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Original article

Prognostic factors for trabeculectomy failure in a Cuban population[☆]



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ARTICLE INFO

Article history:

Received 13 October 2014

Accepted 15 September 2015

Available online 7 January 2016

Keywords:

Glaucoma

Trabeculectomy

Surgical failure

Prognostic factors

Intraocular pressure

ABSTRACT

Objective: To identify the prognostic factors for mid-term trabeculectomy failure.

Method: A prospective cohort study was conducted on 113 eyes (113 patients) that had undergone a trabeculectomy for primary open or closed angle, pigmentary, or juvenile glaucoma. Surgical failure was defined if intraocular pressure was equal or more than 18 mmHg with medication (two or more drops), after 1–4 postoperative years. The relative risk was calculated and a logistic regression analysis was performed.

Results: Previous trabeculectomy, preoperative intraocular pressure ≥ 31 mmHg, black race, and advanced glaucoma increased the failure risk by 7.9 times ($p = .036$), 5.3 times ($p = .011$) and 4.7 times ($p = .028$, and $p = .027$), respectively. The addition of two or more factors increased the risk by 6.4 times ($p < .001$). It was not affected by age, sex, pre-operative drops, or surgical complication.

Conclusions: Previous trabeculectomy, pre-operative intraocular pressure ≥ 31 mmHg, black race, and advanced glaucoma are prognostic factors for trabeculectomy failure, in decreasing order of their association with surgical failure. The addition of two or more factors increased the risk of failure. In those situations, the use of trans-operative anti-metabolites is suggested.

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Factores pronósticos de fracaso de la trabeculectomía en una población de Cuba

RESUMEN

Objetivo: Identificar los factores pronósticos de fracaso a medio plazo en la trabeculectomía.

Método: Cohorte prospectiva en 113 ojos (113 pacientes) con glaucomas primarios de ángulo abierto o cerrado, pigmentario o juvenil que fueron intervenidos de trabeculectomía.

Palabras clave:

Glaucoma

Trabeculectomía

[☆] Please cite this article as: Fernández Argones L, Padilla González CM, Obret Mendive I, Piloto Díaz I, Fumero González FY. Factores pronósticos de fracaso de la trabeculectomía en una población de Cuba. Arch Soc Esp Ophthalmol. 2016;91:27–33.

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Fracaso quirúrgico
Factores pronósticos
Presión intraocular

Se definió fracaso si la presión intraocular mayor o igual de 18 mmHg con medicación (2 o más colirios), entre 1–4 años postoperatorios. Se calculó riesgo relativo y análisis de regresión logística.

Resultados: La trabeculectomía previa, la presión intraocular preoperatoria ≥ 31 mmHg, la raza negra y el daño glaucomatoso avanzado incrementaron el riesgo de fracaso en 7,9 veces ($p = 0,036$), 5,3 veces ($p = 0,011$) y 4,7 veces ($p = 0,028$ y $p = 0,027$), respectivamente. La presencia conjunta de 2 o más factores lo incrementó en 6,4 veces ($p < 0,001$). No se afectó por edad, sexo, colirios preoperatorios ni complicaciones quirúrgicas.

Conclusiones: La trabeculectomía previa, la presión intraocular preoperatoria ≥ 31 mmHg, la raza negra y el daño glaucomatoso avanzado son factores pronósticos de fracaso de la trabeculectomía, en orden decreciente de su asociación con el fracaso. La presencia conjunta de 2 o más factores incrementa el riesgo de fracaso. En estas situaciones se indica el uso de antimetabolitos transoperatorios.

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Objective

Glaucoma constitutes the first cause of irreversible blindness in the world.¹

With over 40 years of history, Cairns trabeculectomy (TBT) remains the most frequent incisional surgery for treating glaucoma. TBT is characterized by superior hypotensor capacity, fast execution, low technical complexity and minimum requirements for surgical instruments.^{2–5}

Even though the literature demonstrates that, in initial stages, TBT achieves intraocular pressure control in 80–100% of cases, these results change in the mid- and long-term with success rates between 56 and 94%.^{6,7}

To date there is no consensus about the factors which determine surgical failure. The present study has the objective of assessing the individual and ocular characteristics that bear on the prognosis for TBT failure.

Subjects, material and method

An observational, analytic study of a prospective cohort of 113 eyes of 113 patients who were intervened for trabeculectomy by a surgeon (LFA) of the Glaucoma Dept. of the Ramón Pando Ferrer Ophthalmology Institute of Cuba during the Period Comprised between November 2006 and November 2010.

The study included in the eyes of patients with a diagnostic of primary open or closed angle, juvenile or pigment glaucoma. In bilateral trabeculectomy cases the first operated eye was included, while in patients with surgical success only those with at least one year of postoperative follow-up were included.

The study excluded the eyes of patients in whom the intraocular pressure measured with Goldmans tonometer was not reliable, as well as those who preoperatively exhibited isopter contraction up to the area between the central 0 and 10° of the visual field and those who were administered antimetabolites, scleral implant in surgery and/or filtering surgery combined with phacoemulsification.

The result of the surgery was defined as total success if the most recent ophthalmological examination produced an intraocular pressure (IOP) of <18 mmHg without medication, partial success if <18 mmHg with medication and failure if ≥ 18 mmHg with topical hypotensor treatment (2 or more eyedrops). Goldman's applanation tonometry was utilized and the readings were rounded to the higher whole number (mmHg).

The presurgery visit requested information about age, sex, race, use of hypotensor eyedrops, previous ocular surgery, IOP with medication, stage of glaucomatous damage and type of glaucoma. The follow-up postoperative visits at 24 h, one week, one, 3 and 6 months, one, 2, 3 and up to 4 years collected IOP value and surgical complications.

The race was defined as white or black including in the latter *mestizos* (combined European and Amerindian descent) and Africans.

Preoperative ocular hypotensor medication included eyedrops, which were applied at least 4 weeks prior to surgery: timolol 0.5%, betaxolol 0.5%, dorzolamide 2%, latanoprost 0.005% and travoprost 0.004% (Julio Trigo López, Cuba). The following categories were utilized: none (in eyes of patients who did not receive hypotensor medication), timolol, other eyedrops (in monotherapy) and 2 or more eyedrops.

Previous ocular surgery was documented in the following categories: none, laser iridotomy, selective laser trabeculoplasty and previous trabeculectomy.

The stage of glaucomatous damage was classified as none, slight, moderate or advanced according to the value of the mean visual field defect taken by program 32 of the PERIMETRO Octopus 101 (HAAG STREIT AG) 101 (HAAG-STREIT International) device utilizing trend oriented perimetry (TOP). No damage was defined when the value of the mean deviation was below 3 dB; slight for between 3 and 6 dB; moderate between 6 and 12 dB, and advanced above 12 dB. At least two visual fields were taken for each patient, and reliability rates and scotoma topography were checked.

Postoperative complications were defined as: cataract requiring surgery, athalamia with iridocorneal contact (corresponding to grade II-III of the Spaeth classification), hyphema exceeding 1 mm or persisting over one week, serous choroidal

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