

INDIRECT TREATMENT COMPARISON OF MINIMALLY INVASIVE GLAUCOMA SURGERIES ON TOP OF PHACOEMULSIFICATION IN PATIENTS WITH PRIMARY OPEN-ANGLE GLAUCOMA

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OBJECTIVES

To perform an adjusted indirect treatment comparison (ITC) of minimally invasive glaucoma surgeries (MIGS) on top of phacoemulsification (PHACO) in patients with primary open-angle glaucoma (POAG).

METHODS

- For the study of any type of MIGS on top of PHACO in patients with POAG, five randomized clinical trials (RCT) with a common control arm (PHACO) were eligible from a 2017 published systematic literature review by Lavia C and colleagues¹ (*Table 1*).
- Main endpoint of interest was the one year mean change from baseline in intraocular pressure (IOP).
- An ITC using the methods described by Bucher and collaborators² was performed (*Figure 1*).
- Pooled effects using a meta-analysis were estimated in comparisons with more than one RCT using validated software³.
- A number of sensitivity analyses (SAs) were performed to test alternative scenarios.

Table 1. Pre-processed Data from Randomized Clinical Trials

Exploratory Group						Control Group			
Device Author, Year		Eyes	1 Year Change from Baseline (mmHg)			Eyes	1 Year Change from Baseline (mmHg)		
			Mean	SD ^a	SE		Mean	SD ^a	SE
One TMBS ^b + PHACO	Craven, 2012 ⁴	98	-1,6	3,14	0,32	101	-0,9	3,05	0,31
One TMBS ^b + PHACO	Fea, 2015 ⁵	10	-3,1	2,34	0,74	24	-1,1	2,63	0,83
Two TMBS ^b + PHACO	Fernande z, 2010 ⁶	17	-6,6	2,46	0,60	16	-3,8	2,02	0,49
SM ^b + PHACO	Vold, 2016 ⁷	374	-7,9	3,78	0,20	131	-6,2	3,97	0,21
IS ^b + PHACO	Pfeiffer, 2015 ⁸	50	-2,8	3,16	0,45	50	-2,6	3,41	0,48

^a Correlation between baseline and one year assumed ½

^b Abbreviations: **TMBS**: Trabecular micro-bypass stent, **SM**: Suprachoroidal Microstent, **IS**: Intracanalicular Scaffold

RESULTS

- Estimated absolute IOP reductions (mmHg units and 95% CI) for PHACO alone, and when combined with one trabecular micro-bypass stent (TMBS), two TMBS, suprachoroidal microstent (SM) and intracanalicular scaffold (IS) were -2.05(-3.38 to -0.72), -3.15(-5.66 to -0.64), -4.85(-7.71 to -1.99), -3.75(-5.68 to -1.64) and -2.25(-4.87 to 0.37) respectively (*Figure 2, base case*).
- Following high observed heterogeneity in the evidence, random-effects were prioritized.
- Outlying results from one RCT were removed when estimating a pooled PHACO effect (suprachoroidal microstent study).
- Sensitivity analyses showed similar trends in the outcomes (*Figure 2, SA1 to SA 4*).

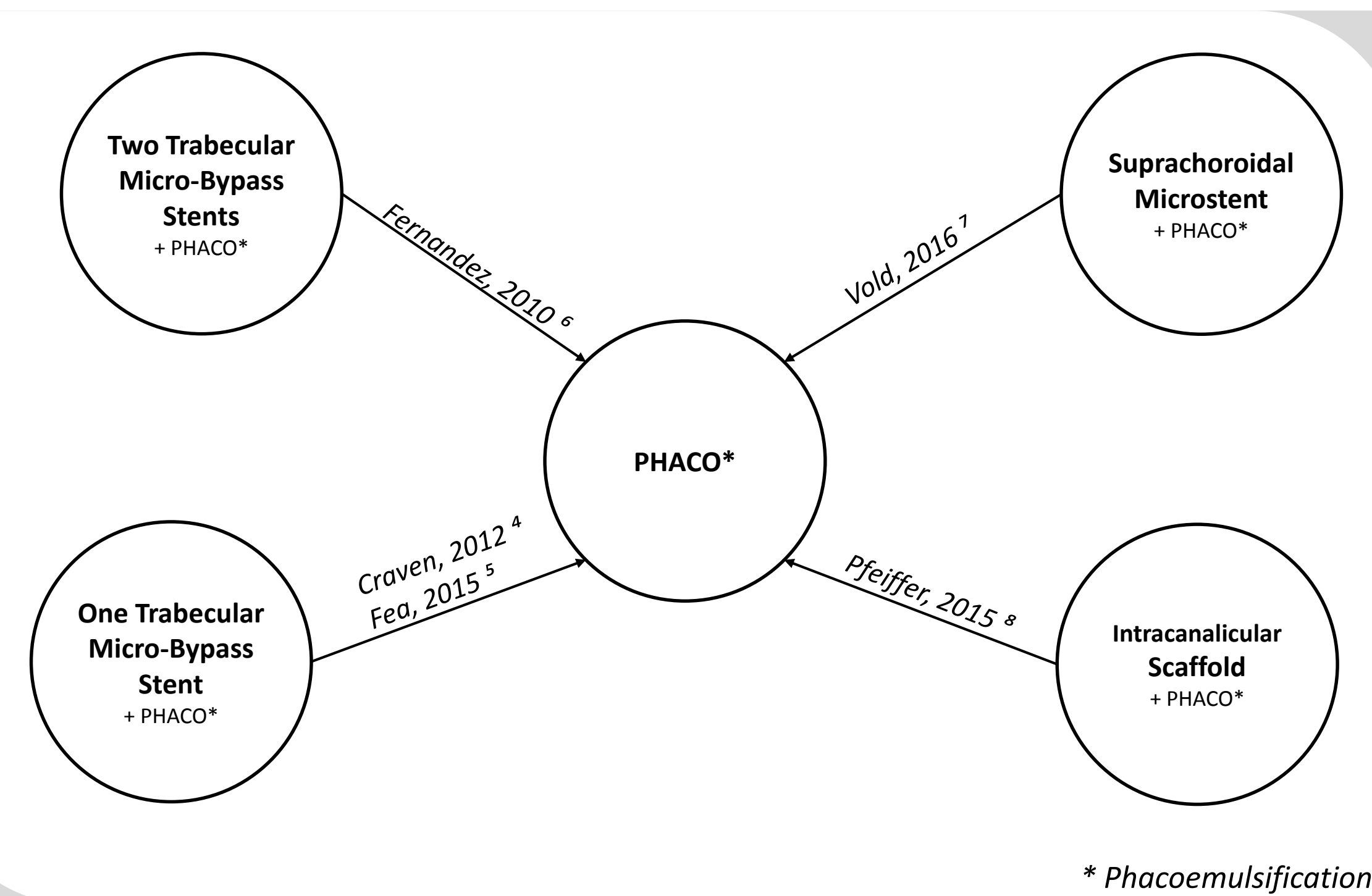
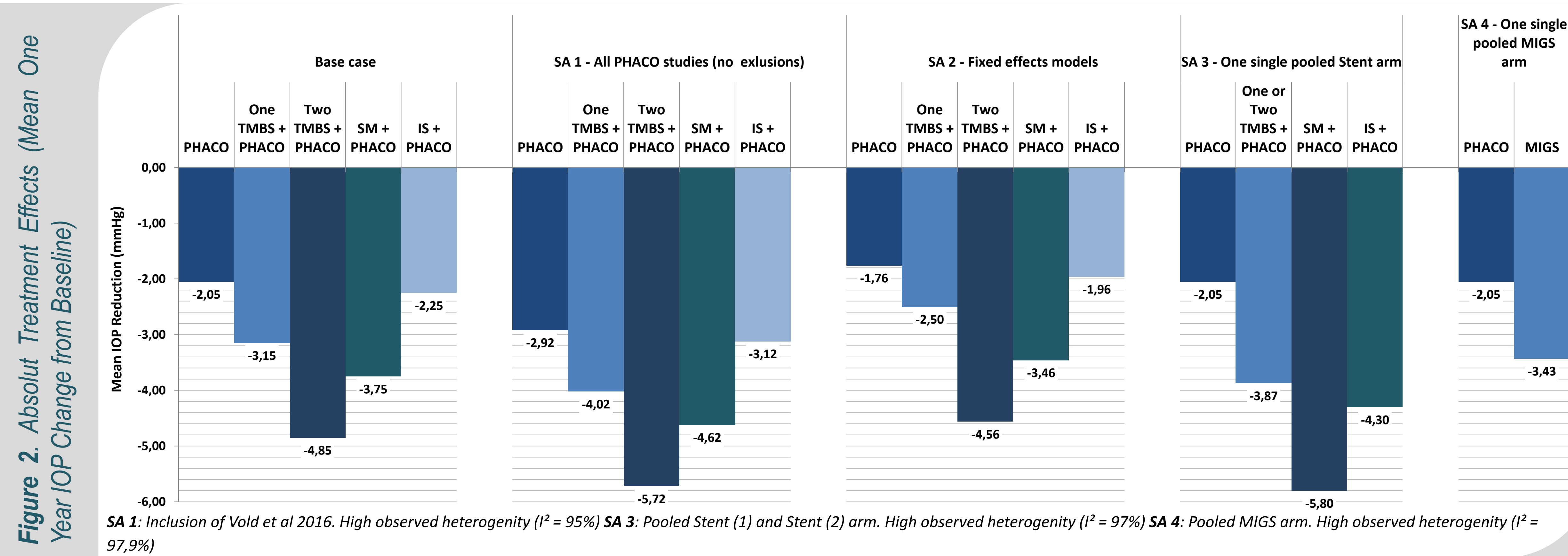


Figure 1. Indirect Treatment Comparison Scheme



CONCLUSION

When compared to PHACO alone, selected combined MIGS showed mostly a statistical significant improvement in IOP. Present heterogeneity between RCTs could be an important bias. Studies comparing the mean change in IOP vs modern cataract surgery (PHACO) alone are up to date the best common criteria to perform ITCs for MIGS in POAG patients, but scarce evidence is available.

REFERENCES
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