

Supplementary Tables

Supplementary Table S1. Excluded records and the associated reasons for exclusion in the full text screening phase

ID	Author/YOP	Titles	Reason for exclusion
769	Tam/2009	Approach to cataract extraction combined with new glaucoma devices	Book
291	Gallardo/2021	Canaloplasty and Trabeculotomy Combined with Phacoemulsification in Open-Angle Glaucoma: Interim Results from the GEMINI Study	Combined T and C
907	Zhang/2022	Efficacy of bleb-independent penetrating canaloplasty in primary angle-closure glaucoma: one-year results	Combined TE and CP
873	Xin/2016	One-year interim comparison of canaloplasty in primary open-angle glaucoma following failed filtering surgery with primary canaloplasty	CP + failed TE vs. CP
446	Klink/2014	Quality of life following glaucoma surgery: Canaloplasty versus trabeculectomy	Irrelevant outcome (QoL not IOP)
881	Yang/2021	Usage Patterns of Minimally Invasive Glaucoma Surgery (MIGS) Differ by Glaucoma Type: IRIS Registry Analysis 2013-2018	Irrelevant outcome (use pattern not IOP)
133	Brubaker/2013	Incidence and success rates of trabeculectomy with express mini shunt following failed canaloplasty	No CP group
312	Gilmour/2009	Viscocanalostomy versus trabeculectomy for primary open angle glaucoma: 4-year prospective randomized clinical trial	No CP group
779	Tanito/2017	Comparison of surgically induced astigmatism following different glaucoma operations	No CP group
780	Tanito/2019	Comparison of anterior chamber flare among different glaucoma surgeries	No CP group
791	Theilig/2020	Comparing the efficacy of trabeculectomy and XEN gel microstent implantation for the treatment of primary open-angle glaucoma: a retrospective monocentric comparative cohort study	No CP group
796	Tojo/2019	Factors related to filtration-bleb morphology after Ex-PRESS [®] surgery	No CP group
825	Vaziri/2015	Incidence of postoperative suprachoroidal hemorrhage after glaucoma filtration surgeries in the United States	No CP group
838	S. Wagner/2021	Comparison of subconjunctival microinvasive glaucoma surgery and trabeculectomy	No CP group
848	Wanichwecharungruang/2021	24-month outcomes of XEN45 gel implant versus trabeculectomy in primary glaucoma	No CP group
850	Wecker/2016	Ab interno trabeculectomy with the trabectome as a valuable therapeutic option for failed filtering blebs	No CP group
866	Xia/2016	Comparison of 1-Site and 2-Site Phacotrabeculectomy in the Small Adult Eyes With Concomitant Cataract and Glaucoma	No CP group
867	Xia/2013	The clinical effect of phacoemulsification combined with trabeculectomy for primary angle-closure glaucoma with cataract	No CP group
899	Zahid/2013	Risk of endophthalmitis and other long-term complications of trabeculectomy in the collaborative initial glaucoma treatment study (CIGTS)	No CP group
906	Zhang/2013	The Effect of Prior Trabeculectomy on Refractive Outcomes of Cataract Surgery	No CP group
911	Zhang/2015	Reduction of intraocular pressure and improvement of vision after cataract surgeries in angle closure glaucoma with concomitant cataract patients	No CP group

767	Szymor/2018	Flaremetry measurement of blood-aqueous barrier breakdown after canaloplasty combined with phacoemulsification versus phacoemulsification in patients with secondary open angle glaucoma	No TE group
787	Tetz/2015	Phacoemulsification and Intraocular Lens Implantation Before, During, or After Canaloplasty in Eyes with Open-Angle Glaucoma: 3-Year Results	No TE group
802	Toneatto/2022	360° Ab-Interno Schlemm's Canal Viscodilation with OMNI Viscosurgical Systems for Open-Angle Glaucoma—Midterm Results	No TE group
804	Tracer/2021	The association between corneal hysteresis and surgical outcomes from trabecular meshwork microinvasive glaucoma surgery	No TE group
807	Trope/2011	Canaloplasty for primary open-angle glaucoma: Long-term outcome	No TE group
813	Vaiciulienė/2018	Clinical evaluation of aqueous outflow system in vivo and correlation with intraocular pressure before and after non-penetrating glaucoma surgery	No TE group
822	Vastardis/2021	The Efficacy of Ab Externo Canaloplasty by Using a Nonabsorbable Suture and No Viscoelastics; IOP Results, Intraoperative and Early Complication Rates within 6-Month Follow-Up Period	No TE group
831	Voykov/2015	Treatment efficacy and safety of canaloplasty for open-angle glaucoma after 5 years	No TE group
835	Wagdy/2017	Canaloplasty versus Viscocanalostomy in Primary Open Angle Glaucoma	No TE group
839	Wang/2014	One-year efficacy of canaloplasty for adult open-angle glaucoma	No TE group
845	Wang/2016	Analysis of efficacy and safety of operation in treating secondary glaucoma caused by contusion hyphema	No TE group
874	Xin/2016	Modified canaloplasty: A new, effective, and safe option for glaucoma patients with a disrupted schlemm canal wall	No TE group
919	Zvandasara/2014	Viscocanalostomy/phacoviscocanalostomy, augmented with Nd: YAG laser goniopuncture for uncontrolled intraocular pressure: 1 year results	No TE group
748	Sohajda/2017	Experiences with CO2 laser-assisted sclerectomy surgery	No TE nor CP groups
754	Steiner/2021	Needling and open filtering bleb revision after XEN-45 implantation—a retrospective outcome comparison	No TE nor CP groups
758	Strnad/2013	Long-term outcomes at not-penetrating glaucoma surgery	No TE nor CP groups
760	Sugihara/2020	Evaluation of blood-filling patterns in schlemm canal for trabectome surgery	No TE nor CP groups
766	Szurman/2018	Suprachoroidal drainage with collagen sheet implant- a novel technique for non-penetrating glaucoma surgery	No TE nor CP groups
826	Vila-Masarell/2021	Spurectomy: A novel modification of non-penetrating deep sclerectomy	No TE nor CP groups
856	Widder/2021	Trabectome, trabecular aspiration and phacoemulsification in a triple procedure for treating exfoliation glaucoma: A long-term follow-up	No TE nor CP groups
888	Yap/2021	Endocyclophotocoagulation combined with phacoemulsification in surgically naive primary open-angle glaucoma: three-year results	No TE nor CP groups
799	Tojo/2020	Can a contact lens sensor predict the success of trabectome surgery?	No TE nor CP groups
630	Porter/2020	Excisional goniotomy in latino patients with open-angle glaucoma: Outcomes through 24 months	No TE nor CP groups
374	Hirsch/2021	Canaloplasty and trabeculotomy ab interno with the OMNI system combined with cataract surgery in open-angle glaucoma: 12-month outcomes from the ROMEO study	Trabeculotomy not TE
778	Tanito/2017	Effectiveness and safety of combined cataract surgery and microhook ab interno trabeculotomy in Japanese eyes with glaucoma: report of an initial case series	Trabeculotomy not TE
830	Vold/2021	Canaloplasty and Trabeculotomy with the OMNI System in Pseudophakic Patients with Open-Angle Glaucoma: The ROMEO Study	Trabeculotomy not TE
896	Yu/2021	Comparison of viscocanalostomy plus suture-assisted near-360-degree trabeculotomy and viscocanalostomy plus rigid probe trabeculotomy in primary congenital glaucoma	Trabeculotomy not TE

Supplementary Table S2. Risk of bias assessment of included non-randomized studies of intervention using the ROBINS-I tool

Author/YOP	Confounding	Selection of Participants	Classification of Interventions	Deviation from Interventions	Missing Data	Measurement of outcomes	Selection of Reported Results	Overall bias
Aghayeva/2021 ²¹	Low	Low	Low	Low	Low	Moderate	Low	Moderate
Ayyala/2011 ³³	Low	Low	Low	Low	Moderate	Moderate	Low	Moderate
Brüggemann/2012 ¹⁶	Low	Low	Low	Low	Low	Low	Low	Low
Brüggemann/2013 ³⁴	Serious	Low	Low	Low	Low	Low	Low	Serious
Garris/2018 ³⁵	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Matlach/2013 ³⁷	Low	Low	Low	Low	Low	Moderate	Low	Moderate
Nassri/2020 ³⁸	Low	Low	Low	Low	Moderate	Moderate	Low	Moderate
Quaranta/2014 ¹⁷	Low	Low	Low	Low	Low	Moderate	Low	Moderate
Schoenberg/2015 ³⁹	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Taruttis/2018 ⁴⁰	Serious	Low	Low	Low	Low	Low	Low	Serious
Thederan/2014 ¹⁸	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Vastardis/2021 ⁴¹	Low	Low	Low	Low	Low	Moderate	Low	Moderate
Klink/2014 ²⁸	Serious	Low	Low	Low	Low	Moderate	Low	Serious

YOP: Year of Publication

Supplementary Table S3. Complete and qualified success and failure assessment and their reported definitions among included studies

Author/YOP	Complete Success		Qualified Success		Failure	
	Assessment	Definition	Assessment	Definition	Assessment	Definition
Aghayeva/2021	-	-	-	-	-	-

Ayyala/2011	-	-	-	-	Y	failure based on IOP (>18 or <4 mmHg at 1 year) or second operative procedure (any eye requiring reoperation)
Brüggemann/2012	-	-	-	-	-	-
Brüggemann/2013	Y	IOP ≤ 18 mm Hg without supplemental glaucoma medication	-	-	-	-
Garris/2018	-	-	-	-	Y	(IOP >18 or <4 mmHg at 2 years), second operative procedure, or loss of light perception.
Matlach/2013	Y	≤ 21 mmHg + 30% IOP ↓	Y	(IOP ≤21 mmHg and ≥20% IOP reduction)	-	-
Matlach/2015	Y	IOP ≤21 mmHg and ≥20% IOP reduction	Y	IOP of less than 18 mmHg with or without medical treatment	-	-
Nassri/2020	Y	IOP values were ≤21mmHg or ≤18mmHg without local therapy	Y	≤18mmHg with therapy	Y	NCD
Quaranta/2014	-	-	-	-	-	-
Schoenberg/2015	-	-	-	-	Y	based on intraocular pressure (IOP; >18 or <4 mm Hg at 1 y), second operative procedure (any eye requiring reoperation), or decrease in visual acuity by 0.20 logMAR.
Taruttis/2018	-	-	-	-	-	-
Thederan/2014	Y	≤21mmHg+20%IOD↓ without medication	Y	< 18 mmHg with medication	-	-
Vastardis/2021	Y	5 ≤ IOP ≤ 15 mmHg, no medication or surgery	Y	IOP less than or equal to 15mmHg with or without topical therapy	Y	(18>IOP>4mmHg)
Klink/2014	-	-	-	-	-	-

Y: Yes; NCD: Not clearly described

Supplementary Table S4. The detailed search criteria used for each database

Search No.	Search Query	Records
[1] PubMed [Date of original search: March 9, 2022]		
#1	(Glaucoma*[All Fields] OR "ocular hypertens*" [All Fields] OR Pseudoexfoliat*[All Fields] OR "Glaucoma"[Mesh] OR "Ocular Hypertension"[Mesh] OR "Exfoliation Syndrome"[Mesh])	82415
#2	(Canaloplast*[tiab])	304
#3	(trabeculectom*[tiab] OR "Trabeculectomy"[Mesh])	8337
#4	#1 AND #2 AND #3	90
[2] Scopus [Date of original search: March 8, 2022]		
#1	(ALL (glaucoma) OR ALL (ocular AND hypertens*) OR ALL (pseudoexfoliat) OR ALL (exfoliation AND syndrome))	186823
#2	ALL (canaloplast*)	953
#3	(AL (trabeculectom*) OR ALL (trabeculectomy))	19474
#4	#1 AND #2 AND #3	583
[3] EMBASE [Date of original search: March 8, 2022]		
#1	glaucoma OR 'intraocular hypertension' OR pseudoexfoliation OR (exfoliation AND syndrome)	122427
#2	trabeculectom*	10453
#3	canaloplast*	413
#4	'glaucoma'/exp OR 'intraocular hypertension'/exp OR 'pseudoexfoliation'/exp	107001
#5	'trabeculectomy'/exp	9213
#6	'canaloplasty'/exp	160
#7	#1 OR #4	123043
#8	#2 OR #5	10453
#9	#3 OR #6	413
#10	#7 AND #8 AND #9	111
[4] Web of Science (WOS) [Date of original search: March 8, 2022]		
#1	glaucoma (All Fields) or Ocular hypertension (All Fields) or Pseudoexfoliation (All Fields) or Exfoliation syndrome (All Fields)	81089
#2	ALL=(Canaloplast*)	383
#3	ALL=(trabeculectom*)	7523
#4	#1 AND #2 AND #3	158
[5] ProQuest [Date of original search: March 8, 2022]		

#1	glaucoma OR (Ocular hypertension) OR Pseudoexfoliation OR (Exfoliation syndrome)	39157
#2	Canaloplast*	131
#3	trabeculectom*	2157
#4	#1 AND #2 AND #3	78
[6] EBSCO – Academic Search Complete [Date of original search: March 9, 2022]		
#1	TX glaucoma* OR TX “ocular hypertens*” OR TX pseudoexfoliat*	78226
#2	TX Canaloplast*	532
#3	TX trabeculectom*	6478
#4	#1 AND #2 AND #3	268
[7] CENTRAL [Date of original search: March 8, 2022]		
#1	(glaucoma) OR (Ocular hypertension) OR (Pseudoexfoliation) OR (Exfoliation syndrome)	9448
#2	(Canaloplast*)	26
#3	(trabeculectom*)	1550
#4	#1 AND #2 AND #3	7
[8] Clinicaltrials.gov [Date of original search: March 9, 2022]		
Condition or disease	Glaucoma OR “ocular hypertension”	
Other terms	canaloplasty AND trabeculectomy	
Final		4
[9] Google Scholar (only the first 200 records were retrieved) [Date of original search: March 9, 2022]		
With all of the words	glaucoma canaloplasty trabeculectomy	
With the exact phrase		
With at least one of the words		
Final		200