



SYSTEMATIC LITERATURE REVIEW ON THE USE OF iSTENT inject® FOR THE TREATMENT OF PATIENTS WITH GLAUCOMA AND CATARACT WITH IOP>21 MMHG.

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BACKGROUND The group of chronic optic neuropathies, characterized by degeneration of the optic nerve, are called glaucoma. Increased intraocular pressure (IOP) can lead to blindness, requiring treatment to slow glaucoma progression. Although multiple treatment options are available for reducing IOP for patients with glaucoma and cataract, the clinical evidence of each option lack clarity in the scattered published domain, requiring a systematic review of the literature in order to assess comprehensive comparisons of those options. In Mexico, guidelines exist for the treatment of patients with glaucoma and cataract including different treatment options (Secretaría de Salud, 2013).

OBJECTIVE A systematic review of the international literature, of the different glaucoma surgical methods included, and which are performed in combination with phacoemulsification, was carried out in order to comparatively evaluate the efficacy of each of these alternatives.

METHODS The review was performed on the PubMed and Cochrane Library databases using the following search terms: "iStent inject", "phacoemulsification", "viscocanalostomy", "trabeculectomy", "sclerectomy", "phacoviscocanalostomy", "phacocanaloplasty", "phacotrabeculectomy", "phacosclerectomy", "second-generation trabecular micro-bypassstents", "glaucoma" and "cataract". No time restriction was used. The date of the last search was May 20, 2019.

A set of targeted research questions was identified and a set inclusion and exclusion criteria was applied (Table 1). The primary inclusion criteria included comparative studies, patients with glaucoma and cataract, initial IOP > 21 mmHg, studies evaluating change in IOP pre and post-surgery and/or % of patients with IOP<21mmHg, studies using 1 stent per eye (iStent® inject) and publications in English or Spanish. Studies where phacoemulsification was not considered as adjunctive surgery were excluded.

Table 1. Methodology of the systematic review of literature

Criterion	Selection	Justification
Type of population	Patients with primary open angle glaucoma with cataract.	The technology evaluated in this study was designed for this population.
Intervention	iStent® in conjunction with phacoemulsification	Objective technology of the inclusion request (ocular implant)
Comparator	<ul style="list-style-type: none"> Phacoemulsification (monotherapy) Phacoemulsification with surgery for glaucoma with cataract: <ul style="list-style-type: none"> Viscocanalostomy Trabeculectomy Sclerotomy Canaloplasty 	Therapies recommended in national clinical practice guidelines.
Outcomes	Probability of success (patient/eye ratio with IOP reduction, less than or equal to 21 mmHg)	Common interest and outcomes between studies.
Inclusion criteria in addition to those specified in the research question		
Type of study	Randomized, comparative, prospective, or retrospective clinical studies in patients with primary open-angle glaucoma with cataract	Based on suggested databases, as well as the highest quality evidence available.
Search Strategies and Search Engines		
Search Engines	PubMed and Cochrane Library	Recommendations from Cochrane and the Center for Systematic Reviews at York University, United Kingdom.
Date of search	20/05/2019	N/A
Additional restrictions or contacts	Publications of electronic journals indexed in English or Spanish.	Limit interpretative biases and partially available information that leads to inappropriate interpretations

RESULTS 260 studies were identified. Fifty-one duplicate studies and 21 studies corresponding to a language other than Spanish or English were excluded. Of the remaining 188 articles, 167 were removed as initial scrutiny. Out of 21 articles that were reviewed in full, 15 were removed as they did not meet the inclusion criteria. Finally, 6 articles were selected for analysis (Samuelson, 2019) (Hou, 2015) (Cillino, 2004) (Tanito, 2002) (Gianoli, 1999) (Storr-Paulsen, 1998).

Figure 1. Systemic Literature Review Flow Chart

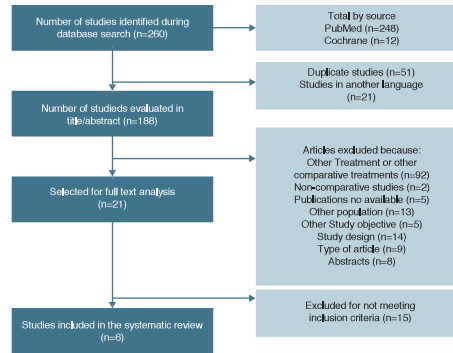


Table 2. Summary of Literature Review

Author	Methods	Regions	Comparison	Results
(Samuelson, 2019)	Prospective Randomized Multicentre Controlled trial	U.S.A.	iSTENT inject® in conjunction with phacoemulsification versus phacoemulsification	Statistically significant differences in terms of: <ul style="list-style-type: none"> Reduction of day time IOP without medication at 24 months (7mmHg in the iStent® inject group and 5,4 in the phacoemulsification group; p<0,001) Eye proportion with reduction > 20% in IOP (75,8% in the iStent® inject group and 61,8% in the phacoemulsification group; p<0,005)
(Hou, 2015)	Prospective Randomized Multicentre	China	Phaco-trabeculectomy versus phacoemulsification	No statistically significant differences in terms of: <ul style="list-style-type: none"> IOP reduction at 1 month (p=0,16) IOP reduction at 3 months (p=0,13) IOP reduction at 6 months (p=0,13) IOP reduction at 9 months (p=0,08) Statistically significant differences in terms of: <ul style="list-style-type: none"> IOP reduction at 12 months in favour of phaco-trabeculectomy (13,71 mmHg vs 16,64 mmHg; p=0,006) Success rate (IOP ≤ 21 mmHg): <ul style="list-style-type: none"> 20 eyes (83,33%) in phaco-trabeculectomy group 18 eyes (72%) in phacoemulsification group
(Storr-Paulsen, 1998)	Prospective Randomized Trial	Denmark	Phaco-trabeculectomy versus phacoemulsification	Mean IOP at 3 months: <ul style="list-style-type: none"> Phaco-trabeculectomy group: 14,5 mmHg versus Phacoemulsification group: 15,5 mmHg in Mean IOP at 12 months <ul style="list-style-type: none"> Phaco-trabeculectomy group: 13 mmHg Phacoemulsification group: 15,5 mmHg
(Tanito, 2002)	Prospective Nat randomized clinical trial	Japan	Phaco-viscocanalostomy versus phacoemulsification	No statistically significant differences in terms of: <ul style="list-style-type: none"> IOP reduction at 6 months (5,1 mmHg in phaco-viscocanalostomy group and 5,2 mmHg in the phacoemulsification group) IOP reduction at 12 months (6,1 mmHg in phaco-viscocanalostomy and 6,2 mmHg in the phacoemulsification group) IOP ≤ 21 mmHg: <ul style="list-style-type: none"> 51 of 57 patients in phaco-viscocanalostomy group 55 of 57 patients in phacoemulsification group.
(Cillino, 2004)	Prospective Randomized Trial	Italy	Phaco-sclerotomy versus phaco-trabeculectomy	No statistically significant differences in terms of: <ul style="list-style-type: none"> IOP at 12 (p=0,528) IOP at 24 months (p=0,780) Proportion of patients with IOP ≤ 21 mmHg IOP ≤ 21 mmHg: <ul style="list-style-type: none"> 7 of 15 patients in phaco-sclerotomy group 7 of 15 patients in phaco-trabeculectomy group.
(Gianoli, 1999)	Prospective Randomized Trial	Italy	Phaco-sclerotomy versus phaco-trabeculectomy	No statistically differences in terms of: <ul style="list-style-type: none"> Reduction of IOP at 12 months (Phaco-sclerotomy: 13,8; phaco-trabeculectomy: 14,7) Reduction of IOP at 18 months, (Phaco-sclerotomy: 14,2; phaco-trabeculectomy: 15,2) Success rate (IOP ≤ 21 mmHg): <ul style="list-style-type: none"> 88% at 12 months in phaco-sclerotomy group 96% at 12 months patients in phaco-trabeculectomy group

CONCLUSIONS

The systematic literature review supported the evidence that the iSTENT inject® ocular implant in combination with phacoemulsification presents statistically significant benefits compared to phacoemulsification in patients with glaucoma and cataract, while revealing no conclusive evidence that phaco-viscocanalostomy, phaco-trabeculectomy, phaco-channelostomy or phaco-esclerotomy are clinically and statistically superior to phacoemulsification in terms of IOP reduction as well as in proportion of patients with IOP ≤ 21 mmHg.

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