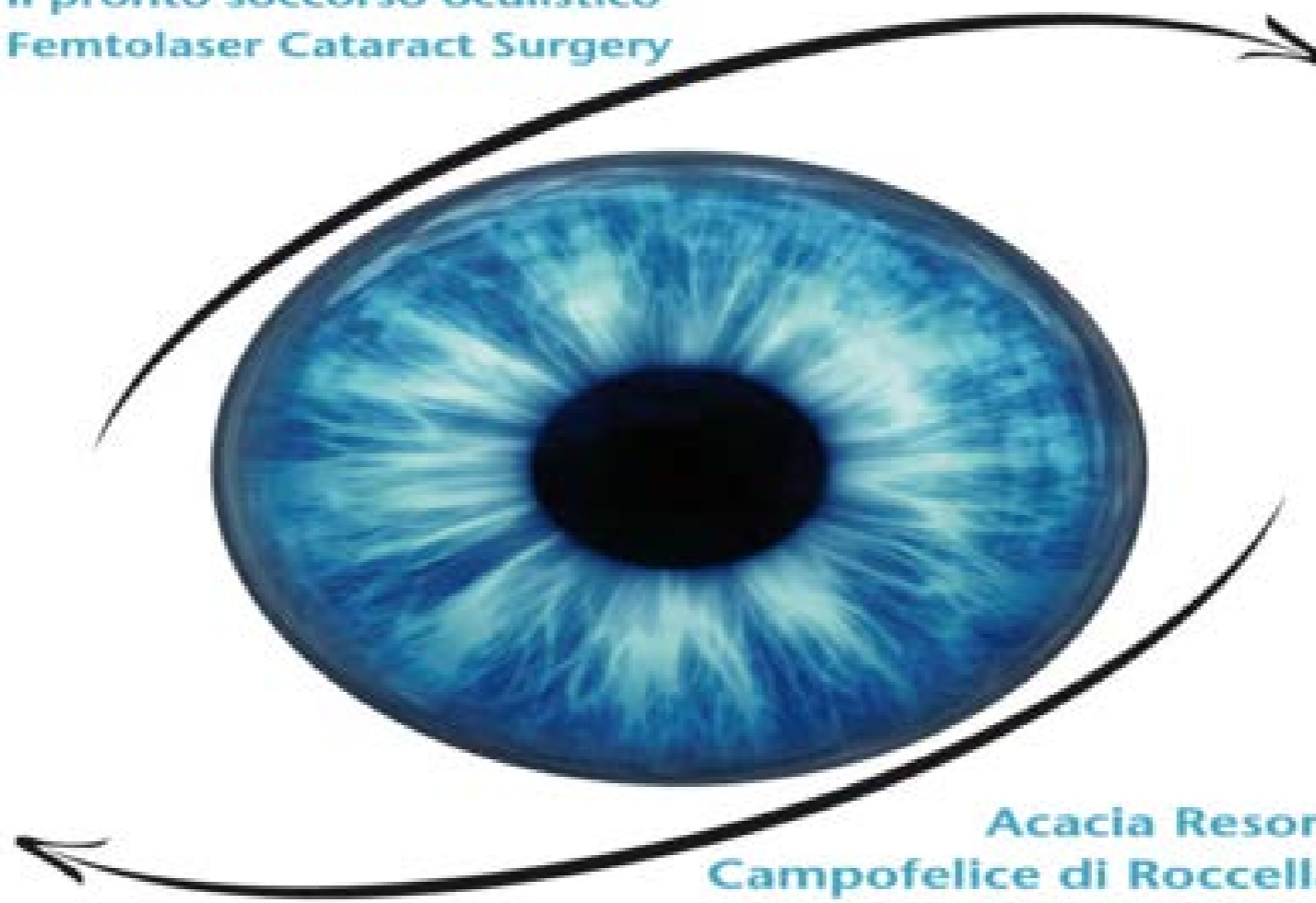




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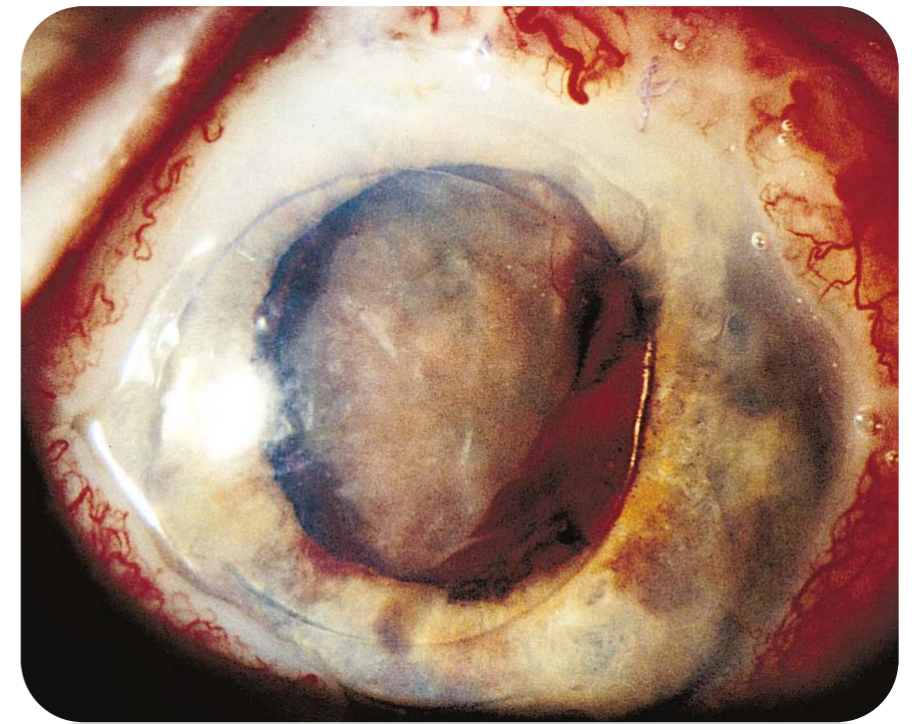
Emorragia Sovracoroideale post Vitrectomia

MATTEO FALLICO, GIOVANNI SCANDURA, SANTO STELLA, ANDREA PIANETA, VINCENZA BONFIGLIO, MICHELE REIBALDI, TERESIO AVITABILE

Emorragia Coroideale

Eziologia

- L'emorragia sovracoroideale è una drammatica condizione definita dalla presenza di sangue nello spazio sovracoroideale conseguente alla rottura delle arterie ciliari posteriori o delle vene vorticose.
- E' considerata una delle potenziali complicanze maggiormente devastanti di tutti i tipi di chirurgia intraoculare.
- Quando l'emorragia si verifica durante la chirurgia è denominata " emorragia sovracoroideale intraoperatoria acuta", mentre quando si sviluppa nel periodo postoperatorio è definita "emorragia sovracoroideale ritardata".



Emorragia Coroideale

Patogenesi

- 1) Congestione della coriocapillare.
- 2) Effusione sierosa nello spazio sovracoroideale, che si verifica soprattutto al polo posteriore.
- 3) Stretching e lacerazione dei vasi e distacco dal corpo ciliare.
- 4) Conseguente massiccio stravasamento di sangue derivante dai vasi distaccati dal corpo ciliare.



Emorragia Coroideale Acuta durante Vitrectomia

- Incidenza di emorragia coroideale acuta durante vitrectomia: 0,5-3%.
- Fattori di rischio associati: sesso maschile, età avanzata, aterosclerosi, uso di anticoagulanti o antiaggreganti, miopia elevata, distacco di retina regmatogeno, cristallino lussato in camera vitrea.
- Fattore precipitante: ipotonia.
- Si associa con la perdita del riflesso rosso della retina, con prolasso di vitreo e iride, e può causare l'estrusione del contenuto oculare.



Emorragia Coroideale Acuta durante Vitrectomia

The rate of SCH was 1.03%.

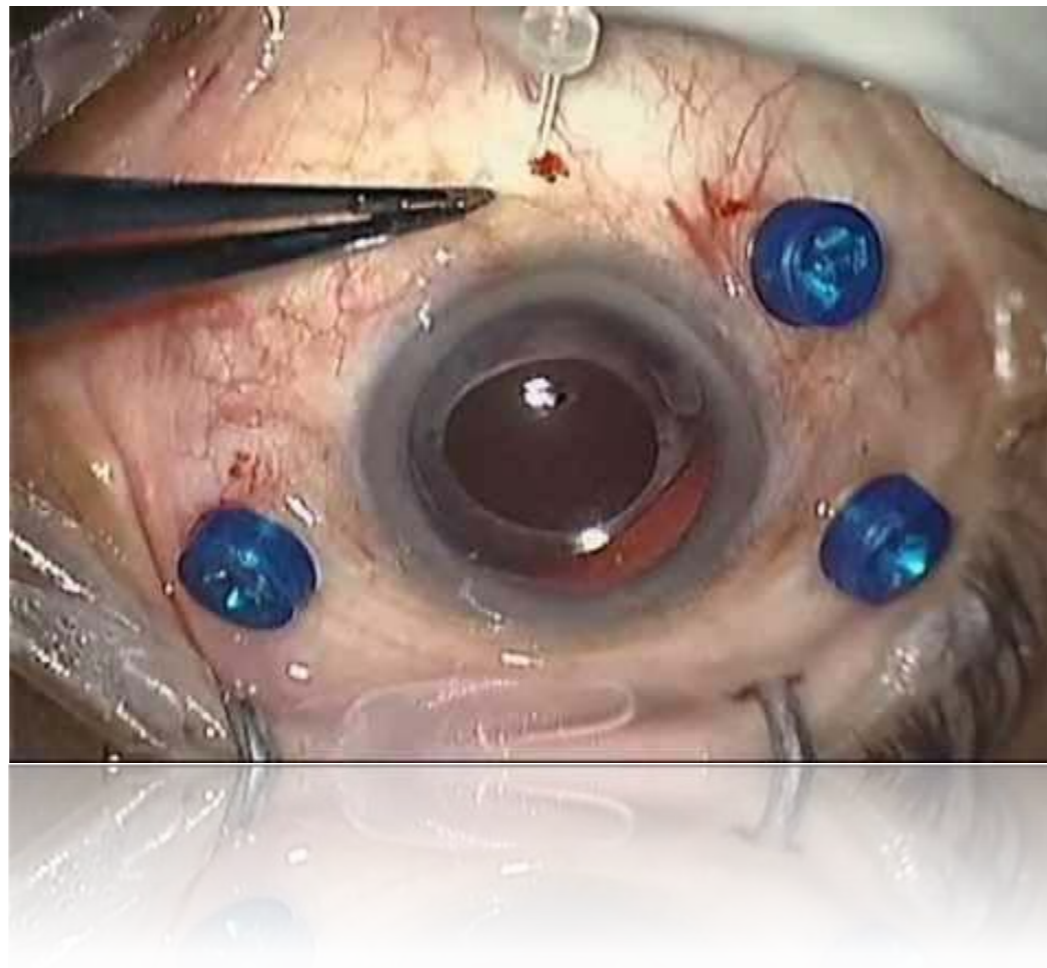
Logistic Regression			
Variable	OR	P Value	95% CI
Age	1.04	0.001	1.02–1.07
Sex (male)	2.38	0.008	1.26–4.53
Explant	5.63	<0.0001	2.94–10.77
Aspirin/warfarin	2.29	0.007	1.26–4.18
→ Dropped lens fragment	6.94	0.002	2.02–23.84
→ RRD	5.92	<0.0001	2.29–15.32

CI = confidence interval; OR = odds ratio; RRD = rhegmatogenous retinal detachment.

“The final visual acuity in 46% of eyes was hand motion, perception of light or worse”.

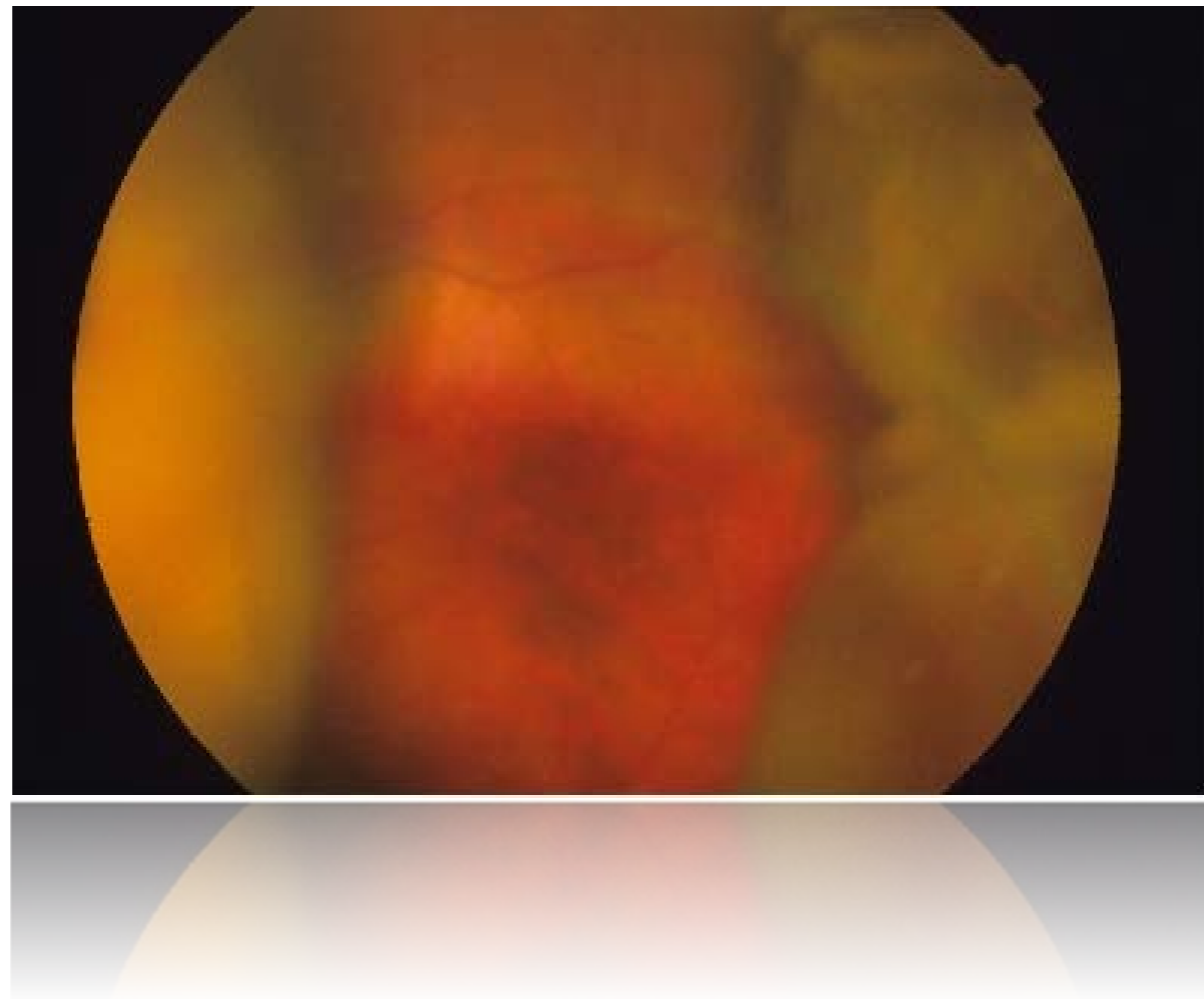
Emorragia Coroideale post Vitrectomia

....mattina dopo una vitrectomia conclusa
senza complicanze



Emorragia Coroideale post Vitrectomia

...mattina dopo una vitrectomia conclusa
senza complicanze



Emorragia Coroideale post Vitrectomia

Perché ???



Delayed Suprachoroidal Hemorrhage After Pars Plana Vitrectomy: Five-Year Results of a Retrospective Multicenter Cohort Study

MICHELE REIBALDI, ANTONIO LONGO, MARIO R. ROMANO, GILDA CENNAMO, CESARE MARIOTTI, FRANCESCO BOSCIA, VINCENZA BONFIGLIO, AND TERESIO AVITABILE

“The aim of this study was to investigate the **incidence** of delayed suprachoroidal hemorrhage after pars plana vitrectomy surgery and **factors associated with its development**”.

Emorragia Coroideale post Vitrectomia

- RETROSPECTIVE MULTICENTER COHORT STUDY
- included all consecutive patients who underwent primary pars plana vitrectomy from January 1, 2009, to December 31, 2014
- All eyes that developed delayed suprachoroidal hemorrhage within 48 hours of hospitalization after the end of the vitrectomy were identified as the delayed suprachoroidal hemorrhage group
- All other eyes that underwent vitrectomy in the same period, without delayed suprachoroidal hemorrhage, were considered the control group.
- Patient demographics and systemic, ophthalmic, operative, and postoperative data were abstracted from the electronic medical records.

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• **PURPOSE:** To determine the incidence, risk factors, and outcomes of delayed suprachoroidal hemorrhage after vitrectomy.

• **DESIGN:** Retrospective multicenter cohort study.
• **METHODS:** All consecutive patients who underwent primary vitrectomy, from January 2009 to December 2014, at 4 tertiary vitreoretinal centers in Italy were enrolled. Patient demographics and systemic, ophthalmic, operative, and postoperative data from all centers were extracted from the electronic record system using standardized data collection forms. All eyes that developed delayed suprachoroidal hemorrhage within 48 hours of the end of the vitrectomy were identified as the delayed suprachoroidal hemorrhage group; all other eyes that underwent vitrectomy in the same period, without delayed suprachoroidal hemorrhage, were considered the control group.

• **RESULTS:** From a total of 4852 vitrectomy procedures, 39 cases of delayed suprachoroidal hemorrhage (0.8%) were identified. Multivariable logistic regression showed that significant risk factors for developing delayed suprachoroidal hemorrhage included advancing age (odds ratio [OR], 2.22; $P < .001$), longer axial length (OR, 2.57; $P < .001$), presence of rhegmatogenous retinal detachment (OR, 3.27; $P = .005$), extensive intraoperative photocoagulation (OR, 4.94; $P < .001$), and emesis postoperatively (OR, 24.39; $P < .001$). Decision-tree analysis showed that the stronger predictors of delayed suprachoroidal hemorrhage were emesis postoperatively ($P < .001$) and extensive intraoperative photocoagulation ($P < .001$). After a mean follow-up of 27 ± 8 months, the best-corrected visual acuity decreased from 1.3 preoperatively to 1.6 logarithm of minimal angle of resolution at last follow-up ($P < .001$).

• **CONCLUSIONS:** Delayed suprachoroidal hemorrhage occurs in 0.8% of vitrectomized eyes. The main risk

factors are postoperative emesis and intraoperative extensive photocoagulation. (Am J Ophthalmol 2015; ■: ■-■. © 2015 by Elsevier Inc. All rights reserved.)

SUPRACHOROIDAL HEMORRHAGE IS AN UNCOMMON but dramatic condition defined as the presence of blood in the suprachoroidal space as a consequence of rupture of the posterior ciliary arteries or vortex veins.^{1,2} It is considered one of the most potentially devastating complications of all types of intraocular surgery, including vitreoretinal surgery.¹⁻⁸

When suprachoroidal hemorrhage occurs during surgery it is called "acute intraoperative suprachoroidal hemorrhage," whereas if it develops during the postoperative period it is called "delayed suprachoroidal hemorrhage."³ Acute intraoperative suprachoroidal hemorrhage differs from delayed suprachoroidal hemorrhage in incidence, pathophysiology, and management.⁹ Intraoperative suprachoroidal hemorrhage is associated with loss of red reflex and iris and vitreous prolapse, and it can cause extrusion of ocular contents.¹ Suprachoroidal hemorrhage may occur during any intraocular procedure, especially when accompanied by large intraocular pressure fluctuations.¹⁰ Delayed suprachoroidal hemorrhage may occur hours or days after intraocular surgery, and is characterized by sudden severe pain, decreased vision, and a shallow anterior chamber, usually following a Valsalva maneuver-like activity.⁴ A recent study showed that the rate of suprachoroidal hemorrhage during vitrectomy was approximately 1%.⁷ The risk factors for developing intraoperative suprachoroidal hemorrhage were male sex, advancing age, the use of antiplatelet or anticoagulant drugs, the presence of rhegmatogenous retinal detachment, and dropped lens fragment. The main precipitating factor in these cases seems to be intraoperative hypotony.⁷

To date, no significant evidence exists about the incidence, risk factors, and outcomes of delayed suprachoroidal hemorrhage after vitrectomy. Better understanding of the associations between delayed suprachoroidal hemorrhage and risk factors may enable clinicians to target high-risk patients, in an attempt to prevent this devastating complication. The aim of this study was to investigate the incidence of delayed suprachoroidal hemorrhage after pars plana vitrectomy surgery and factors associated with its

Accepted for publication Aug 24, 2015.

From the Department of Ophthalmology, University of Catania, Catania, Italy (M.R., A.L., V.B., T.A.); Department of Ophthalmology, Second University of Napoli, Napoli, Italy (M.R.R., G.C.); Department of Ophthalmology, University of Ancona, Ancona, Italy (C.M.); and Department of Ophthalmology, University of Sassari, Sassari, Italy (F.B.). Inquiries to Michele Reibaldi, Department of Ophthalmology, University of Catania, Italy, Via S. Sofia 78, 95124 Catania, Italy; e-mail: mreibaldi@libero.it

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Emorragia Coroideale post Vitrectomia

“A total of **4852** eyes underwent vitrectomy at 4 surgical units. Overall, **39** eyes presented with postoperative delayed suprachoroidal hemorrhage after vitrectomy, an incidence of **0.8%**”.

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Delayed Suprachoroidal Hemorrhage After Pars Plana Vitrectomy: Five-Year Results of a Retrospective Multicenter Cohort Study

MICHELE REIBALDI, ANTONIO LONGO, MARIO R. ROMANO, GILDA CENNAMO, CESARE MARIOTTI, FRANCESCO BOSCIA, VINCENZA BONFIGLIO, AND TERESIO AVITABILE

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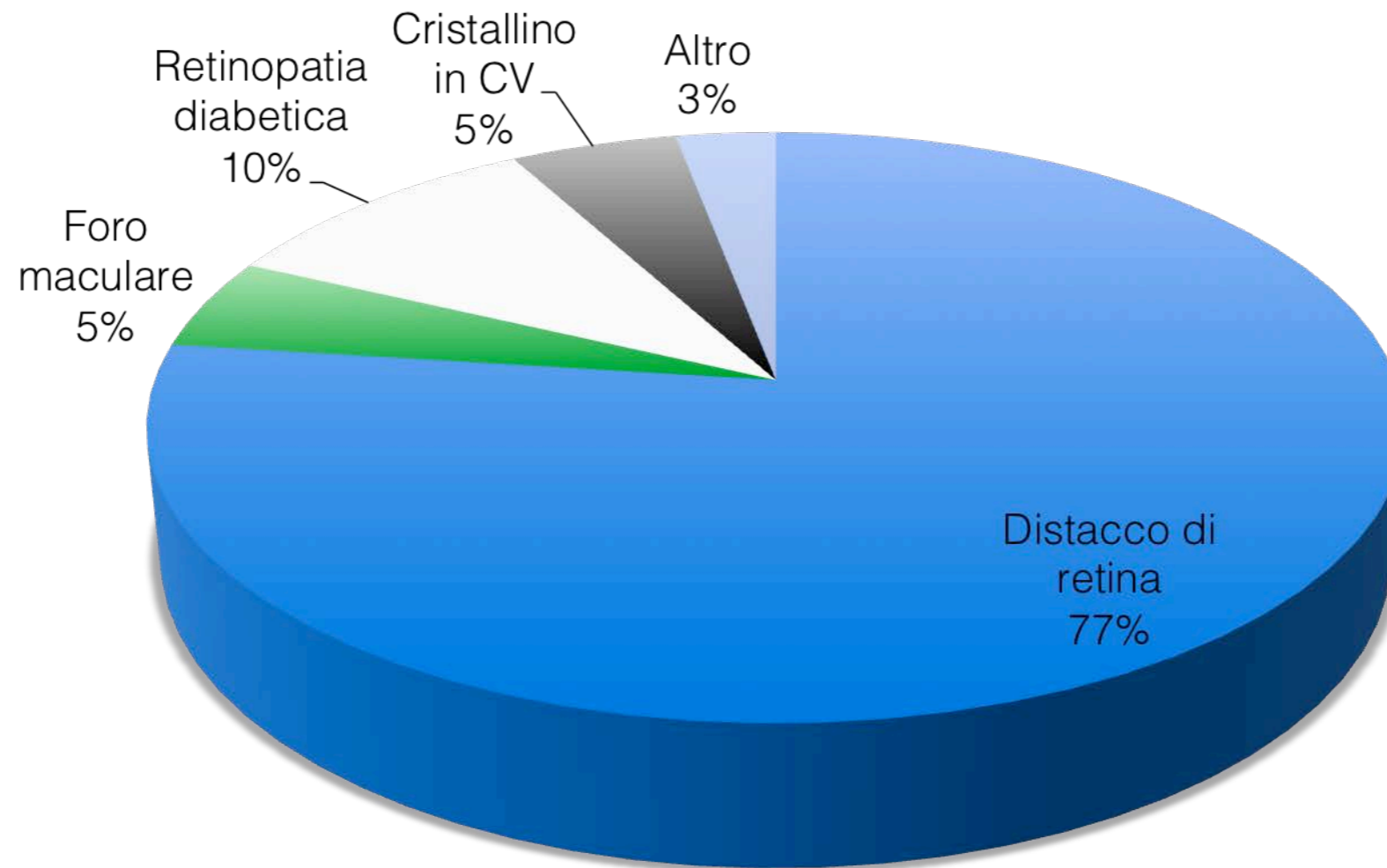
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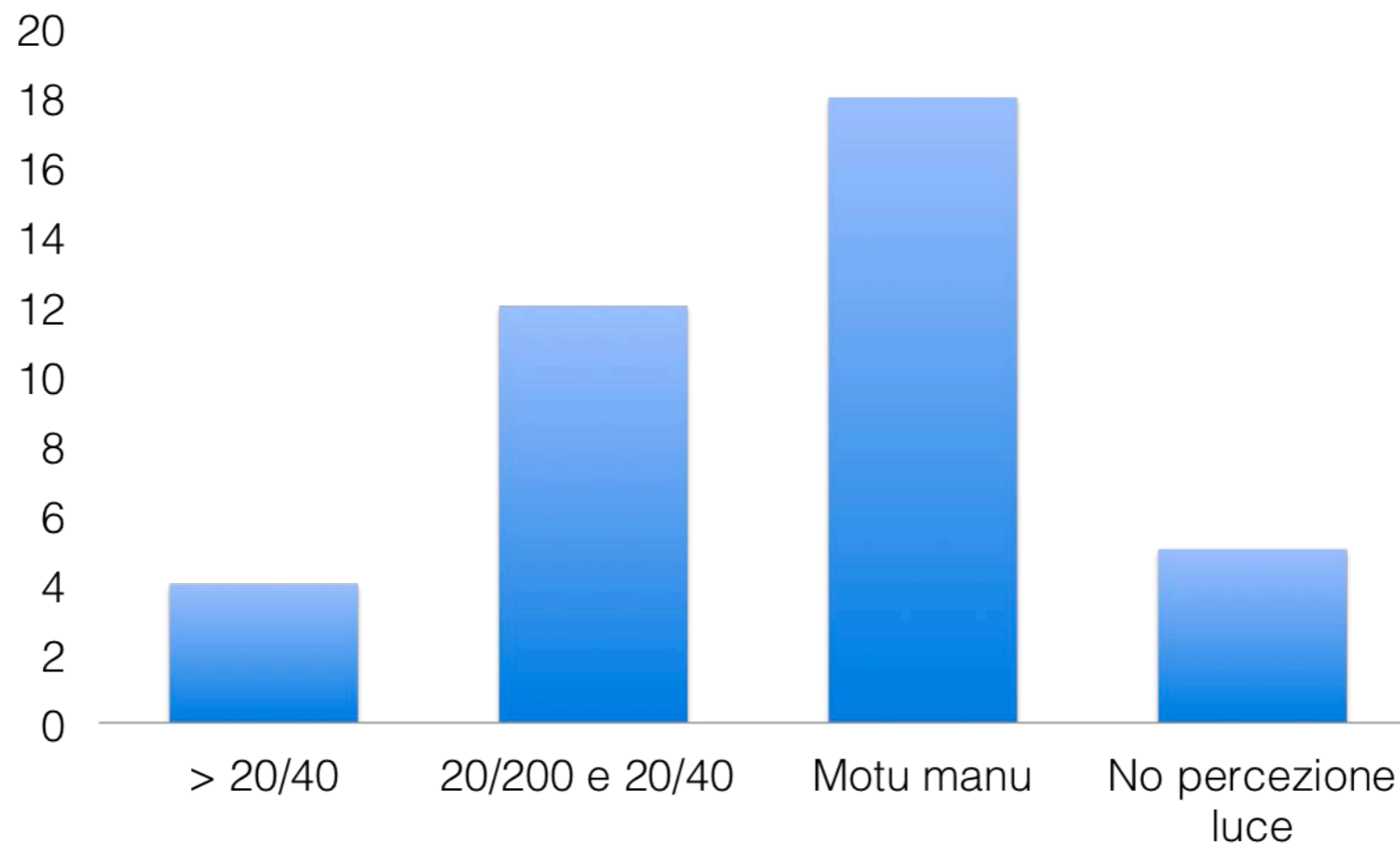
Emorragia Coroideale post Vitrectomia

Diagnosi



Emorragia Coroideale post Vitrectomia

Acuità visiva finale



“The BCVA decreased from 1.3 logMAR (20/400) preoperatively to 1.6 logMAR (20/800) at last follow-up”.

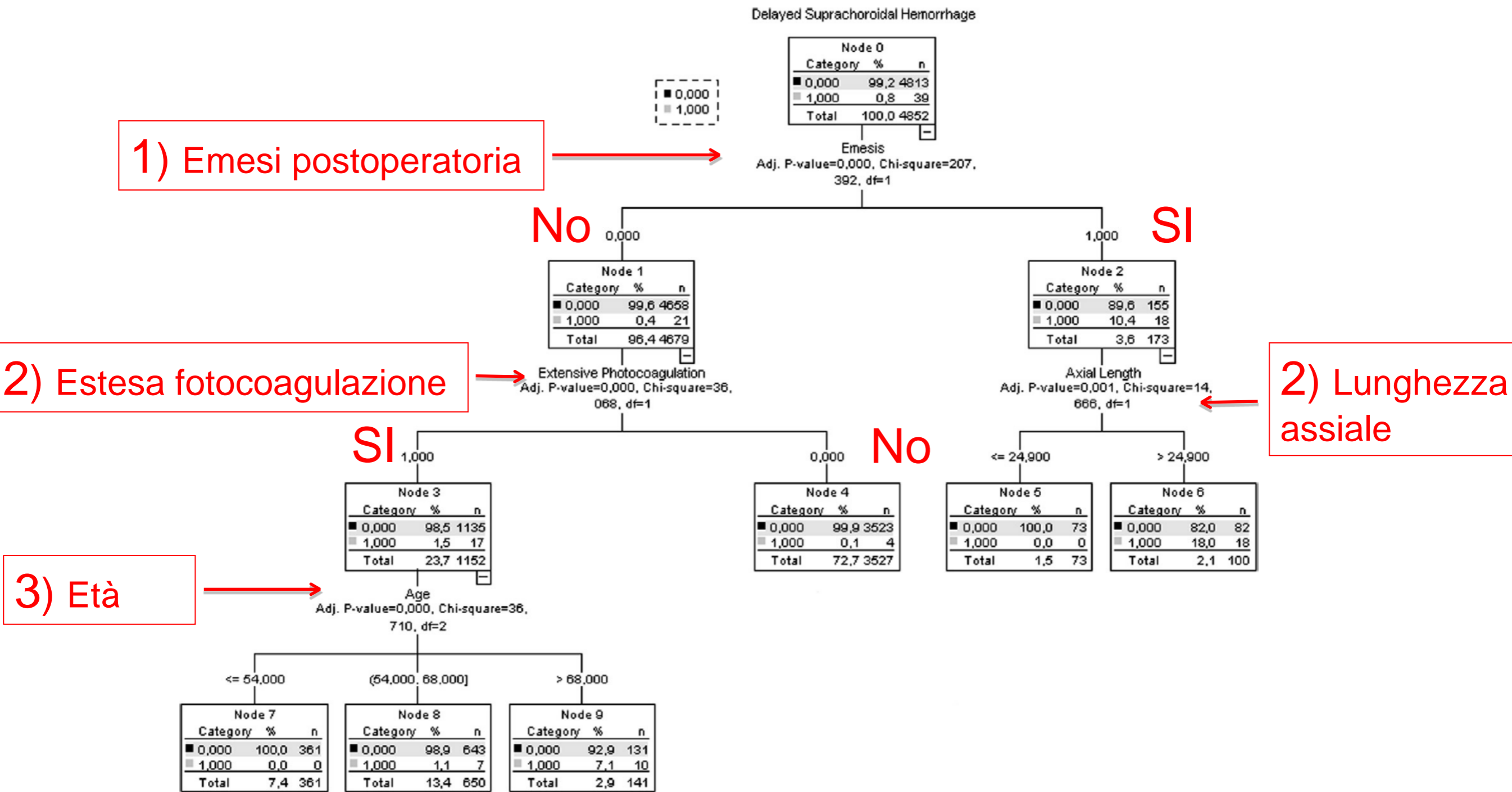
Emorragia Coroideale post Vitrectomia

Variabili associate

Variables	OR	95% CI	P Value
Age	2.22	1.72–2.87	<.001 ^a
Axial length	2.57	2.04–3.25	<.001 ^a
Rhegmatogenous retinal detachment	3.27	1.42–7.52	.005 ^a
Extensive photocoagulation	4.94	1.83–13.30	<.001 ^a
→ Vomiting	24.39	10.27–57.90	<.001 ^a

Emorragia Coroideale post Vitrectomia

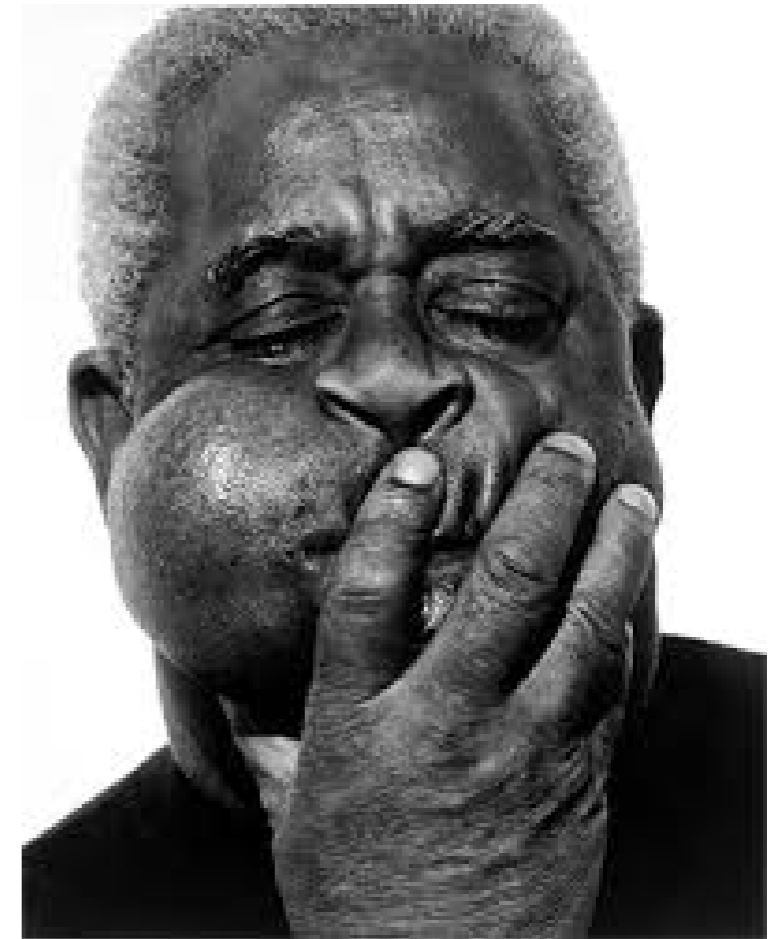
Decision-tree analysis for prediction of delayed suprachoroidal hemorrhage



Emorragia Coroideale post Vitrectomia *Emesi*

Valsalva

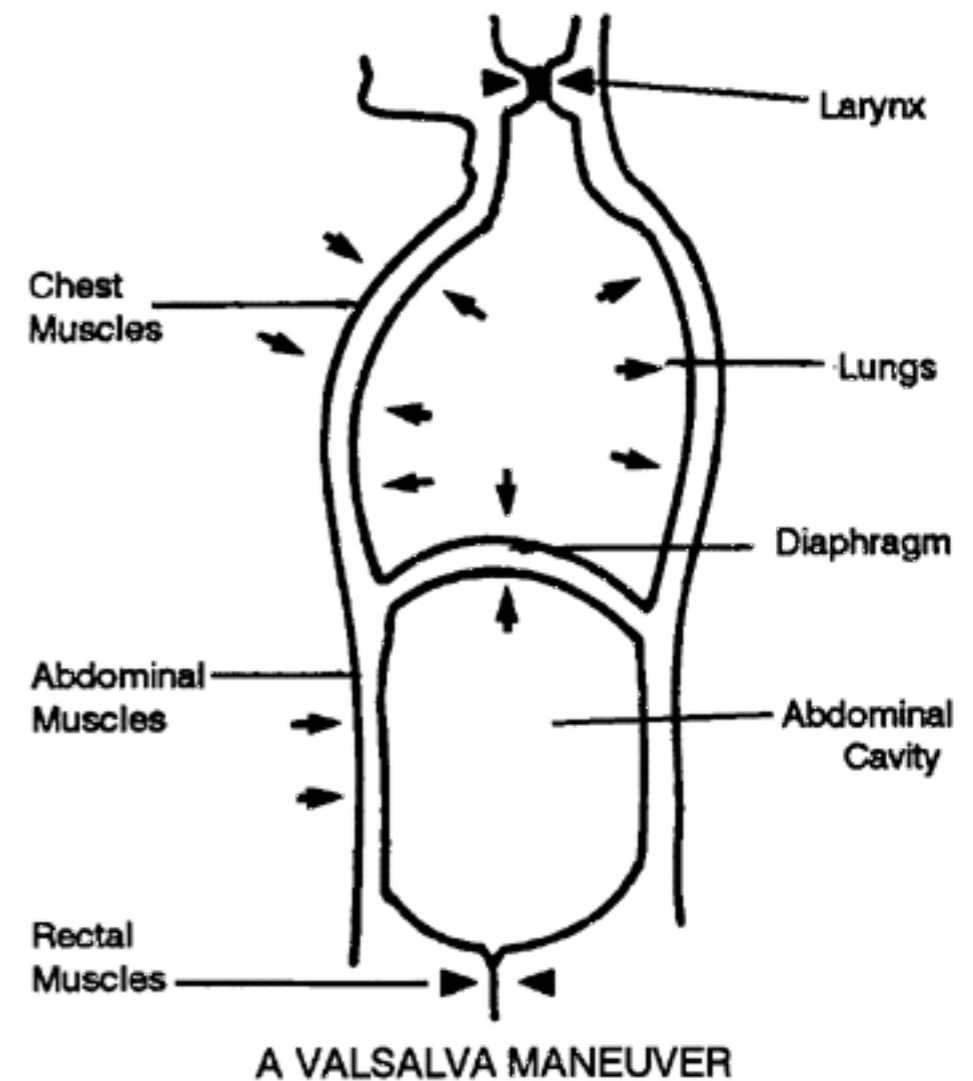
Una possibile spiegazione coinvolge le manovre di Valsalva che si verificano durante l'emesi



Emorragia Coroideale post Vitrectomia Emesi

Valsalva

Questo causa un incremento della pressione intratoracica e addominale contro la glottide chiusa che, per l'assenza di valvole nel sistema venoso, è trasmessa all'occhio, e può causare la rottura della parete vasale



Emorragia Coroideale post Vitrectomia Laser

Laser esteso

Un esteso trattamento laser può indurre un danno alla coroide, che può aumentare il rischio della rottura dei vasi coroideali in occhi con una fragilità vascolare, dovuta alle condizioni sistemiche, oculari o legate all'intervento chirurgico



Conclusioni

- Il nostro studio ha individuato 2 fattori, che hanno un significativo effetto sull'incidenza di emorragia coroideale postoperatoria: l'emesi postoperatoria e un estensivo trattamento laser intraoperatorio.
- Un aspetto importante è che queste 2 variabili sono entrambi fattori di rischio modificabili .
- Pertanto l'utilizzo di una opportuna terapia antiemetica e limitare il numero di applicazioni laser e la percentuale di aree trattate può essere opportuno per prevenire questa drammatica complicanza, specialmente in pazienti che per condizioni sistemiche o oculari, sono ad elevato rischio.

