

## Commentary: Revival of scleral buckling technique with Chandelier illumination

Rhegmatogenous retinal detachment (RRD) is one of the vision-threatening conditions affecting the retina; timely management by a proper procedure yields excellent anatomical and functional outcomes. The available options of surgery include pneumatic retinopexy, pars plana vitrectomy (PPV), and scleral buckling.<sup>[1]</sup>

Scleral buckling has been regarded as a simple, time-tested, effective extraocular procedure in the management of RRD. It has a long learning curve, less surgeon comfort, more patient discomfort, and poor ergonomics. With the advent of microincision vitrectomy and wide-angle viewing systems, there has been a shift in the trend toward pars plana vitrectomy.<sup>[2]</sup> Conventional scleral buckling procedure has now been considered as a “dying art.” Adoption of endoillumination and wide-angle visualization systems (contact/noncontact) have rejuvenated this procedure in the recent years.<sup>[3-6]</sup> In this review, we have compared Chandelier illumination–assisted scleral buckling (CSB) with standard scleral buckling (SSB) and PPV.

SSB requires repeated wearing and removal of indirect ophthalmoscope in the operation theater which makes it inconvenient and time-consuming as well.<sup>[7]</sup> Even though some ophthalmoscopes are equipped with teaching mirrors for assistant’s visualization, SSB has a very limited role in teaching vitreoretinal trainees. On the other hand, CSB with its excellent magnification and visualization of tissues has helped in intraoperative identification of missed retinal breaks. Many complex RRD can be tackled with better illumination as highlighted in a case report where CSB was possible in case of retained intraocular foreign body.<sup>[8]</sup> One case report showed CSB success in identification of undetected break preoperatively.<sup>[9]</sup> Comparison of features between SSB, CSB, and PPV is illustrated in Table 1.

Surgical time is also seen to be significantly reduced in CSB according to two studies which compared CSB and SSB outcomes.<sup>[8,10]</sup> CSB and SSB are cost-effective when compared with PPV. Surgeon’s neck comfort is well taken care of in CSB. The main advantage of CSB is its use as a teaching aid for the

**Table 1: Comparison of features between SSB, CSB, and PPV**

	SSB	PPV	CSB
Cost-effective	Yes	No	Yes
Teaching	Poor	Excellent	Excellent
Magnification	Poor	Good	Good
Visualization	Difficult (Inverted)	Good	Good
Surgical time	More	Less	Less
Identification of new retinal tears	No	Yes	Yes
Surgeon comfort	Less	More	More
Multiple surgeries	No	Yes	No
Visual rehabilitation	Early	Late	Early

**Table 2: Summary of CSB outcome in different studies**

	Year of study	No. of eyes	Mean age (years)	Initial anatomical success (%)	Final anatomical success (%)#	Lens status (P/PS)	Mean surgical time (min)
Aras <i>et al.</i> <sup>[4]</sup>	2012	16	53.7	81	NA	12/4	NA
Imai <i>et al.</i> <sup>[5]</sup>	2015	79	43.7	92.4	100	75/4	100.3
Jo <i>et al.</i> <sup>[9]</sup>	2017	17	26.8	94.1	100	17/0	76.8
Nagpal <i>et al.</i> <sup>[6]</sup>	2013	10	NA	90	100	7/3	NA
Narayanan <i>et al.</i> <sup>[10]</sup>	2016	14	34.3	92.9	100	11/3	77.8
Seider <i>et al.</i> <sup>[12]</sup>	2016	12	52	83.3	100	11/1	117.9
SPP study group. <sup>[11]</sup>	2007	342	63.3	59.6	95.3	209/133	NA

P: phakic; PS: pseudophakic; NA: not available, #Final anatomical success after additional procedures

future retinal surgeons thereby modifying the SSB technique preserving the aim of the surgery to support the breaks externally and at the same time improving the visualization allowing the technique to be used in complex RRD.<sup>[10]</sup> Only theoretical concerns that have been expressed are light toxicity, cataract, infection, and vitreous incarceration in port sites. But with advanced microsurgery techniques with small gauge vitrectomy instrumentation, those complications are almost nonevident.

The major randomized study till date by the SPR study group observed SSB to be as effective as PPV in phakic patients (63.6% vs 63.8%) in terms of primary retinal attachment rates. They also showed less cataract progression in SSB in comparison to PPV (45.9% vs 77.3%).<sup>[11]</sup> Hence, CSB is expected to have better outcomes which has been demonstrated in several small case series. CSB studies are summarized in Table 2. CSB can also help in better visualization in patients with pseudophakic RRD where posterior capsular opacification and reflexes hinder visualization of breaks.

CSB is a modification of SSB in modern times taking care of the surgeons' comfort, better visualization at a higher magnification enhancing the anatomical outcome in complex RRD, and at the same time it an excellent teaching tool for the budding vitreoretinal surgeons which has revived the technique of SSB.

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