Ecografia B Scan vs OCT

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L’OCT ha diminuito le indicazioni dell’ecografia?

A Scan

B Scan

Ecografia OCT

INDICAZIONI DELL' OCT

Mezzi diottrici trasparenti

INDICAZIONI DELL' ECOGRAFIA

Mezzi diottrici opachi

Patologie orbitarie

Ecografia
Oftalmoscopia

MEZZI DIOTTRICI TRASPARENTI

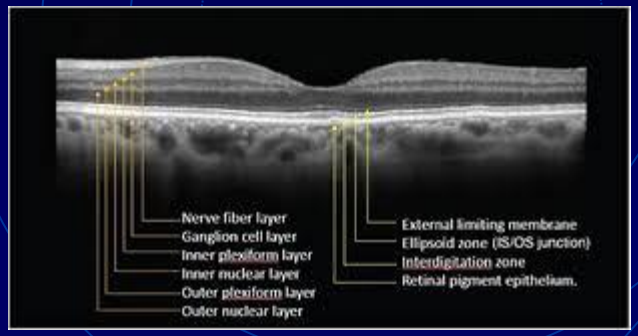
Neoformazioni
Distacco di retina
Lacerazioni
Maculopatie

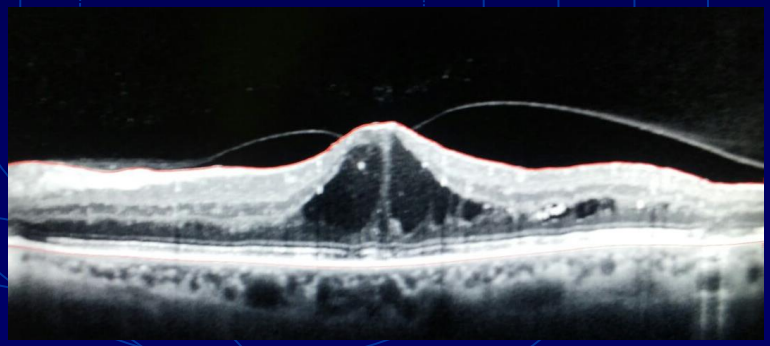
MEZZI DIOTTRICI OPACHI

Neoformazioni
Distacco di retina
Lacerazioni
Maculopatie

RISOLUZIONE

OCT: 12 micron

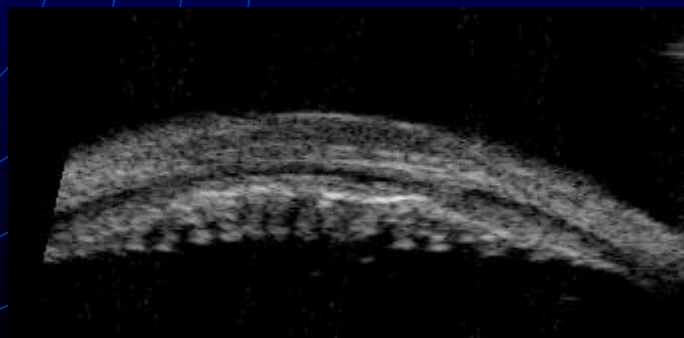


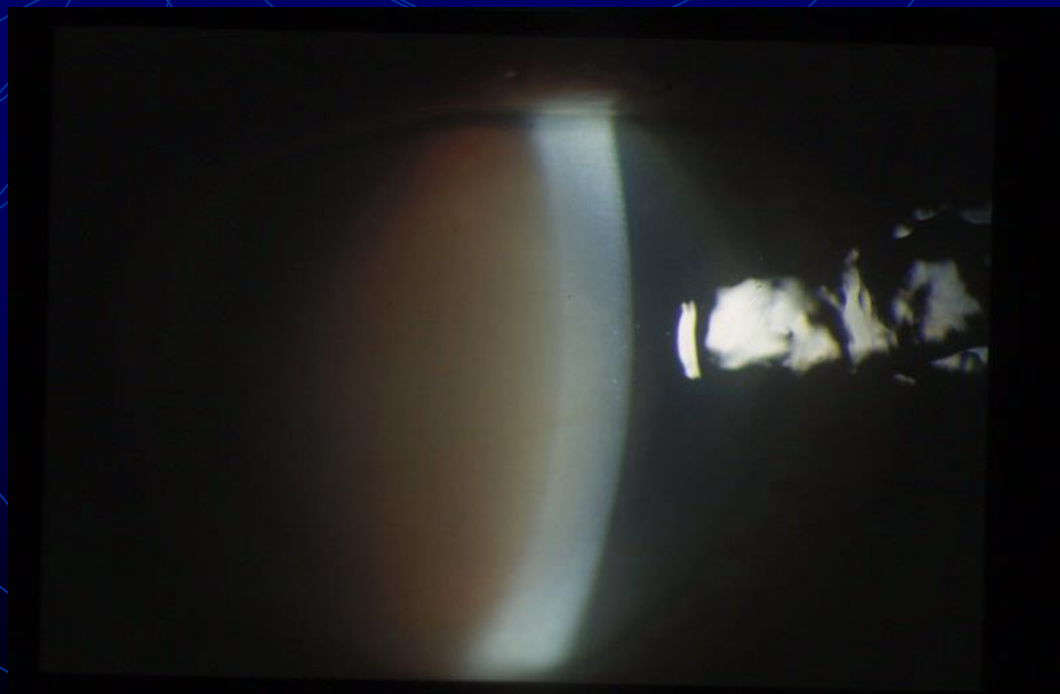


Eco:

150 micron

50 micron





MEZZI DIOTTRICI OPACHI

Neoformazioni
Distacco di retina
Lacerazioni
Maculopatie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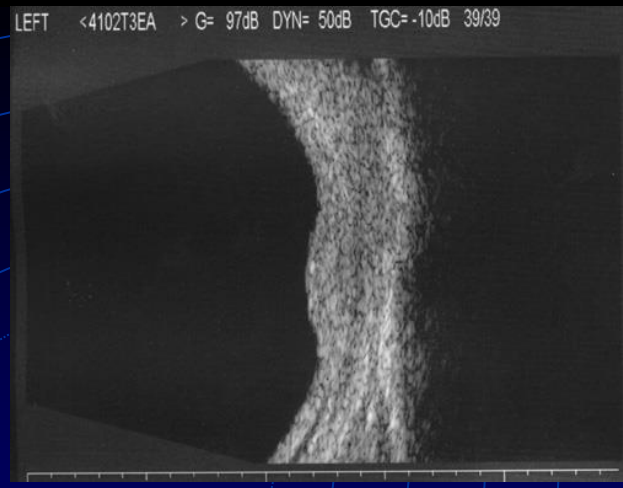
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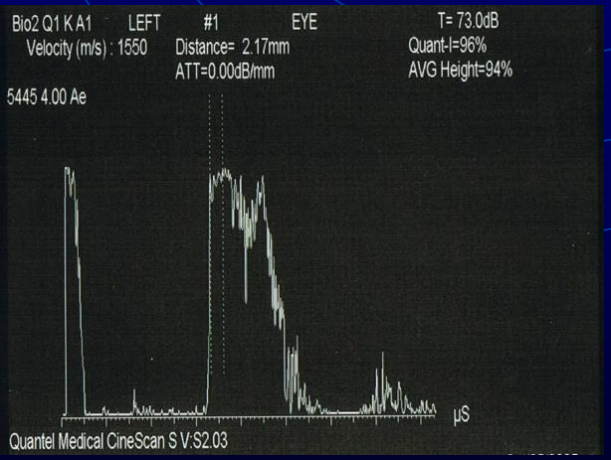
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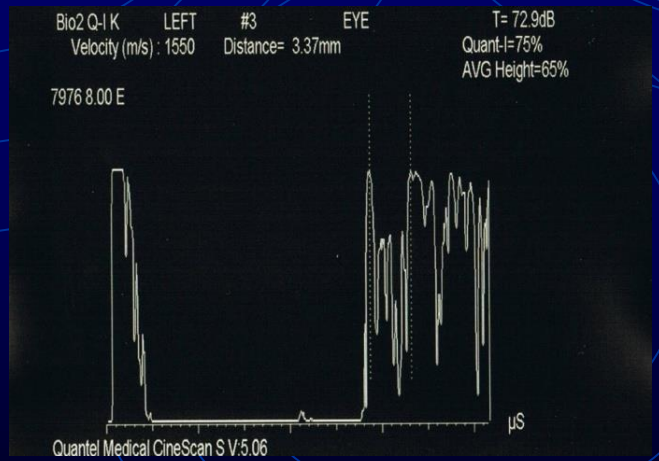
5445 4.00 Ae
µS
Quantel Medical CineScan S V:S2.03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7976 8.00 E
µS
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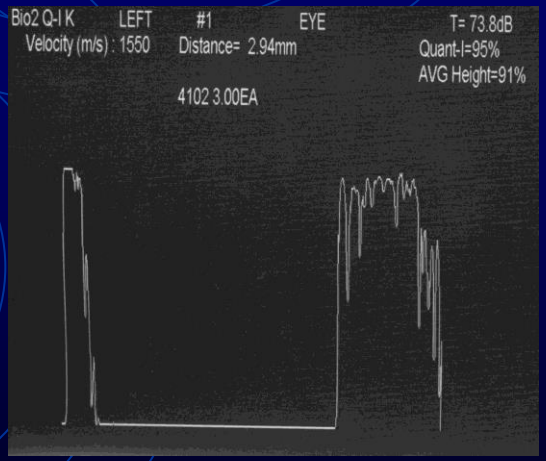
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4102 3.00EA

MEZZI DIOTTRICI OPACHI

Neoformazioni
Distacco di retina
Lacerazioni
Maculopatie

PRE OPERATORIO

DIAGNOSTICARE

STADIARE


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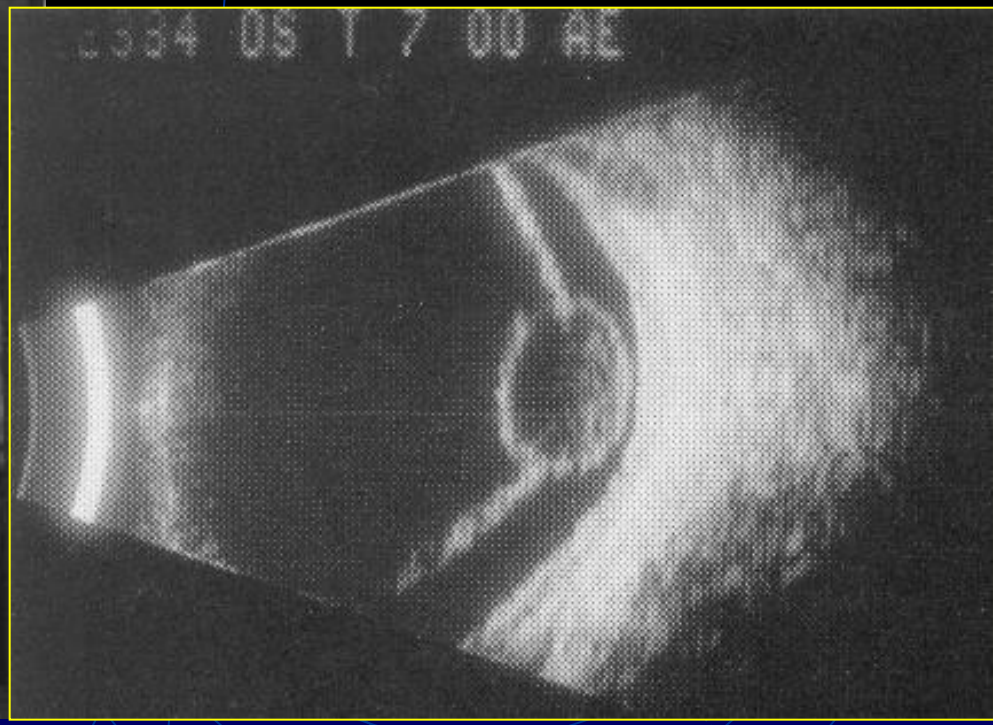
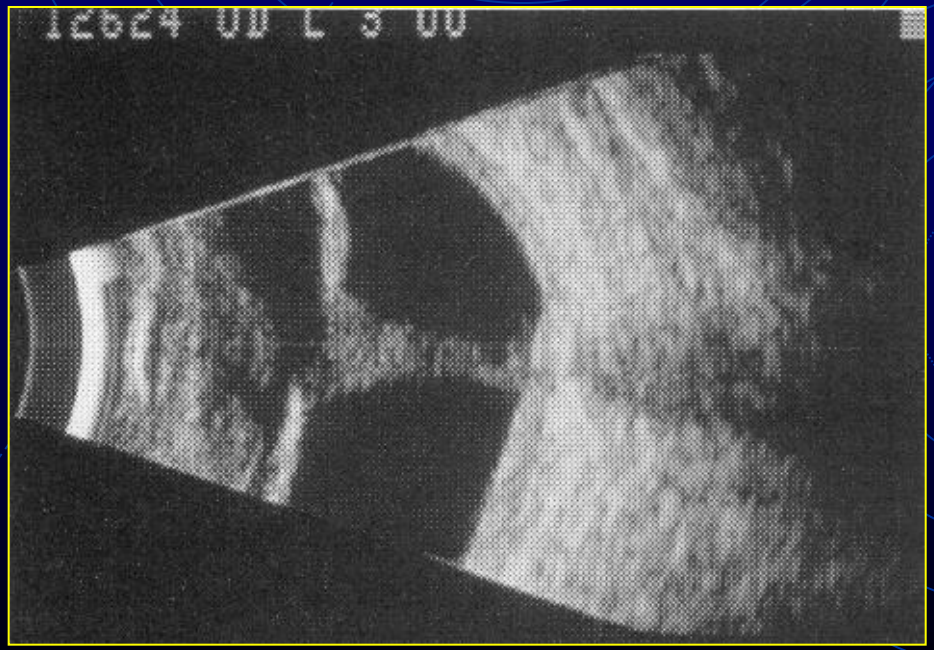
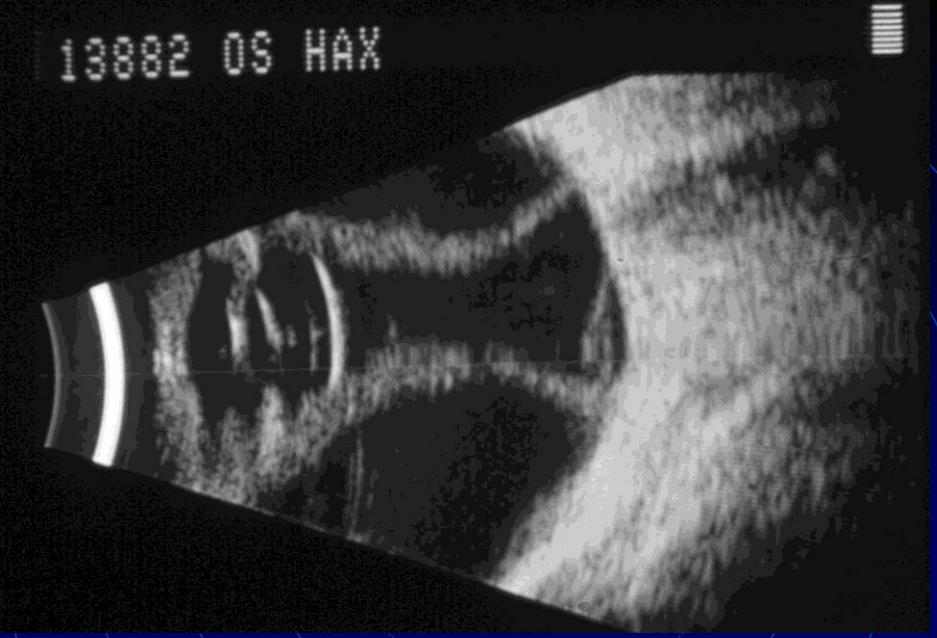
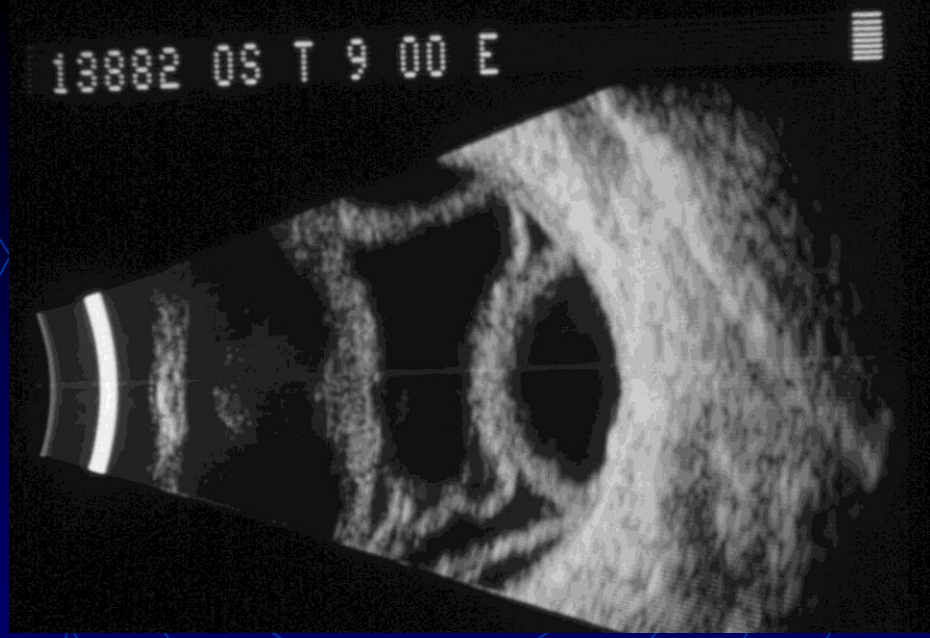





13882 OS HAX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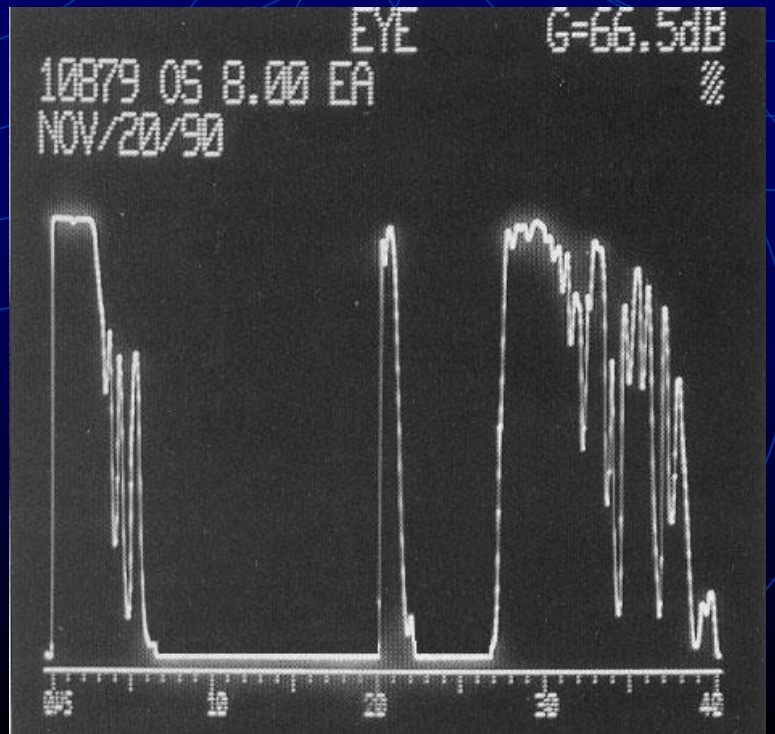
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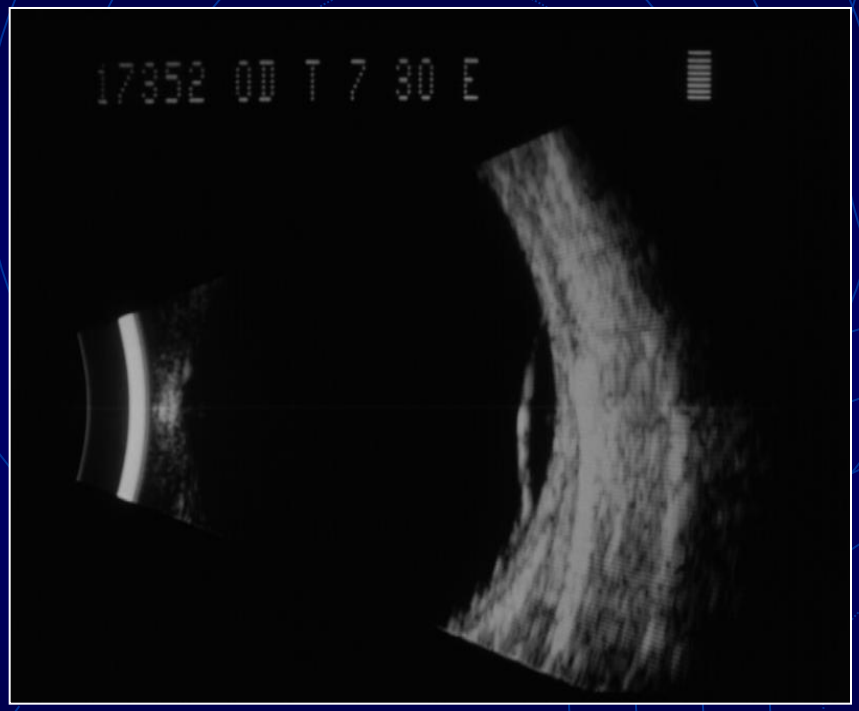
10879 OS 8.00 EA
NOV/20/90
0MS
10
20
30
40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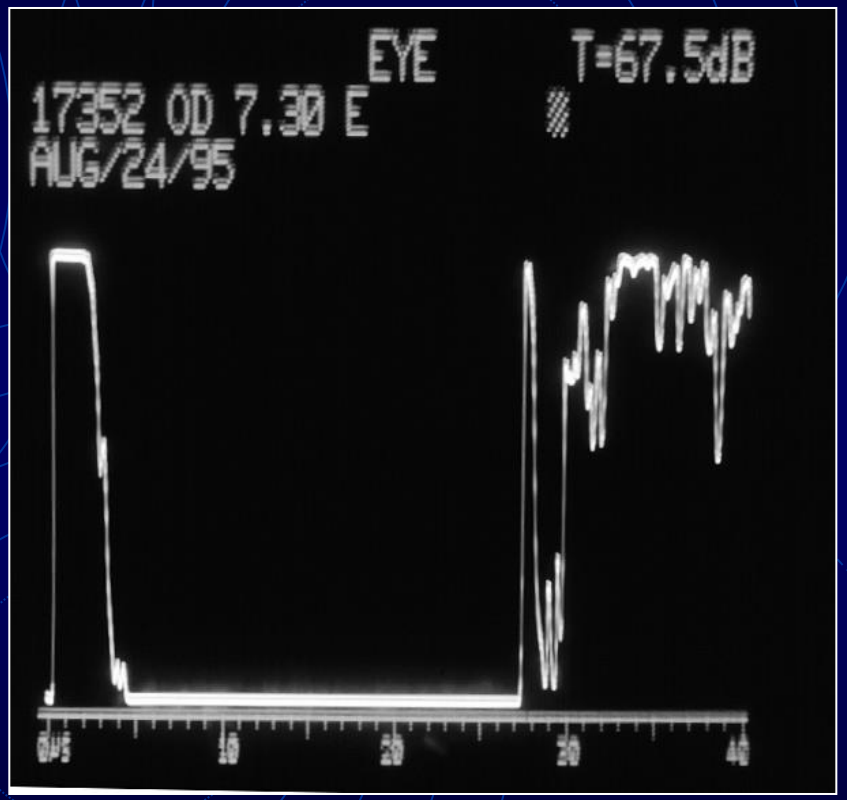
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T=67.5dB
17352 OD 7.30 E
AUG/24/95
0MS
10
20
30
40

MEZZI DIOTTRICI OPACHI

Neoformazioni
Distacco di retina
Lacerazioni
Maculopatie


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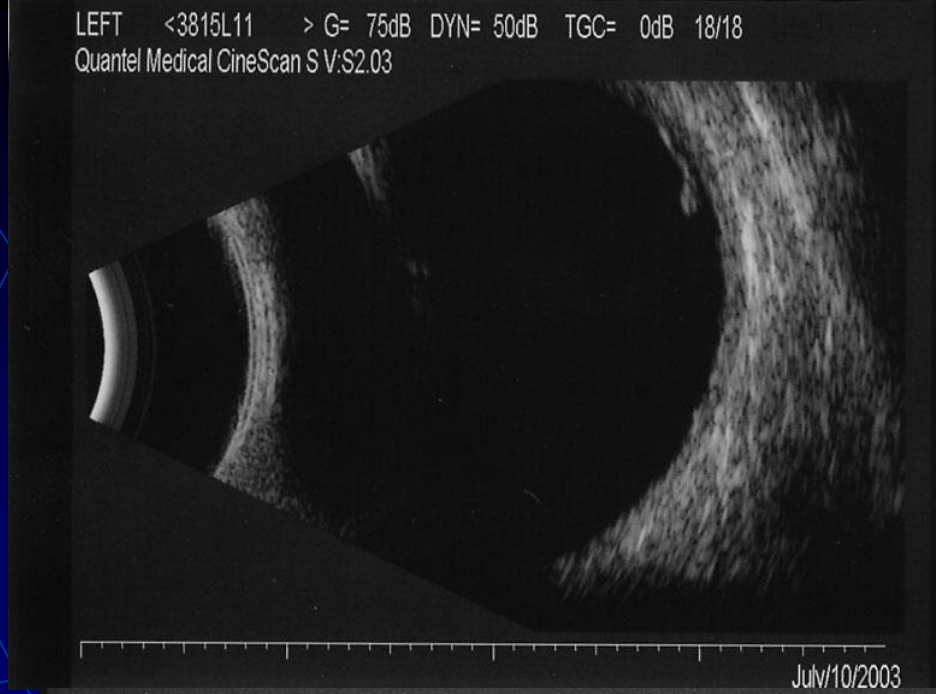
Quantel Medical CineScan S V:S2.03
July/10/2003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Quantel Medical CineScan S V:S2.03
July/10/2003


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Jan/14/2004 10 MHz


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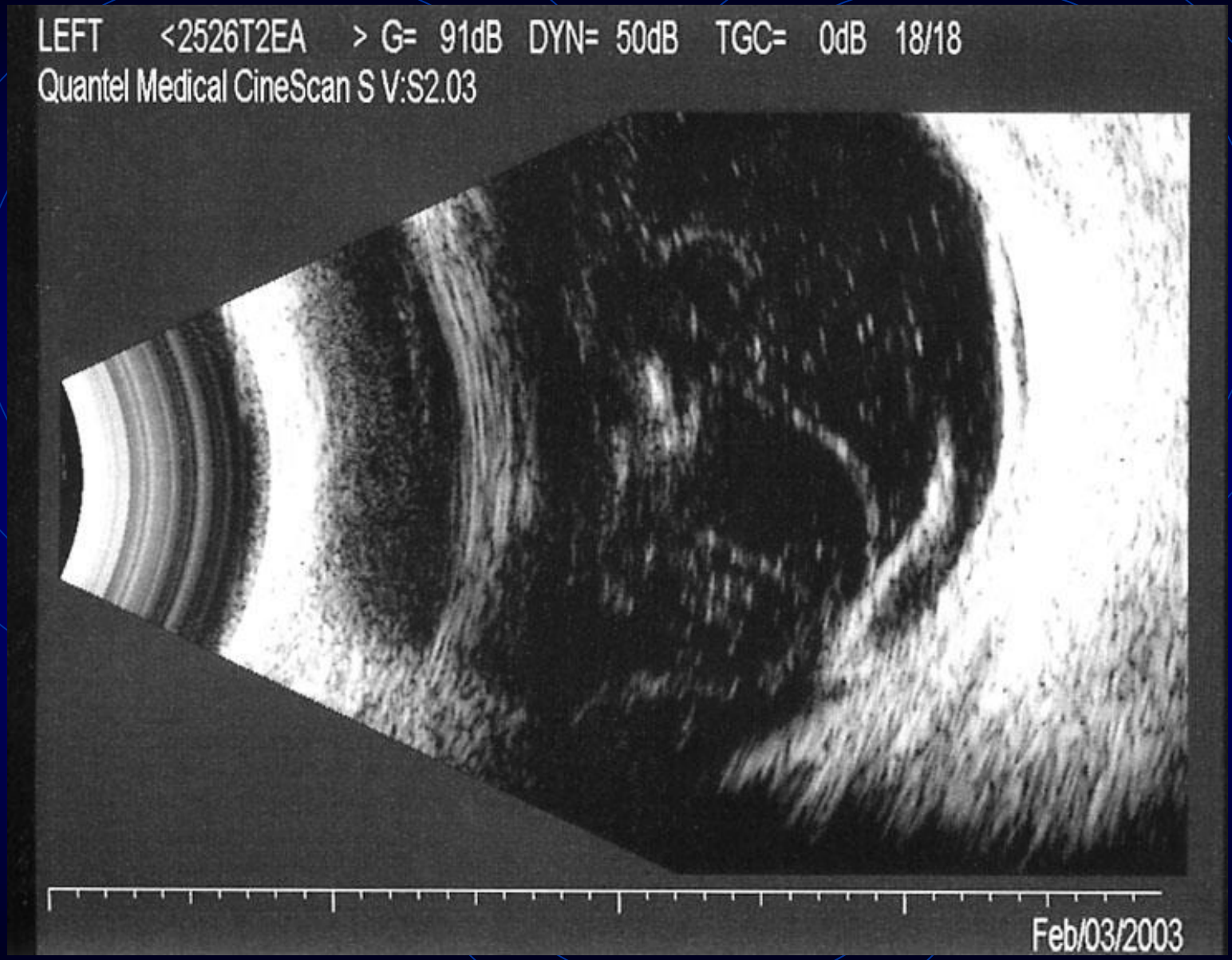
Jan/14/2004 20 MHz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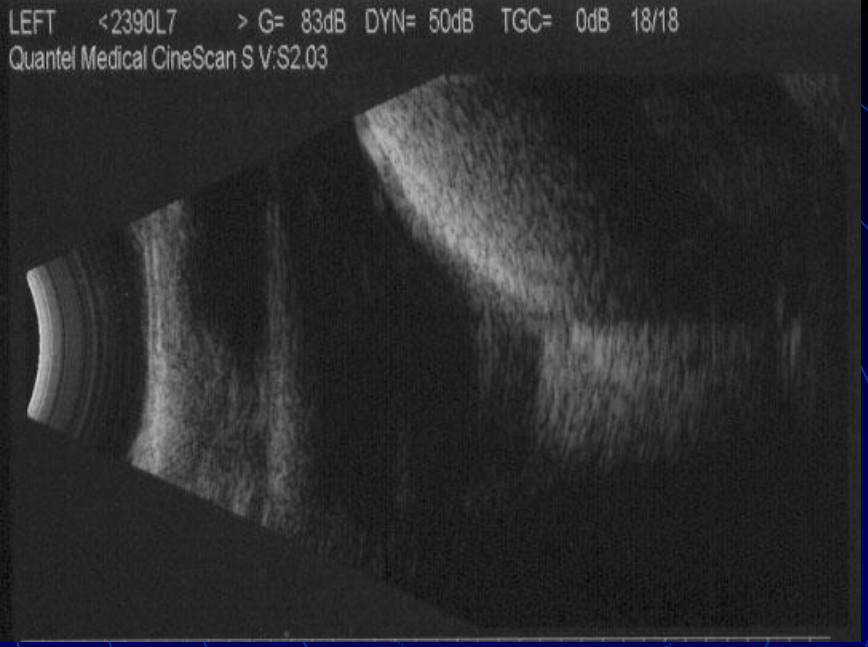
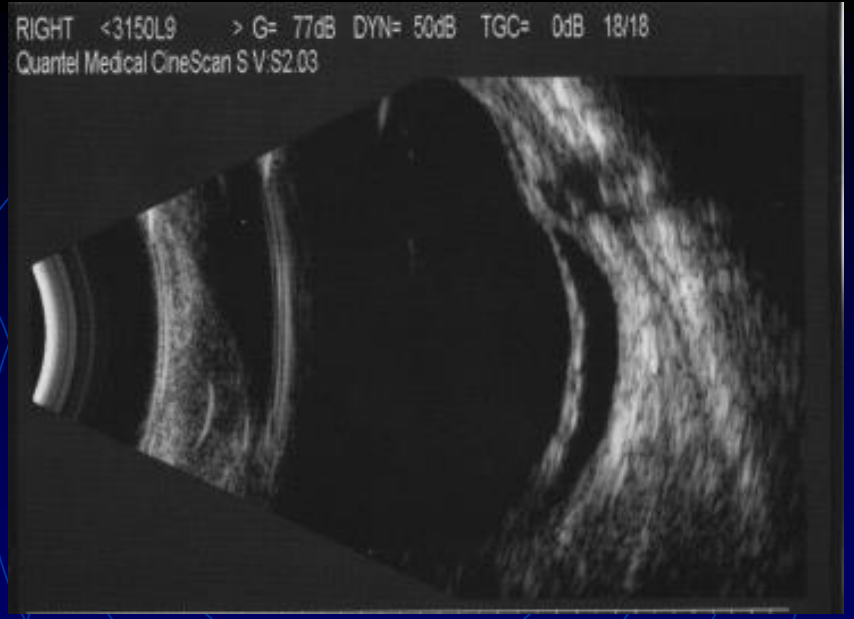
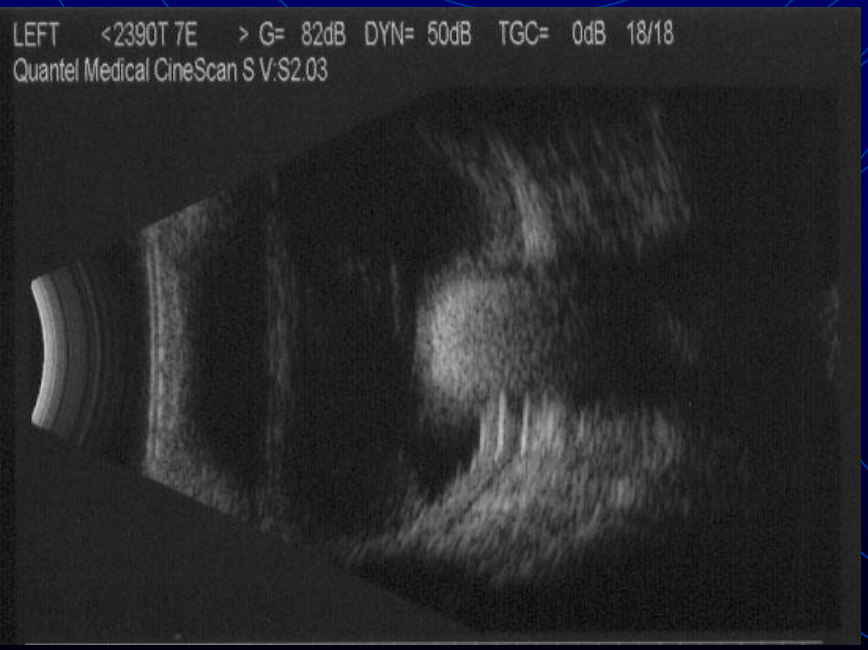
Feb/03/2003

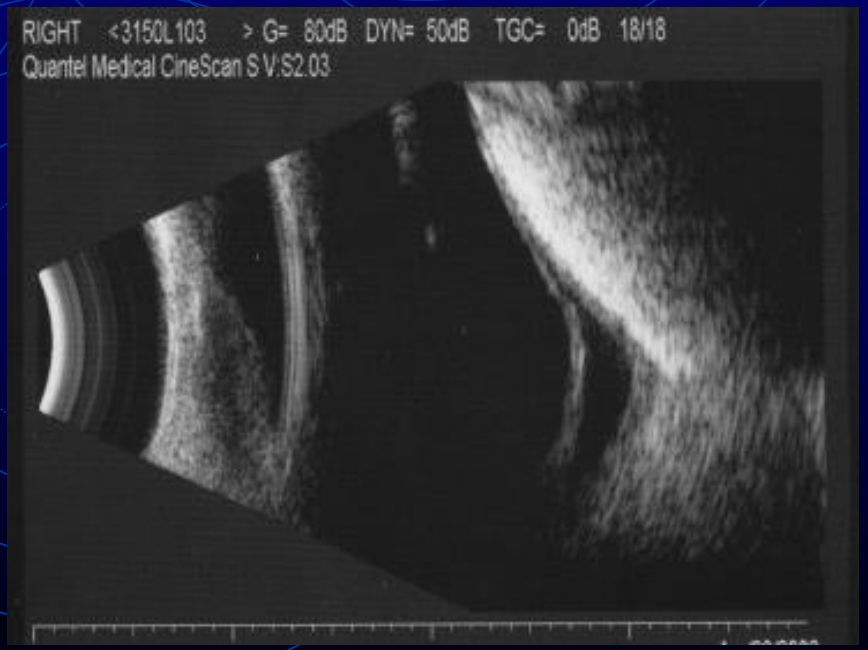
POST INTERVENTO

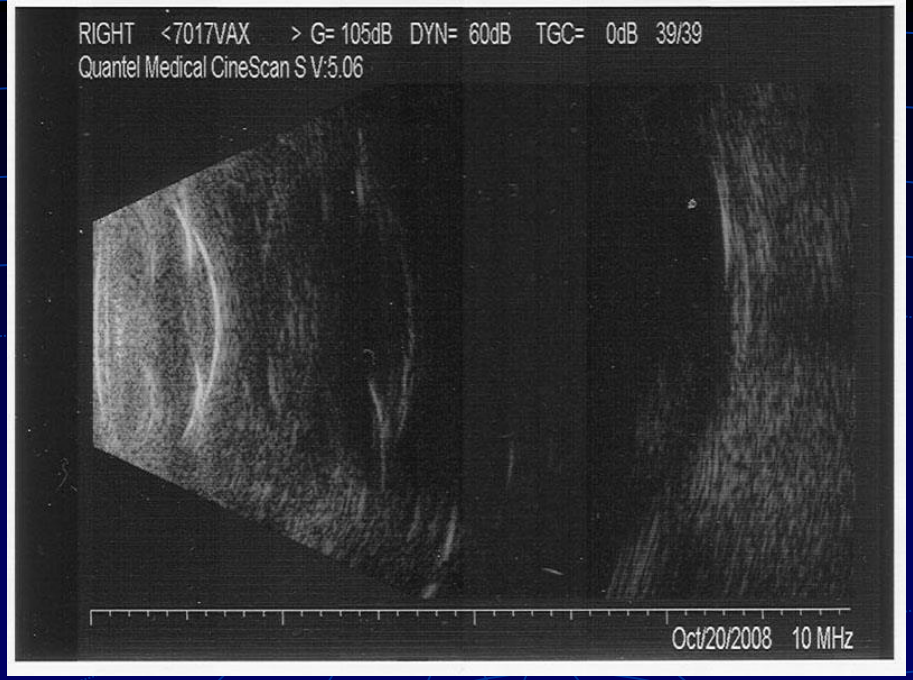




POST OPERATORIO



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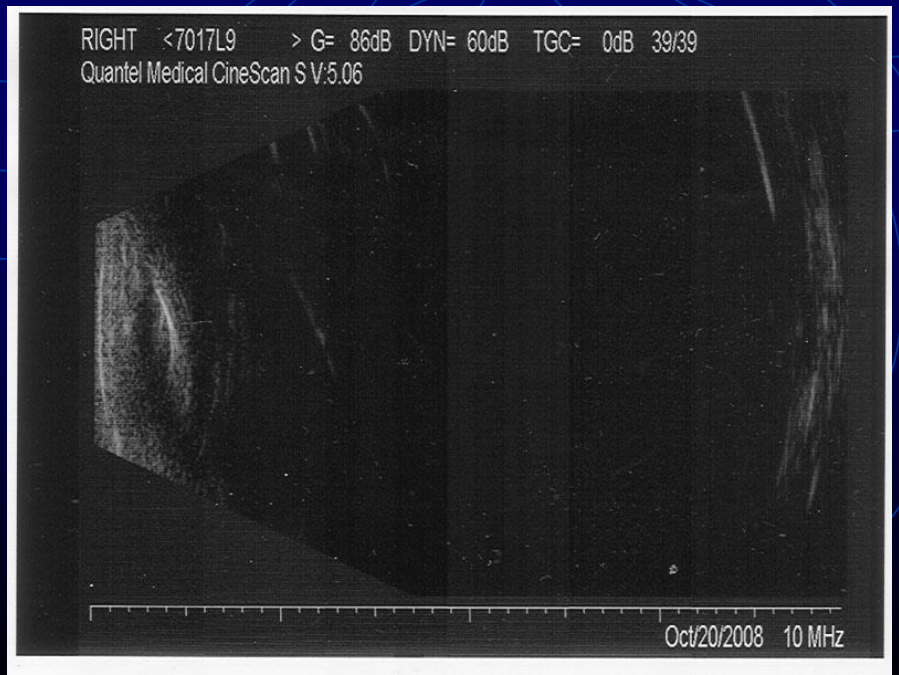
Oct/20/2008 10 MHz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Quantel Medical CineScan S V:5.06
Oct/20/2008 10 MHz

MEZZI DIOTTRICI OPACHI

Neoformazioni
Distacco di retina
Lacerazioni
Maculopatie

Macula study with standardized echography

G. Cennamo[1], N. Rosa[1], G. Iaccarino[2], A. La Rana[1] and A. Pasquariello[1]

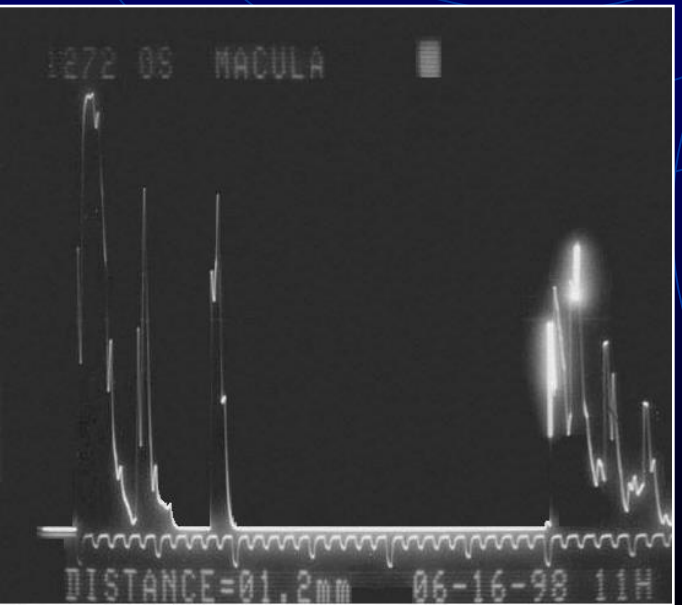
Department of Ophthalmology[1], University of Naples - Federico II, and Eye Department[2], II University of Naples, Italy

ABSTRACT. At an early clinical stage, patients with cystoid macular oedema show no significant changes in their vision. This phase is described as angiographic cystoid macular oedema. Echographic macular studies have in the past years shown that the macular thickness is increased in the early stages of cystoid macular oedema. In these patients there was no evidence of cystoid macular oedema with the visual acuity test, B-scan echography and fluorescein angiography. In this paper an echographic macular study by standardized A-scan echography was performed in 537 patients before extracapsular cataract extraction and intraocular lens implantation in posterior chamber (ciliary sulcus). The results showed that this method is very sensitive in detecting patients with high risk of cystoid macular oedema.

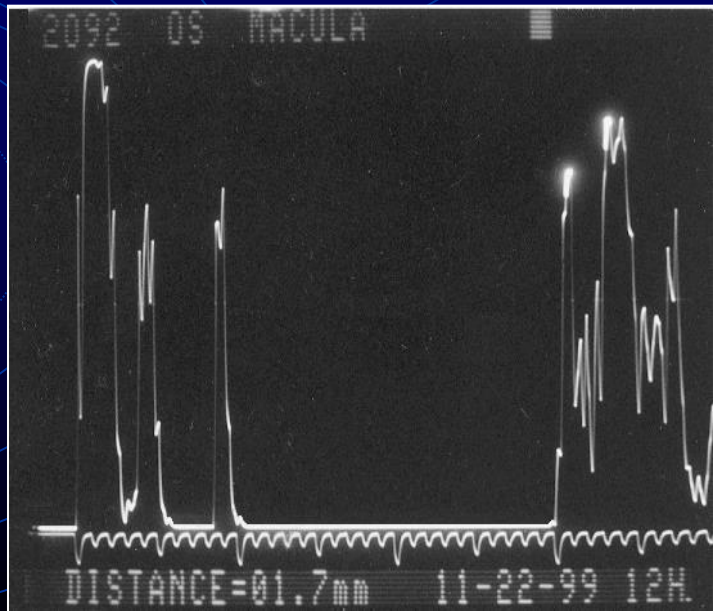
Key words: cystoid macular oedema - standardized echography - cataract extraction - macular thickness.

Acta Ophthalmol. Scand. 1996: 74: 178-181

Macula normale
≤ 1.5 mm



Macula ispessita



Bianciotto C, Shields CL, Guzman JM, Romanelli-Gobbi M, Mazzuca D Jr, Green WR, Shields JA. Assessment of anterior segment tumors with ultrasound biomicroscopy versus anterior segment optical coherence tomography in 200 cases. Ophthalmology. 2011 Jul;118(7):1297-302

Hau SC, Papastefanou V, Shah S, Sagoo MS, Restori M, Cohen V. Evaluation of iris and iridociliary body lesions with anterior segment optical coherence tomography versus ultrasound B-scan. Br J Ophthalmol. 2015 Jan;99(1):81-6

Krema H, Santiago RA, Gonzalez JE, Pavlin CJ. Spectral-domain optical coherence tomography versus ultrasound biomicroscopy for imaging of nonpigmented iris tumors. Am J Ophthalmol. 2013 Oct;156(4):806-12.

Merchant KY, Su D, Park SC, Qayum S, Banik R, Liebmann JM, Ritch R. Enhanced depth imaging optical coherence tomography of optic nerve head drusen. Ophthalmology. 2013 Jul;120(7):1409-14.

Shields CL, Arepalli S, Atalay HT, Ferenczy SR, Fulco E, Shields JA. Choroidal osteoma shows bone lamella and vascular channels on enhanced depth imaging optical coherence tomography in 15 eyes. Retina. 2015 Apr;35(4):750-7.

Br J Ophthalmol. 2015 Jan;99(1):81-6. doi: 10.1136/bjophthalmol-2014-305218.

Evaluation of iris and iridociliary body lesions with anterior segment optical coherence tomography versus ultrasound B-scan.

Hau SC[1], Papastefanou V[2], Shah S[1], Sagoo MS[3], Restori M[1], Cohen V[2].

RESULTS: The three most common diagnoses were iris naevi (62 (49.2%)), iris pigment epithelial cysts (23 (18.3%)) and iris melanoma (11 (8.7%)). Image feature comparison for USB was better than AS-OCT in visualising all tumour margins (81 (64.3%) vs 59 (46.8%)), posterior tumour margin (54 (42.9%) vs 16 (12.7%)) and producing less posterior shadowing (121 (96%) vs 43 (34.1%)). Image resolution comparison revealed USB to be slightly better for resolving the overall tumour (45 (35.7%) vs 43 (34.1%)) and posterior tumour surface (70 (55.6%) vs 32 (25.4%)) but AS-OCT was better for resolving the anterior (62 (49.2%) vs 4 (3.2%)) and lateral tumour surface (62 (49.2%) vs 31 (24.6%)). Comparing the three most common diagnoses, USB was better for visualising iris pigment epithelial cysts (12 (52.2%) vs 2 (8.7%)) and iris melanoma (7 (63.6%) vs 1 (9.1%)) but AS-OCT was better (28 (45.2%) vs 15 (24.2%)) for visualising iris naevi. Bland-Altman plots showed good agreement between the two techniques for lesions smaller than 3 mm in base and 2 mm in elevation.

CONCLUSIONS: AS-OCT is superior to USB for imaging small lesions pertaining to the anterior iris but USB is better for imaging larger iris lesions with posterior or ciliary body extension.

Ophthalmology. 2011 Jul;118(7):1297-302. doi: 10.1016/j.ophtha.2010.11.011. Epub 2011 Mar 5.

FULL-TEXT ARTICL

Assessment of anterior segment tumors with ultrasound biomicroscopy versus anterior segment optical coherence tomography in 200 cases.

Bianciotto C[1], Shields CL, Guzman JM, Romanelli-Gobbi M, Mazzuca D Jr, Green WR, Shields JA.

RESULTS: There were 200 eyes with anterior segment tumors involving the iris stroma in 96 (48%), ciliary body in 14 (7%), combined iris and ciliary body in 32 (16%), iris pigment epithelium (IPE) in 44 (22%), conjunctiva in 6 (3%), sclera in 4 (2%), and others in 6 (1% each). The diagnoses included nevus in 75 eyes (38%), melanoma in 47 (24%), cyst in 48 (24%), epithelioma (adenoma) in 5 (3%), metastasis, melanocytosis and melanocytoma in 4 eyes each (2%), and others (1% each). Image analysis (UBM vs AS-OCT) revealed adequate visualization of all tumor margins (189 [95%] vs 80 [40%]), posterior tumor shadowing (9 [5%] vs 144 [72%]), and high overall image quality (159 [80%] vs 136 [68%]). Comparison for better image resolution (UBM vs AS-OCT) disclosed UBM provided better overall tumor visualization (138 [69%] vs 62 [31%]) and better resolution of the posterior margin (147 [74%] vs 53 [27%]), whereas AS-OCT provided better resolution of the anterior margin (40 [20%] vs 160 [80%]) as well as better overall resolution of anterior segment anatomy (41 [21%] vs 159 [80%]). Better resolution was found with UBM for pigmented tumors (n = 162; 107 [66%] vs 55 [34%]) as well as for nonpigmented tumors (n = 38; 23 [61%] vs 15 [39%]). Regarding location, iris tumor resolution was similar with each technique (49 [52%] vs 45 [48%]).

CONCLUSIONS: For anterior segment tumors, UBM offers better visualization of the posterior margin and provides overall better images for entire tumor configuration compared with AS-OCT.

Am J Ophthalmol. 2013 Oct;156(4):806-12. doi: 10.1016/j.ajo.2013.05.025. Epub 2013 Jul 20.

FULL-TEXT ARTICLE

Spectral-domain optical coherence tomography versus ultrasound biomicroscopy for imaging of nonpigmented iris tumors.

Krema H[1], Santiago RA, Gonzalez JE, Pavlin CJ.

RESULTS: Thirty-seven patients with nonpigmented iris tumors were included. Comparing SDOCT to UBM, the image definitions of anterior tumor surface and internal tumor heterogeneity were equivalent. Posterior tumor surface was well defined in 54% of SDOCT vs 100% in UBM images. Full tumor thickness measurement was possible in 86% of SDOCT vs 100% with UBM. The maximum measurable tumor thickness with SDOCT was 1.34 mm. SDOCT images showed optical aberrations such as shadowing and ghost images in 22 tumors (59%), which encroached on the tumor image in 8 patients (22%). The overall tumor visualization with SDOCT was possible in 65% of the iris tumors.

CONCLUSIONS: UBM generally provides superior imaging quality and reproducible measurements of nonpigmented iris tumors. Nevertheless, SDOCT, being a noncontact technique, can be a reliable alternative in imaging and following some selected nonpigmented iris tumors.

Ophthalmology. 2013 Jul;120(7):1409-14. doi: 10.1016/j.ophtha.2012.12.035. Epub 2013 Mar 24.

FULL-TEXT ARTICLE

Enhanced depth imaging optical coherence tomography of optic nerve head drusen.

Merchant KY[1], Su D, Park SC, Qayum S, Banik R, Liebmann JM, Ritch R.

RESULTS: Sixty-eight eyes were clinically classified into 3 groups: 32 eyes with definite ONHD, 25 eyes with suspected ONHD, and 11 normal-appearing fellow eyes. In the definite ONHD group, EDI OCT, non-EDI OCT, and ultrasound B-scan were positive for ONHD in all eyes and visual field (VF) was abnormal in 24 eyes. In the suspected ONHD group, EDI OCT, non-EDI OCT, ultrasound B-scan, and VF were positive in 17, 14, 7, and 3 eyes, respectively; 8 eyes had no evidence of ONHD in any of the tests. In normal-appearing fellow eyes, EDI OCT, non-EDI OCT, ultrasound B-scan, and VF were positive in 3, 1, 1, and 0 eyes, respectively; 4 eyes had no evidence of ONHD in any of the tests. Enhanced depth imaging OCT had a significantly higher ONHD detection rate than ultrasound B-scan in all eyes (52/68 eyes vs. 40/68 eyes; $P<0.001$), in eyes with clinically suspected ONHD or normal-appearing fellow eyes (20/36 eyes vs. 8/36 eyes; $P<0.001$), and in eyes with clinically suspected ONHD (17/25 eyes vs. 7/25 eyes; $P = 0.002$). Enhanced depth imaging OCT-detected ONHD appeared as signal-poor regions surrounded by short, hyper-reflective bands or isolated/clustered hyper-reflective bands without a signal-poor core. In non-EDI OCT, posterior surfaces of the ONHD and deep-seated hyper-reflective bands were invisible or less clear than in EDI OCT.

CONCLUSIONS: Enhanced depth imaging OCT detects lesions likely representing ONHD more often and better assesses their shape and structure than conventional tests.

Retina. 2015 Apr;35(4):750-7. doi: 10.1097/IAE.0000000000000376.

Choroidal osteoma shows bone lamella and vascular channels on enhanced depth imaging optical coherence tomography in 15 eyes.

Shields CL[1], Arepalli S, Atalay HT, Ferenczy SR, Fulco E, Shields JA.

RESULTS: The mean age at presentation was 27 years. There were 10 women and 3 men. The visual acuity ranged from 20/20 to hand motion, with reduced visual acuity secondary to photoreceptor loss in the foveola (n = 5) or subfoveal fluid (n = 1), and additional choroidal neovascular membrane (n = 3). The mean basal tumor diameter was 8.0 mm, and ultrasonographic thickness was 1.5 mm. Using enhanced depth imaging optical coherence tomography, the mean tumor thickness was 589 µm when compared with a matched choroidal region in the unaffected eye of 247 µm (138% increased thickness) (P = 0.009). The tumor surface topography was classified (ultrasonography vs. enhanced depth imaging optical coherence tomography) as flat (87 vs. 13%), dome (13 vs. 40%), or undulating (0 vs. 47%). On enhanced depth imaging optical coherence tomography, unique features included horizontal lamellar lines (presumed bone lamella) (n = 15, 100%) and hyperreflective horizontal lines (presumed cement lines) (n = 8, 53%). Other features included horizontal tubular lamella with optically empty center (presumed Haversian canals or vascular channels) (n = 9, 60%), vertical tubular lamella (presumed Volkmann canals or vascular channels) (n = 2, 13%), and speckled regions (presumed compact or small trabecular bone) (n = 6, 40%). Of the nine eyes with subfoveolar osteoma, the tumor was completely ossified (n = 4), partially deossified (n = 2), or completely deossified (n = 3). Photoreceptor thinning/atrophy was found in all five eyes with deossified osteoma, whereas intact photoreceptor appearance was noted in the four eyes with ossified subfoveal osteoma.

CONCLUSION: Enhanced depth imaging optical coherence tomography reveals characteristic surface topography of choroidal osteoma as dome or undulating (87%) with unique intrinsic features of horizontal lamellar lines (100%), horizontal (60%) or vertical (13%) tubules, and speckled regions (40%). Photoreceptor loss was evident in every case of tumor deossification.

TAKE HOME MESSAGE

Mezzi diottrici trasparenti

	Neoformazioni	Distacco di retina	Lacerazioni	Maculopatie	Segmento anteriore
ECOGRAFIA	+	+	+	-	+/-
OCT	+/-	+/-	+/-	++	+/-

Mezzi diottrici opachi

	Neoformazioni	Distacco di retina	Lacerazioni	Maculopatie	Segmento anteriore
ECOGRAFIA	+	+	+	+/-	+
OCT	-	-	-	-	-

L’OCT ha diminuito le indicazioni dell’ecografia?

GRAZIE PER L'ATTENZIONE