

Abstract 234

EFFECT OF THE USE OF TRANEXAMIC ACID IN PATIENTS WITH PROLIFERATIVE DIABETIC RETINOPATHY UNDERGOING PARS PLANA VITRECTOMY.

Gonzalez--Cortes J.H.*^[1], Garcia--Islas E.M.^[2], Davila--Villarreal J.F.^[2], Garza--Chavarria J.^[2], Gonzalez--Cantu J.E.^[1], Azuara--Azuara C.D.^[2], Mohamed--Hamsho J.^[1]

^[1]Department of Ophthalmology, University Hospital, Faculty of Medicine, Autonomous University of Nuevo Leon, Mexico ~ Monterrey ~ Mexico, ^[2]UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO FACULTAD DE MEDICINA DIVISIÓN DE ESTUDIOS DE POSGRADO C.H. CONSTITUCIÓN DEL ISSSTE ~ Monterrey ~ Mexico

Intraoperative hemorrhage is a common complication in patients with proliferative diabetic retinopathy (PDR) undergoing pars plana vitrectomy (PPV). The aim of this presentation is to show the efficacy and safety of Tranexamic Acid (TA) in reducing bleeding during and after PPV in PDR patients.

Prospective and descriptive study of 30 eyes with PDR of 30 patients who were administered intravenous TA 30 minutes prior to PPV, from January-October 2024 at the Retina and Vitreous Department of CHC ISSSTE Monterrey, Mexico.

A low incidence of intraoperative bleeding and a low number of intraoperative complications were observed. Most surgeries were completed without incident. Regarding postoperative bleeding, there were no cases of bleeding at 24 hours, 72 hours, or one week after surgery. As for postoperative complications, only one patient developed central retinal vein occlusion one week after surgery.

The use of TA is a safe and effective option to decrease bleeding during and after PPV in patients with PDR.

1. Kanaley JA, Colberg SR, Corcoran MH, Malin SK, Rodriguez NR, Crespo CJ, Kirwan JP, Zierath JR. Exercise/Physical Activity in Individuals with Type 2 Diabetes: A Consensus Statement from the American College of Sports Medicine. *Med Sci Sports Exerc.* 2022 Feb 1;54(2):353-368.
2. Wu Y, Ding Y, Tanaka Y, Zhang W. Risk factors contributing to type 2 diabetes and recent advances in the treatment and prevention. *Int J Med Sci.* 2014 Sep 6;11(11):1185-200. doi: 10.7150/ijms.10001.
3. Rachdaoui N. Insulin: The Friend and the Foe in the Development of Type 2 Diabetes Mellitus. *Int J Mol Sci.* Mar 5;21(5):1770. doi: 10.3390/ijms21051770.
4. Damanik J, Yunis E. Type 2 Diabetes Mellitus and Cognitive Impairment. *Acta Med Indones.* 2021 Apr;53(2):213-220.
5. Yun JS, Ko SH. Current trends in epidemiology of cardiovascular disease and cardiovascular risk management in type 2 diabetes. *Metabolism.* 2021 Oct;123:154838
6. Kautzky-Willer A, Harreiter J, Pacini G. Sex and Gender Differences in Risk, Pathophysiology and Complications of Type 2 Diabetes Mellitus. *Endocr Rev.* 2016 Jun;37(3):278-316. doi: 10.1210/er.2015-1137.
7. Kautzky-Willer A, Harreiter J, Pacini G. Sex and Gender Differences in Risk, Pathophysiology and Complications of Type 2 Diabetes Mellitus. *Endocr Rev.* 2016 Jun;37(3):278-316. doi: 10.1210/er.2015-1137.
8. Mieler W, Wolf M. Management of post vitrectomy diabetic vitreous hemorrhage. In: Lewis H, Rayan ST, eds. *Medical and surgical retina [book on CD-ROM]*. St Louis: Mosby, 1994:29
10. Rahmani B, Jahadi HR. Comparison of tranexamic acid and prednisolone in the treatment of traumatic hyphema: a randomized clinical trial. *Ophthalmology* 1999;106:375–

11. Sanislo SR, Blumenkranz MS. Diabetic vitrectomy. In: Duane's clinical ophthalmology [book on CD-ROM]. Philadelphia: Lippincott Williams & Wilkins Publishers, 2004:57.
12. Pelikán Á T. Diabetica retinopatie: patogenezé a terapeutické implikace [Diabetic retinopathy: pathogenesis and therapeutic implications]. Vnitr Lek. 2016 Fall;62(7-8):620-8. 64
13. Qiao Q, Liu X, Xue W, Chen L, Hou X. Analysis of the association between high antioxidant diet and lifestyle habits and diabetic retinopathy based on NHANES cross-sectional study. Sci Rep. 2024 May 24;14(1):11868.
14. Wong Y, Cheung CM, Larsen M, Sharma S, Simó R. Diabetic retinopathy. Nat Rev Dis Primers. 2016 Mar 17;2:16012. doi: 10.1038/nrdp.2016.12.
15. Lin KY, Hsih WH, Lin YB, Wen CY, Chang TJ. Update in the epidemiology, risk factors, screening, and treatment of diabetic retinopathy. J Diabetes Investig. 2021 Aug;12(8):1322-1325. doi: 10.1111/jdi.13480.
16. Kollias AN, Ulbig MW. Diabetic retinopathy: Early diagnosis and effective treatment. Dtsch Arztebl Int. 2010 Feb;107(5):75-83; quiz 84. doi: 10.3238/arztebl.2010.0075. E
17. Alemán I, Castillo Velázquez J, Rush SW, Rush RB. Administración de Ziv-aflibercept versus bevacizumab antes de la vitrectomía diabética: un ensayo aleatorizado y controlado . Revista Británica de Oftalmología 2019; 103 (12): 1740-6.
18. Cui J, Chen H, Lu H, Dong F, Wei D, Jiao Y, e al. Efficacy and safety of intravitreal conbercept, ranibizumab, and triamcinolone on 23-gauge vitrectomy for patients with proliferative diabetic retinopathy. Journal of Ophthalmology 2018;2018:4927259.
19. Jiang T, Gu J, Zhang P, Chen W, Chang Q. The effect of adjunctive intravitreal conbercept at the end of diabetic vitrectomy for the prevention of post-vitrectomy hemorrhage in patients with severe proliferative diabetic retinopathy: a prospective, randomized pilot study. BMC Ophthalmology 2020;20(1):43.
20. di Lauro R, De Ruggiero P, di Lauro R, di Lauro MT, Romano MR. Intravitreal bevacizumab for the surgical treatment of severe proliferative retinopathy. Graefe's Archive for Clinical and Experimental Ophthalmology 2010;248(6):785-91.
21. Perais J, Agarwal R, Evans JR, Loveman E, Colquitt JL, Owens D, Hogg RE, Lawrenson JG, Takwoingi Y, Lois N. Prognostic factors for the development and 65 progression of proliferative diabetic retinopathy in people with diabetic retinopathy. Cochrane Database Syst Rev. 2023 Feb 22;2(2):CD013775. d
22. Laatikainen L, Summanen P, Immonen I. Effect of tranexamic acid on post vitrectomy hemorrhage in diabetic patients. Int Ophthalmol 1987;10:153-5
23. Tolentino FI, Cajita VN, Gancayco T, Skates S. Hemorragia vítrea después de vitrectomía cerrada por retinopatía diabética proliferativa. Oftalmología. 1989; 96 : 1495-500
24. Steel DHW, Connor A, Habib MS, Owen R. Tratamiento en el sitio de entrada para prevenir la hemorragia postoperatoria tardía recurrente de la cavidad vítrea después de la vitrectomía por retinopatía diabética proliferativa. Hno. J. Oftalmol. 2010; 94 : 1219-25.
25. Smith JM, Steel DHW. Anti-vascular endothelial growth factor for prevention of postoperative vitreous cavity hemorrhage after vitrectomy for proliferative diabetic retinopathy. Cochrane Database Syst Rev. 2015;2015:CD008214.
26. Mahalingam P, Topiwala TT, Ganesan G. Vitreous rebleed following sutureless vitrectomy: Incidence and risk factors. Indian J Ophthalmol. 2018;66:558-61
27. Sengupta S, Sindal MD, Shanmugam PM, Bhende P, Ratra D, Nagpal M, et al. A Delphi method based consensus statement for surgical management of proliferative diabetic retinopathy in India. Indian J Ophthalmol. 2021;69:3308-18
28. Brar AS, Behera UC, Karande S, Kanakagiri A, Sugumar S, Rani PK, Vignesh TP, Manayath G, Salian R, Giridhar A, Indurkha S, Bhattacharjee H, Raman R, Sivaprasad S. Late postoperative

vitreous cavity hemorrhage after vitrectomy for proliferative diabetic retinopathy-observation versus intervention. *Indian J Ophthalmol*. 2024 Jan 1;72(Suppl 1):S22-S26. doi: 10.4103/IJO.IJO 311_23_66

29. Ramezani AR, Ahmadi H, Ghaseminejad AK, Yazdani S, Golestan B. Effect of tranexamic acid on early post vitrectomy diabetic hemorrhage; a randomized clinical trial. *Br J Ophthalmol*. 2005 Aug;89(8):1041-4. doi: 10.1136/bjo.2004.062638.

30. Longstaff C, Kolev K. Basic mechanisms and regulation of fibrinolysis. *J Thromb Haemost*. 2015;13(S1):S98–105.

31. Chapin JC, Hajjar KA. Fibrinolysis and the control of blood coagulation. *Blood Rev*. 2015 Jan 1;29(1):17–24.

32. Levy JH, Koster A, Quinones QJ, Milling TJ, Key NS. Antifibrinolytic therapy and perioperative considerations. Vol. 128, *Anesthesiology*. Lippincott Williams and Wilkins; 2018. p. 657–70.

33. Fergusson DA, Hébert PC, Mazer CD, Fremes S, MacAdams C, Murkin JM, et al. A Comparison of Aprotinin and Lysine Analogues in High-Risk Cardiac Surgery. *N Engl J Med*. 2008 May 29;358(22):2319–31.

34. Tenengborn L, Blomback M, Berntorp E. Tranexamic acid - An old drug still going strong and making a revival. Vol. 135, *Thrombosis Research*. 2015.

35. Jimenez JJ, Iribarren JL, Lorente L, Rodriguez JM, Hernandez D, Nassar I, et al. Tranexamic acid attenuates inflammatory response in cardiopulmonary bypass surgery through blockade of fibrinolysis: A case control study followed by a randomized double-blind controlled trial. *Crit Care*. 2007 Nov 7;11(6).

36. McCormack PL. Tranexamic Acid: A review of its use in the treatment of hyper-fibrinolysis. Vol. 72, *Drugs*. Drugs; 2012. p. 585–617.

37. Shakur h, Roberts I, Bautista R et al. Effects of tranexamic acid on death,vascular occlusive events, and blood transfusion in trauma patients with significant hemorrhage (CRASH-2): a randomized, placebo-controlled trial. *Lancet*. 2010;376(9734):23–32.