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SUTURELESS PERITOMY SPARING SCLERAL BUCKLE IN A PEDIATRIC PATIENT

Cruz--Pimentel M.*, Demian S., Martins Melo I., Pecaku A., Muni R.

University of Toronto ~ Toronto ~ Canada

Introduction:

Traditionally, peritomy has been the first step when performing scleral buckle (SB) surgery for patients with rhegmatogenous retinal detachment (RRD). Historically, a posterior peritomy was created 6 to 8 mm behind the limbus. Later, this technique was improved and modified to limbal peritomy by Cibis, Jungschaffer, King Jr. and Schepens.

The transition from posterior to limbal peritomy was a breakthrough in SB surgery, providing numerous benefits. Compared to posterior peritomy, limbal peritomy preserves the anatomical relationship between the conjunctiva and Tenon's capsule and leaves the scleral surgery site covered with an undamaged layer of tissue. This was a significant milestone in the advancement of episcleral surgery.

For over 40 years, limbal peritomy has been the standard procedure in SB surgery. However, with the evolution of retinal detachment repair new techniques have emerged, such as limited limbal peritomy and limbal sparing or minimal conjunctival incisions with transconjunctival muscle traction sutures described by Yopez et al. and Jin et al. for encircling and segmental scleral buckle surgery.

The pediatric population can benefit the most from peritomy sparing SB in the long term. Herein, we report the use of sutureless peritomy-sparing encircling scleral buckle in a pediatric patient with RRD.

Materials and methods:

Design, setting, and participant: This single case report with short-term follow-up describes a sutureless peritomy-sparing scleral buckle procedure in a 15-year-old patient. The procedure was conducted at St. Michael's Hospital, Unity Health Toronto, Toronto, Ontario, Canada and patient/parent informed consent was obtained. The present work was conducted following the Declaration of Helsinki.

Exposure: In this procedure, the four recti muscles are isolated through a transconjunctival approach. The retinal breaks were marked and treated with cryopexy. Afterward, small radial conjunctival incisions are made in all four quadrants, and scleral belt loops are created with a crescent knife. Subsequently, a scleral buckle is passed through the belt loops and under the recti muscles and tightened with a Watzke sleeve. Finally, the radial conjunctival incisions are closed using fibrin sealant.

Main outcome and measures: Ability to perform sutureless limbal peritomy sparing scleral buckle and minimize conjunctival trauma in a young patient.

Results:

Results: A 15-year-old girl with high myopia had a retinal detachment extending from 2:00 to 6:00 in her left eye, involving the fovea. At the time of diagnosis, her vision was 20/25 in the right eye and

20/100 in the left. Following the sutureless peritomy-sparing scleral buckle procedure, the retina was completely reattached.

Conclusions:

Conclusions and Relevance: This is the first documented case of a pediatric patient undergoing a completely sutureless peritomy-sparing scleral buckle procedure. This procedure has the potential to reduce morbidity associated with scleral buckle in pediatric patients.

Sources:

1. King LM, Jr., Schepens CL. Limbal peritomy in retinal detachment surgery. *Arch Ophthalmol*. Apr 1974;91(4):295-8. doi:10.1001/archopht.1974.03900060305012
2. Jin H, Zhang Q, Zhao P. Minimal in situ conjunctival incision for segmental scleral buckling surgery. *Ophthalmic Surg Lasers Imaging Retina*. Nov-Dec 2014;45(6):574-6. doi:10.3928/23258160-20141118-14
3. Yepez JB, Murati FA, Petitto M, De Yepez J, Mura M, Kozak I. Peritomy-sparing scleral buckle. *Am J Ophthalmol Case Rep*. Sep 2019;15:100474. doi:10.1016/j.ajoc.2019.100474
4. Nuzzi R, Lavia C, Spinetta R. Paediatric retinal detachment: a review. *Int J Ophthalmol*. 2017;10(10):1592-1603. doi:10.18240/ijo.2017.10.18
5. Starr MR, Boucher N, Sharma C, et al. THE STATE OF PEDIATRIC RETINAL DETACHMENT SURGERY IN THE UNITED STATES: A Nationwide Aggregated Health Record Analysis. *Retina*. May 1 2023;43(5):717-722. doi:10.1097/iae.0000000000003735
6. Actuarial Life Table. <https://www.ssa.gov/oact/STATS/table4c6.html>
7. Venkatesh R, Jayadev C, Mangla R, Chitturi SP, Mohan S, Ratra D. Ocular surface changes following vitreoretinal procedures. *Indian J Ophthalmol*. Apr 2023;71(4):1123-1126. doi:10.4103/ijo.ijo_2573_22
8. Sepulveda-Beltran PA, Levine H, Chang VS, Gibbons A, Martinez JD. Complications in Retinal Surgery: A Review of Corneal Changes Following Vitreoretinal Procedures. *Int Ophthalmol Clin*. Jul 1 2022;62(3):65-77. doi:10.1097/iiio.0000000000000423
9. Mani R, Shobha PS, Thilagavathi S, et al. Altered mucins and aquaporins indicate dry eye outcome in patients undergoing Vitreo-retinal surgery. *PLoS One*. 2020;15(5):e0233517. doi:10.1371/journal.pone.0233517
10. Swamynathan SK, Wells A. Conjunctival goblet cells: Ocular surface functions, disorders that affect them, and the potential for their regeneration. *Ocul Surf*. Jan 2020;18(1):19-26. doi:10.1016/j.jtos.2019.11.005
11. Mansoori T, Mohan GP, Agraharam SG, Balakrishna N, Pesala V. Incidence and Risk Factors for Intraocular Pressure Rise after the Scleral Buckle Surgery for Retinal Detachment. *J Curr Ophthalmol*. Oct-Dec 2021;33(4):444-448. doi:10.4103/joco.joco_108_21
12. Pinninti U, Carvounis PE, McPherson AR. Scleral Buckle Surgery and The Development of Glaucoma - Long Term Followup. *Investigative Ophthalmology & Visual Science*. 2011;52(14):6154-6154.
13. Kornmann HL, Gedde SJ. Glaucoma management after vitreoretinal surgeries. *Curr Opin Ophthalmol*. Mar 2016;27(2):125-31. doi:10.1097/icu.0000000000000238
14. SEBESTYEN JG, SCHEPENS CL, ROSENTHAL ML. Retinal Detachment and Glaucoma: I. Tonometric and Gonioscopic Study of 160 Cases. *Archives of Ophthalmology*. 1962;67(6):736-745. doi:10.1001/archopht.1962.00960020736007
15. Hartley RE, Marsh RJ. Anterior chamber depth changes after retinal detachment. *Br J Ophthalmol*. Aug 1973;57(8):546-50. doi:10.1136/bjo.57.8.546
16. Kreiger AE, Hodgkinson BJ, Frederick AR, Jr., Smith TR. The results of retinal detachment surgery.

- Analysis of 268 operations with a broad scleral buckle. *Arch Ophthalmol.* Oct 1971;86(4):385-94. doi:10.1001/archophth.1971.01000010387005
17. Perez RN, Phelps CD, Burton TC. Angel-closure glaucoma following scleral buckling operations. *Trans Sect Ophthalmol Am Acad Ophthalmol Otolaryngol.* Mar-Apr 1976;81(2):247-52.
18. Miller MH, Rice NS. Trabeculectomy combined with beta irradiation for congenital glaucoma. *Br J Ophthalmol.* Oct 1991;75(10):584-90. doi:10.1136/bjo.75.10.584
19. Broadway DC, Grierson I, Hitchings RA. Local effects of previous conjunctival incisional surgery and the subsequent outcome of filtration surgery. *Am J Ophthalmol.* Jun 1998;125(6):805-18. doi:10.1016/s0002-9394(98)00045-2
20. Broadway DC, Chang LP. Trabeculectomy, risk factors for failure and the preoperative state of the conjunctiva. *J Glaucoma.* Jun 2001;10(3):237-49. doi:10.1097/00061198-200106000-00017
21. Sato T, Koh S, Yasukura Y-i, et al. Surgical Factors Affecting Changes in Ocular Surface Dynamics in the Early Postoperative Period After 25-Gauge Vitrectomy. *Eye & Contact Lens.* 2019;45(4):254-259. doi:10.1097/icl.0000000000000562
22. Wong K, Goldstraw P. Effect of fibrin glue in the reduction of postthoracotomy alveolar air leak. *Ann Thorac Surg.* Oct 1997;64(4):979-81. doi:10.1016/s0003-4975(97)00820-5
23. Radosevich M, Goubran HI, Burnouf T. Fibrin sealant: scientific rationale, production methods, properties, and current clinical use. *Vox Sang.* 1997;72(3):133-43. doi:10.1046/j.1423-0410.1997.7230133.x
24. Inc. BI. TISSEEL [Fibrin Sealant] full Prescribing Information: http://baxterpi.com/pi-pdf/Tisseel_PI.pdf.
25. Anand K, Goyal G, Goel Y, Bansal Y, Rastogi A, Jaisingh K. Ocular surface response to fibrin sealant versus vicryl suture for conjunctival closure after strabismus surgery: An objective assessment. *Saudi J Ophthalmol.* Oct-Dec 2020;34(4):243-246. doi:10.4103/1319-4534.322602
26. Read SA, Alonso-Caneiro D, Vincent SJ, et al. Anterior eye tissue morphology: Scleral and conjunctival thickness in children and young adults. *Scientific Reports.* 2016/09/20 2016;6(1):33796. doi:10.1038/srep33796
27. Kessing SV. Mucous gland system of the conjunctiva. A quantitative normal anatomical study. *Acta Ophthalmol (Copenh).* 1968:Suppl 95:1+.
28. Österlind G. An Investigation Into the Presence of Lymphatic Tissue in the Human Conjunctiva: And Its Biological and Clinical Importance. H. Ohlssons boktryckeri; 1944.
29. Min X, Jiang H, Shi L. Descriptive Study of Conjunctival Cysts: A Rare Complication after Strabismus Surgery. *Journal of Ophthalmology.* 2018/06/19 2018;2018:1076818. doi:10.1155/2018/1076818