Outcomes of Trabeculectomy and Glaucoma Drainage Device Surgery in Congenital Aniridia-Associated Glaucoma: A Systematic Review and Meta-Analysis

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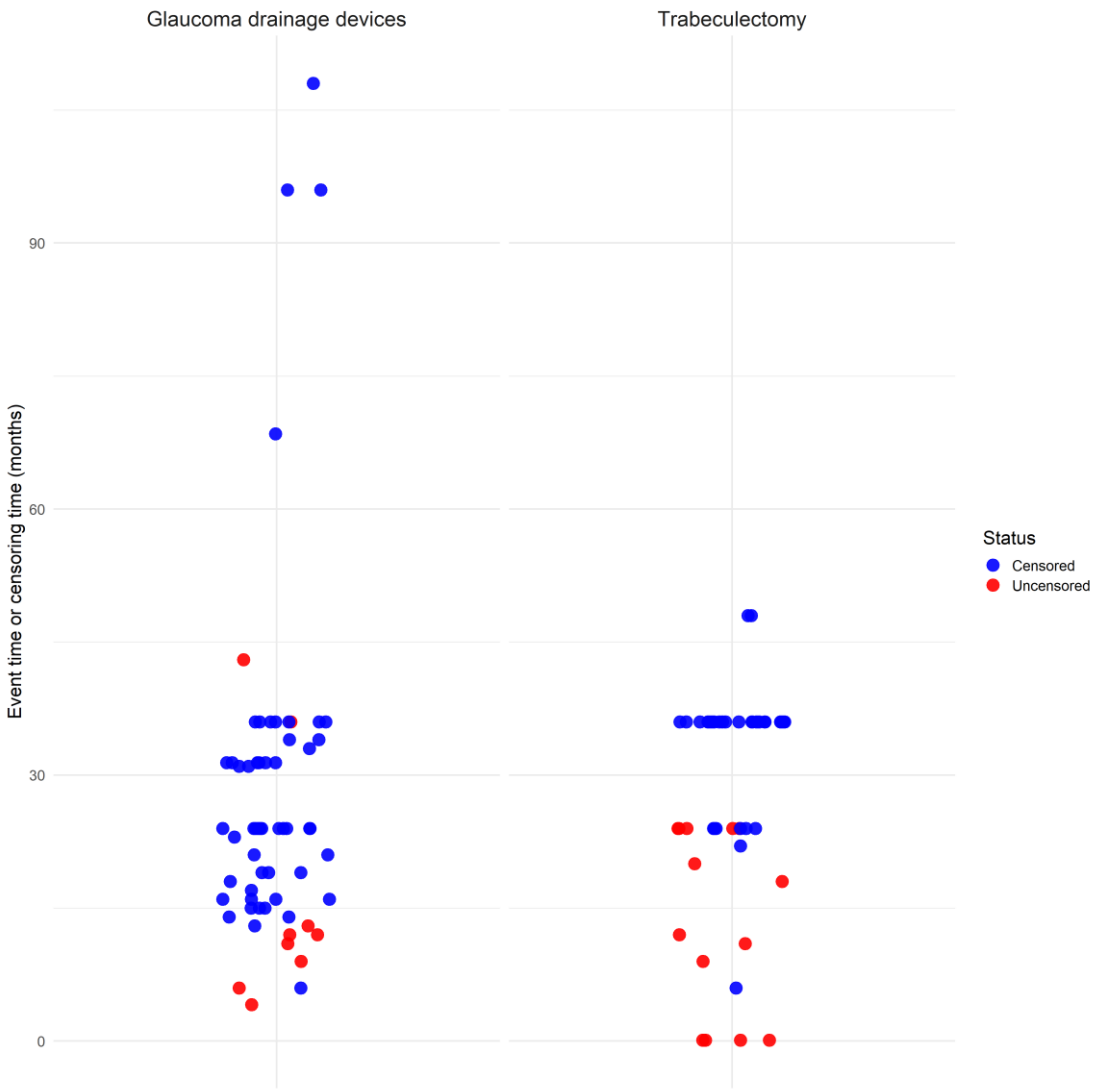


Figure S1. Failure event times and censored times after trabeculectomy and glaucoma drainage device implantation.

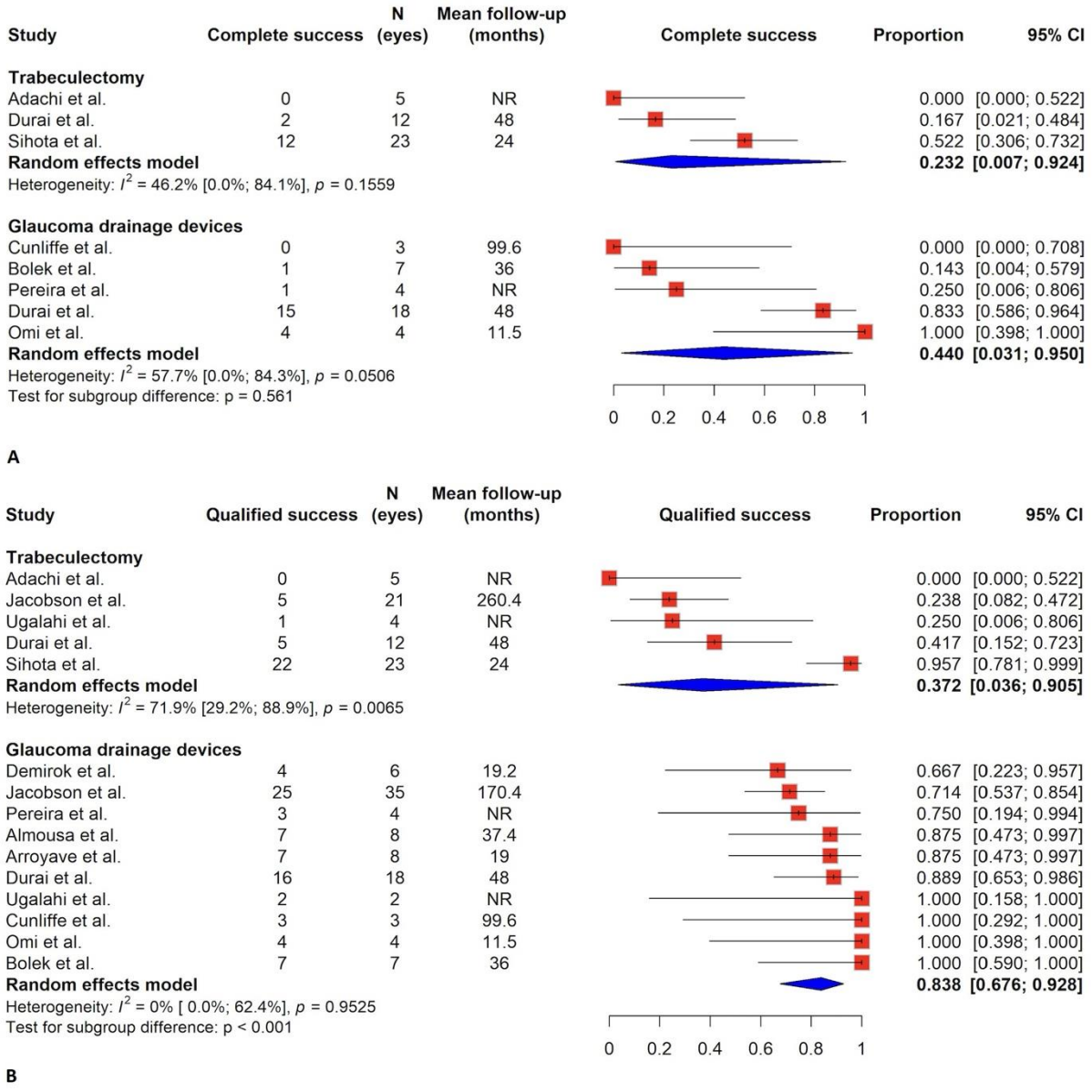
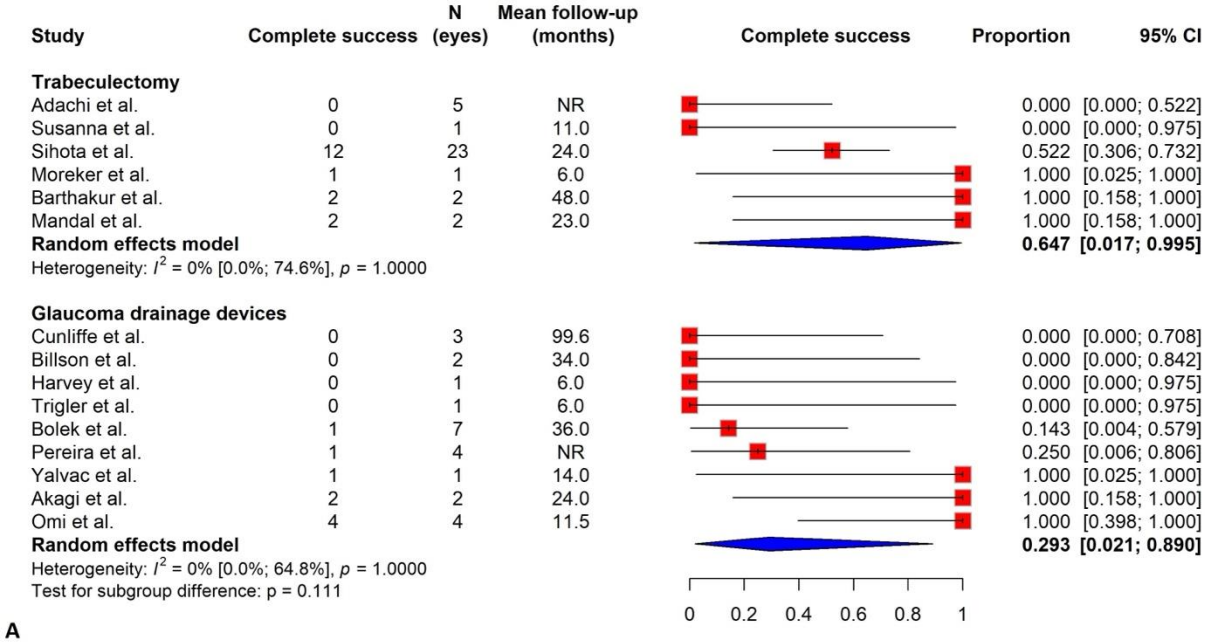
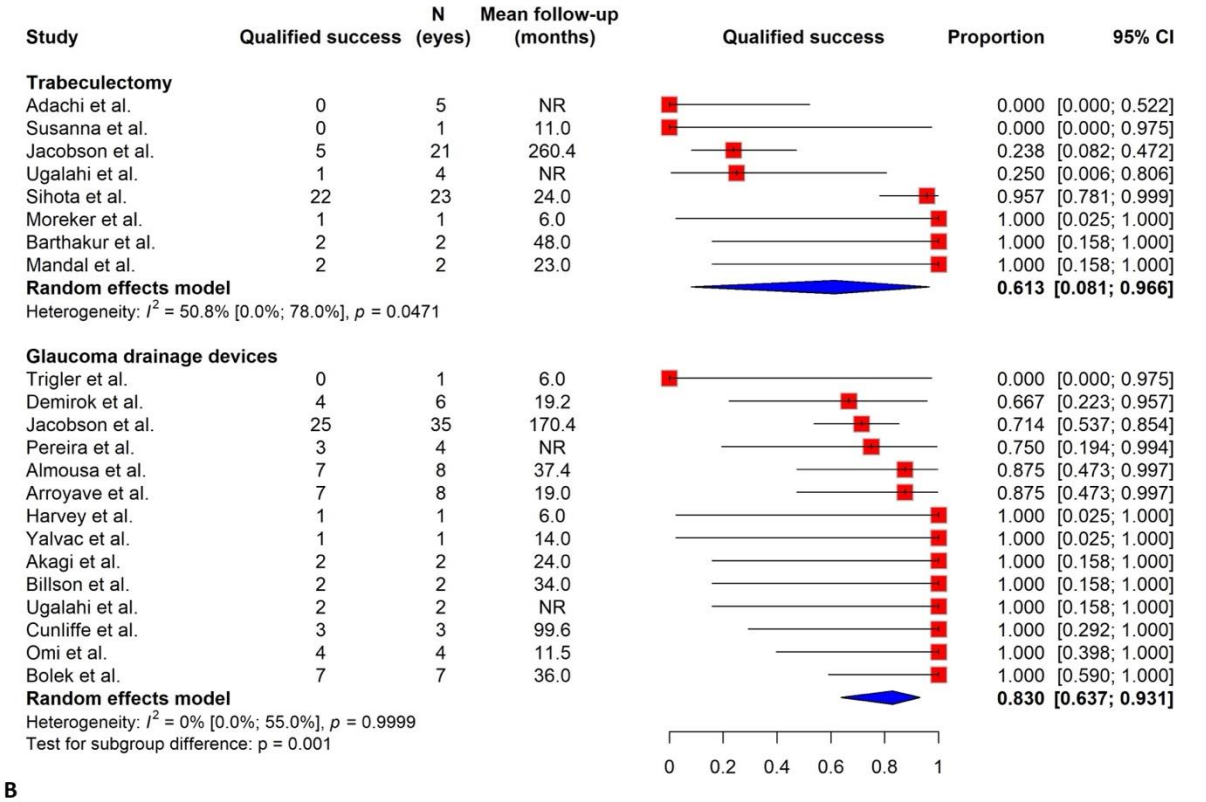


Figure S2. Complete (**A**) and qualified (**B**) success rates for trabeculectomy and glaucoma drainage device (GDD) implantation in aniridic glaucoma, excluding case reports.



A



B

Figure S3. Complete (**A**) and qualified (**B**) success rates for trabeculectomy and glaucoma drainage device (GDD) implantation in aniridic glaucoma, excluding the study by Durai et al.

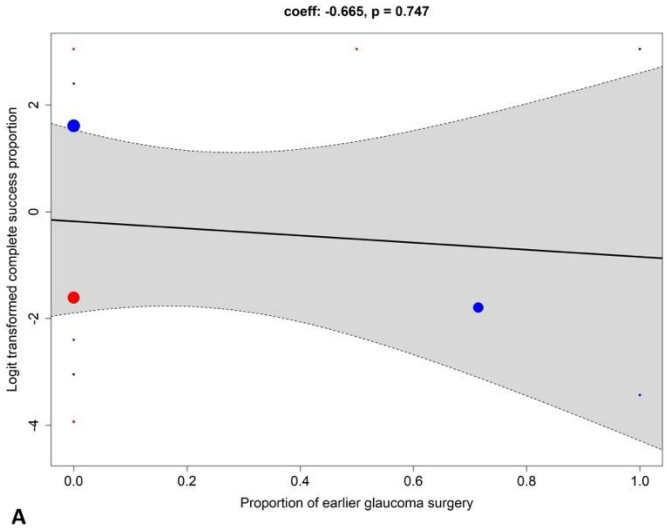


Figure S4. Meta-regression analysis assessing the effect of the covariates proportion of prior glaucoma surgery (**A**), proportion of prior intraocular surgery (**B**), and the use of simultaneous adjunctive agents (**C**) on complete success rate. Red color indicates trabeculectomy treatment, blue color indicates glaucoma drainage device implantation.

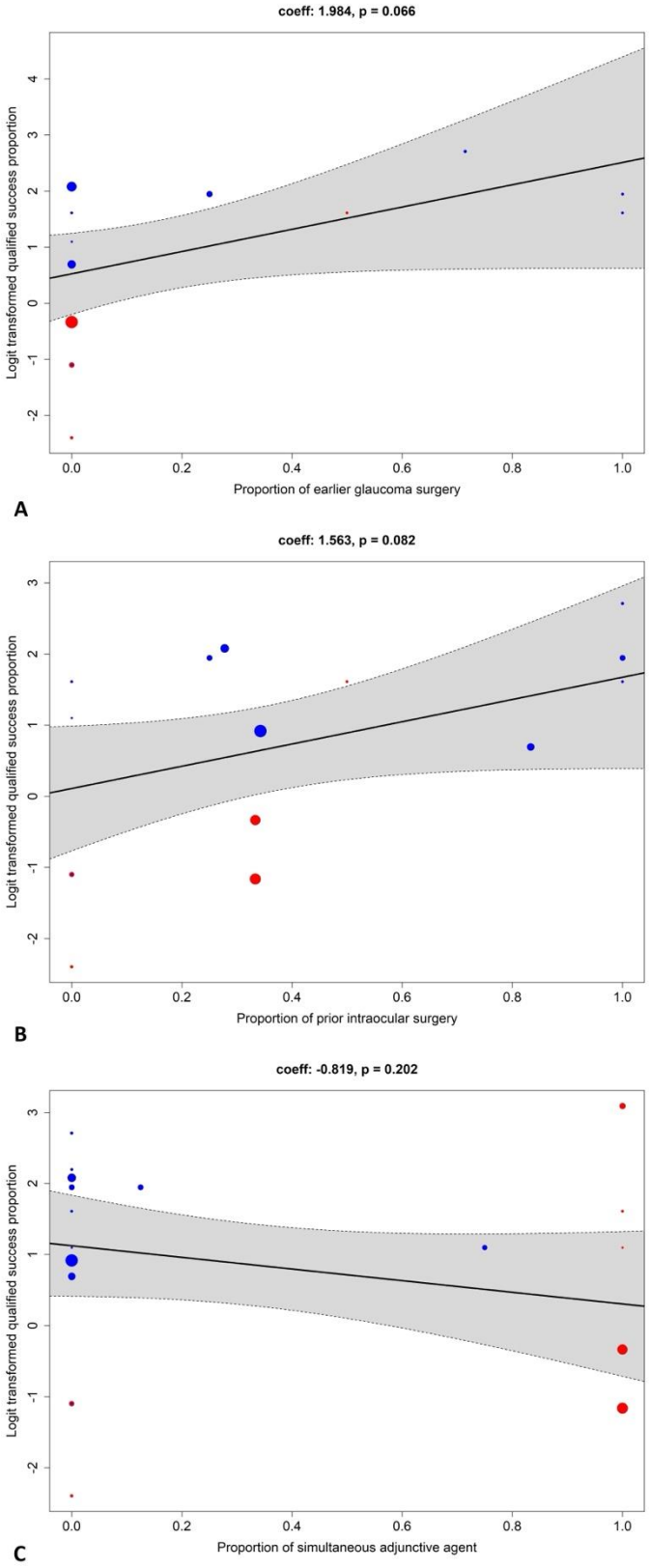


Figure S5. Meta-regression analysis assessing the effect of the covariates proportion of prior glaucoma surgery (**A**), proportion of prior intraocular surgery (**B**), and the use of simultaneous adjunctive agents (**C**) on qualified success rate. Red color indicates trabeculectomy treatment, blue color indicates glaucoma drainage device implantation.

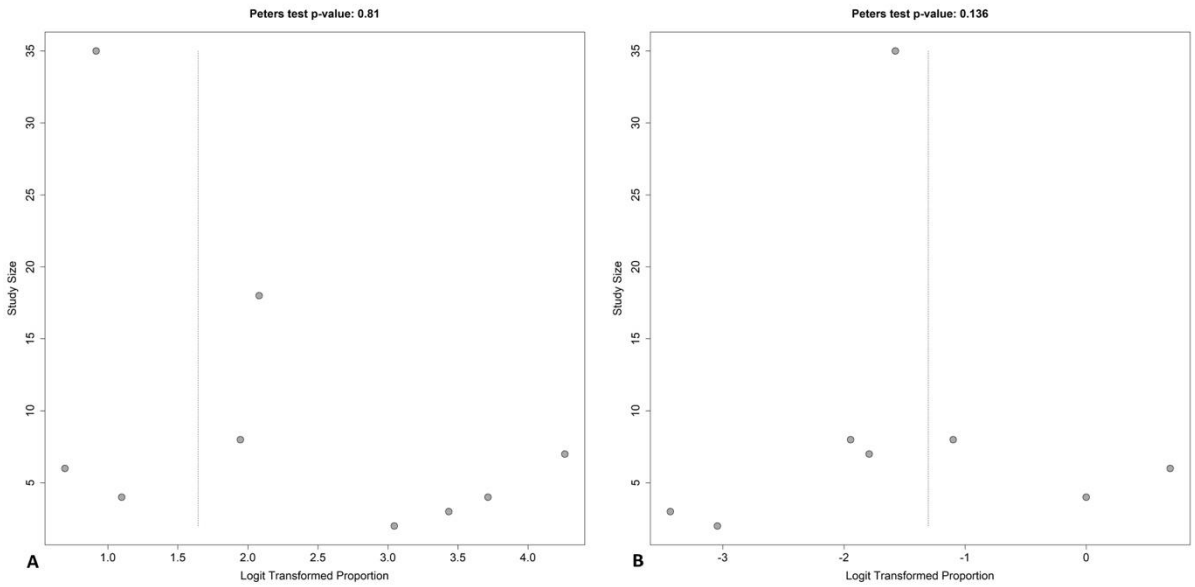


Figure S6. Funnel plots for qualified success rate (**A)** and postoperative serious complications rate (**B)** after glaucoma drainage device implantation.

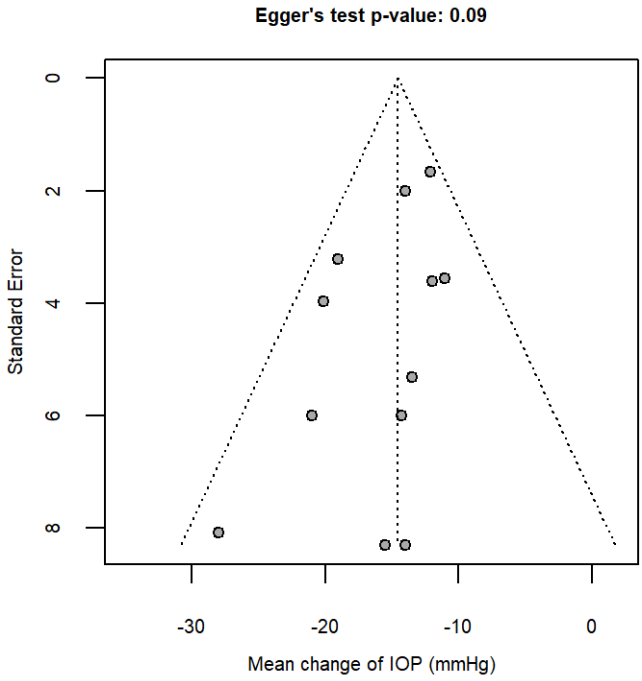


Figure S7. Funnel plot for intraocular pressure change after glaucoma drainage device implantation.

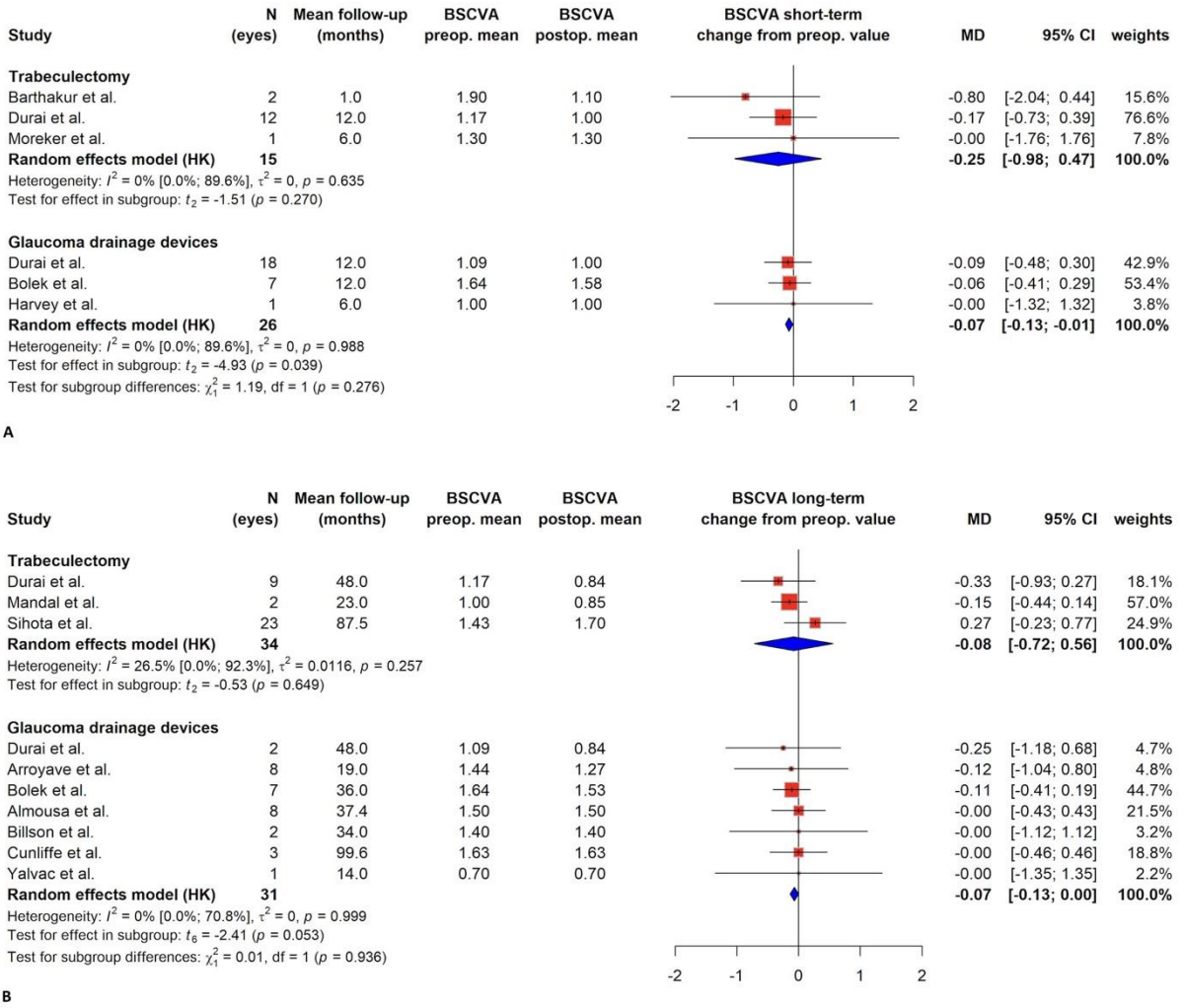


Figure S8. Short-term and long-term changes in best spectacle-corrected visual acuity (BSCVA) following trabeculectomy and glaucoma drainage device (GDD) implantation in aniridic glaucoma.

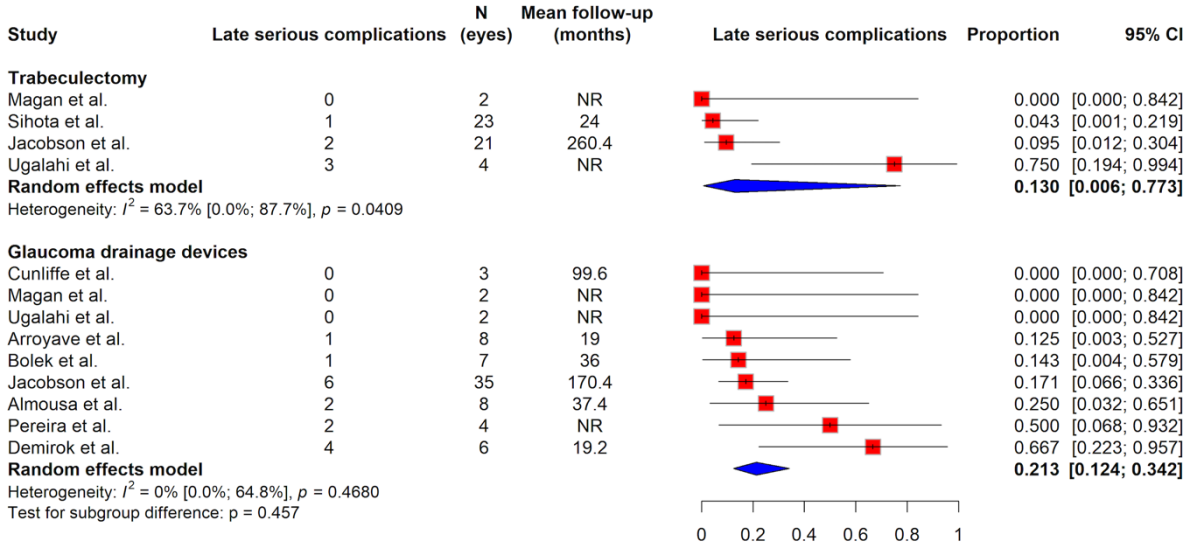


Figure S9. Serious postoperative complications following trabeculectomy and glaucoma drainage device (GDD) implantation in aniridic glaucoma, excluding case reports.

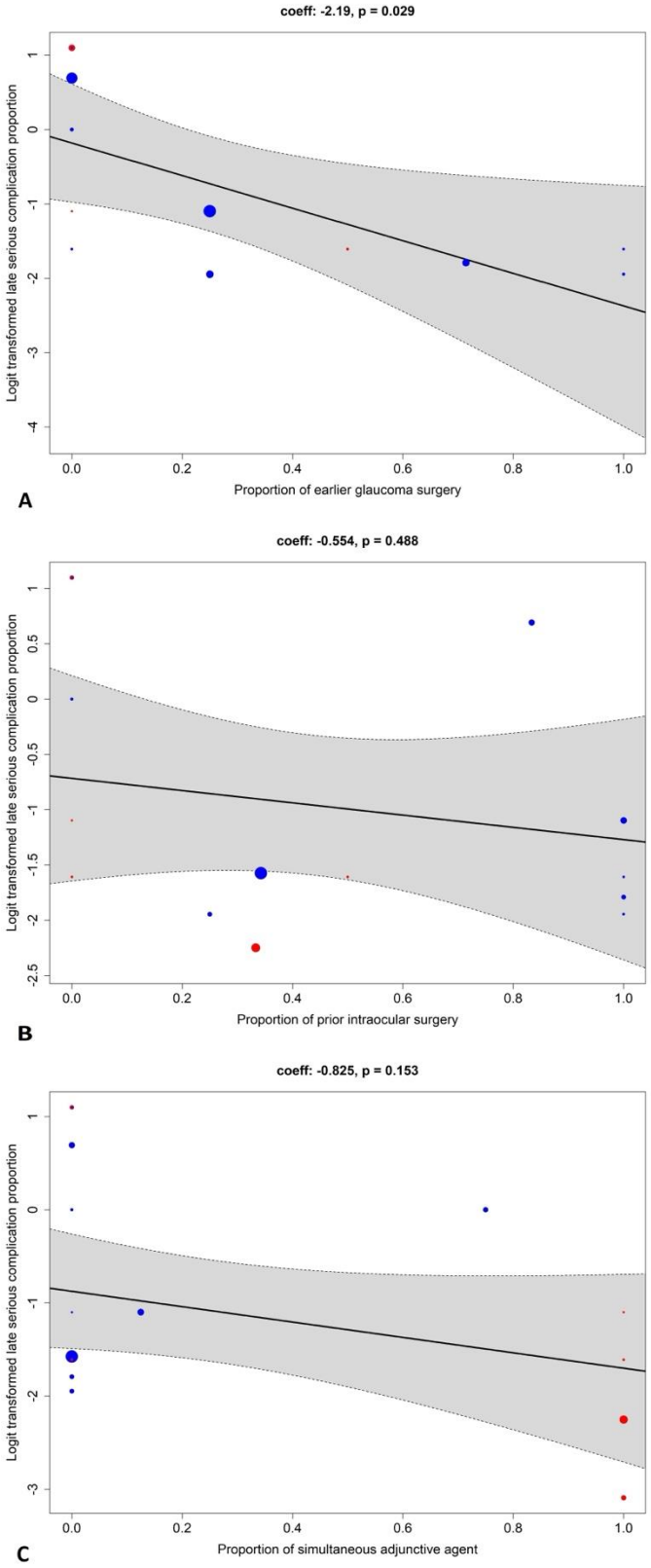


Figure S10. Meta-regression analysis assessing the effect of the covariates proportion of prior glaucoma surgery (**A**), proportion of prior intraocular surgery (**B**), and the use of simultaneous adjunctive agents (**C**) on postoperative serious complications rate. Red color indicates trabeculectomy treatment, blue color indicates glaucoma drainage device implantation.

Table S1. Detailed search strategy.

Database	Search key	Hits
Medline	("aniridia"[MeSH Terms] OR "aniridia"[All Fields] OR "aniridic"[All Fields] OR "PAX6"[All Fields]) AND ("glaucoma"[MeSH Terms] OR "glaucoma"[All Fields] OR "glaucomas"[All Fields] OR "glaucoma s"[All Fields] OR ("ocular hypertension"[MeSH Terms] OR ("ocular"[All Fields] AND "hypertension"[All Fields]) OR "ocular hypertension"[All Fields]) OR (("ocular"[All Fields] OR "oculars"[All Fields] OR "intra-ocular"[All Fields]) AND ("pressure"[MeSH Terms] OR "pressure"[All Fields] OR "pressures"[All Fields] OR "pressure s"[All Fields] OR "pressurisation"[All Fields] OR "pressurised"[All Fields] OR "pressuriser"[All Fields] OR "pressurization"[All Fields] OR "pressurizations"[All Fields] OR "pressurize"[All Fields] OR "pressurized"[All Fields] OR "pressurizer"[All Fields] OR "pressurizes"[All Fields] OR "pressurizing"[All Fields]))))	2024.12.15 – 490
Embase	('aniridia'/exp OR aniridia OR aniridic OR pax6) AND ('glaucoma'/exp OR glaucoma OR 'ocular hypertension'/exp OR 'ocular hypertension' OR (('ocular'/exp OR ocular) AND ('hypertension'/exp OR hypertension)) OR (('ocular'/exp OR ocular OR 'intra ocular') AND ('pressure'/exp OR pressure)))	2024.12.15 – 540
Cochrane Central Register of Controlled Trials	((aniridia) OR (aniridic) OR (PAX6)) AND ((glaucoma) OR (ocular hypertension) OR ((ocular OR intra-ocular) AND pressure))	2024.12.15 – 7

Table S2. Risk of bias of case reports.

RISK OF BIAS	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Akagi et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Barthakur et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Harvey et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Moreker et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yalvac et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Q1: Were patient's demographic characteristics clearly described?
Q2: Was the patient's history clearly described and presented as a timeline?
Q3: Was the current clinical condition of the patient on presentation clearly described?
Q4: Were diagnostic tests or assessment methods and the results clearly described?
Q5: Was the intervention(s) or treatment procedure(s) clearly described?
Q6: Was the post-intervention clinical condition clearly described?
Q7: Were adverse events (harms) or unanticipated events identified and described?
Q8: Does the case report provide takeaway lessons?

Table S3. Risk of bias of case series studies.

RISK OF BIAS	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Adachi et al.	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Single center	Yes
Almousa et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Single center	Yes
Arroyave et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Single center	Yes
Billson et al.	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Single center	Unclear
Bolek et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Single center	Yes
Cunliffe et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Single center	Yes
Demirok et al.	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Single center	Yes
Jacobson et al.	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Single center	Unclear
Magan et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Single center	Yes
Mandal et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Single center	Yes
Omi et al.	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Single center	Yes
Pereira et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Single center	Yes
Sihota et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Single center	Yes
Susanna et al.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Single center	Yes
Trigler et al.	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Single center	No
Ugalahi et al.	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Single center	Not applicable

Q1: Were there clear criteria for inclusion in the case series?
Q2: Was the condition measured in a standard, reliable way for all participants included in the case series?
Q3: Were valid methods used for identification of the condition for all participants included in the case series?
Q4: Did the case series have consecutive inclusion of participants?
Q5: Did the case series have complete inclusion of participants?
Q6: Was there clear reporting of the demographics of the participants in the study?
Q7: Was there clear reporting of clinical information of the participants?
Q8: Were the outcomes or follow up results of cases clearly reported?
Q9: Was there clear reporting of the presenting site(s)/clinic(s) demographic information?
Q10: Was statistical analysis appropriate?

Table S4. Risk of bias assessment using the ROBINS-I tool.

Author	Outcome	D1	D2	D3	D4	D5	D6	D7	Overall
Durai et al.	Success rate	low	low	low	low	low	low	serious	**serious**

D1: Risk of bias due to confounding.
D2: Risk of bias in classification of interventions.
D3: Risk of bias in selection of participants into the study (or into the analysis).
D4: Risk of bias due to deviations from intended interventions.
D5: Risk of bias due to missing data.
D6: Risk of bias arising from measurement of the outcome.
D7: Risk of bias in selection of the reported result.

Table S5. Definitions of complete and qualified success rates across different studies.

First author (year)	Complete success	Qualified success
Adachi et al. (1997) [22]	IOP ≤21 mmHg without AGM	IOP ≤21 mmHg with AGM
Almousa et al. (2014) [24]	IOP >5 and ≤21 mmHg without AGM	IOP >5 and ≤21 mmHg with AGM
Arroyave et al. (2003) [25]	IOP ≤21 mmHg without AGM	IOP ≤21 mmHg with AGM
Bolek et al. (2023) [28]	30% reduction in IOP without AGM	30% reduction in IOP with AGM
Cunliffe et al. (1998) [29]	IOP ≤21 mmHg without AGM	IOP ≤21 mmHg with AGM
Demirok et al. (2019) [30]	IOP >5 and ≤21 mmHg without AGM	IOP >5 and ≤21 mmHg with AGM
Durai et al. (2021) [31]	IOP >5 and ≤21 mmHg with >20% reduction in IOP without AGM	IOP >5 and ≤21 mmHg with >20% reduction in IOP without AGM
Jacobson et al. (2022) [33]	IOP >5 and ≤21 mmHg without AGM	IOP >5 and ≤21 mmHg with AGM
Magan et al. (2022) [34]	IOP ≥6 and ≤21 mmHg with ≥20% reduction in IOP without AGM	IOP ≥6 and ≤21 mmHg with ≥20% reduction in IOP with AGM
Mandal et al. (1997) [35]	IOP ≤21 mmHg without AGM	IOP ≤21 mmHg with AGM
Omi et al. (1991) [37]	IOP ≤21 mmHg without AGM	IOP ≤21 mmHg with AGM
Pereira et al. (2002) [38]	IOP ≤21 mmHg without AGM	IOP ≤21 mmHg with AGM
Sihota et al. (2021) [39]	IOP ≤18 mmHg without AGM	IOP ≤18 mmHg with AGM
Susanna et al. (1995) [40]	IOP ≥4 and ≤21 mmHg without AGM	IOP ≥4 and ≤21 mmHg with AGM
Ugalahi et al. (2020) [42]	NR	NR

AGM = antiglaucoma medication; IOP = intraocular pressure; NR = not reported.