Enhanced Depth Imaging of the Choroid: EDI-OCT

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The choroid “defies current methods of clinical examination”

-Spaide, R. F.

EDI-OCT
What is the Choroid?

- Uveal tract: Iris, Ciliary Body, & Choroid
  - Extends from the optic nerve to the ciliary body
- Vascular, pigmented tissue
- Provides most of the ocular blood flow & nutrition for the outer retina
How does EDI work?

Sclera
EDI of the Optic Nerve
EDI of the Optic Nerve
What affects the Quality of EDI?

- The amount of pigment in the RPE
  - “Blonde” Fundus vs. highly pigmented fundus
- Pathology being studied
  - Mirror artifacts in myopia, tumors, etc.
RPE Dropout in AMD
How to Measure?
How to Measure

294 µm
Best of Both Worlds: Vitreous & Choroid
Viewing Methods
En Face/C-Scan of EDI-OCT

(Video)
OCT 3-D Cube (Video)
### How does this help us clinically?

<table>
<thead>
<tr>
<th>Thin Choroid</th>
<th>Thick Choroid</th>
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<tbody>
<tr>
<td>– Myopia</td>
<td>– Choroiditis</td>
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<tr>
<td>– Aging</td>
<td>– CSCR</td>
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<tr>
<td>– Choroidal Atrophy</td>
<td>– Tumors</td>
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<td>– Hyperopia</td>
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<td>– Younger Age</td>
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Normal Choroid

- Thickest underneath the fovea
- Mean subfoveal thickness = 287 um +/- 76 um
- Decreases by 15.6 um for each decade of life
- Varies topographically within the posterior pole

Myopic Degeneration
Central Serous Retinopathy (CSR)
Central Serous Retinopathy (CSR)
Leukemic Choroidopathy
Leukemic Choroidopathy
Choroidal Tumors: Qualitative

- **Amelanotic nevi**: homogenous and medium reflective band, visible choroidal vessels

- **Melanoic nevi and choroidal melanomas**: high reflective band in anterior choroid with shadowing, nonvisualization of choroidal vessels and inner sclera

- **Choroidal hemangiomas**: medium/low reflective band without shadowing

- **Choroidal metastasis**: low reflective band in the deep choroid with enlargement of suprachoroidal space

Choroidal Melanoma
Choroidal Melanoma
The future of EDI-OCT

- Long wavelength OCT

Thank you!

- Hakan Demirci, MD
- The ophthalmic photographers at Kellogg Eye Center:
  - Richard Hackel, Hillary Bernard, Rob Prusak, & Lin Goings
References


