

## Endoillumination-assisted scleral buckling: Our results

Varun Gogia, Pradeep Venkatesh, Shikha Gupta,  
Ashish Kakkar, Satpal Garg

**Aims:** The aim was to evaluate the long-term surgical outcomes of endoillumination assisted scleral buckling (EASB) in primary rhegmatogenous retinal detachment (RRD). **Methods:** Twenty-five eyes of 25 patients with primary RRD and proliferative vitreoretinopathy  $\leq$ C2 where any preoperative break could not be localised, were included. All patients underwent 25 gauge endoillumination assisted rhegma localisation. Successful break determination was followed by cryopexy and standard scleral buckling under surgical microscope. Anatomical and functional outcomes were evaluated at the end of 2 years. **Results:** At least one intraoperative break could be localized in 23 of 25 (92%) eyes. Median age of these patients was 46 years (range: 17-72). Thirteen eyes (56.52%) were phakic, 8 (34.78%) were pseudophakic and 2 (8.6%) were aphakic. Anatomical success (attachment of retina) was achieved in 22 (95.63%) of 23 eyes with EASB. All eyes remained attached at the end of 2 years. Significant improvement in mean visual acuity (VA) was achieved at the end of follow-up ( $1.09 \pm 0.46$  log of the minimum angle of resolution [logMAR]) compared with preoperative VA ( $1.77 \pm 0.28$  logMAR) ( $P < 0.001$ ). **Conclusion:** EASB can be considered an effective alternative to vitreoretinal surgery in simple retinal detachment cases with the added advantage of enhanced microscopic magnification and wide field illumination.

**Key words:** Endoillumination, results, scleral buckling

Despite better visual outcomes with scleral buckling (SB) in both phakic and pseudophakic eyes in comparison to vitrectomy, it is declining in popularity among vitreo-retinal surgeons.<sup>[1]</sup> We describe our results with endoillumination assisted SB (EASB) to achieve retinal attachment.

### Methods

This was a prospective interventional case series of consecutive patients who presented to retina services from March 2010 to September 2011 with primary rhegmatogenous retinal

detachment (RRD) and proliferative vitreoretinopathy (PVR) grade  $<$ C2 where breaks were not localized preoperatively on indirect ophthalmoscopy (IO) with scleral indentation. A written informed consent from all patients was taken and approval from Institutional Review Board was obtained. Patients unwilling to participate and detachments with PVR  $\geq$ C3 grade were excluded. Baseline characteristics including age, etiological diagnosis, duration of detachment, preoperative visual acuity (VA), lens status and PVR grade were recorded.

A 360° peritomy and extraocular muscle bridling was followed by placement of 25 gauge self-retaining endoillumination either in a quadrant opposite to the suspected break or else in inferotemporal quadrant. Under high microscopic magnification and through volk Reinverting Operating Lens System and wide angle viewing system (WAVS), break was localised using indentation, marked and cryopexy was performed<sup>[2]</sup> [Fig. 1]. Endoillumination was removed and sclerotomy was closed using 7-0 vicryl. Conventional nondrainage buckling was then performed using silicon-based scleral buckle and encirclage and height of buckle was adjusted according to break buckle relationship under observation of indirect ophthalmoscope. Multiple paracentesis helped stabilise intraocular pressure (IOP); and peritomy was closed after a gentamicin wash. Patients were assessed for anatomical retinal attachment and VA change at 1<sup>st</sup> day, 1 and 4 weeks, 3 months and 3 monthly thereafter till 2 years. Statistical analysis was performed using the SPSS version 17.0 (SPSS, Chicago, Illinois, USA). Paired *t*-test was used to evaluate significant change in log of the minimum angle of resolution VA.  $P < 0.05$  was considered as significant.

### Results

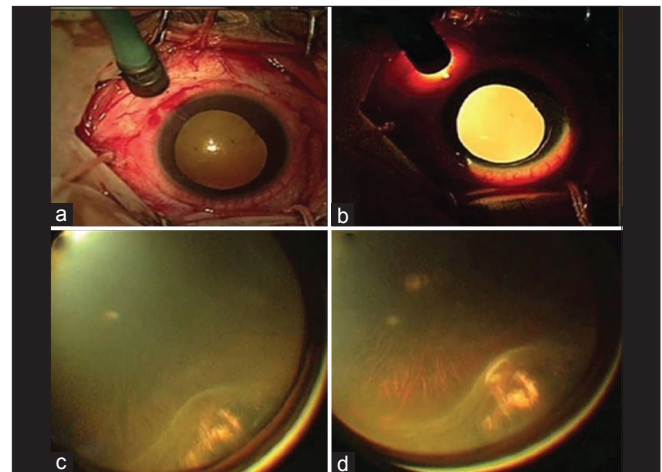
Of 25 eyes (25 patients) recruited at least one intraoperative break could be localized in 23 of 25 (92%) eyes; and multiple breaks ( $\geq 2$ ) were found in four patients. All 23 patients underwent EASB and pars plana vitrectomy was performed in two patients where break was not localized intraoperatively. Median age of these 23 patients was 46 years (range: 17-72);

Access this article online	
Quick Response Code:	Website: www.ijjo.in
	DOI: 10.4103/0301-4738.141068

Department of Ophthalmology, Dr. Rajendra Prasad Centre for Ophthalmic Science, All India Institute of Medical Sciences, New Delhi, India

**Correspondence to:** Dr. Varun Gogia, Retina and Uvea Services, Dr. Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India. E mail: varungogia@gmail.com

Manuscript received: 17.11.13; Revision accepted: 19.06.14



**Figure 1:** (a) 25-gauge self-retaining endoillumination is placed into the vitreous cavity; (b) Intense internal illumination is obtained after switching on the endoillumination and switching off the microscope light; (c) the cryo probe is adjusted, so that the break is located at the apex of the indentation and (d) cryopexy is completed

**Table 1: Demonstrating baseline clinical characteristics, anatomical outcome and final visual acuity**

Configuration of RD	Baseline VA (logMAR)	Myopia ( $\geq -2D$ )	Lens status	Anatomical outcome	Final VA (logMAR)	Reason for nonlocalisation
Temporal fresh	1	Yes	Phakic	Attached	0.6	None
Subtotal fresh	1.78	Yes	Pseudophakic	Attached	1	PCO
Subtotal fresh	2	No	Phakic	Attached	1	None
Inferior old	2	Yes	Phakic	Attached	1.78	None
Inferior fresh	2	Yes	Aphakic	Attached	1.48	Nondilating pupil with PCO
Inferior fresh	2	No	Aphakic	Attached	0.78	Nondilating pupil with PCO
Total old	1.48	No	Phakic	Attached	1.48	None
Total fresh	2	No	Pseudophakic	Attached	1.78	PCO
Total old	1.78	Yes	Phakic	Attached	1.18	None
Subtotal fresh	2	No	Phakic	Attached	1	None
Temporal fresh	1.78	No	Pseudophakic	Attached	0.6	None
Total fresh	1.78	Yes	Pseudophakic	Attached	0.6	PCO
Total old	2	Yes	Phakic	Detached	2	None
Inferior fresh	1.18	No	Phakic	Attached	0.6	None
Subtotal fresh	2	No	Pseudophakic	Attached	1	None
Inferior old	1.78	Yes	Phakic	Attached	1	None
Subtotal fresh	1.78	No	Pseudophakic	Attached	0.6	None
Inferior fresh	1.48	No	Phakic	Attached	0.6	None
Total old	1.48	No	Phakic	Attached	1.48	None
Total fresh	2	No	Pseudophakic	Attached	1.78	IOL pitting
Total old	1.78	Yes	Phakic	Attached	1.18	None
Subtotal fresh	2	Yes	Phakic	Attached	1	None
Temporal fresh	1.78	No	Pseudophakic	Attached	0.48	Decentred IOL and PCO

RD: Retinal detachment, VA: Visual acuity, PCO: Posterior capsular opacification, IOL: Intraocular lens, LogMAR: Log of the minimum angle of resolution

14 were males. Among pseudophakic eyes, five of eight eyes had cataract surgery-related problems, which precluded preoperative break localization [Table 1]. None of the patients had fix folds in our series; however, three patients had subretinal bands in two quadrants. Initial retinal attachment in EASB group could be achieved in 22 of 23 eyes (95.6%); 23 gauge pars plana vitrectomy and silicon oil injection was performed for eye, which had failed EASB. Retina remained attached in all eyes at 2 years. Mean preoperative and postoperative VA was  $1.77 \pm 0.28$  and  $1.09 \pm 0.46$  ( $P < 0.0001$ , Paired *t*-test). None developed endoilluminator site break, cataract or significant IOP rise until 2 years follow-up.

## Discussion

Peroperative determination of retinal tear(s) is time consuming, requires lifting the microscope and wearing the headband of IO and an unobstructed view of peripheral retina. In contrast, chances of missing retinal tear are minimal with vitrectomy due to advanced endoilluminator technology, WAVS and high microscopic magnification; albeit with an increased risk of cataract progression, iatrogenic tears, complications of vitreous substitutes and prolonged time for visual rehabilitation.<sup>[3]</sup> Several series have reported anatomic retinal attachment rates at 70% to 90% after vitrectomy and 75-91% after SB in cases with RRD.<sup>[4]</sup> However, redetachment is higher after vitrectomy due to contraction of residual vitreous and epiretinal membrane.<sup>[5]</sup> EASB combines advantages of both SB and vitrectomy to provide us with good surgical outcomes.

In our series, posterior capsule opacification, small pupil and thin atrophic breaks in far periphery in myopes precluded preoperative rhegma localisation; whereas these factors hampered visibility in EASB minimally. Despite a limited sample size, 95.6% success rate of EASB at 2 years is encouraging and the technique could be used as a standard protocol in selected cases.

## References

- Häring G, Wiechens B. Long-term results after scleral buckling surgery in uncomplicated juvenile retinal detachment without proliferative vitreoretinopathy. *Retina* 1998;18:501-5.
- Venkatesh P, Garg S. Endoillumination-assisted scleral buckling: A new approach to retinal detachment repair. *Retin Physician* 2012;9:34-7.
- Heimann H, Bartz-Schmidt KU, Bornfeld N, Weiss C, Hilgers RD, Foerster MH, *et al.* Scleral buckling versus primary vitrectomy in rhegmatogenous retinal detachment: A prospective randomized multicenter clinical study. *Ophthalmology* 2007;114:2142-54.
- Heimann H, Zou X, Jandek C, Kellner U, Bechrakis NE, Kreusel KM, *et al.* Primary vitrectomy for rhegmatogenous retinal detachment: An analysis of 512 cases. *Graefes Arch Clin Exp Ophthalmol* 2006;244:69-78.
- Schwartz SG, Kuhl DP, McPherson AR, Holz ER, Mieler WF. Twenty-year follow-up for scleral buckling. *Arch Ophthalmol* 2002;120:325-9.

**Cite this article as:** Gogia V, Venkatesh P, Gupta S, Kakkar A, Garg S. Endoillumination-assisted scleral buckling: Our results. *Indian J Ophthalmol* 2014;62:893-4.

**Source of Support:** Nil. **Conflict of Interest:** None declared.