

Study Selection

The three stages of study selection were based on title, abstract, and full-text searches respectively according to the relevant sections of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guideline (Figure 1) [11].

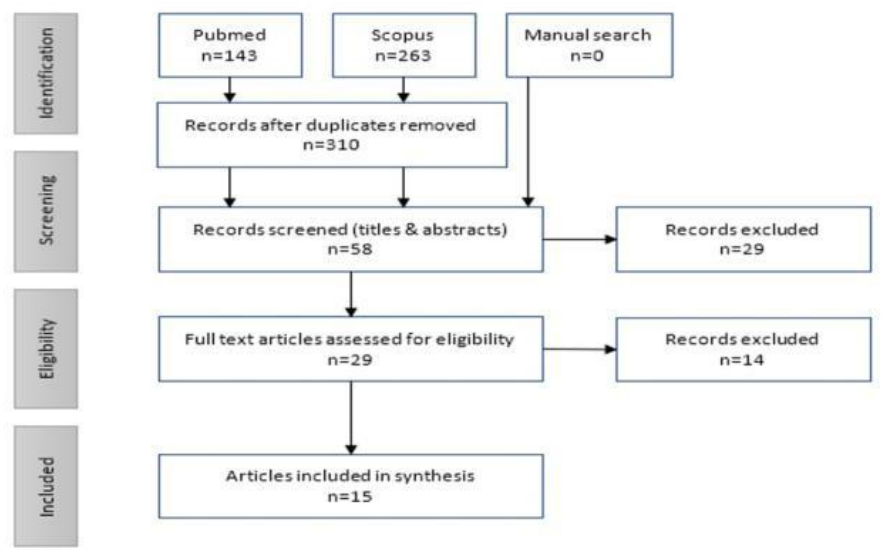


FIGURE 1: Study flow diagram (PRISMA-ScR flow chart)

Charting the Data

Evaluating each study involved a combination of numerical description and general thematic analysis. For the former, the following information was extracted from each article: authors; country of authorship; journal title; the year of publication; study design; sample size; type of OCT used; factors affecting SFCT; quantitative outcomes. Through thematic analysis, other details about the studies were recorded, including, important author’s quotes, theoretical considerations, and any insights pertinent to the research area.

Collating, Summarizing, and Reporting the Results

The information drawn from each article was summarized and tabulated (Table 1).

Author(s)	Country of authorship	Study Title	Journal	Year	Study design	Sample size	Type of OCT used	Parameters measured	SFCT measurement method	Factors affecting SFCT	Study findings
Noda et al. [4]	Japan	Long-term increase in subfoveal choroidal thickness after surgery for senile cataracts	American Journal of Ophthalmology	2014	Retrospective cohort study	29 patients	Spectralis SD-OCT	Central retinal thickness	Manual measurement method	Male gender and thicker baseline subfoveal choroidal thickness	Baseline subfoveal choroidal thickness was 193.8 μm, increasing significantly at postoperative 1, 3, and 6 months (208.9 μm, 210.2 μm, 209.3 μm; P < 0.0001). 69.0% maintained increased subfoveal choroidal thickness for 6 months. Male gender and thicker baseline choroid predicted larger increases.
Falcão et al. [7]	Portugal	Choroidal and macular thickness changes induced by cataract surgery	Clinical Ophthalmology (Auckland, N.Z.)	2014	Not specified, likely prospective observational study	14 patients	Enhanced Depth Imaging Spectral Domain Optical Coherence	Retinal and choroidal thickness	OCT EDI B	Cataract surgery. Use of topical steroid and nonsteroidal anti-inflammatory drugs	Pre-surgery, retinal thickness was 308.77±14.69 μm (vertical) and 304.49±15.37 μm (horizontal). Choroidal thickness varied. Post-surgery, macular thickness significantly increased at different time points. No significant

Tomography											changes in choroidal thickness were observed.
Akcam et al. [12]	Turkey	Changes in choroidal and foveal retinal thickness after cataract surgery	Surgeon	2022	Prospective comparative observational study	20 persons in 2 groups	Spectral-domain OCT (SD-OCT)	Subfoveal choroidal thickness (SFCT) and foveal retinal thickness (FRT)	Enhanced depth imaging SD-OCT (EDI-OCT) with manual caliper measurements by two independent observers blinded to the clinical data	Age, gender, axial length, intraocular pressure, and other ocular and systemic factors	FT values remained unchanged, while CT increased transiently postoperatively, but returned to preoperative levels. The minimal and non-clinically significant changes in CT were supported by quantitative data.
Chen et al. [13]	China	Subfoveal Choroidal Thickness After Femtosecond Laser-Assisted Cataract Surgery for Age-Related Cataracts	Front Med (Lausanne)	2022	Prospective Study	52 patients in 2 groups	Spectral-domain Optical Coherence Tomography (SD-OCT)	SFCT and FRT changes following cataract surgery; phacoemulsification time and energy; preoperative and postoperative aqueous flare	The measurements were performed by two independent examiners using calipers and the Heidelberg Eye Explorer software	Age, AL, preoperative IOP, preoperative flare, phacoemulsification time, phacoemulsification energy, change in IOP, change in flare	The mean SFCT showed no difference with the baseline value at 1 week after Femtosecond Laser-Assisted Cataract Surgery (FLACS). However, an increased SFCT was observed in the Conventional Phacoemulsification Surgery (CPS) group. Aqueous flare was significantly minor in the FLACS group than that in the CPS group in the early postoperative stage. At 3 months post-surgery, there were no differences between the two groups.
Maul et al. [14]	Chile	Choroidal thickness measured by spectral domain optical coherence tomography: factors affecting thickness in glaucoma patients	Ophthalmology	2011	Cross-sectional study	37 glaucoma patients, 37 glaucoma suspects	Spectral Domain Optical Coherence Tomography (SD-OCT)	Axial length, CCT, and diastolic perfusion pressure, macular choroidal thickness, peripapillary choroidal thickness	Averaging choroidal thickness over the scan extension	Significant associations found between choroidal thickness and age, axial length, CCT, and diastolic ocular perfusion pressure.	The study achieved high visualization rates of the choroidal-scleral interface. Factors influencing macular choroidal thickness were identified, including eye length, age, diastolic ocular perfusion pressure, and corneal thickness. Glaucoma did not significantly affect choroidal thickness or its association with disease severity.
Gudauskienė et al. [15]	Czech Republic	Changes in subfoveal choroidal thickness after uncomplicated cataract surgery	Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub	2019	Observational	30 eyes from 23 patients	Swept-source optical coherence tomography (SS-OCT)	BCVA, IOP, AL, FRT, SFCT	Using SS-OCT at 1050 nm, retinal-choroidal maps were generated for ETDRS subfields. Sector thickness was measured within specific distances from the fovea.	Age, AL, preoperative IOP, postoperative IOP, OPP	FRT significantly increased after surgery in all sectors and remained stable between 1 and 3 months. SFCT increased significantly at 3 months post-surgery. Reduced IOP led to increased OPP. Negative correlation between IOP changes and SFCT changes. Phacoemulsification induced short-term SFCT thickening. Subclinical increase in FRT resolved but didn't reach preoperative values.
Ibrahim et al. [16]	Egypt	Changes in Choroidal Thickness after Cataract Surgery	Seminars in Ophthalmology	2018	Prospective observational study	53 patients	Enhanced depth Imaging-OCT (EDI-OCT)	Pre- and post-operative SFCT, subfoveal thickness, macular thickness	Manual caliper measurements using the built-in software	Age, axial length (AL), preoperative intraocular pressure (IOP), best corrected visual acuity (BCVA), and operative time	SFCT significantly increased at D7 after surgery (mean 228.42 ± 59.77 µm) and decreased to near baseline at M3 (mean 200.63 ± 61.37 µm); negative correlation between SFCT changes and IOP; negative correlation between AL and SFCT; one patient developed pseudophakic cystoid macular edema (PCME) at W6 after surgery; with highest SFCT values observed at D7 after surgery

Ohtsugi et al. [17]	Japan	Changes in choroidal thickness after cataract surgery	Journal of Cataract and Refractive Surgery	2014	Prospective observational study	50 right eyes and 50 left eyes from 100 patients	Spectral-domain OCT	Choroidal thickness at 5 points	Manual tracing of the RPE and choroidal-scleral interface	Cataract type and severity; age; axial length	Postoperative choroidal thickness increased in specific regions, correlating with IOP and axial length. Absence of cystoid macular edema. Macular thickness increased significantly but not clinically relevant. Pediatric eyes had low CME incidence. SD-OCT effective for CME assessment. Larger prospective studies needed.
Sacchi et al. [18]	Italy	Spectral-domain optical coherence tomography measurements of central foveal thickness before and after cataract surgery in children	Journal of Cataract & Refractive Surgery	2015	Prospective, observational	11 patients	Spectral-domain OCT	Central foveal thickness	Manual caliper	Age, posterior capsulotomy and anterior vitrectomy	No CME detected. Significant increase in macular thickness at 1 and 3 months. Pediatric eyes have low CME incidence due to favorable factors. SD-OCT effective for CME assessment. Larger prospective studies needed.
Shahzad et al. [19]	Pakistan	Choroidal thickness changes following cataract surgery using swept source optical coherence tomography	Canadian Journal of Ophthalmology	2018	Prospective, interventional	202 eyes from 101 participants	Swept-source OCT (SS-OCT)	SFCT	In-built caliper tool	Age, diabetes status, time after surgery	SFCT gradually increased at 1 month after cataract surgery, more pronounced in younger and nondiabetic individuals
Von Jagow et al. [20]	Germany	Macular thickness after uneventful cataract surgery determined by optical coherence tomography	Graefes Arch Clin Exp Ophthalmol	2007	Prospective Study	33 patients	Time domain OCT	Measurements of mean minimal foveal thickness (MMFT) and mean foveal thickness (MFT) at multiple time points	Preoperatively, 1 day, 1 week, and 6 weeks postoperatively. Best-corrected visual acuity (BCVA) tests and slit-lamp examinations were also performed during these visits.	Several ocular parameters including axial length, anterior chamber depth, phacotome, and energy were documented.	Postoperatively, MFT increased significantly at one day and 6 weeks. MMFT also increased significantly at one day and 6 weeks. No macular edema observed. Mild foveal thickness increase after cataract surgery.
Yilmaz et al. [21]	Turkey	Long-term changes in subfoveal choroidal thickness after cataract surgery	Medical Science Monitor	2016	Prospective observational study	65 eyes from 65 patients	SD-OCT	Subfoveal choroidal thickness (SFCT), macular thickness, Intraocular Pressure (IOP)	SCT was recorded from the subfoveal area using EDI with the same OCT. Because choroidal thickness demonstrates diurnal variation, measurement was made at the same time each day (between 09.30 and 11.00 hours).	Prostaglandins and cytokines released during surgery, changes in intraocular pressure	Preoperatively, CMT was $252.4 \pm 27.6 \mu\text{m}$, while at postoperative week 1 and months 1, 3, 6, and 12, CMT values ranged from $252.8 \pm 21.7 \mu\text{m}$ to $257.4 \pm 27.2 \mu\text{m}$. SCT showed a slight non-significant increase. These findings contribute to understanding late-onset AMD after cataract surgery.
Pieru et al. [22]	France	Measurement of Subfoveal Choroidal Thickness After Cataract Surgery in Enhanced Depth Imaging Optical Coherence	Investigative Ophthalmology & Visual Science	2014	Prospective study	95 patients	Enhanced Depth Imaging Optical Coherence Tomography (EDI-OCT)	Subfoveal choroidal thickness (SFCT)	SFCT measured from the outer part of the hyperreflective line corresponding to the retinal pigment epithelium (RPE) to the inner sclera.	Cataract surgery	In this study, SFCT at baseline was $224 \pm 75 \mu\text{m}$. Following cataract surgery, SFCT significantly increased at Day 1, Month 1, and Month 3. CRT also increased. Three patients developed PCME with the greatest SFCT progression after surgery. SFCT changes preceded PCME