Acil Serviste Oküler USG kullanım Alanları

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Acil tıp Kliniği

Sunu planı

- Giriş
- Ultrasonografik anatomi
- USG tekniği ve prob seçimi
- Endikasyonlar ve literatür

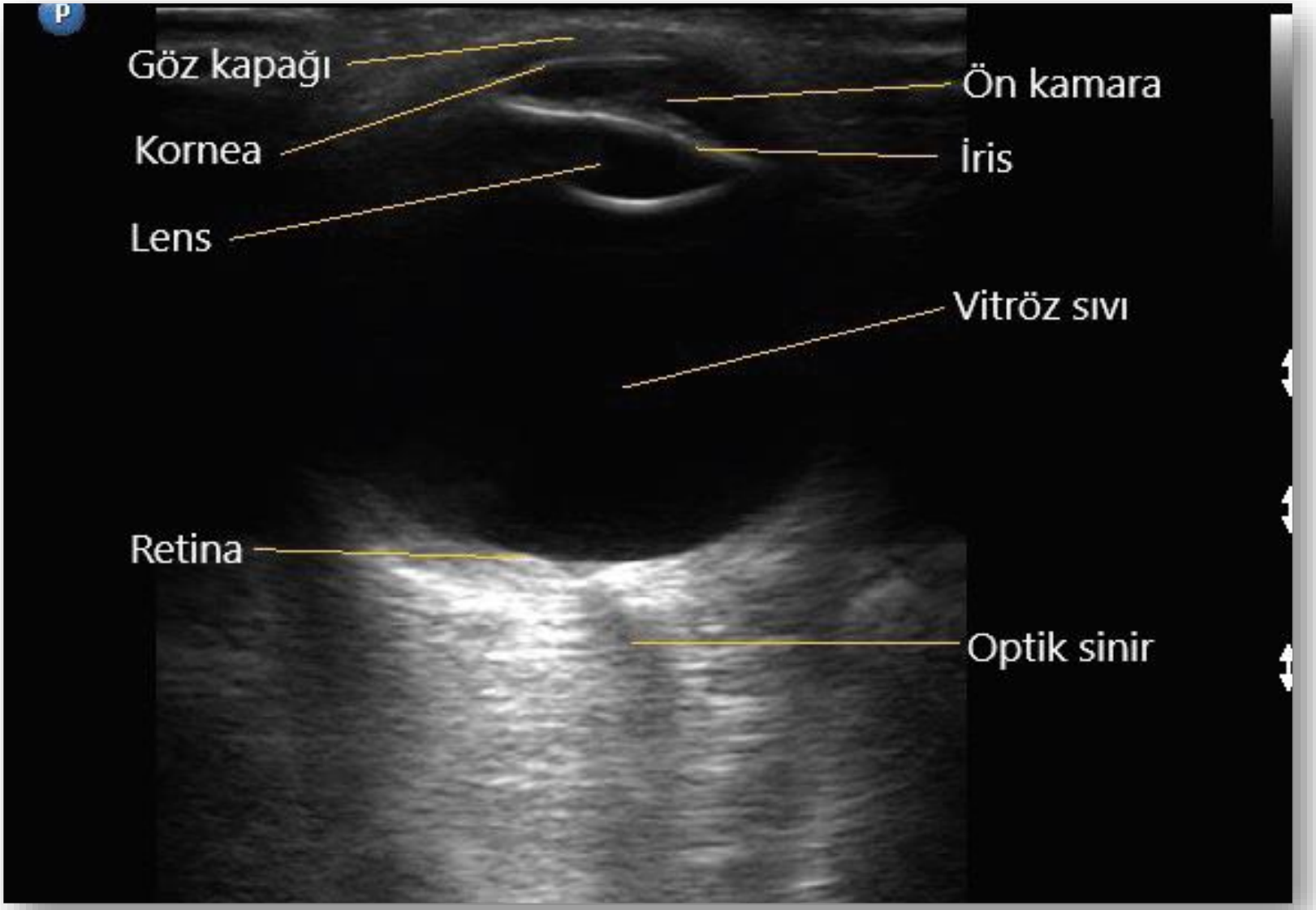
Giriş

- Bir çok göz acili durumunda fizik muayene zor ve yetersiz kalır.
- Acil vakada göz uzmanına ve uygun ekipmana ulaşmak her zaman mümkün olmamaktadır.
- USG özellikle, travmaya bağlı oküler yarlanmalarda ve kafa içi basınç artışı durumlarında oldukça faydalıdır.

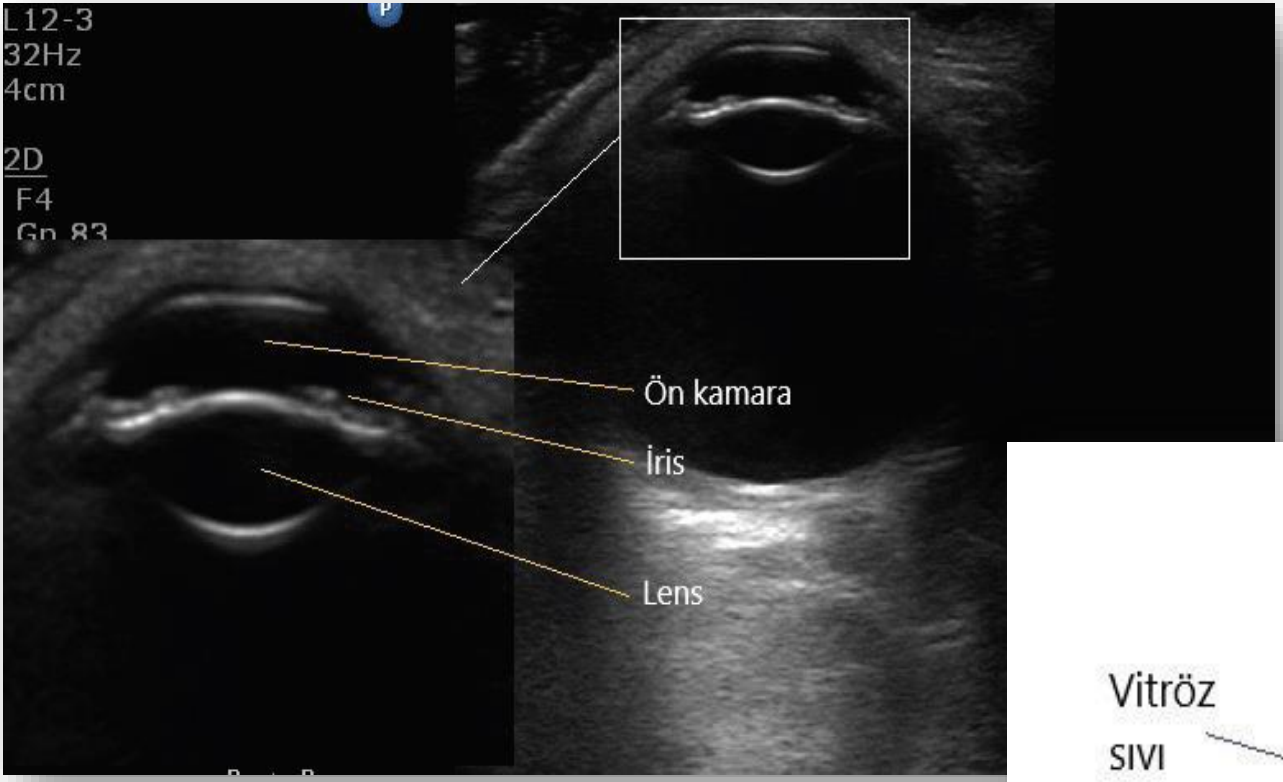
1. Ultrasonografik anatomi

- Göz Anatomik yapısı itibariyle ön çemberdeki sıvı ve vitröz sıvısı sayesinde USG değerlendirmesine elverişli organlardan bir tanesidir.
- Anatomik olarak sırasıyla;

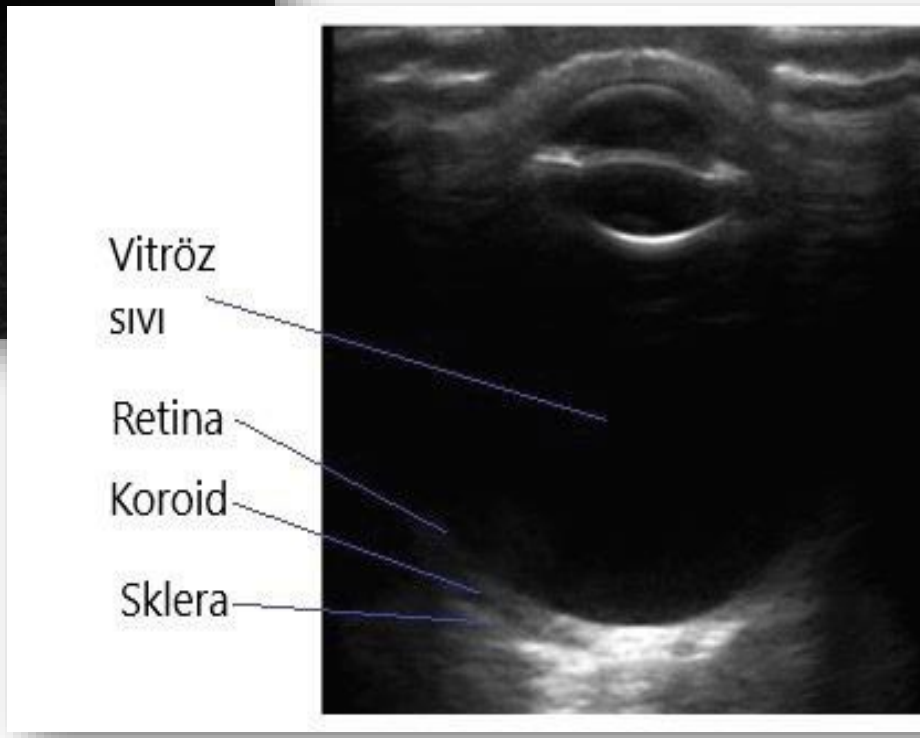
Göz kapağı, kornea, ön kamara, iris, lens, arka kamara, vitröz sıvı, retina, optik sinir şeklinde karşımıza gelmektedir



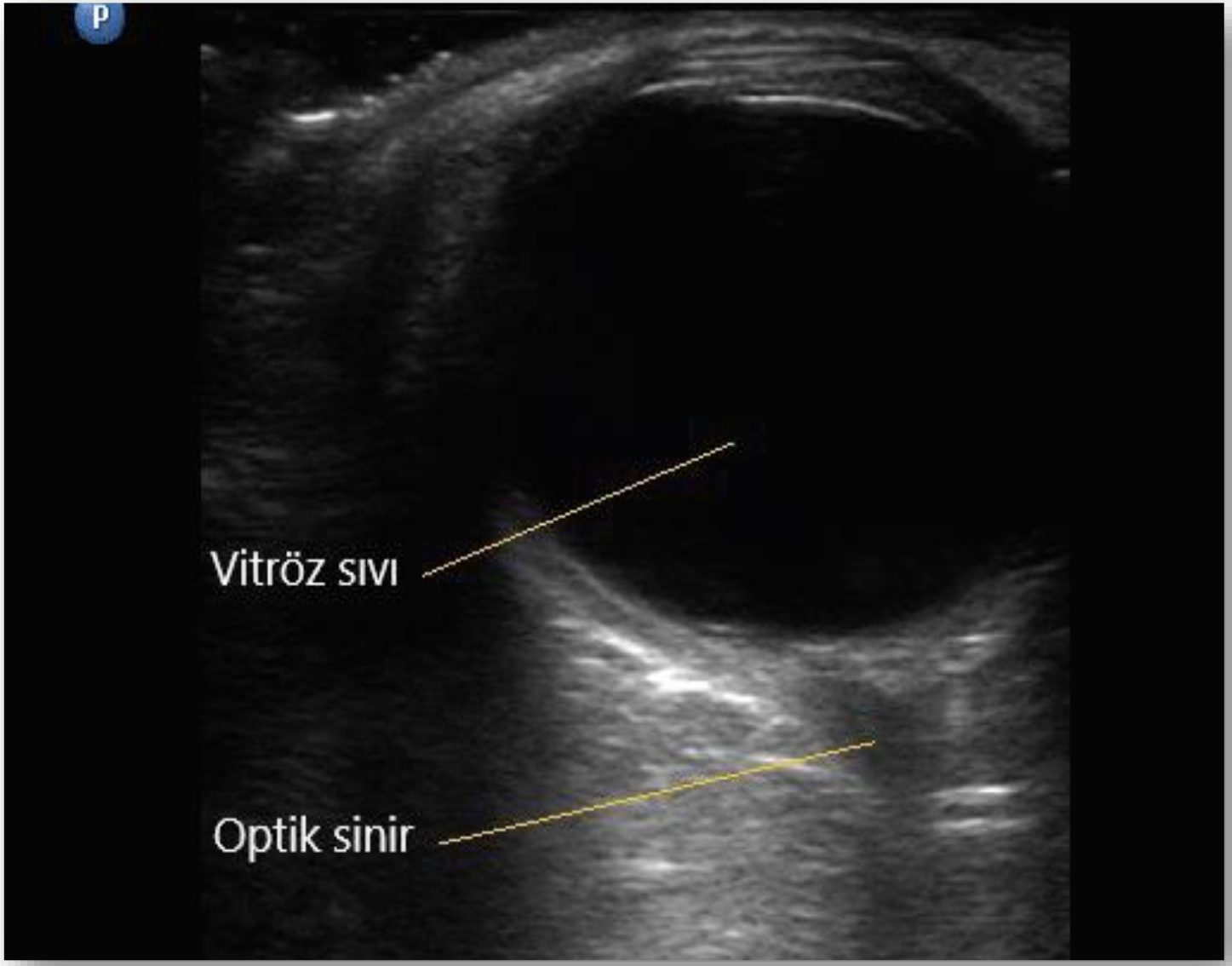
Gözün normal USG anatomisi



Ön kamara USG görünümü



Posterior göz anatomisi USG görünümü



Optik sinir USG görünümü

2. USG tekniği

- Yüksek frekanslı lineer transduser seçilmeli (7.5-15 MHz).
- Transduser, göz küresine transvers olarak yerleştirilmelidir
- Yaklaşık 60-70 derece açılanma ve kaudal yönlendirme gereklidir.

3. Endikasyonlar

a) İntrakranial basınç artışı
b) Ani görme kaybı
c) Göz travması
d) Yabancı cisim

İntrakranial basınç artışı

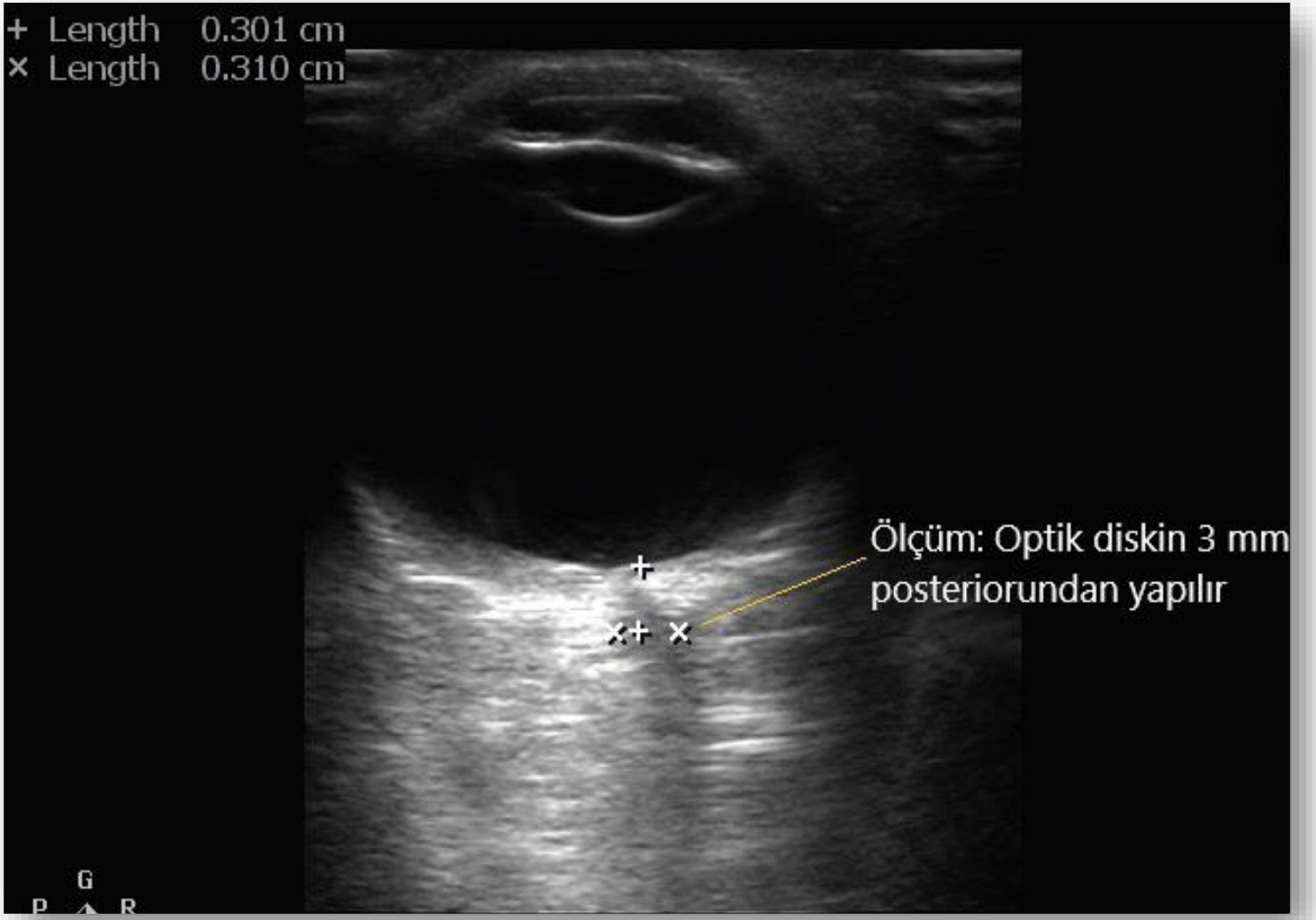
- Optik sinirin kılıfı meninksin üç tabakasından oluştuğu için basınç artışlarına da duyarlıdır.
- Optik sinir kılıfının çapı, optik sinirin retinaya girdiği yerin 3 mm posteriorundan ölçülmelidir.
- ***Optik sinir kılıf çapının normal değerinin üst sınırı***;

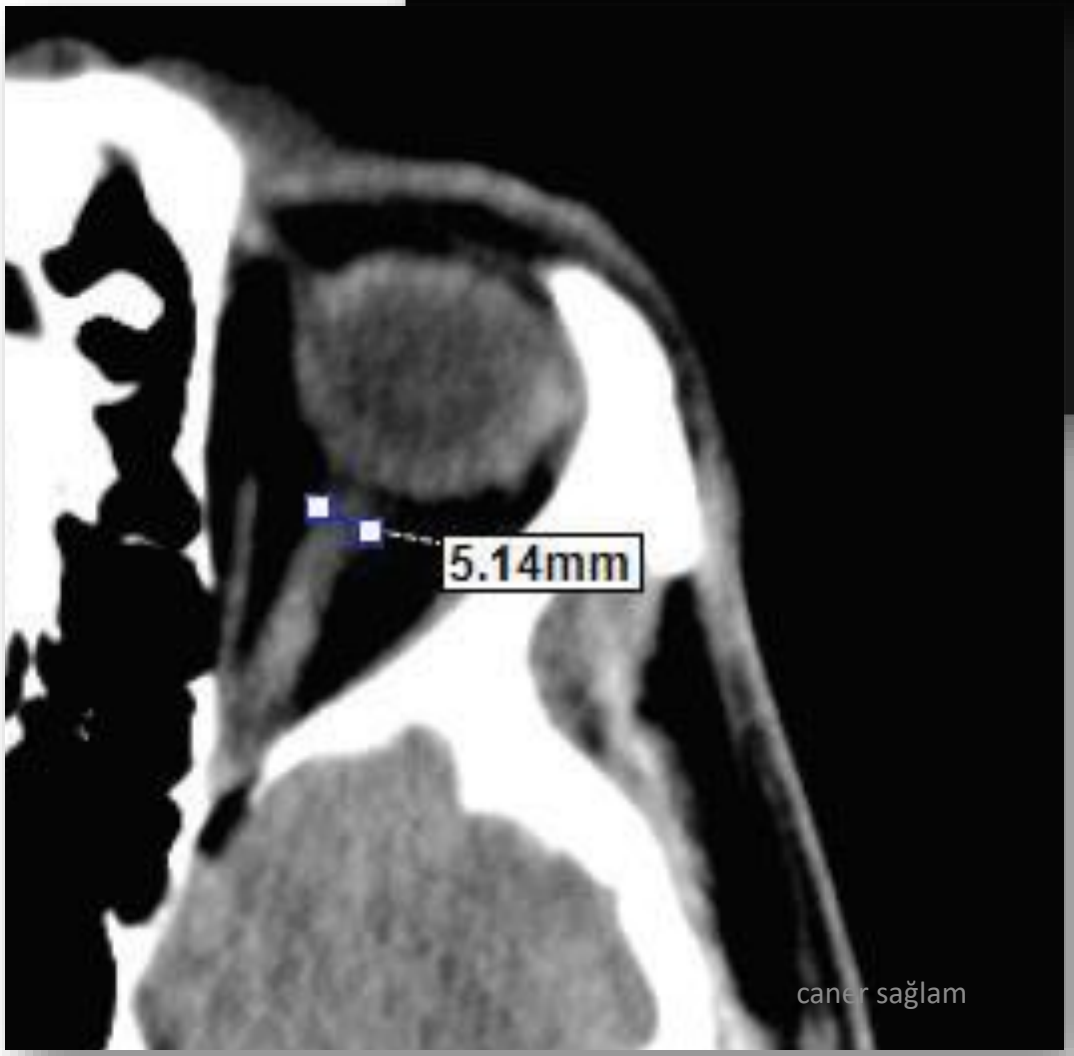
Erişkinler için: 5 mm

1-15 yaş arası çocuklar için 4.5 mm

1 yaş altı bebeklerde: 4mm olarak belirtilmiştir.

USG’de optik sinir ölçümü





- KİBAS artışı olan hastanın USG'de ve BT'de optik sinir çapı ölçümü

Emergency Department Sonographic Measurement of Optic Nerve Sheath Diameter to Detect Findings of Increased Intracranial Pressure in Adult Head Injury Patients

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H. James Norton, PhD
Troy Foster, MD

From the Department of Emergency Medicine (Tayal, Neulander, Foster), and the Department of Biostatistics (Norton), Carolinas Medical Center, Charlotte, NC; the Charlotte Eye, Ear, Nose, and Throat Associates, Charlotte, NC (Saunders); and the Department of Emergency Medicine, Medical College of Georgia, Augusta, GA (Blaivas).

Study objective: Our objective is to determine whether a bedside ultrasonographic measurement of optic nerve sheath diameter can accurately predict the computed tomographic (CT) findings of elevated intracranial pressure in adult head injury patients in the emergency department (ED).

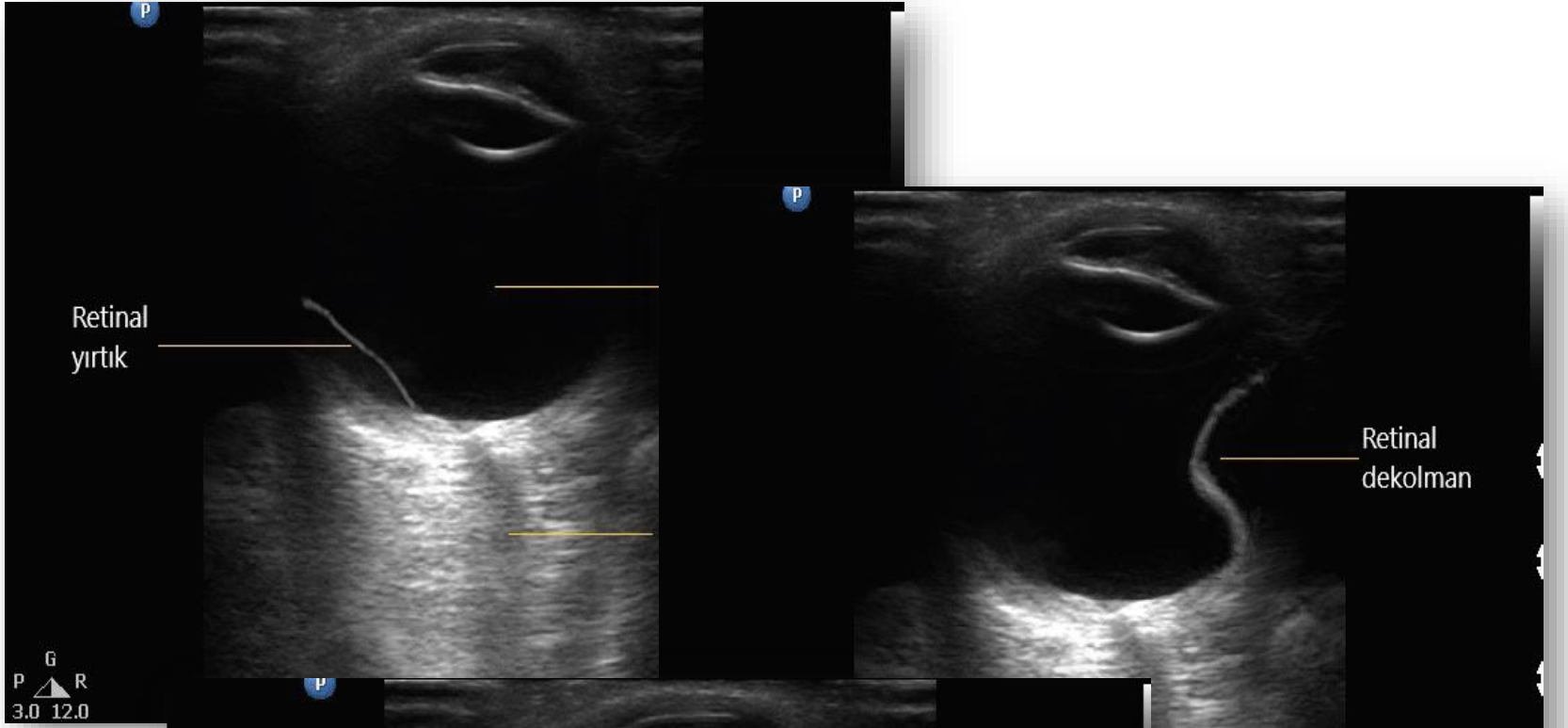
Methods: We conducted a prospective, blinded observational study on adult ED patients with suspected intracranial injury with possible elevated intracranial pressure. Exclusion criteria were age younger than 18 years or obvious ocular trauma. Using a 7.5-MHz ultrasonographic probe on the closed eyelids, a single optic nerve sheath diameter was measured 3 mm behind the globe in each eye. A mean binocular optic nerve sheath diameter greater than 5.00 mm was considered abnormal. Cranial CT findings of shift, edema, or effacement suggestive of elevated intracranial pressure were used to evaluate optic nerve sheath diameter accuracy.

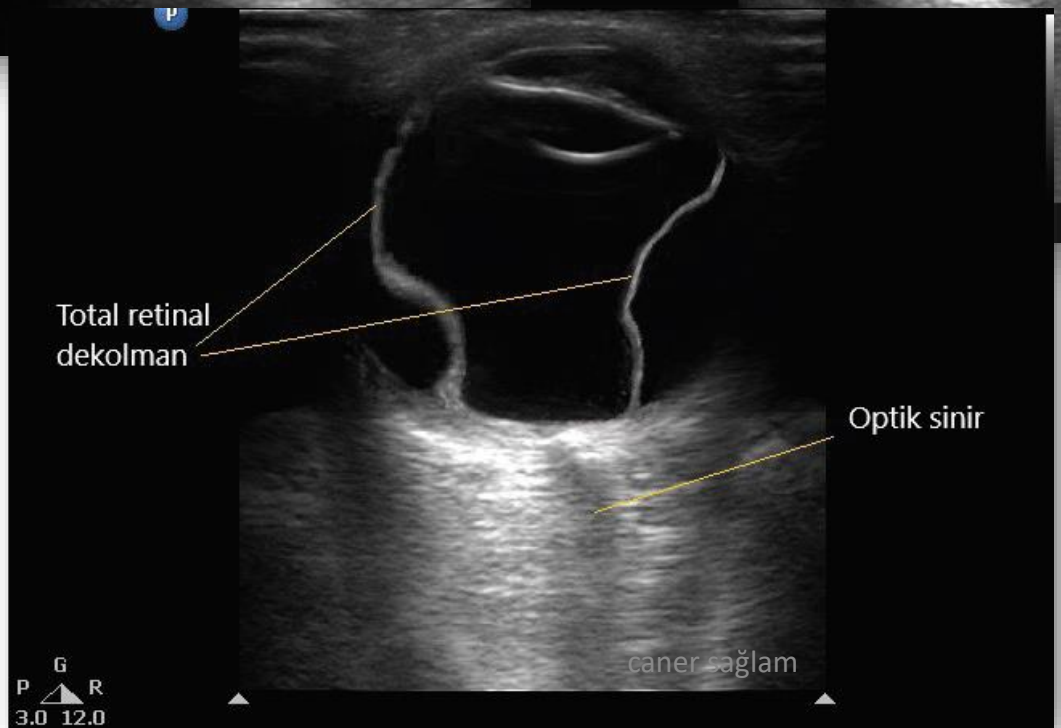
Results: Fifty-nine patients were enrolled in the study. Average age was 38 years, and median Glasgow Coma Scale score was 15 (interquartile 6 to 15). Eight patients with an optic nerve sheath diameter of 5.00 mm or more had CT findings that correlated with elevated intracranial pressure. The sensitivity for the ultrasonography in detecting elevated intracranial pressure was 100% (95% confidence interval [CI] 68% to 100%) and specificity was 63% (95% CI 50% to 76%). The sensitivity of ultrasonography for detection of any traumatic intracranial injury found by CT was 84% (95% CI 60% to 97%) and specificity was 73% (95% CI 59% to 86%).

Conclusion: Bedside ED optic nerve sheath diameter ultrasonography has potential as a sensitive screening test for elevated intracranial pressure in adult head injury. [Ann Emerg Med. 2007;49: 508-514.]

Retina dekolmanı

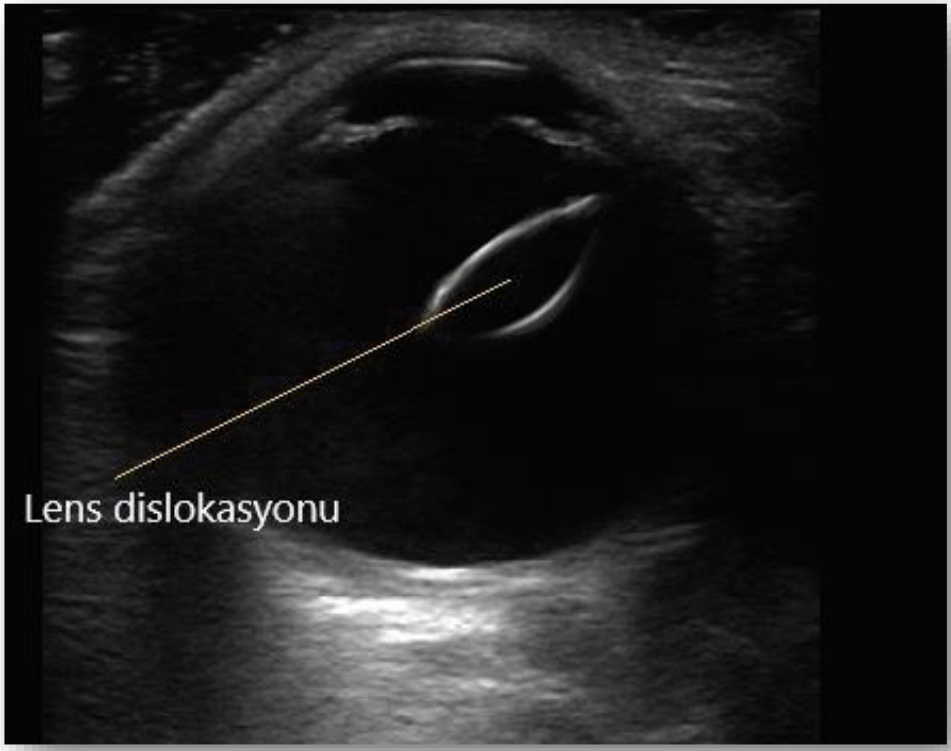
- Dekolman için USG, oftalmoskopa göre daha güvenilirdir.
- Posterior vitröz dekolman genellikle yaşlı ve miyoplu bireylerde veya travma durumunda görülür.
- Vitröz dekolman ve retinal yırtık; *retina dekolmanının* en sık sebebidir.
- Dekolmanın makulayı içermesi durumunda ani santral görme kaybı gelişir.


Retinal
yırtık
Retinal
dekolman


Total retinal
dekolman
Optik sinir
caner sağlam

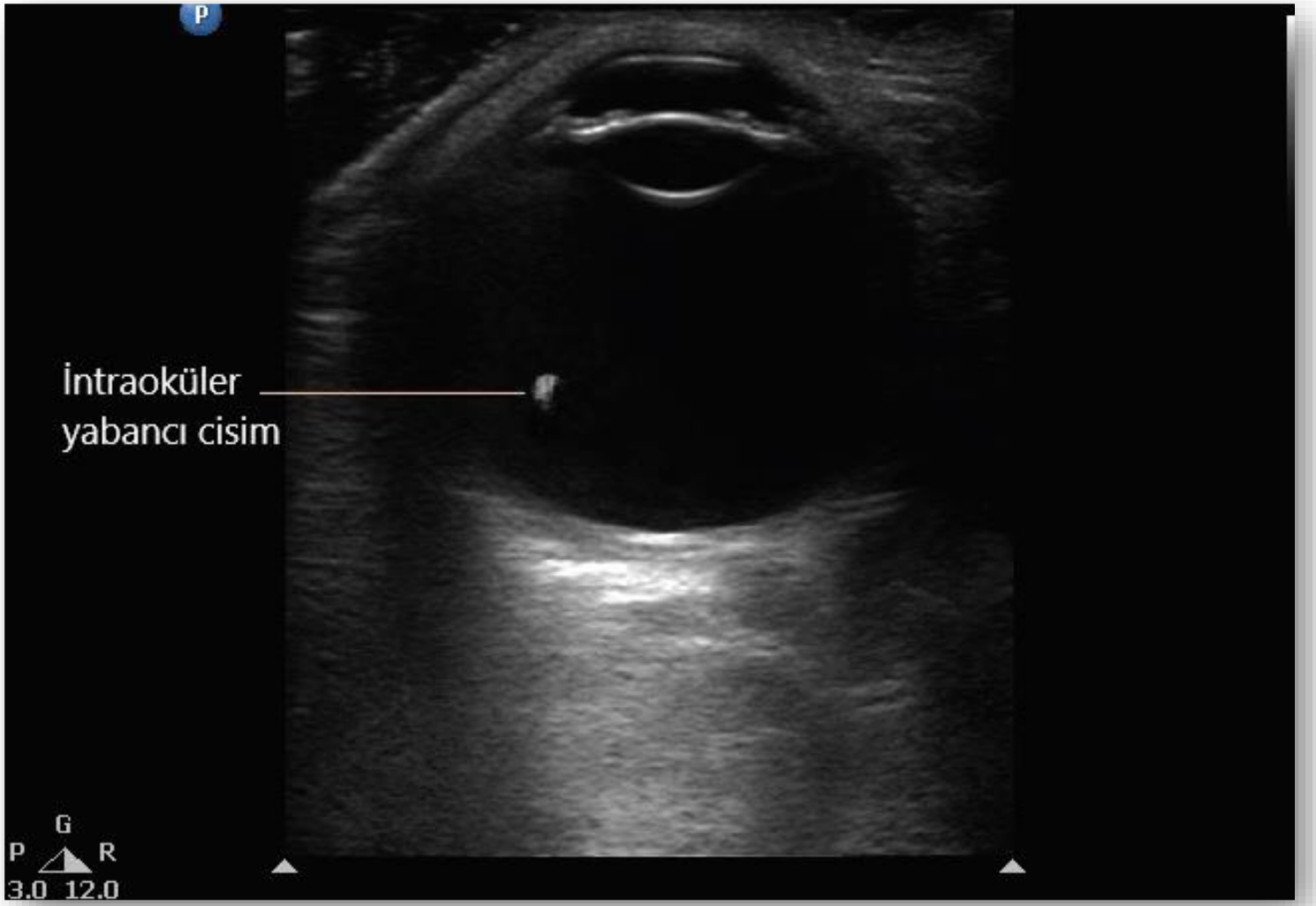
Lens dislokasyonu

- Genellikle künt travma sonrası gelişir
- Dislokasyon parsiyel veya komplet olabilir.
- Lens en sık posteriora doğru disloke olur ve vitröz sıvı içerisinde yüzer şekilde görülür



Göz içi yabancı cisim

- USG hem tanı koymada hem de yerini lokalize etmede kullanılabilir.
- Sensitivitesi %87-96, spesifitesi %92-96 olarak bildirilmektedir.
- Metal, cam veya plastik yapıdaki yabancı cisimler düzensiz kenarlı ve yüksek yansıtıcı yapılar olarak görülürler, reverberasyon artefaktı ve akustik gölgelenmeye sebep olurlar



Göz içi yabancı cisim

JAMA Network Open

Original Investigation | Imaging

Ocular Point-of-Care Ultrasonography to Diagnose Posterior Chamber Abnormalities

A Systematic Review and Meta-analysis

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Abstract

IMPORTANCE Diagnosing posterior chamber ocular abnormalities typically requires specialist assessment. Point-of-care ultrasonography (POCUS) performed by nonspecialists, if accurate, could negate the need for urgent ophthalmologist evaluation.

OBJECTIVE This meta-analysis sought to define the diagnostic test characteristics of emergency practitioner–performed ocular POCUS to diagnose multiple posterior chamber abnormalities in adults.

DATA SOURCES PubMed (OVID), MEDLINE searched from inception through June 2019 registries were also searched. Bibliographies searched, and experts in the field were queri

STUDY SELECTION Included studies compa practitioners with a reference standard of op excluded. All 116 studies identified during abs

Key Points

Question What is the accuracy of ocular point-of-care ultrasonography performed by emergency practitioners in diagnosing posterior chamber abnormalities?

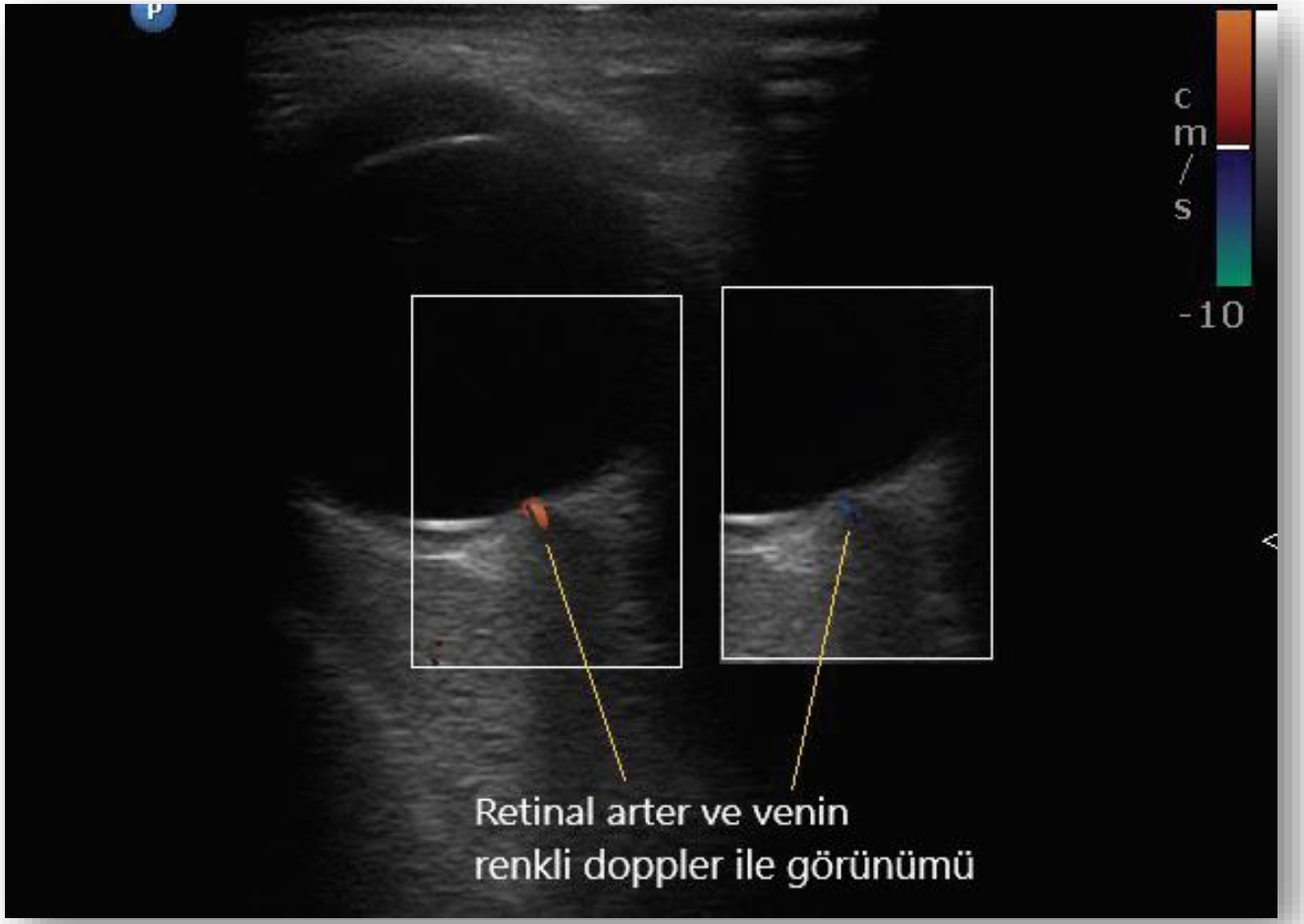
Findings This systematic review and meta-analysis found high sensitivity and

Table 3. Results of Meta-analyses

Diagnosis	Studies, No.	Eyes, No.	Sensitivity (95% CI)	I^2, %	Specificity (95% CI)	I^2, %	Positive Likelihood Ratio (95% CI)	Negative Likelihoo (95% CI)
Retinal detachment	9	1189	0.94 (0.88-0.97)	54	0.94 (0.85-0.98)	92	16.6 (6.1-45.3)	0.064 (0.031-0.1
Vitreous hemorrhage	5	739	0.90 (0.65-0.98)	92	0.92 (0.75-0.98)	96	11.7 (3.1-44.3)	0.112 (0.027-0.4
Vitreous detachment	4	388	0.67 (0.51-0.81)	75	0.89 (0.53-0.98)	96	6.2 (1.2-31.3)	0.36 (0.25-0.53)
Lens dislocation	2	400	0.97 (0.83-0.99)		0.99 (0.97-1.00)		89.3 (33.0-237.0)	0.03 (0.00-0.22)
Intraocular foreign body	2	400	1.00 (0.81-1.00)		0.99 (0.99-1.00)		383.0 (54.0-2712.0)	0
Globe rupture	2	400	1.00 (0.63-1.00)		0.99 (0.99-1.00)		392.0 (55.0-2779.0)	0
Sensitivity analyses of studies with low risk of bias								
Retinal detachment	6	940	0.94 (0.83-0.98)	60	0.93 (0.76-0.98)	94	11.6 (9.2-14.8)	0.07 (0.04-0.13)
Vitreous detachment	2	286	0.70 (0.59-0.80)		0.89 (0.84-0.93)		6.60 (4.31-9.97)	0.330 (0.236-0.4
Vitreous hemorrhage	3	637	0.85 (0.77-0.91)	92	0.92 (0.89-0.94)	60	10.10 (7.55-13.60)	0.160 (0.106-0.2

Retinal arter veya ven tıkanıklığı

- Ani görme kaybı şikayetiyle başvururlar
- İnceleme renkli veya nabız-dalga Doppler ile yapılmalı
- Değerlendirme karşılıklı her iki gözde yapılmalı.



Normal akımlı arter ve ven görünümü

Kaynaklar

- O. John Ma, James R. Mateer, Robert F. Reardon, Scott A. Joing - Ma and Mateer’s Emergency Ultrasound-McGraw-Hill
- E. Erol Ünlüer, Yatakbaşı Ultrasonografi, İstanbul Tıp Kitabevleri, 2020
- Pubmed