Table 42: Effect of MIGS + Cataract Surgery Versus Comparators on Visual Acuity in Adults With Glaucoma

Quality Assessment							Summary of Findings				Importance
							No. of Eyes		Effect	Quality	
No. Of Studies	Study Design	Risk of Bias	Inconsistency	Indirectness	Imprecision	Other Considerations	MIGS	Comparator			
MIGS + Cataract Surgery Vs. Cataract Surgery Alone: ECP + Phaco Vs. Phaco Alone											
4	Retrospective cohort[a]	Very serious risk of bias[b]	No serious inconsistency	Serious indirectness[c]	Serious imprecision[d]	None	475	202	**ECP + Phaco =/[=] Phaco Alone: VA**[72,73,75] and **BCVA**[74] were not different[74,75] between groups (or were numerically similar; no statistical comparisons[72,73]) at baseline or up to 36 mo follow-up.	⊕OOO VERY LOW	CRITICAL
MIGS + Cataract Surgery Vs. Cataract Surgery Alone: iStent + Phaco Vs. Phaco Alone											
1	RCT[e]	Serious risk of bias[f]	No serious inconsistency	Serious indirectness[g]	Serious imprecision[h]	None	117	123	**iStent + Phaco [=] Phaco Alone: CDVA** was numerically similar between groups at baseline, 12 and 24 mo follow-up, but this was not tested statistically.[34,68]	⊕OOO VERY LOW	CRITICAL
MIGS + Cataract Surgery Vs. Cataract Surgery Alone: 1 or 2 iStents + Phaco Vs. Phaco Alone											
1	Retrospective cohort[i]	Serious risk of bias[j]	No serious inconsistency	Serious indirectness[k]	Serious imprecision[l]	None	iStent + Phaco, 31 2x iStent + Phaco, 22	78	**1 or 2 iStent(s) + Phaco [?] Phaco Alone:** Inconsistent reporting (i.e., different values reported in abstract, tables, and text) so interpretation of findings is unclear.[76]	⊕OOO VERY LOW	CRITICAL
MIGS + Cataract Surgery Vs. A Different MIGS + Cataract Surgery: Goniotomy With KDB + Phaco Vs. iStent + Phaco											
1	Retrospective cohort[m]	Serious risk of bias[n]	No serious inconsistency	Serious indirectness[o]	Serious imprecision[p]	None	KDB + Phaco, 237 iStent + Phaco, 198	NA[q]	**KDB + Phaco = iStent + Phaco: BCVA** improved significantly from baseline to 6 mo in both groups, and the change in BCVA was not significantly different between groups.[86]	⊕OOO VERY LOW	CRITICAL
MIGS + Cataract Surgery Vs. A Different MIGS + Cataract Surgery: Trabectome + Phaco Vs. 2x iStent + Phaco											
1	Retrospective cohort[r]	Serious risk of bias[s]	No serious inconsistency	Serious indirectness[t]	Serious imprecision[u]	None	Trabectome + Phaco, 36 2x iStent + Phaco, 34	NA[q]	**Trabectome + Phaco = 2x iStent + Phaco:** **BCVA** was not significantly different between groups at baseline, and the change from baseline to 12 mo follow-up was not significantly different between groups.[79]	⊕OOO VERY LOW	CRITICAL

Quality Assessment							Summary of Findings				Importance
							No. of Eyes		Effect	Quality	
No. Of Studies	Study Design	Risk of Bias	Inconsistency	Indirectness	Imprecision	Other Considerations	MIGS	Comparator			
MIGS + Cataract Surgery Vs. A Different MIGS + Cataract Surgery: Trabectome + MICS Vs. 2x iStent Inject + MICS											
1	Retrospective cohort[v]	Serious risk of bias[w]	No serious inconsistency	Serious indirectness[x]	Serious imprecision[y]	None	Trabectome + MICS, 25 2x iStent Inject + MICS, 25	NA[q]	**Trabectome + MICS = 2x iStent Inject + MICS:** **BCVA** was improved from baseline at 12 mo follow-up in both groups, with no significant difference between groups at any time point.[77]	⊕OOO VERY LOW	CRITICAL
MIGS + Cataract Surgery Vs. A Different MIGS + Cataract Surgery: Different Numbers of iStents + Phaco											
1	Non-randomized controlled clinical trial[z]	Serious risk of bias[aa]	No serious inconsistency	Serious indirectness[bb]	Serious imprecision[cc]	None	2x iStent + Phaco, 28 3x iStent + Phaco, 25	NA[q]	**2 iStents + Phaco [=] 3 iStents + Phaco:** The proportion of eyes with a given **CDVA** was not different between groups at baseline and was numerically similar at 12 mo follow-up, but this was not tested statistically.[83]	⊕OOO VERY LOW	CRITICAL
MIGS + Cataract Surgery Vs. Filtration Surgery + Cataract Surgery: ECP + Phaco Vs. Trabeculectomy With MMC + Phaco											
1	Retrospective cohort[dd]	Serious risk of bias[ee]	No serious inconsistency	Serious indirectness[ff]	Serious imprecision[gg]	None	24	29	**ECP + Phaco = Trabeculectomy with MMC + Phaco:** **VA** was significantly improved from baseline at 6 mo follow-up in both groups and was not significantly different between groups.[82]	⊕OOO VERY LOW	CRITICAL

= = not significantly different between groups; [=] = not compared statistically but tendency for no difference between groups; 2x = two devices; 3x = three devices; BCVA = best-corrected visual acuity; CDVA = corrected-distance visual acuity; ECP = endoscopic cyclophotocoagulation; KDB = Kahook Dual Blade; MICS = micro-incision cataract surgery; MIGS = minimally invasive glaucoma surgery; MMC = mitomycin C; mo = months; NA = not applicable; no. = number; Phaco = phacoemulsification; RCT = randomized controlled trial; VA = visual acuity; vs. = versus.

Note: Data were collected by RCT, non-randomized controlled clinical trial, or retrospective cohort, with up to 36 months (three years) of follow-up. Visual acuity, BCVA or CDVA were measured by Snellen visual acuity or eye chart[72,75,79,83] or Snellen converted to logMAR;[73,74,82,86] in all other cases the method of measurement was not reported.

[a] Four retrospective cohort studies.[72-75]

[b] Very serious risk of bias. Bias due to confounding: retrospective study and rationale for assigning treatments likely to be different between groups;[72-75] baseline characteristics not reported for the Phaco alone group so unable to assess whether groups were systematically different at baseline;[72] treatment assignment based on patient characteristics and groups were systematically different;[73] baseline characteristics were different between groups;[73,74] treatment group was assigned based on patient choice and treatment availability;[75] potential confounding variables not controlled for in analyses.[72-75] Bias in selection of participants: only those with complete data or sufficient follow-up were included and it is possible that those with complete data or a given follow-up duration were systematically different from those without complete data or a particular follow-up duration (i.e., different from those in routine clinical practice);[72,73] patients with intraoperative complications were excluded.[74] Bias due to deviations from intended interventions: important co-intervention may not have been balanced between groups (number of medications was not reported in one group;[72] absolute number of medications not compared statistically between groups[73]); important co-intervention not balanced between groups (number of medications significantly different between groups).[74,75] Bias due to missing data: reasons for patient exclusion only reported for the ECP + Phaco group;[72] follow-up duration significantly different between groups (mean of 7.4 versus 2.1 months in the ECP + Phaco and Phaco alone groups, respectively).[74] Bias in measurement of outcomes: visual acuity measured by Snellen[72,75] or Snellen converted to logarithm of the minimum angle of resolution (logMAR),[73,74] which are not considered reliable, valid, or discriminative measures.[96] Bias in selection of the reported result: VA only reported as the proportion of eyes with improved, same, or worsened VA and not as absolute values;[72] VA only reported at baseline and one-month follow-up (while other variables were assessed at follow-up ranging from 1 to 43.4 months);[74] VA only reported at baseline and the last follow-up time point.[75]

[c] Serious indirectness.[72-75] VA or BCVA measured by Snellen or Snellen converted to logMAR for analysis, which is not considered reliable, valid or discriminative.[96]

[d] Serious imprecision.[72,74,75] VA only reported as the proportion of eyes with improved, same, or worsened VA and not as absolute values;[72] no measures of variability. [72,74,75]

[e] One RCT in two publications.[34,68]

[f] Serious risk of bias.[34,68] Selection bias: no indication of allocation concealment.[34,68] Detection bias: method of measurement of CDVA not reported. Attrition bias: large amount of missing data (~9% per group at 12 months and 16% to 18% per group at 24 months), and reasons for missing data may be related to the true outcome (e.g., those with failed Phaco due to adverse event were excluded post-randomization). Reporting bias: results not reported comprehensively and rationale for analysis choice not reported (i.e., some results reported with the intention-to-treat population and others reported with the "consistent cohort" population); different breakdown of CDVA reported at baseline and 24-month follow-up.[34,68]

[g] Serious indirectness.[34,68] Sufficient detail of measuring CDVA not reported and therefore whether reliable, valid and discriminative (versus surrogate) measures were used is uncertain.

[h] Serious imprecision.[34,68] Only a single study, no measures of variability, and CDVA only reported as the proportion of eyes with a given CDVA or better.

[i] One retrospective cohort study.[76]

[j] Very serious risk of bias.[76] Bias due to confounding: retrospective study and rationale for assigning treatments likely to be different between groups; potential confounding variables not controlled for in analyses. Bias due to deviations from intended interventions: important co-intervention (number of medications) may not have been balanced across groups. Bias due to missing data: substantial loss to follow-up, reasons for missing data not reported, and amount of missing data not balanced across groups. Bias in measurement of outcomes: method of measurement not reported. Bias in selection of the reported result: units for VA not specified and values only reported at baseline.

[k] Serious indirectness.[76] No detail regarding measurement of VA reported, and therefore whether reliable, valid, and discriminative (versus surrogate) measures were used in uncertain.

[l] Serious imprecision.[76] Only a single study and no measures of variability.

[m] One retrospective cohort study.[86]

[n] Serious risk of bias.[86] Bias due to confounding: retrospective design and rationale for assigning treatments likely to be different between groups; significant differences between groups at baseline; potential confounding variables not controlled for in analyses. Bias in selection of participants: only those with six-month complete data were included and it is possible that those with complete data were systematically different from those without complete data (i.e., different from those in routine clinical practice). Bias due to deviations from intended interventions: important co-intervention not balanced between groups (number of medications significantly different between groups). Bias due to missing data: large amount of missing data at one month and three months, reasons for missing data not reported, and amount of missing data not balanced across groups. Bias in measurement of outcomes: BCVA measured by Snellen converted to logMAR, which is not considered a reliable, valid, or discriminative measure.[96] Bias in selection of the reported result: BCVA only reported pooled across groups and only at baseline and six-month follow-up.

[o] Serious indirectness.[86] BCVA measured by Snellen converted to logMAR for analysis, which is not considered reliable, valid, or discriminative.[96]

[p] Serious imprecision.[86] Only a single study, and the variability in the estimate (standard deviation) was similar in magnitude to the parameter (mean).

[q] In these studies, one MIGS performed in combination with cataract surgery was compared with another MIGS combined with cataract surgery.[77,79,83,86]

[r] One retrospective cohort study.[79]

[s] Serious risk of bias.[79] Bias due to confounding: retrospective design and rationale for assigning treatments likely to be different between groups; different surgeons performed procedures in the different treatment arms; only one potential confounding factor controlled for in analyses (i.e., "between-eye correlation" for patients with two eyes in the study). Bias in selection of participants: only those with 12-month follow-up were included and it is possible that those with 12-month follow-up were systematically different from those with shorter follow-up (i.e., different from those in routine clinical practice). Bias in measurement of outcomes: visual acuity measured by Snellen, which is not considered a reliable, valid, or discriminative measure.[96] Bias in selection of the reported result: BCVA only presented as change from baseline and not as absolute values, and only reported for 12-month follow-up time point.

[t] Serious indirectness.[79] BCVA measured by Snellen, which is not considered reliable, valid, or discriminative.[96]

[u] Serious imprecision.[79] Only a single study and no measures of variability.

[wv] One retrospective cohort study.[77]

[w] Serious risk of bias.[77] Bias in selection of participants: only those with complete follow-up were included and it is possible that those with versus without complete follow-up were systematically different (i.e., different from those in routine clinical practice). Bias due to deviations from intended interventions: by design the post-operative medication regimen was different between groups, the number of medications was significantly different between groups at six-week follow-up, and intraocular pressure was measured without washout. Bias in measurement of outcomes: method of measuring BCVA not reported.

[x] Serious indirectness.[77] Sufficient detail of measuring BCVA not reported and therefore whether reliable, valid, and discriminative (versus surrogate) measures were used is uncertain.

[y] Serious imprecision.[77] Only a single study, and the variability in the estimate (standard deviation) was similar in magnitude to the parameter (mean).

[z] One non-randomized controlled clinical trial.[83]

[aa] Serious risk of bias.[83] Bias due to confounding: treatment assigned based on patient characteristics and judgment of operating surgeon (i.e., with those requiring greater intraocular pressure control receiving three versus two iStents); potential confounding variables not controlled for in analyses. Bias in selection of participants: only those with 12-month follow-up were included and it is possible that those with 12-month follow-up were systematically different from those with shorter follow-up (i.e., different from those in routine clinical practice). Bias due to deviations from intended interventions: important co-intervention not balanced between groups (number of medications significantly different between groups). Bias in measurement of outcomes: CDVA measured by Snellen, which is not considered reliable, valid, or discriminative.[96] Bias in selection of the reported result: CDVA only reported for 12-month follow-up time point.

[bb] Serious indirectness.[83] CDVA measured by Snellen, which is not considered reliable, valid, or discriminative.[96]

[cc] Serious imprecision.[83] Only one study and no measures of variability.

[dd] One retrospective cohort study.[82]

[ee] Serious risk of bias.[82] Bias due to confounding: participants in the different treatment arms were systematically different; Trabeculectomy + Phaco patients had healthy conjunctiva, ECP + Phaco patients had thin conjunctiva or plateau iris; potential confounding variables not controlled for in the analysis. Bias due to deviations from intended interventions: important co-intervention not balanced between groups (number of medications significantly different between groups). Bias due to missing data: substantial amount of missing data, amount of missing data not balanced across groups, and reasons for missing data not reported. Bias in measurement of outcomes: VA measured by or Snellen converted to logMAR for analysis, which is not considered reliable, valid, or discriminative.[96]

[ff] Serious indirectness.[82] VA measured by or Snellen converted to logMAR for analysis, which is not considered reliable, valid, or discriminative.[96]

[gg] Serious imprecision.[82] Only a single study and the variability in the estimate (standard deviation) was similar in magnitude to the parameter (mean).