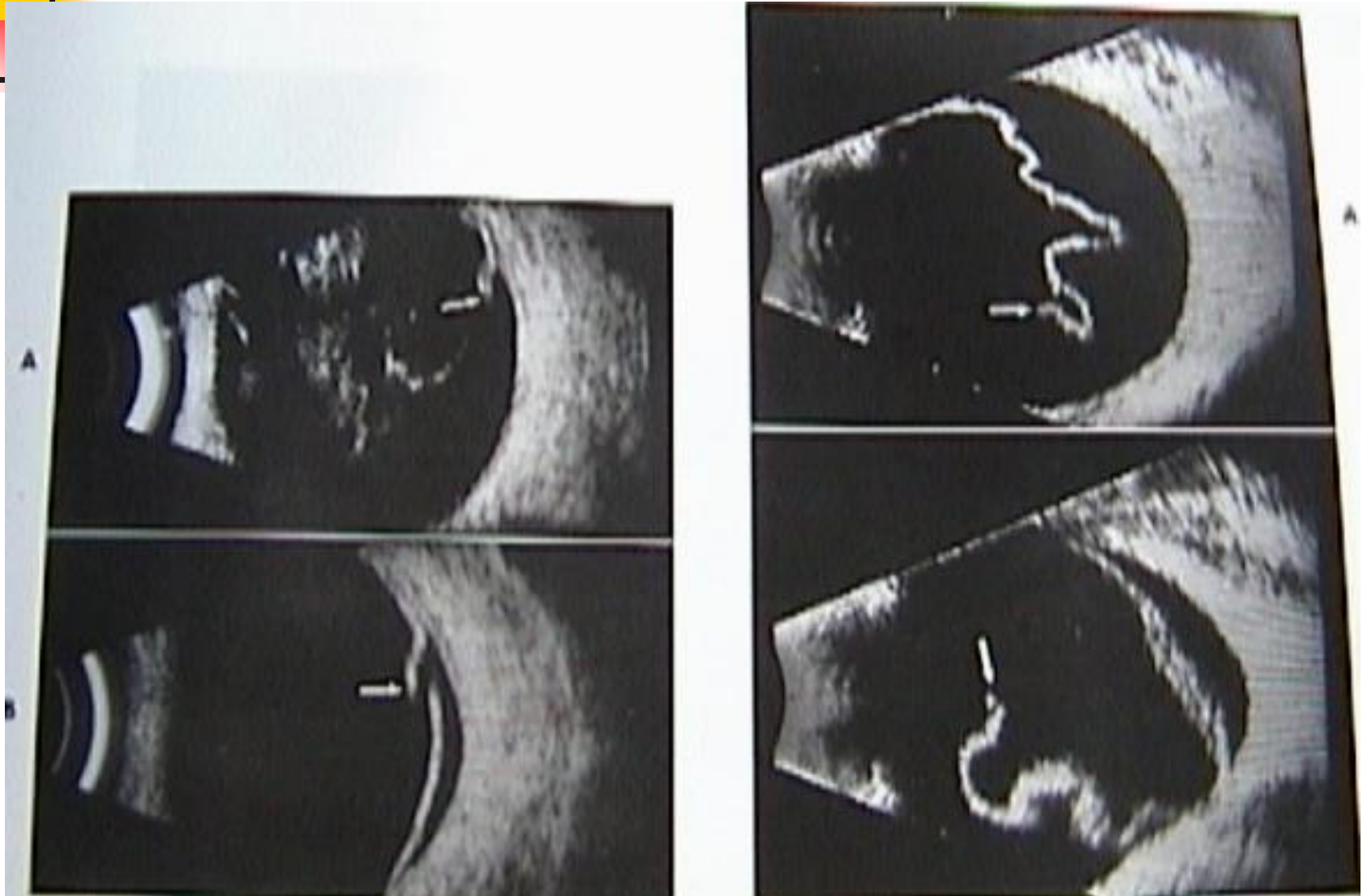
Vit Hem

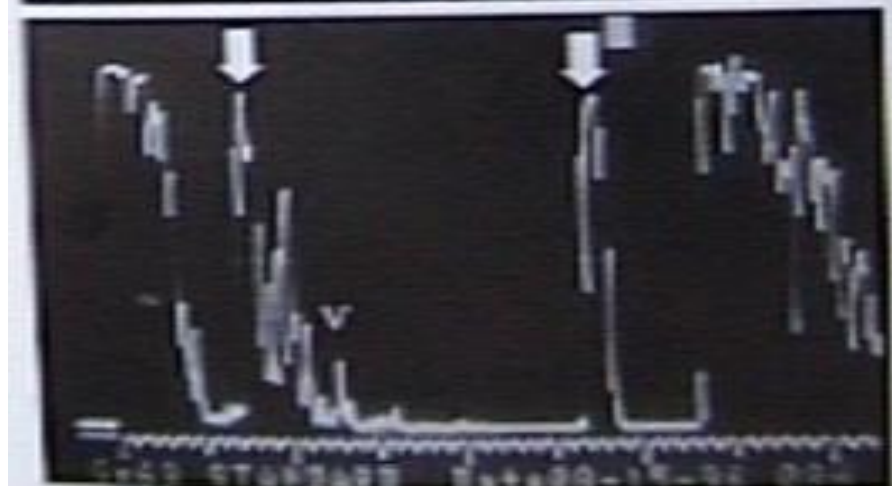






Retinal yırtık

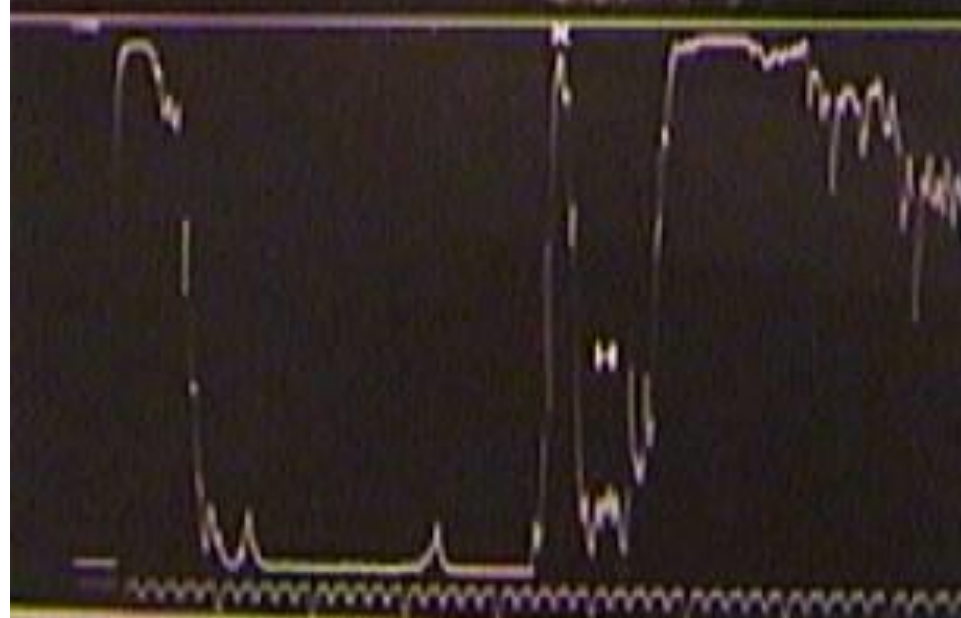
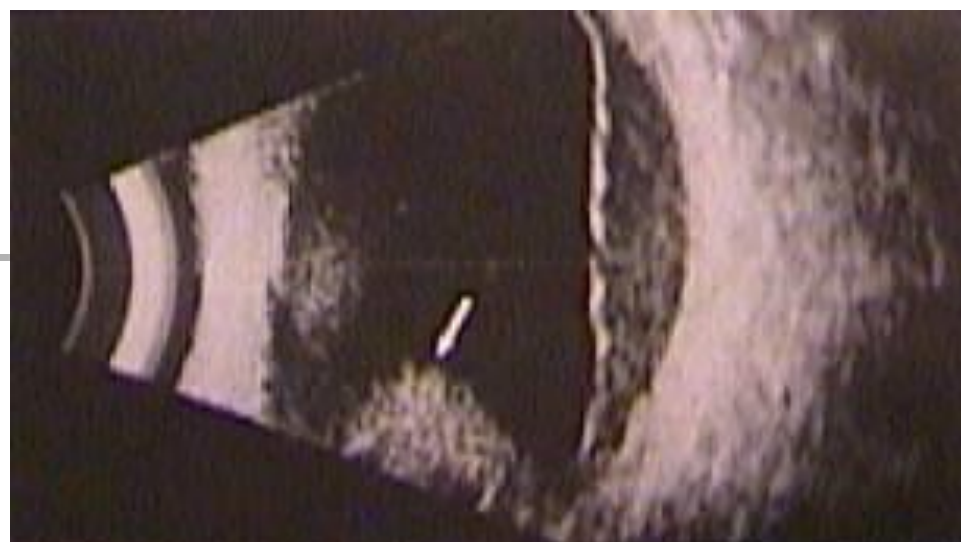


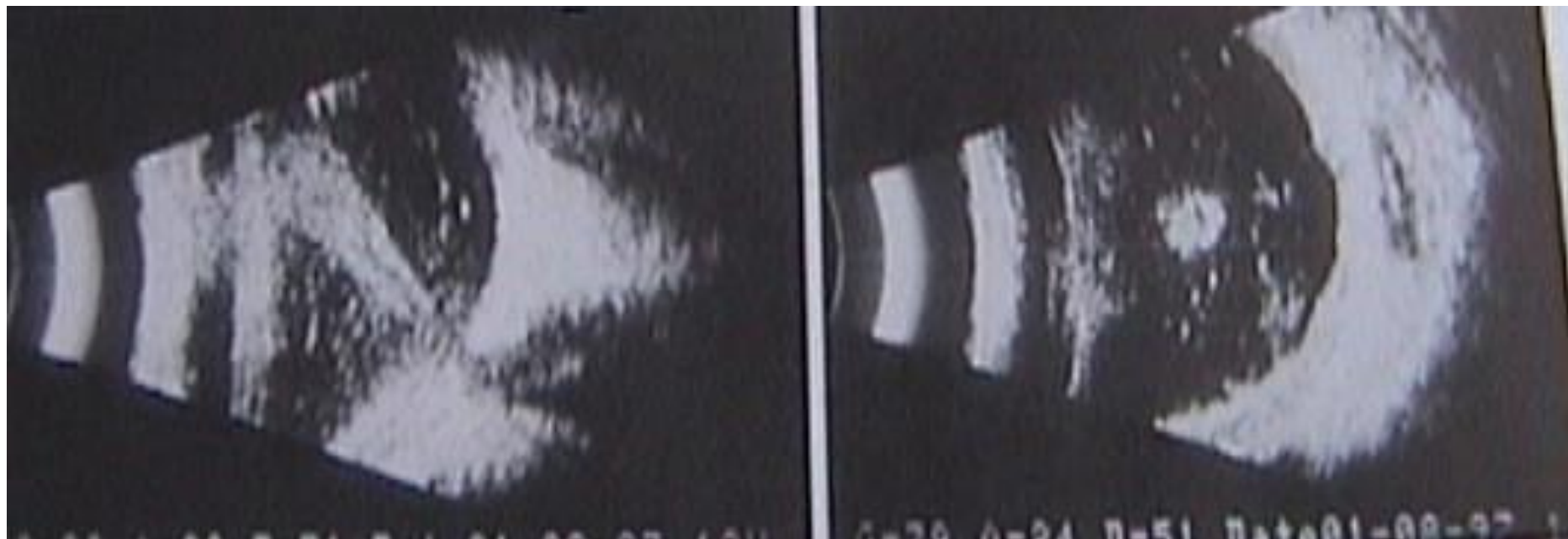
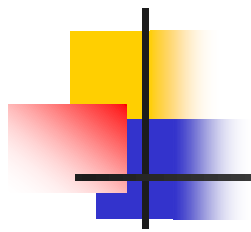






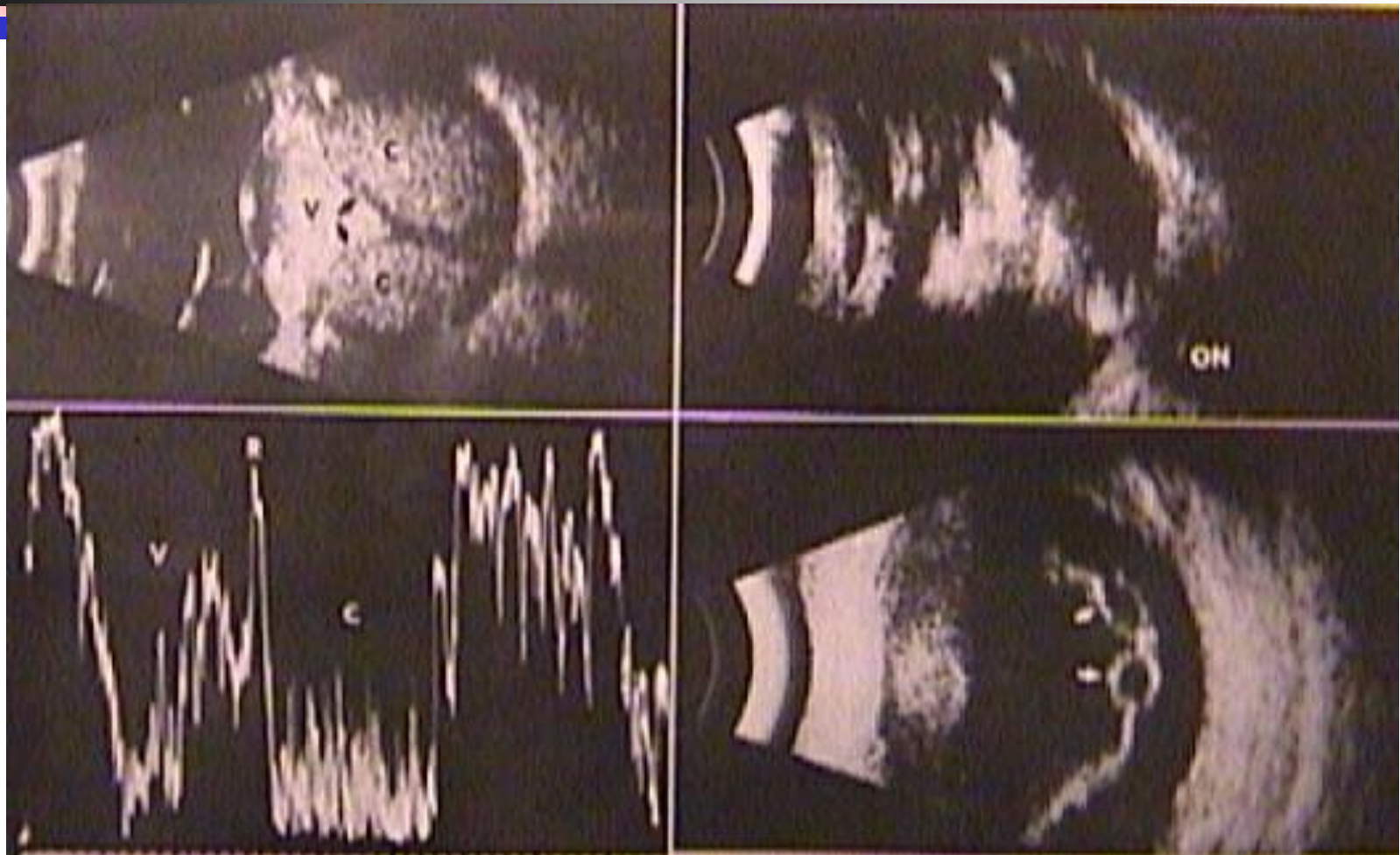
G=85 A=35 $\Pi=51$ Date 05-13-92 09H



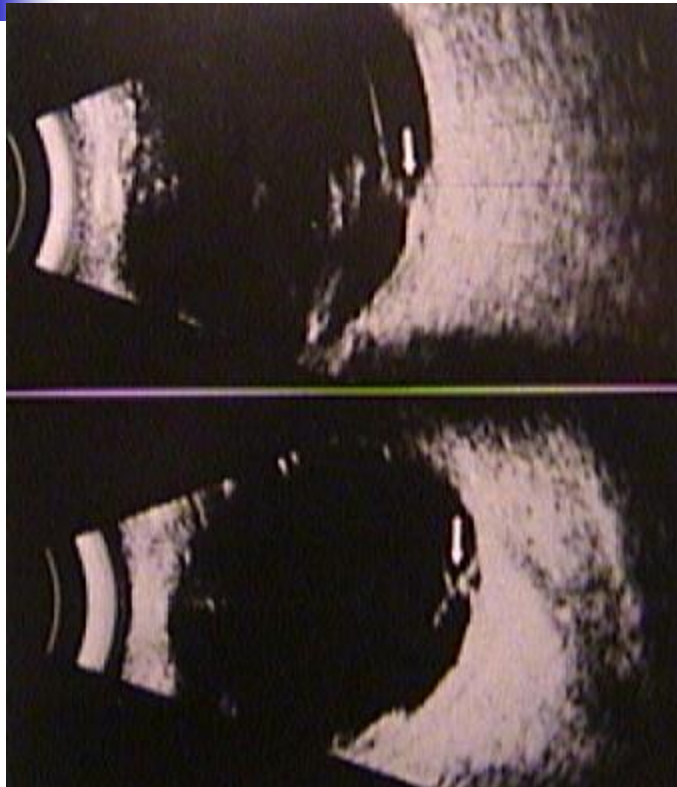


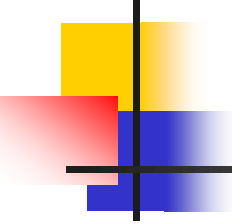
0-30 0-24 0-51 Date 01-08-97 1

Eski RD

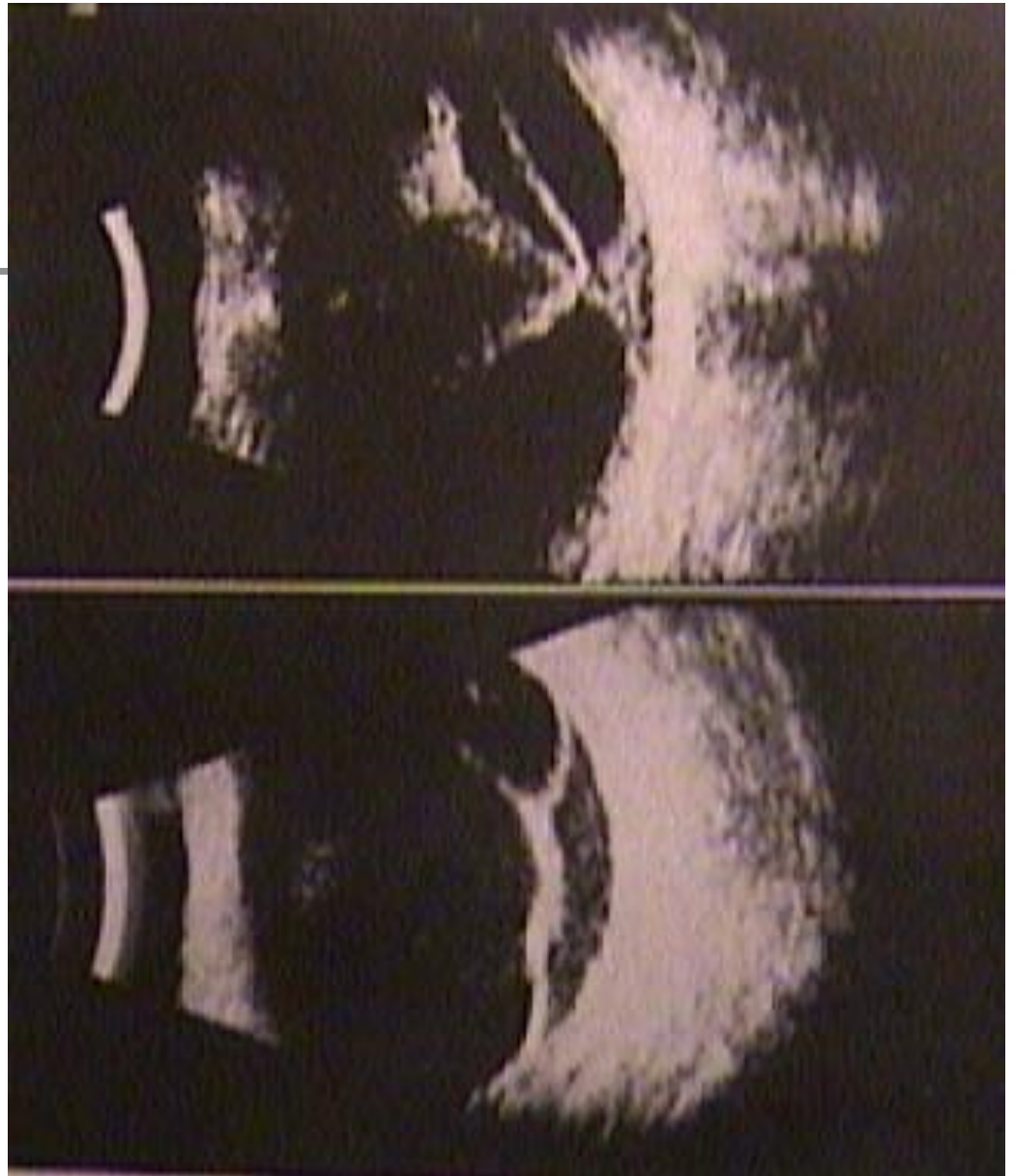


DR

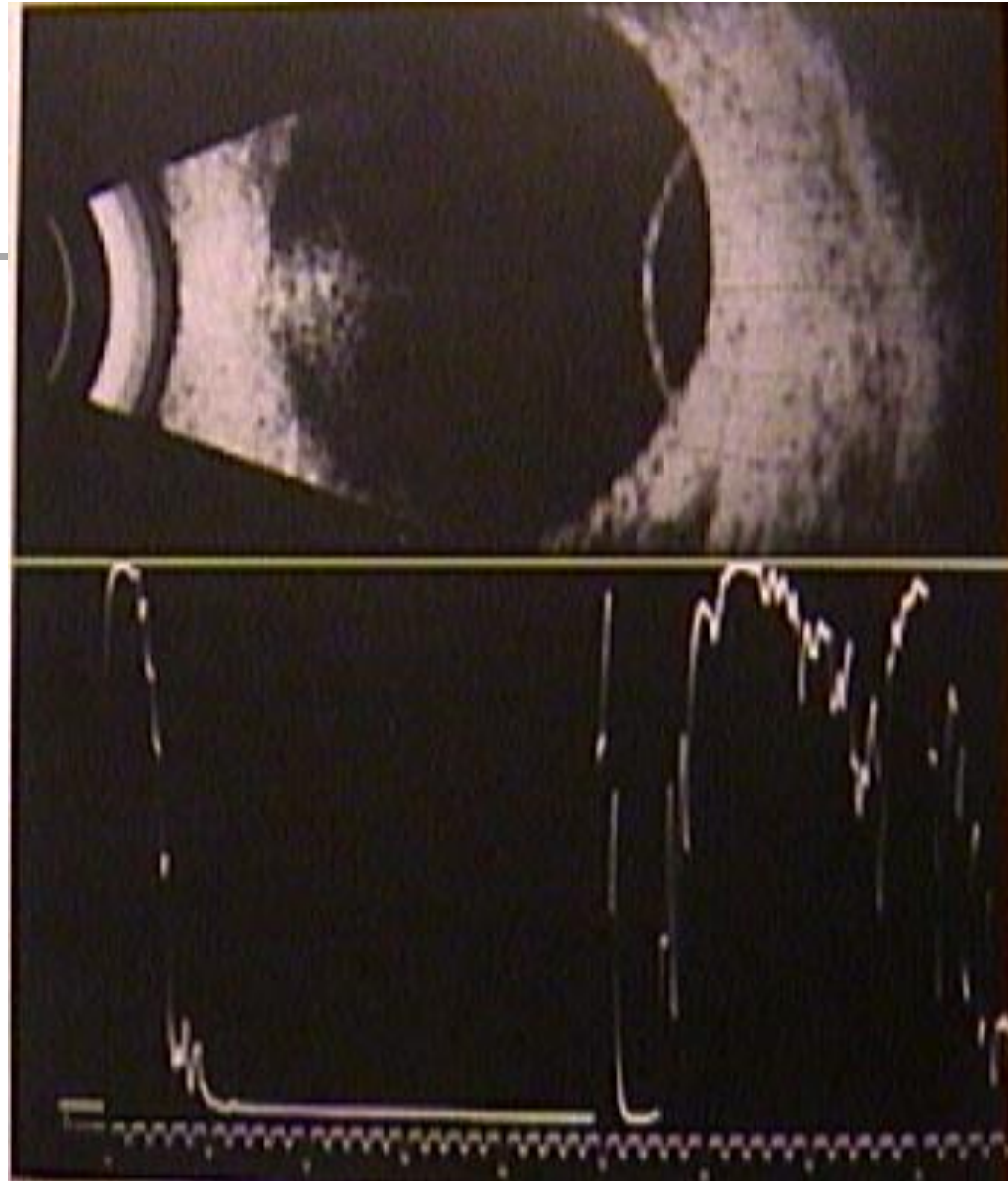




PDR



Retinoskizis



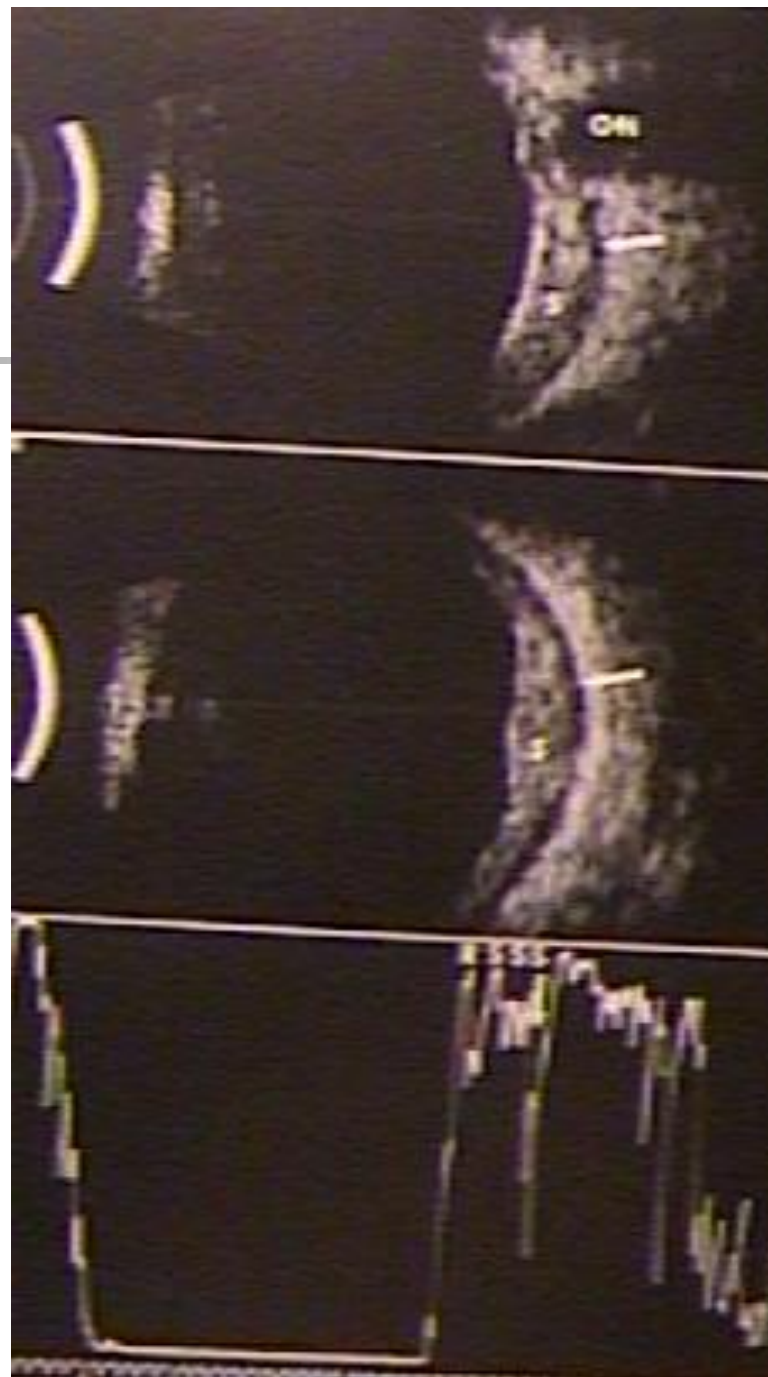
Koroidal kalınlaşma



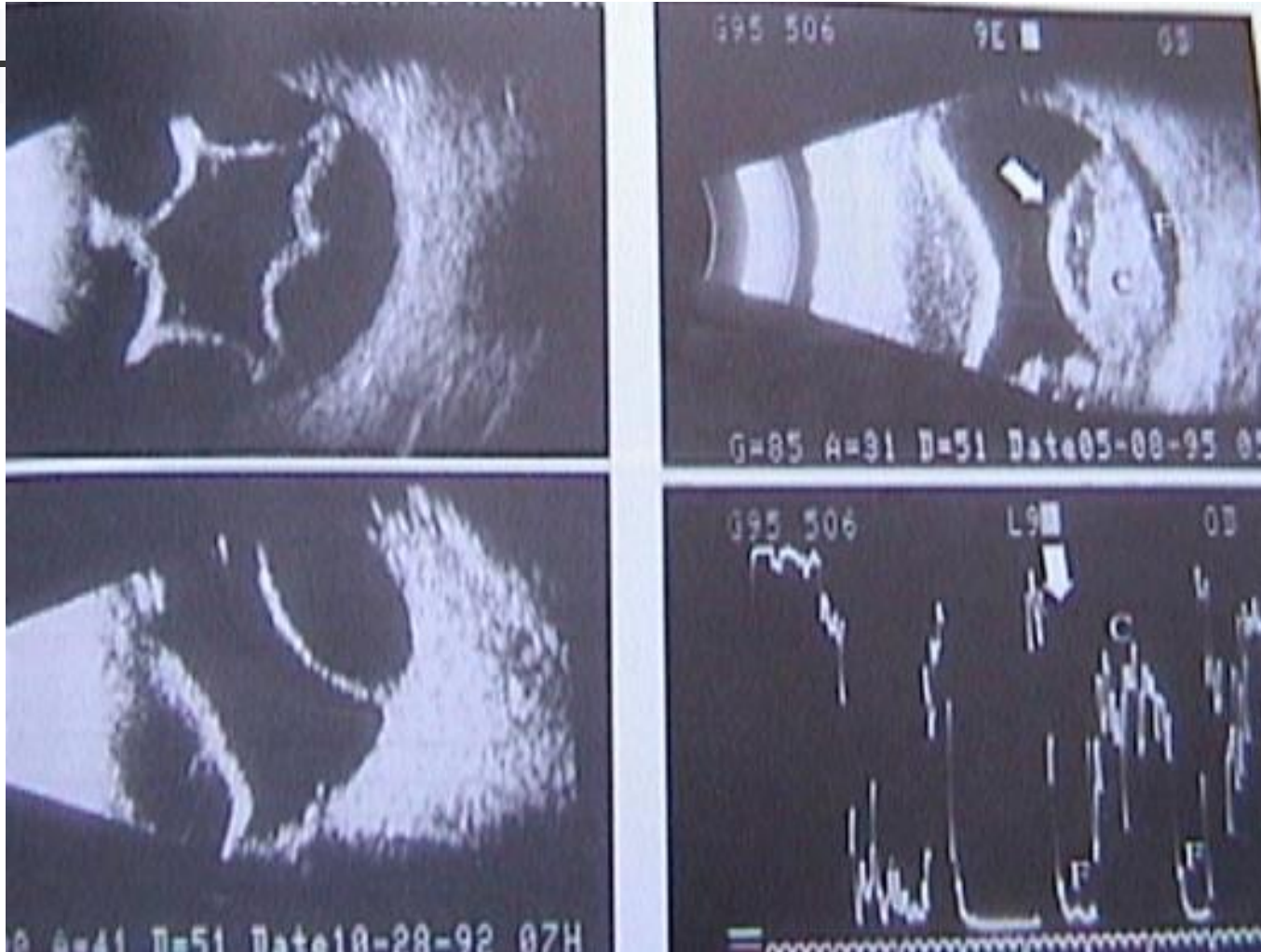
Harada



Post sklerit

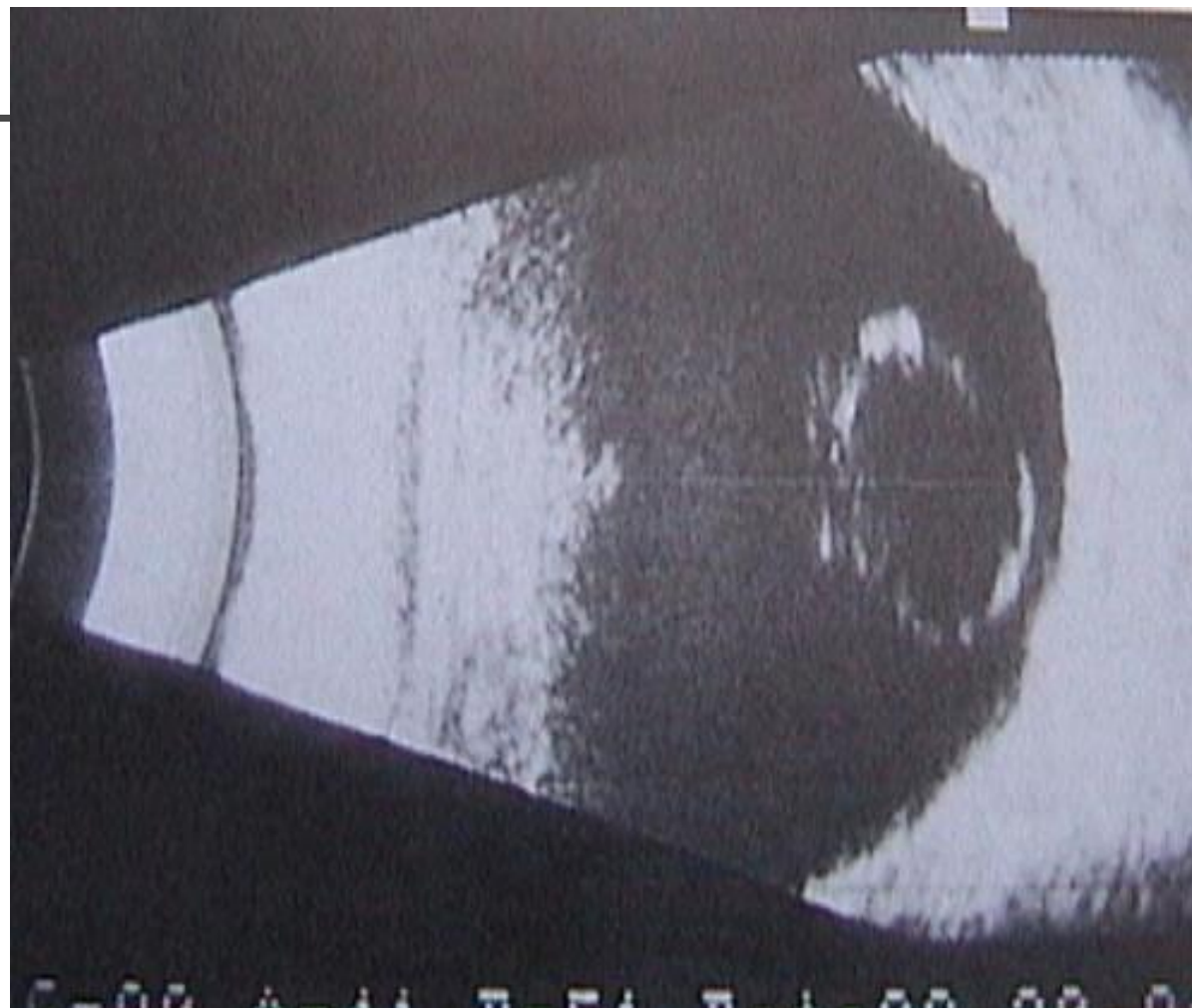
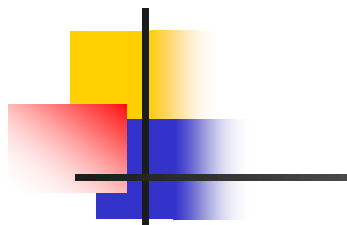


Kororidal efüzyon

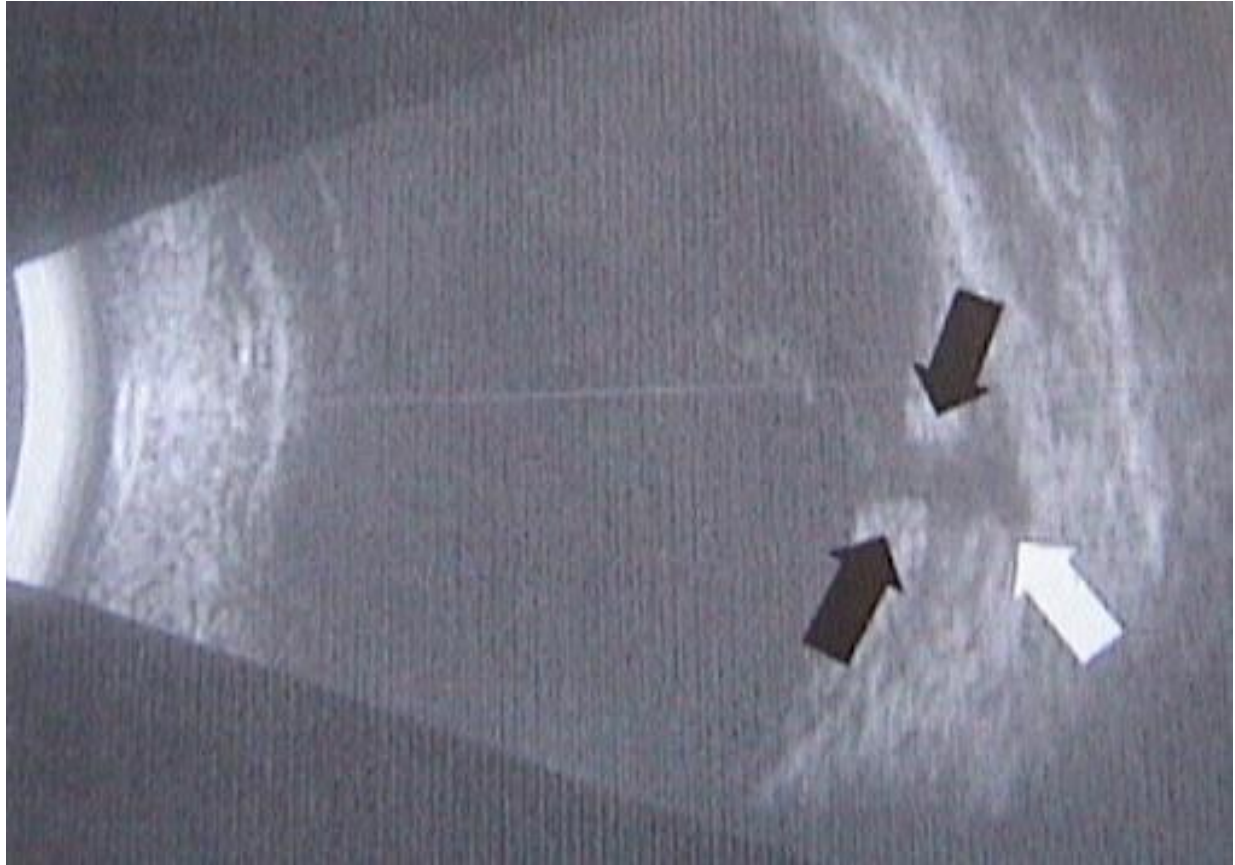


Hemorajik KD

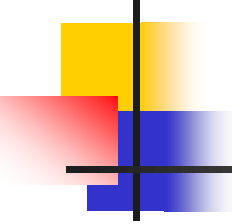




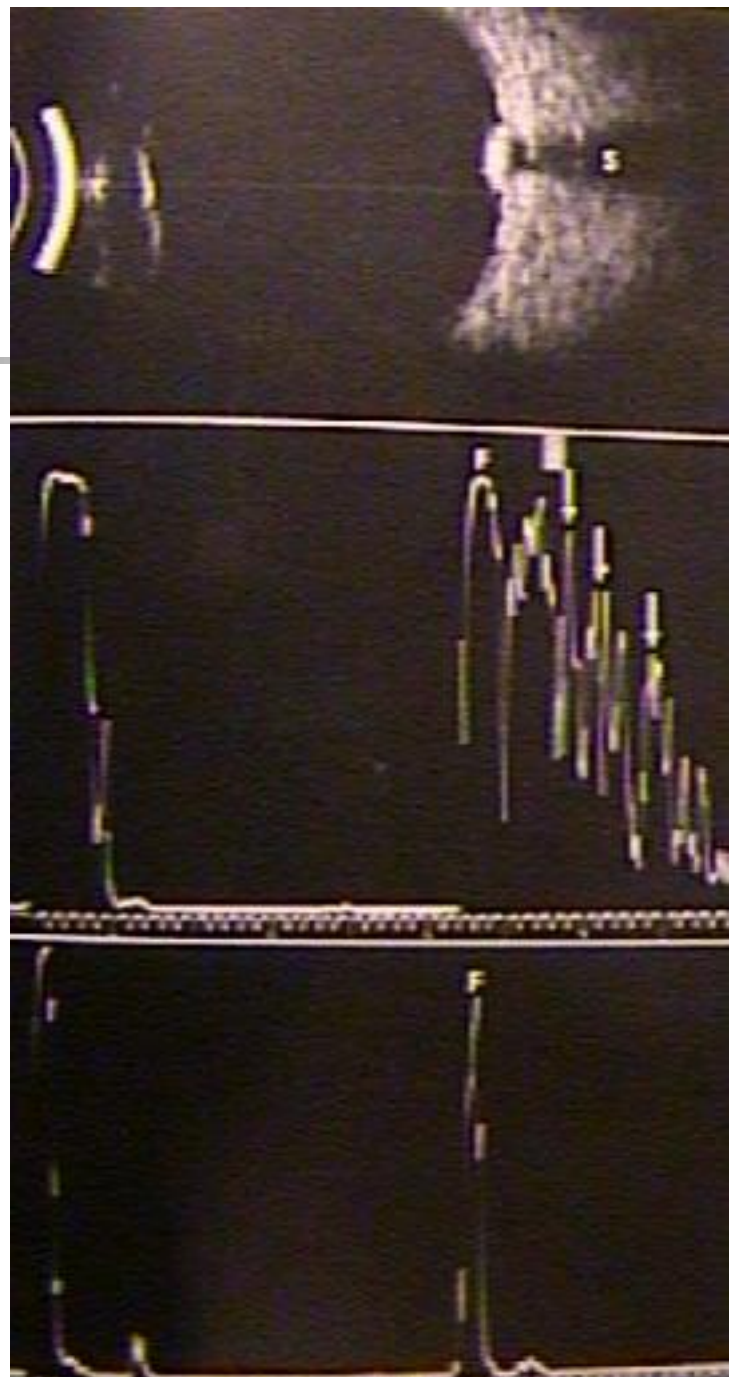
Post Skleral rüptür

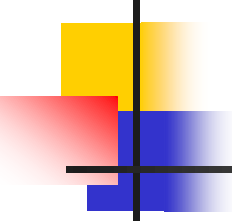






GIYC





KMM

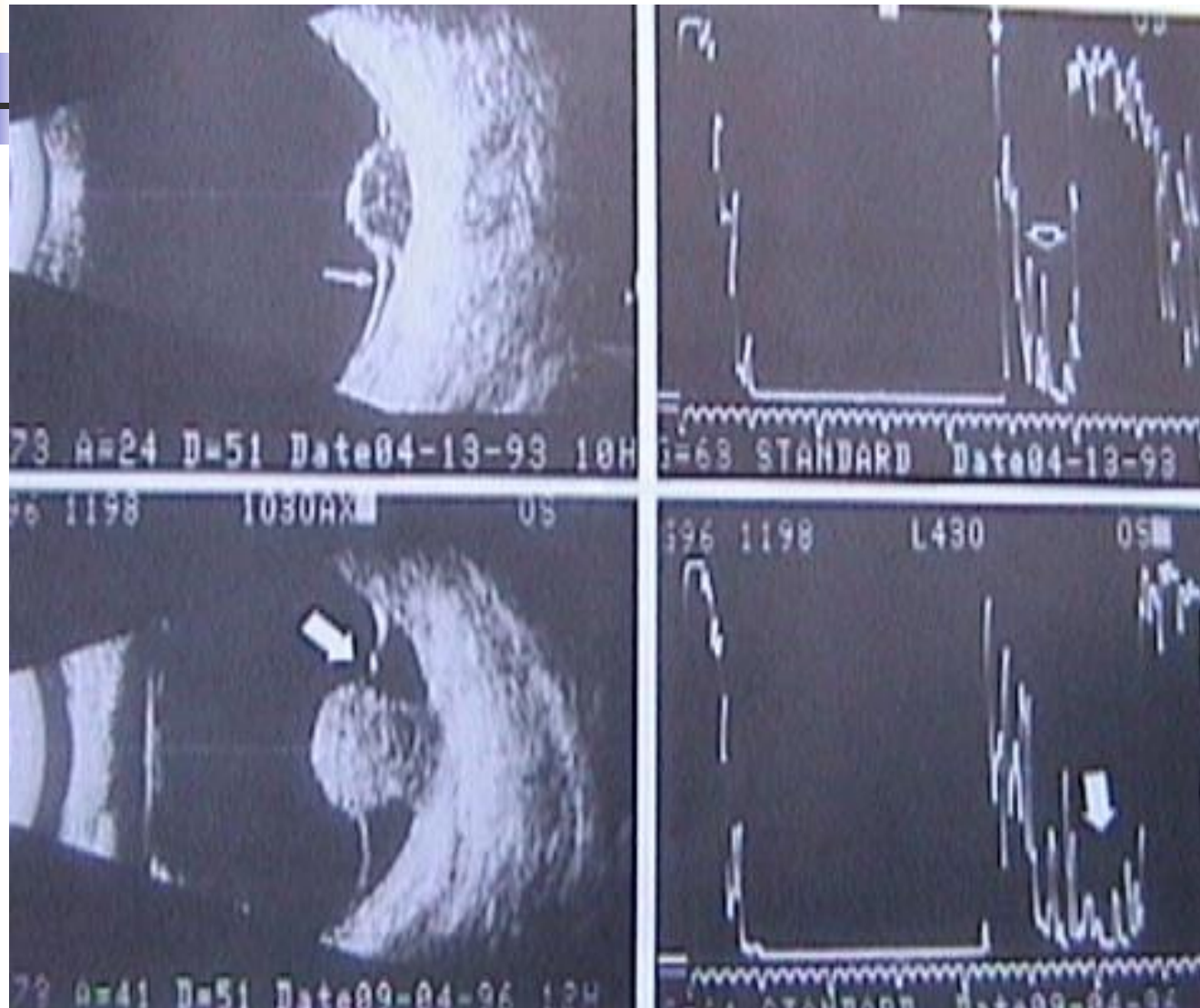
- Mantar görünümü
- Solid yapıda
- Regüler içsel yapı
- Lezyonun düşük-orta reflektivitede olması
- Vaskülarite
- (Koroidal ekskavasyon)

KMM

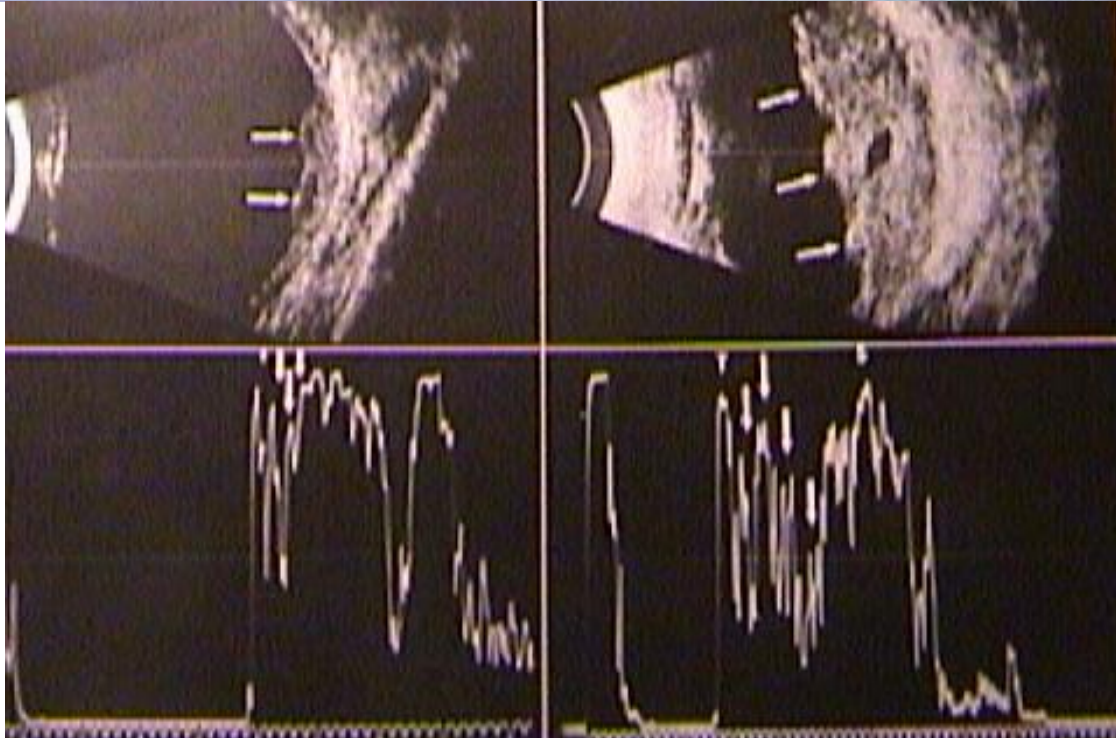
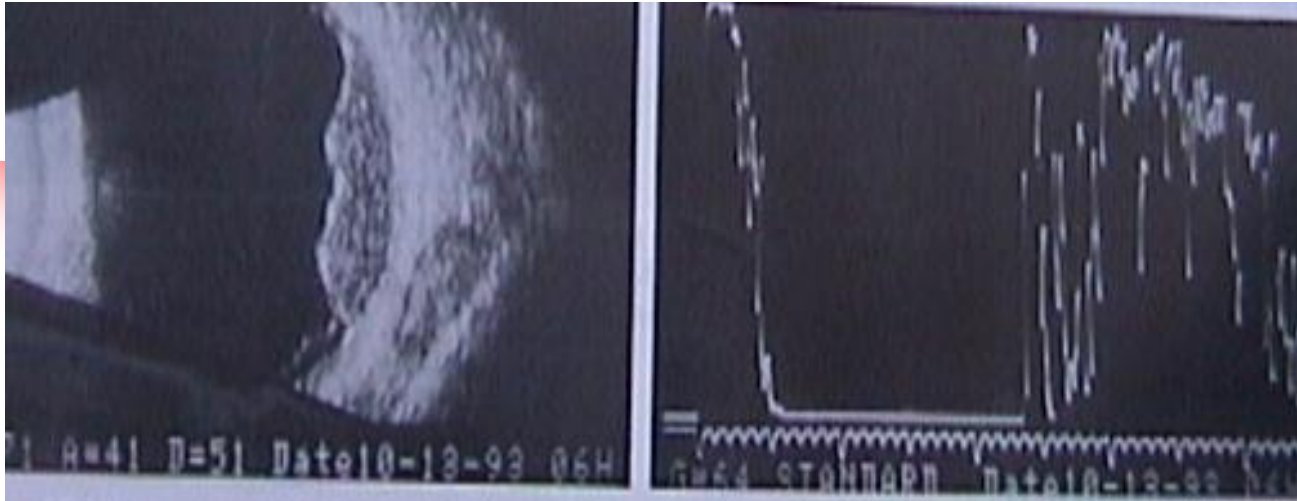
- Ses atenüasyonu:
Tümörün base'inde
akustik boşluk



CMM



Koroidal metastaz



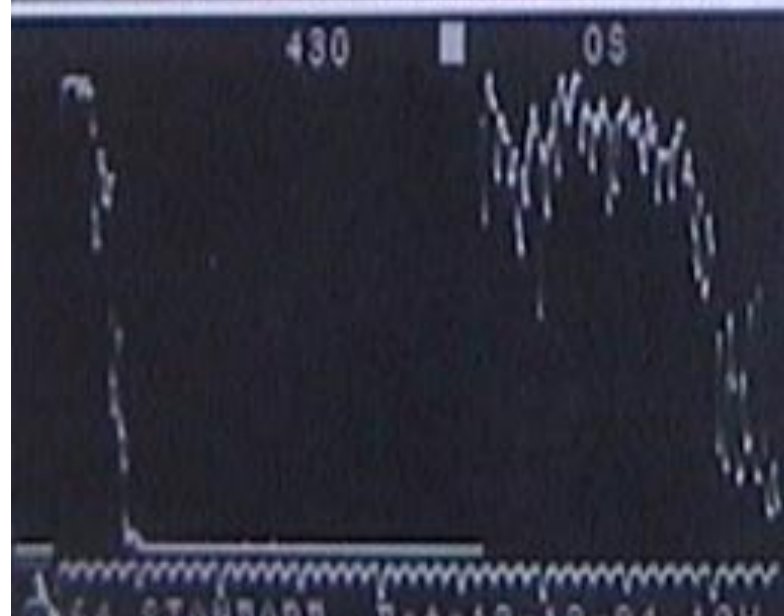
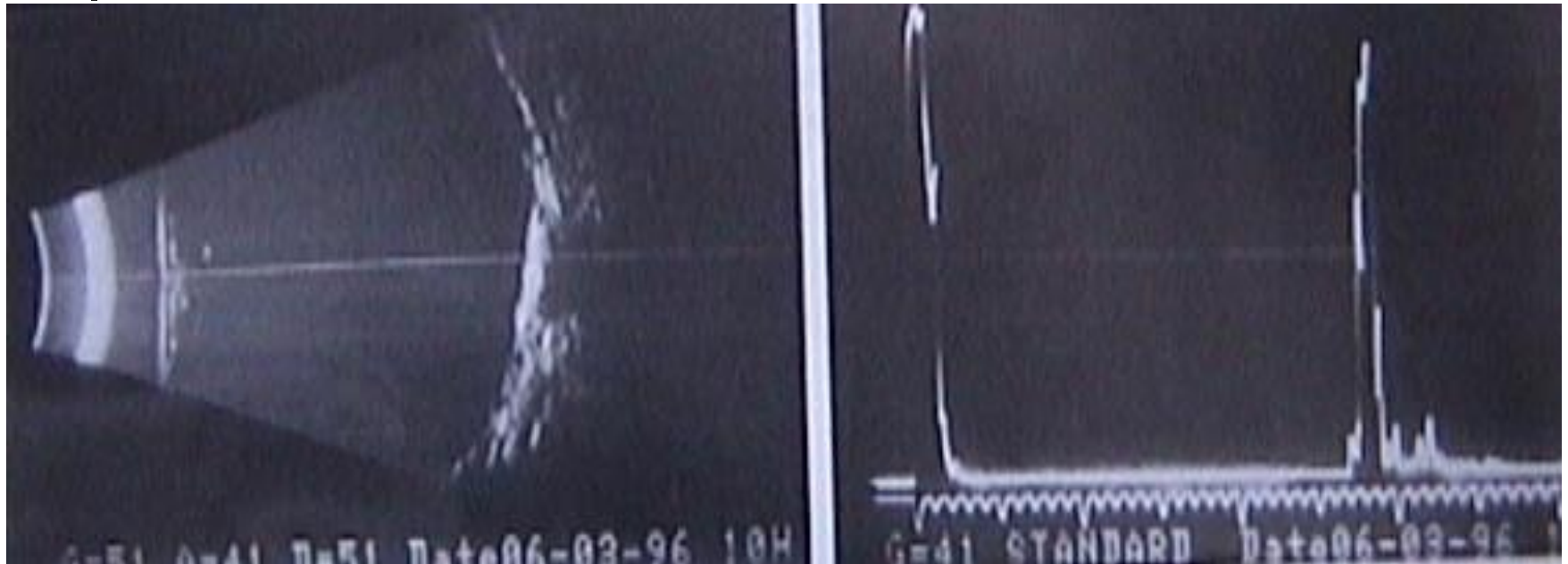
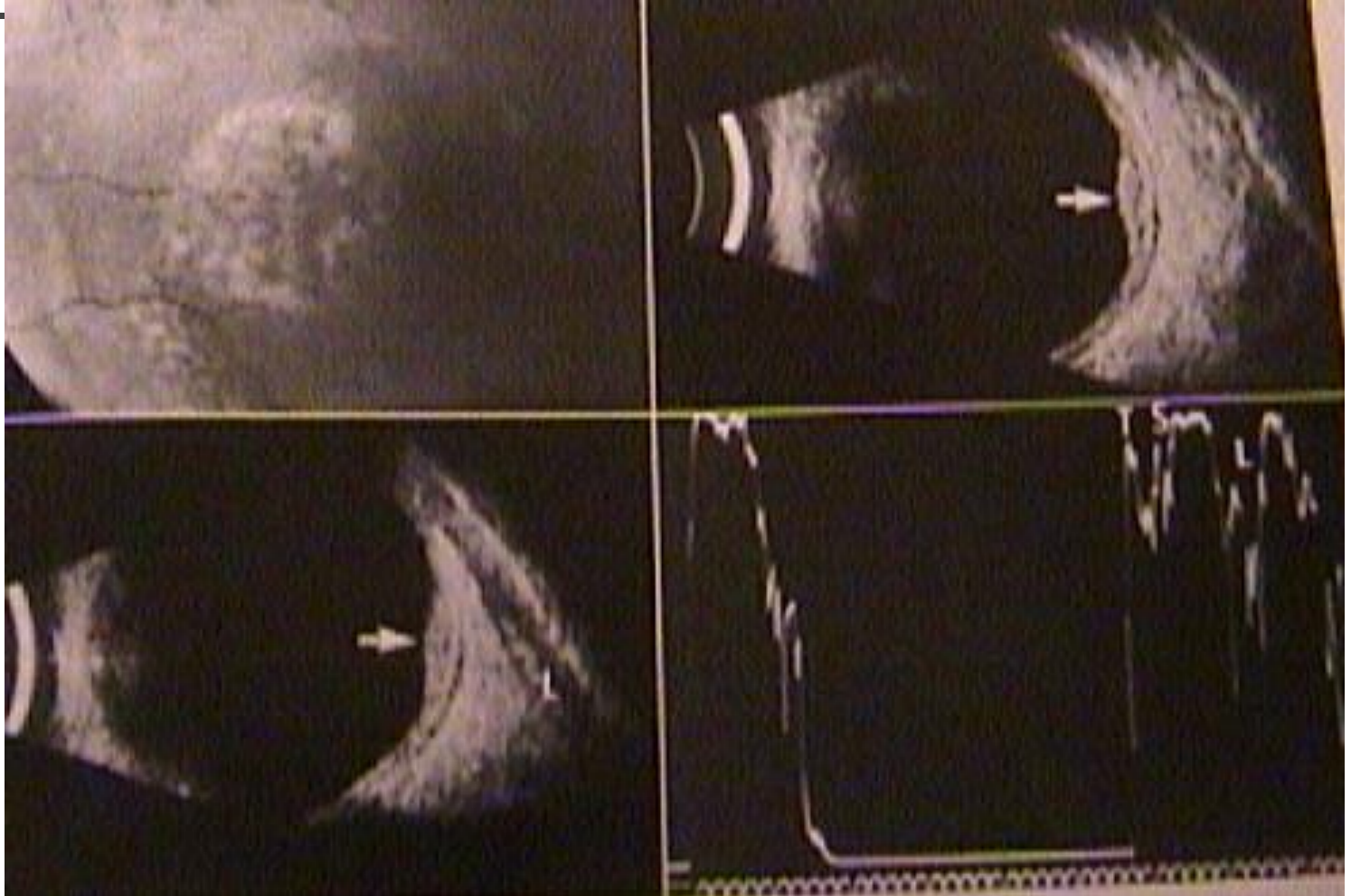


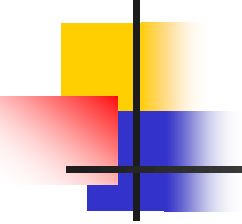
FIGURE 6-15 Choroidal hemangioma: **Left:** Transverse B-scan showing the slightly dome-shaped elevation of the posterior fundus. **Right:** Longitudinal B-scan used to determine the radial dimension. **Bottom:** Standardized A-scan at time sensitivity showing the highly reflective internal structure.

Koroidal osteom

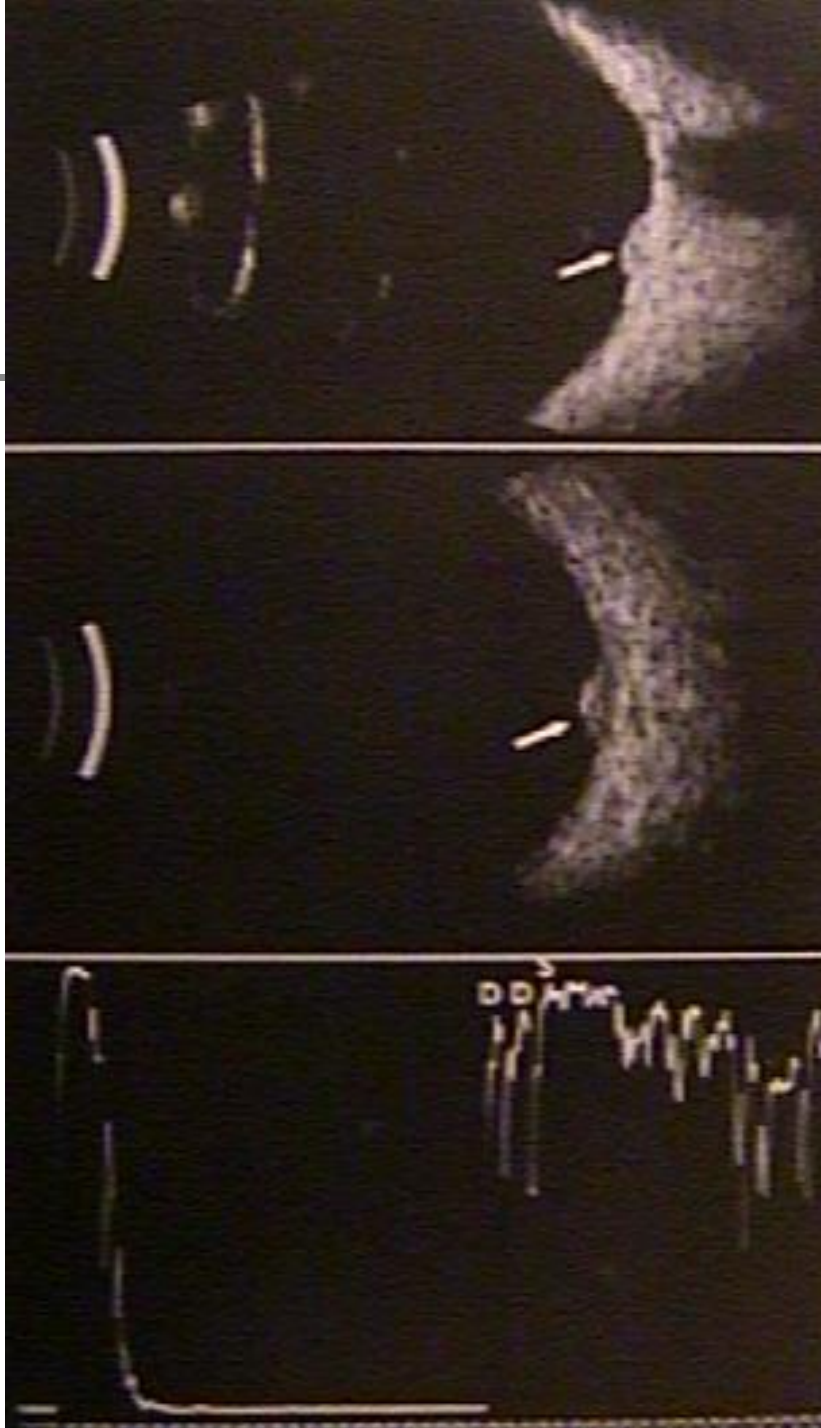


Koroidal nevüs

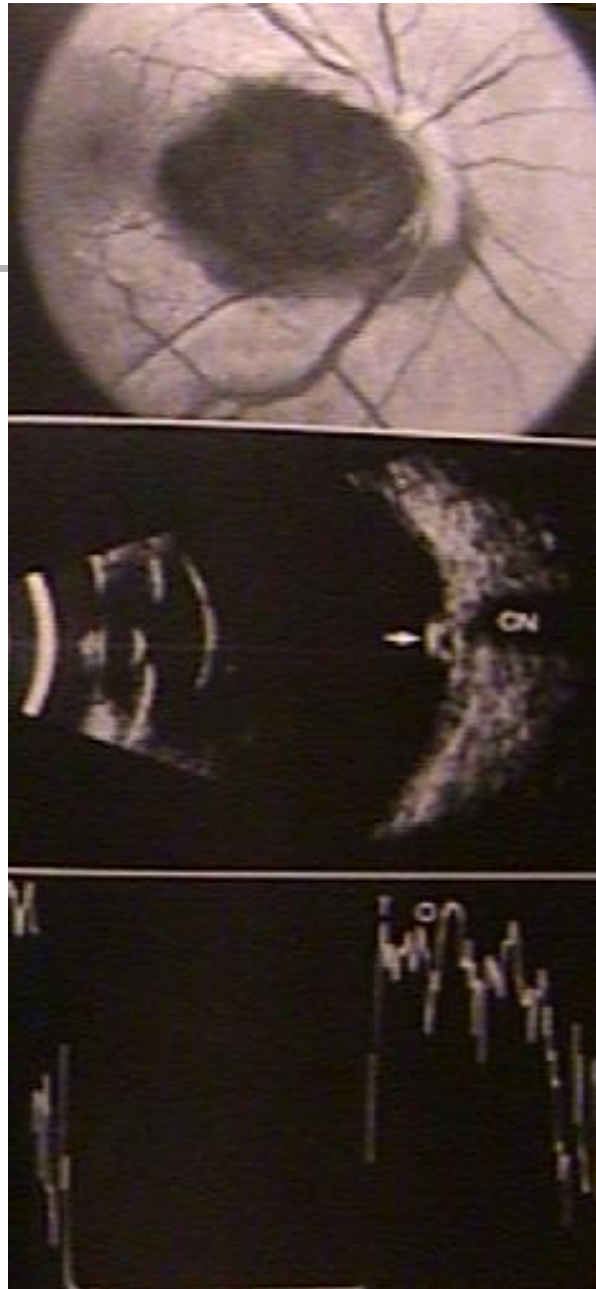




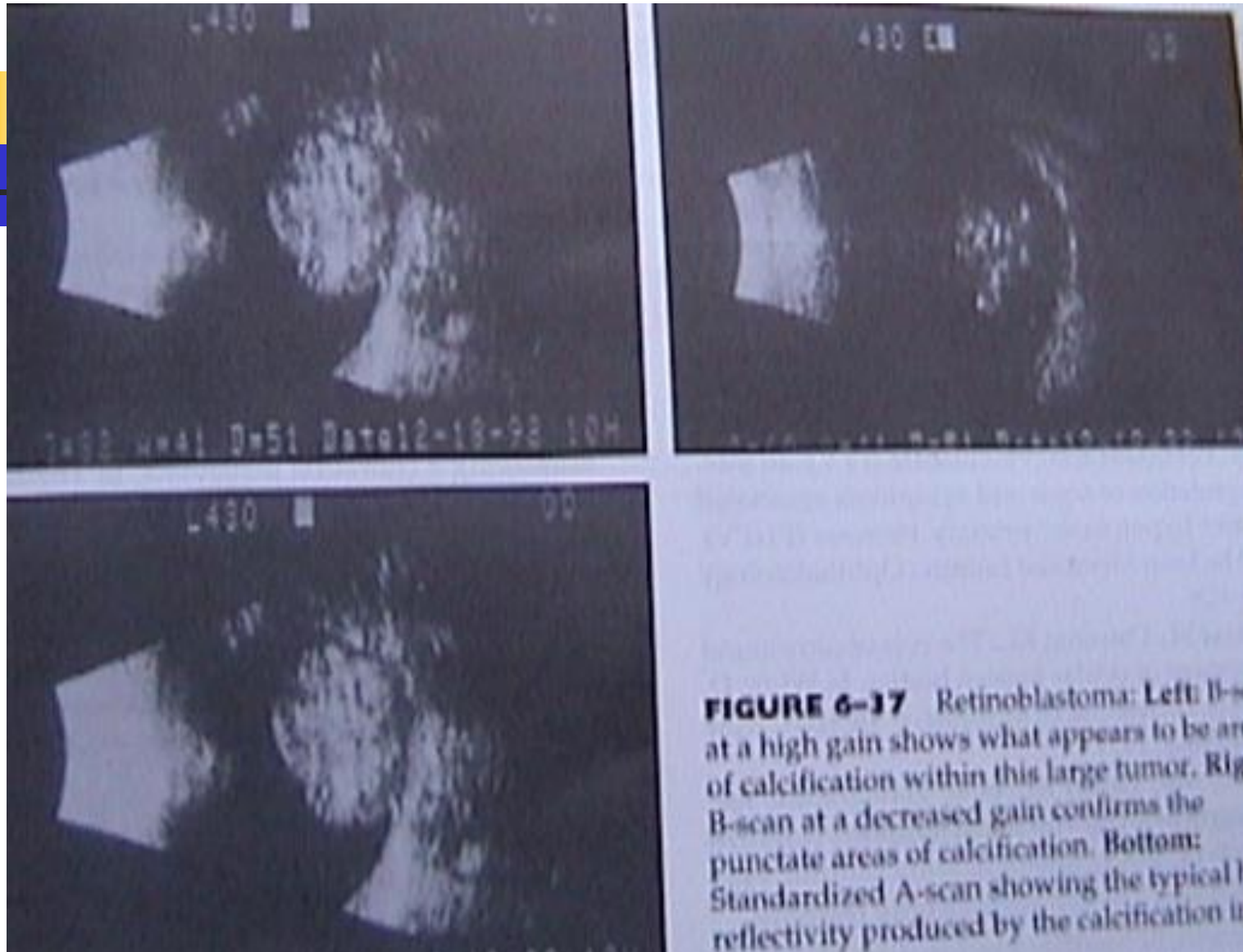
Diskiiform maküler lezyon



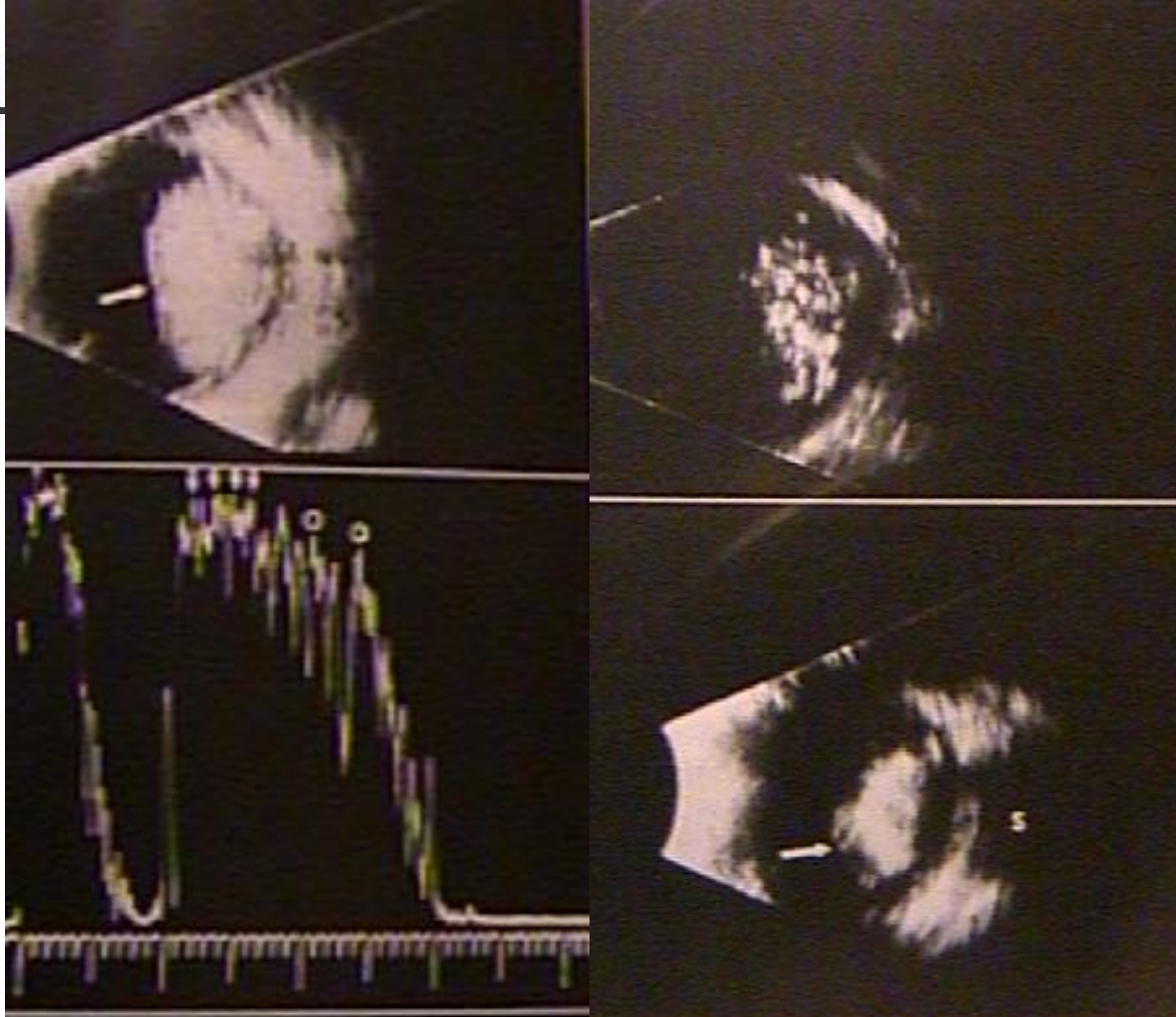
melanositom



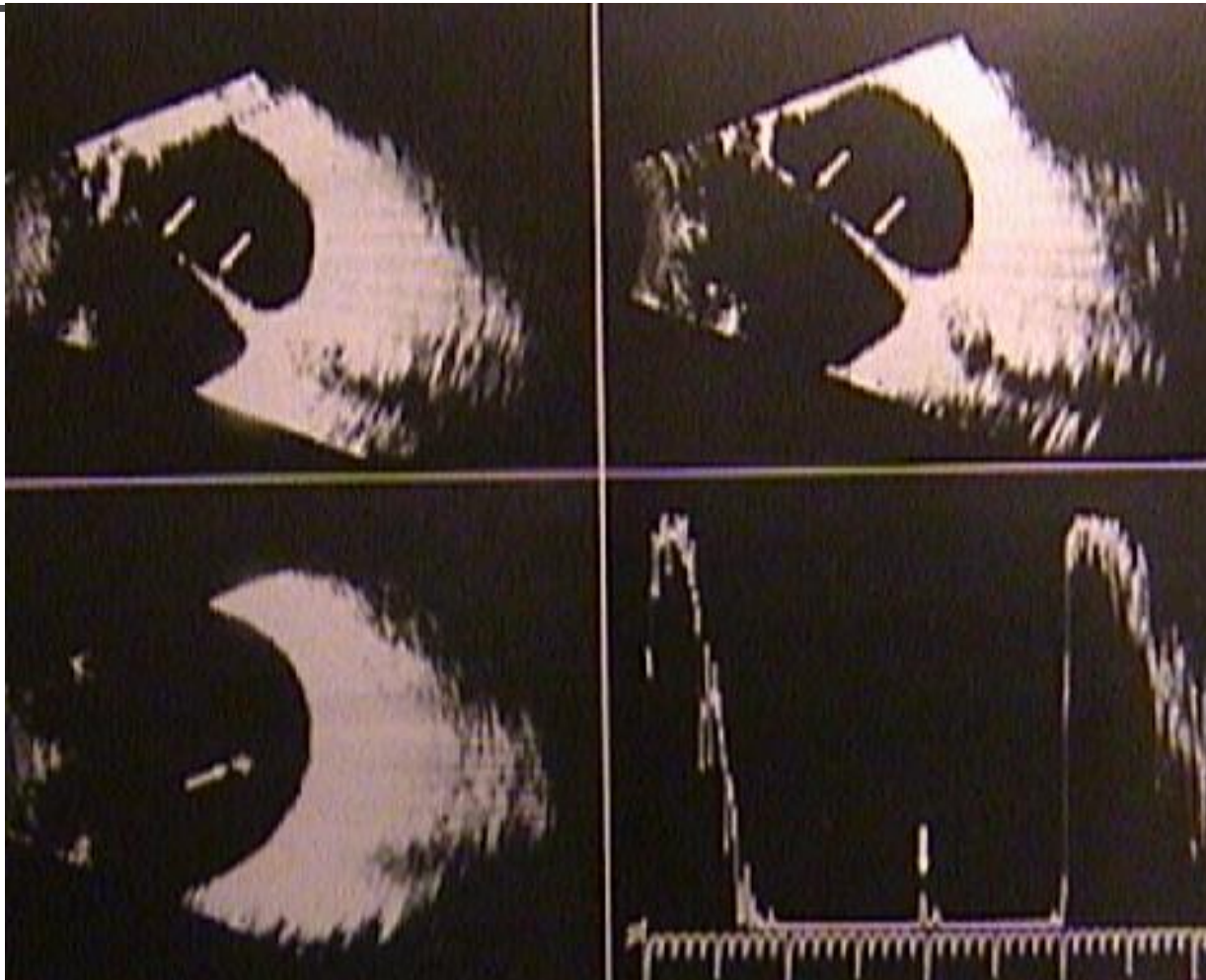
Retinoblastom



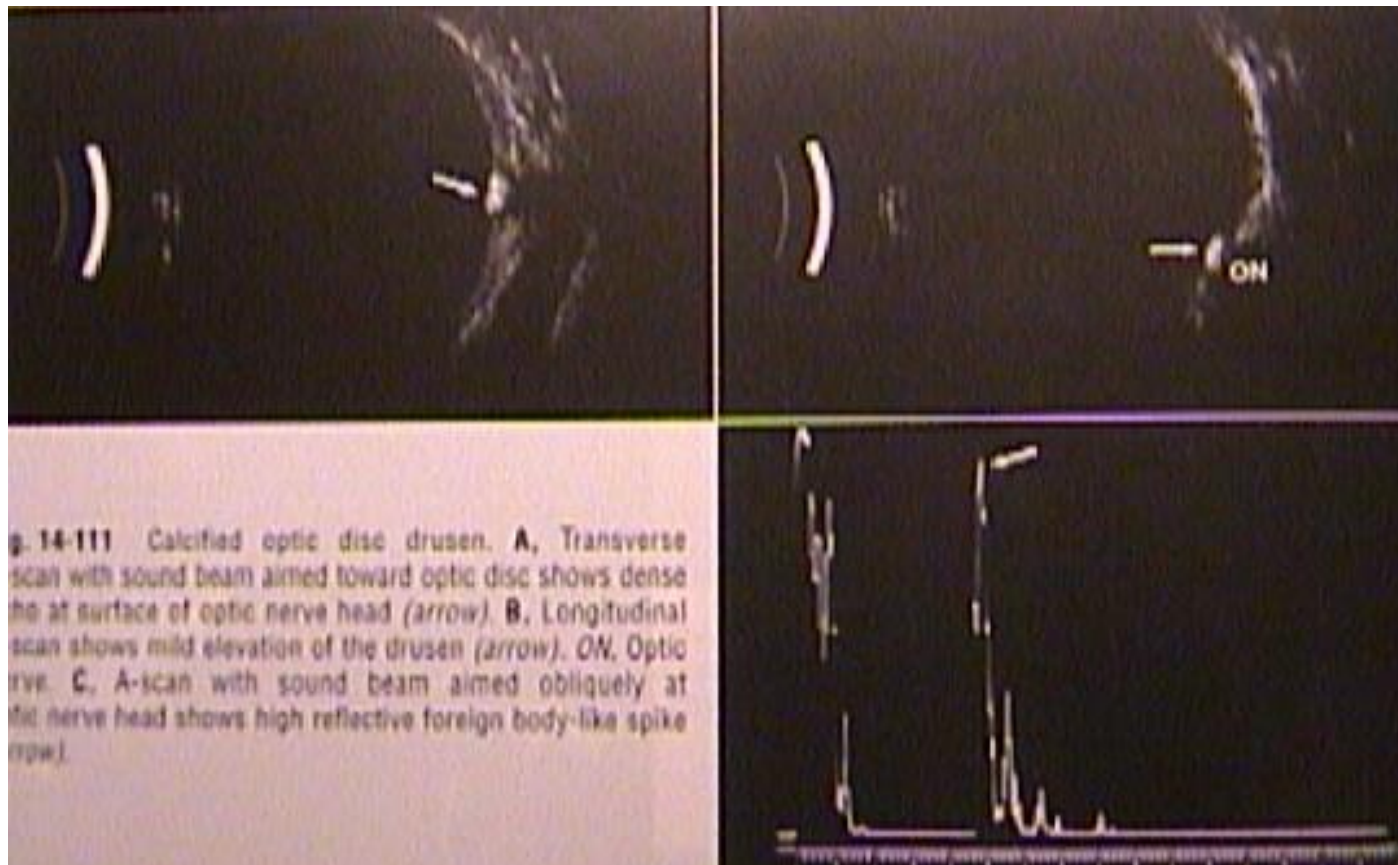
Retinoblastom-Kalsifikasyon



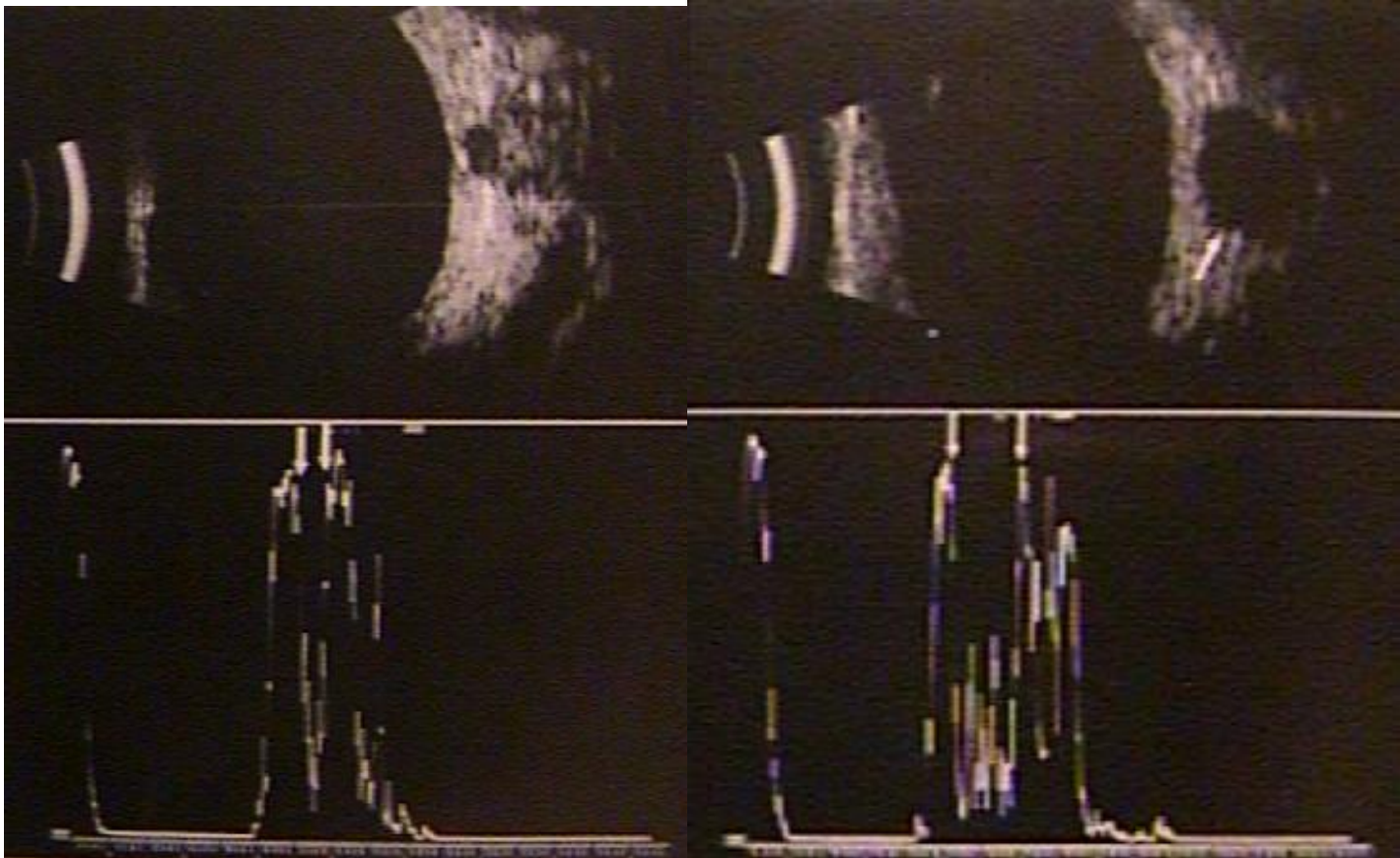
PHPV



ON Drusen



Optik nevrīt



Post stafilom

