IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 25, Issue 5 Ser. 3 (May. 2026), PP 77-87
www.iosrjournals.org

Scleral Buckling In The Era Of Vitrectomy: Is The Buckle Dead?

Dr. Akshay Thakur, Dr. Sambhu Majumder

Department Of Ophthalmology, Regional Institute Of Medical Sciences (RIMS), Imphal, Manipur, India

Abstract

Purpose

To assess whether scleral buckling still plays a significant role in managing rhegmatogenous retinal detachment during the pars plana vitrectomy era or not.

Methods

The review analyzed randomized controlled trials alongside meta-analyses and observational studies with contemporary reviews to assess patient selection and surgical outcomes.

Results

Modern vitrectomy advances have been adopted worldwide in retinal detachment repair which dominates pseudophakic and complex cases. Research shows that scleral buckling maintains excellent anatomical success rates in specific clinical situations including young phakic patients and inferior retinal breaks and retinal dialysis along with detachments that lack posterior vitreous detachment.

Conclusion

Pars plana vitrectomy dominates rhegmatogenous retinal detachment treatment but scleral buckling remains a valuable surgical option when used correctly. The best treatment approach needs evidence-based personalized decisions that combine both surgical methods instead of depending solely on one.

Keywords

Scleral buckling; Pars plana vitrectomy; Rhegmatogenous retinal detachment; Retinal detachment surgery; Surgical decision-making

Date of Submission: 16-05-2026 Date of Acceptance: 26-05-2026

I. Introduction

Rhegmatogenous retinal detachment (RRD) still stands as a leading culprit behind sudden vision loss, and honestly, it continues to throw curveballs at surgeons, even with all the headway made in vitreoretinal procedures [1,2]. The groundwork for repairing retinal detachments was really laid down by Charles Schepens. He is the one who brought scleral buckling into the spotlight,an approach designed to relieve vitreoretinal traction and help seal off those pesky retinal breaks [3–5].

Over roughly thirty years or so, there's been a dramatic pivot in how we tackle RRDs surgically. Thanks to leaps forward, think small-gauge tools, panoramic viewing systems, brighter endoillumination setups, plus sharper dissection techniques around the vitreous base,pars plana vitrectomy (PPV) has become not just possible, but practical for all sorts of cases that used to be out of reach [6–8]. PPV is often front and center at many retina clinics, especially when dealing with pseudophakic detachments or complicated scenarios involving tricky vitreoretinal issues [6,7,12].

PPV brings some real perks: you can see every break right from inside the eye; you get rid of all that unwanted traction; internal tamponade becomes straightforward; and coexisting problems get handled on the spot too [7–9]. On top of that shift in technology comes another change,training priorities. Most modern fellowships now put a heavy focus on mastering vitrectomy skills while spending less time teaching scleral buckling. Not surprisingly, this means fewer new surgeons are routinely performing buckle procedures these days, the numbers keep slipping year by year [16].

Still,and this is important, leaning hard into vitrectomy doesn't mean we can write off scleral buckling altogether.Robust evidence from randomized trials and big comparative studies shows that when you pick your cases wisely, buckle surgery stacks up very well against vitrectomy in terms of anatomical success rates [6,10,17]. Plus,and here's where it gets interesting, it offers unique upsides for certain groups: think young phakic eyes, situations without posterior vitreous detachment present yet, inferior breaks or cases involving retinal dialysis,all areas where maintaining refractive stability and sparing the natural lens take center stage [6,9,19–21].

Surgical outcomes aren't ever one-size-fits-all either with importance of age.So does whether someone still has their natural lens, or if their macula is involved,the number and position of tears, the overall extent of detachment,and even subtleties in how the retina interfaces with its surroundings come into play [17,18]. That means picking between scleral buckling versus vitrectomy isn't some simple simple straightforward choice; instead it's more like assembling a custom game plan based on each patient's story, and factoring in what each surgeon knows best.

II. Biomechanical And Pathophysiological Rationale Of Scleral Buckling

Rhegmatogenous retinal detachment kicks off when a full-thickness tear in the retina lets liquefied vitreous seep into the subretinal space, all thanks to ongoing vitreoretinal traction [3–5] .The main aim of scleral buckling is to push back against these abnormal forces by pressing on the outside of the eyeball, essentially indenting the sclera which eases circumferential traction right at the vitreous base and shores up support precisely where that retinal break has occurred. It nudges the retinal pigment epithelium closer to that lifted neurosensory retina.It helps seal off those troublesome breaks and encourages subretinal fluid to get reabsorbed,all without needing to mess with or remove any vitreous gel [4,5].

Now, compare that with pars plana vitrectomy. That technique banks on releasing internal traction and using intraocular tamponade for reattachment. Scleral buckling takes a different route, it physically remodels eye geometry from outside, providing lasting support even after chorioretinal adhesion sets in for good measure. Why does this matter.Well, these mechanics are especially relevant if you're dealing with eyes where vitreous architecture is still intact and those sticky vitreoretinal connections remain strong. Take young phakic patients as an example. Inducing posterior vitreous detachment during vitrectomy can be quite tricky here,and it comes with a higher risk of accidentally causing new retinal breaks [19–21,31]. The beauty of scleral buckling in such cases is its ability to relieve pulling forces exactly at the site of trouble while keeping most of that native interface untouched; less fiddling inside means lower surgical risks overall. Both lab-based experiments and real-world studies point out that scleral buckling stabilizes things near the vitreous base while dialing down shear stress on retinal tissue, a big win for long-term anatomical stability [5,15].

Certain types of detachments,like those linked to anterior breaks, lattice degeneration patches, or outright dialysis, are particularly well-served by external support because buckle placement matches their anatomy so neatly. On flip side. Vitrectomy depends on internal tamponade plus careful head positioning afterward to keep everything aligned,a strategy that doesn't always pan out for every configuration like inferior breaks [13–15]. Reshaping how pressure gets distributed inside your eye and influencing how subretinal fluid moves around also come into play with scleral buckling. By contouring globe geometry just right, this procedure encourages natural drainage through pre-existing tears and makes retinopexy stick better by keeping retina pressed close against its pigmented partner underneath [4,5].

Evolution of Pars Plana Vitrectomy in Rhegmatogenous Retinal Detachment

Pars plana vitrectomy actually started out as a sort of backup plan, something surgeons reached for mainly in tough retinal detachment cases, especially those complicated by proliferative vitreoretinopathy, giant retinal tears, dense vitreous hemorrhage, or when cloudy media made it impossible to see what was going on [6–8]. Back then, these procedures had some real drawbacks: the instruments were bulky, visualization was far from ideal, and complication rates ran high. So, early on, only the most severe situations called for this kind of intervention [6].

But here's the thing,the field didn't stand still. Over time, steady technological upgrades have completely reshaped how we think about vitrectomy in retinal detachment surgery.With the move to small-gauge transconjunctival systems , sharper wide-angle viewing optics, brighter endoillumination setups, and gentler techniques for shaving the vitreous base safely, well, surgical efficiency shot up while intraoperative risks went down [6–8].

You can also use long-acting tamponade agents internally to hold everything in place after surgery [7–9]. In pseudophakic eyes,where seeing peripheral breaks is trickier and traction behaves differently than with a natural lens, vitrectomy has delivered particularly impressive anatomical results [6,7,12]. When we talk about outcomes, big studies and randomized trials keep showing strong primary reattachment rates with this approach. No wonder so many surgeons now turn to PPV first when faced with pseudophakic detachments or tricky cases involving multiple or posterior breaks [6,10,17].

There's another angle too: vitrectomy sidesteps buckle-related refractive shifts and avoids external complications tied to scleral buckling,that's a clear bonus [10,33]. Training has played its part as well; current fellowship programs tend to focus heavily on teaching vitrectomy skills while exposure to scleral buckling is often limited. Unsurprisingly then, younger specialists report feeling far more confident performing vitrectomies day-to-day, a pattern that only strengthens its role in routine care [16]. Still,and this matters, even though plenty of evidence points toward similar outcomes between these two techniques under certain conditions. It hasn't been all smooth sailing as indications expand: phakic patients face faster cataract progression post-vitrectomy [10,19–21].

Intraocular manipulation raises risks like iatrogenic retinal breaks during PVD induction and puts heavy weight on postoperative tamponade choices if you want top-notch results [13–15,31]. The widespread embrace of vitrectomy says a lot about advances in technology,and shifting surgeon comfort zones, but doesn't mean it always trumps other options across the board. Even though it now dominates many practices worldwide , smart decision-making still hinges on matching each case's details: lens status matters; so does anatomy at the vitreoretinal interface; detachment configuration can change everything. Zooming out a bit,it becomes clear that while vitrectomy stands as an incredibly powerful asset in modern retinal detachment repair strategies.it's hardly a one-size-fits-all solution.

III. Evidence Comparing Scleral Buckling And Vitrectomy

Phakic Rhegmatogenous Retinal Detachment

The published research shows that phakic retinal detachment cases treated with scleral buckling have similar primary reattachment outcomes to vitrectomy which range between 85% to 95% [17,19].The phakic group in the scleral buckling versus primary vitrectomy study (SPR) showed better visual results and fewer cataract developments when using scleral buckling rather than vitrectomy although both methods achieved similar anatomical success rates [6]. Research studies which followed have confirmed these results through meta-analyses which demonstrated that scleral buckling protects the natural lens and delays the need for cataract surgery in phakic patients [10,11].

Studies show that vitrectomy in phakic eyes accelerates nuclear sclerosis which leads to cataract surgery in many patients within one year of surgery [47,50]. Therefore, many clinicians recommend scleral buckling as the initial treatment for young phakic patients who have localized detachments and clearly seen retinal breaks [20,21].

Pseudophakic Rhegmatogenous Retinal Detachment

Research studies demonstrate that vitrectomy produces better primary anatomical results than scleral buckling in pseudophakic eyes because this method allows for improved visualization of retinal breaks and lowers the chance of missing tears [6,12,41].Follow-up research including observational studies and systematic reviews confirm that scleral buckling fails to provide adequate results in pseudophakic eyes because the altered optical pathways hinder accurate identification of retinal breaks [42,43].

Inferior Retinal Breaks

Inferior retinal breaks remain a subject of discussion within the retina community. The effectiveness of intraocular gas tamponades is decreased in inferior detachments because gravity works against this treatment making precise vitreous base trimming and correct eye positioning essential during postoperative vitrectomy care [13,14].

Research comparing treatments suggests that scleral buckling offers better results in inferior retinal breaks because this method creates an external permanent support for pathology sites which function irrespective of the positioning of the tamponade [15,24]. Modern vitrectomy techniques which use wide-angle viewing systems and perform complete vitreous base shaving and apply long-acting gas tamponades have shown high success rates in treating inferior break detachments [45,46].

Macula-On versus Macula-Off Retinal Detachment

The macular condition during presentation strongly impacts patient visual recovery yet it does not independently guide the surgical method for retinal detachment. Both scleral buckling and vitrectomy have demonstrated excellent anatomical success in macula-on retinal detachment when surgery is performed promptly [33,34].Surgeons commonly choose vitrectomy to treat macula-off retinal detachment when the detachment extends broadly or multiple retinal breaks exist or there is associated vitreous hemorrhage. Nonetheless, scleral buckling remains an effective treatment option for simple macula-off retinal detachments in younger patients who present with limited detachment extents.[33,34]

Overall Anatomical and Visual Outcomes

Anatomical success rates for scleral buckling and vitrectomy show similar results across studies when cases meet appropriate selection criteria [17,18]. Visual results after surgery mainly depend on lens condition, macular status and postoperative cataract development rather than the chosen method for retinal reattachment [10,47].

Scleral buckling continues to show superiority in managing retinal detachments among young phakic patients with rhegmatogenous retinal detachment. The vitreous in these eyes remains intact and strong vitreoretinal connections make posterior vitreous detachment induction during vitrectomy difficult and risky [29–31]. By externally treating the affected area without disrupting the vitreoretinal interface, scleral buckling reduces the chances of causing retinal breaks during surgery.The preservation of the crystalline lens should take priority for younger patients during surgical decision-making. Research shows that phakic eyes treated with scleral buckling experience lower postoperative cataract progression rates compared to those treated with vitrectomy [6,9,47].

Scleral buckling remains the best surgical choice for young phakic patients who show localized retinal detachments and clearly identified retinal breaks.Vitrectomy-based repair remains difficult for inferior retinal breaks because of its intraocular tamponade restrictions and gravitational effects on subretinal fluid drainage. Scleral buckling delivers lasting external support for inferior break sites without requiring patient positioning adjustments and achieves good anatomical results for this subgroup [13–15].

Vitrectomy techniques currently deliver better outcomes with inferior detachments but medical professionals recommend combining scleral buckling with vitrectomy when inferior vitreoretinal tension or early-stage proliferative vitreoretinopathy is substantial [24–26]. Scleral buckling should be considered for inferior breaks based on the complexity of the detachment and the surgeon's expertise in the field.

Retinal dialysis is mostly found in young individuals following blunt ocular trauma in which retinal breaks develop at the ora serrata and the vitreous remains largely unaffected. These cases feature peripheral retinal detachment at the ora serrata combined with limited posterior vitreous involvement. Scleral buckling treats the affected area externally while avoiding the need to manipulate the vitreous extensively [19,20].

Many case series show that scleral buckling achieves high anatomical success rates as a primary treatment method for retinal dialysis which strengthens its position as the ideal surgical procedure for this condition [20,21]. Vitrectomy is only used when vitreous hemorrhage occurs or when large detachments or recurrent retinal detachments develop.Retinal detachment cases without posterior vitreous detachment present unique problems for vitrectomy because initiating PVD can damage retina through inadvertent breaks and lead to other intraoperative complications [31,32]. The surgical technique of scleral buckling enables external traction relief while maintaining the vitreous body intact.

Younger patients face relevant considerations when managing detachment alongside lattice degeneration and round atrophic holes because research shows that scleral buckling achieves long-lasting anatomical results in these cases [34–36].The characteristic features of pediatric retinal detachment include delayed diagnosis together with tight vitreoretinal adhesion and higher chances of developing proliferative vitreoretinopathy. Scleral buckling may be the best surgical option for specific pediatric patients with localized detachment and visible breaks because it reduces surgical morbidity by avoiding extensive vitreous manipulation [21–23].

Scleral buckling remains an effective surgical treatment for specific cases that show limited retinal detachment along with identifiable retinal breaks and small posterior vitreous traction. These cases typically involve young phakic patients as well as detachments lacking posterior vitreous detachment and lattice degeneration with round atrophic holes and retinal dialysis [19–21,34–36]. Scleral buckling delivers reliable anatomical success for these situations while preventing vitreous manipulation and keeping the crystalline lens intact.

The current medical literature shows that properly selected cases treated with scleral buckling alone achieve superior primary reattachment outcomes that remain stable over time with good visual function results [5,17,20]. The failure rate for external surgical approaches arises primarily because surgeons fail to detect all necessary retinal breaks during preoperative evaluation.Vitrectomy emerged as the preferred initial procedure for retinal detachment in pseudophakic eyes and in cases with extensive or posteriorly positioned retinal breaks or in patients with cloudy media or vitreous bleeding [6,12,41–43].

Vitrectomy becomes the preferred treatment method when posterior vitreoretinal abnormalities reach significant levels such as vitreomacular traction or epiretinal membranes or early proliferative vitreoretinopathy. Modern vitrectomy techniques deliver excellent anatomical outcomes for these conditions although phakic patients should note that postoperative cataract development is a relevant risk factor [47,50].Complex retinal detachments require the combined use of scleral buckling and vitrectomy as a vital surgical method. Surgeons often use this approach when dealing with inferior retinal breaks or extensive lattice degeneration or cases of giant retinal tears or recurrent retinal detachments or early-stage proliferative vitreoretinopathy [24–26,45].

The use of a scleral buckle during these operations delivers external support for the vitreous base that could reduce the remaining traction after vitreous removal. Research indicates that combined surgery may decrease postoperative redetachment rates in high-risk cases but doctors must weigh this benefit against the likelihood of buckle-related complications [27–29].Surgeons should only perform combined procedures after evaluating each case individually based on its complexity. Routine combined procedures for uncomplicated retinal detachments provide no added benefits and only expose patients to unnecessary risks.

Comparative Long-Term Outcomes

Table 1. Major comparative studies evaluating scleral buckling and pars plana vitrectomy for rhegmatogenous retinal detachment

Author (Year)	Study design	Patient population	Surgical approach compared	Primary anatomical success	Key conclusions
Heimann et al.[6] (2007)	Randomized controlled trial (SPR Study)	Phakic and pseudophakic RRD	SB vs PPV	Comparable	SB favored in phakic eyes; PPV favored in pseudophakic eyes
Brazitikos et al.[8] (2005)	Randomized controlled trial	Uncomplicated RRD	SB vs PPV	Comparable	Lens status influenced outcomes
Sun et al[10]. (2012)	Meta-analysis	Mixed RRD	SB vs PPV	Comparable	Case selection critical
Campo et al[7]. (1999)	Retrospective series	Pseudophakic RRD	PPV	High	PPV effective in pseudophakic RRD

Abbreviations: SB = scleral buckling; PPV = pars plana vitrectomy; RRD = rhegmatogenous retinal detachment

Table 2. Direct comparison of baseline and follow-up visual acuity in scleral buckling versus pars plana vitrectomy

Study	Patient subgroup	Surgery	Baseline BCVA	3–6 mo BCVA	12 mo BCVA	Author conclusion on VA
Heimann et al[6]., 2007 (SPR Study)	Phakic RRD	SB	≈ logMAR 1.0–1.3	≈ logMAR 0.4–0.6	≈ logMAR 0.3–0.5	SB achieved significantly better functional

						outcome than PPV in phakic eyes
Heimann et al[6]., 2007 (SPR Study)	Phakic RRD	PPV	≈ logMAR 1.0–1.3	≈ logMAR 0.6–0.8	≈ logMAR 0.5–0.7	VA improvement limited by cataract progression
Heimann et al[6]., 2007 (SPR Study)	Pseudophakic RRD	SB	≈ logMAR 0.9–1.2	≈ logMAR 0.6–0.8	≈ logMAR 0.5–0.7	PPV superior due to improved break detection
Heimann et al[6]., 2007 (SPR Study)	Pseudophakic RRD	PPV	≈ logMAR 0.9–1.2	≈ logMAR 0.4–0.6	≈ logMAR 0.3–0.5	Better final BCVA compared to SB
Ahmadieh et al[50]., 2005	Macula-off RRD	SB	≈ logMAR 1.3–1.6	—	≈ logMAR 0.6–0.8	Final BCVA comparable between SB and PPV
Ahmadieh et al[50]., 2005	Macula-off RRD	PPV	≈ logMAR 1.3–1.6	—	≈ logMAR 0.6–0.8	No statistically significant VA difference
Brazitikos et al[8]., 2005	Uncomplicated RRD	SB	Comparable baseline VA	Faster early recovery with PPV	Comparable final BCVA	Long-term VA outcomes similar
Brazitikos et al[8]., 2005	Uncomplicated RRD	PPV	Comparable baseline VA	Better early BCVA	Comparable final BCVA	No long-term superiority

Abbreviations: BCVA = best-corrected visual acuity; SB = scleral buckling; PPV = pars plana vitrectomy; RRD = rhegmatogenous retinal detachment.

Table 3. Comparison of scleral buckling and pars plana vitrectomy: advantages, limitations, and complications

Parameter	Scleral buckling	Pars plana vitrectomy
Primary indication	Young phakic eyes, inferior breaks, retinal dialysis	Pseudophakic eyes, complex RRD
Vitreous manipulation	Not required	Required
Cataract progression	Minimal	Common in phakic eyes
Refractive change	Induced myopia possible	Minimal
Intraocular complications	Rare	Iatrogenic breaks, hypotony
Extraocular complications	Buckle infection, extrusion	None
Learning curve	Steeper	Relatively shorter
Long-term visual outcome	Comparable	Comparable

IV. Training, Learning Curve, And Future Directions

The development of retinal detachment surgery has significantly transformed the training process and skill development of vitreoretinal specialists. The rise of pars plana vitrectomy as the leading method for rhegmatogenous retinal detachment repair has steadily decreased the exposure to scleral buckling techniques during residency and fellowship training. The research shows that the number of scleral buckling cases for trainee surgeons has diminished and that their confidence to do the procedure independently has dropped significantly [16,35].

Vitrectomy surgery generally shows a better learning curve especially for pseudophakic retinal detachment because surgeons get better visualization during the operation and follow consistent surgical steps. Scleral buckling needs surgeons to accurately localize retinal breaks before surgery and to understand eye anatomy thoroughly while mastering external ocular surgical techniques. The lack of training exposure to scleral buckling leads many surgeons to avoid using this technique despite its ongoing importance in specific clinical situations [14,15].

The decreased focus on scleral buckling in training programs creates apprehension about the future availability of a full range of vitreoretinal surgical skills. Numerous medical experts have highlighted that losing skills in scleral buckling can restrict surgical options and decrease treatment effectiveness in cases which would benefit from buckling such as young phakic patients and inferior retinal breaks and retinal dialysis and pediatric retinal detachment [21–23,34].

It is essential for medical education to involve training future surgeons to maintain competence in scleral buckling rather than treating it as an outdated technique.The integration of simulation training with wet laboratory instruction and organized mentorship programs represents one of the developing methods to bridge this training gap. Research shows that surgical simulators and model eyes enable surgeons to develop skills for buckle placement and muscle handling and localization techniques in a safe patient environment [35,36].

Retinal detachment surgery will likely evolve toward personalized and combined methods in the future. Modern imaging technologies such as ultra-widefield fundus photography combined with optical coherence tomography will enhance the ability to evaluate retinal break positions and vitreoretinal traction during preoperative assessments thus enabling surgeon to plan their procedures more precisely [36,37]. Artificial intelligence applications together with data-based risk evaluation systems will help optimize procedure choice by forecasting surgical results and complication probabilities for different detachment types [38].

The future use of scleral buckling will persist in clinical practice. Scleral buckling will become more specialized in its usage serving clinical cases that benefit most from its biomechanical properties. Future vitreoretinal surgeons need to master both scleral buckling and vitrectomy techniques in order to deliver individualized evidence-based care for rhegmatogenous retinal detachment.

V. Summary

For a long time, scleral buckling stood as the go-to operation for rhegmatogenous retinal detachment, and even now, it remains a solid, evidence-backed option. These days, pars plana vitrectomy tends to steal the spotlight in most retinal detachment cases. Still, here’s the thing: studies keep confirming that scleral buckling can deliver comparable anatomical outcomes when chosen for the right scenarios. It really shines with younger phakic individuals or people dealing with inferior retinal breaks and retinal dialysis,especially if there’s no PVD involved. Managing rhegmatogenous retinal detachment effectively.

It’s not about blindly sticking to one surgical playbook. Instead, what matters is tailoring your approach based on the patient’s unique situation, the specifics of their detachment and, just as crucially, how comfortable and skilled the surgeon is with different procedures (more on that in a second). There’s no getting around it: outcomes hinge not only on which technique you pick, but also on who's holding the scalpel. Being technically adept at an operation,really knowing its ins and outs while anticipating possible pitfalls, often tips the scales more than any theoretical advantage tied to one method or another. Let me put it bluntly: relying exclusively on a single procedure across all patients often falls short compared to selecting an approach that matches both the particular pattern of detachment and what each surgeon does best.

VI. Conclusion

The landscape of rhegmatogenous retinal detachment management was fundamentally reshaped once pars plana vitrectomy entered the scene, a shift made possible by advancements in surgical tools, enhanced visualization, and refined techniques. These days, vitrectomy sits at the forefront when it comes to treating pseudophakic and more complicated detachment scenarios. Still, here's the thing: evidence shows there isn't a universal winner among surgical approaches. No single technique consistently outshines its counterparts in every clinical setting. Scleral buckling,far from obsolete, remains both biologically logical and clinically robust when chosen for the right patients.

Its true strengths really shine in younger individuals with natural lenses (phakic eyes), detachments without posterior vitreous separation, those involving inferior retinal zones or dialysis cases, and select pediatric groups. Why? largely because scleral buckling preserves the native lens while sparing patients intraocular intervention,it offers steady anatomical outcomes precisely where it matters most. That said, vitrectomy takes center stage for pseudophakic detachments and tricky situations that call for internal tamponade or simultaneous management of other eye conditions. In these contexts, its advantages are hard to ignore..

So should surgeons pick sides.. Not at all. Scleral buckling and vitrectomy aren't rivals, they're two pieces of a much bigger puzzle that is modern vitreoretinal surgery. The best results come from tailoring treatment: matching patient-specific factors with detachment features while considering what each surgeon brings to the table skill-wise. Hanging on to expertise in both techniques is non-negotiable; this dual proficiency keeps options open during planning and wards off overdependence on any single approach.

With today's emphasis on vitrectomy-driven practice patterns, maybe it's time to give scleral buckling another hard look,especially through thoughtful patient selection and solid training initiatives (which can make all the difference).

References

[1]. Mitry D, Charteris DG, Yorston D, Et Al. The Epidemiology And Socioeconomic Associations Of Retinal Detachment In Scotland. Ophthalmology. 2010;117:365–371.

[2]. Feltgen N, Walter P. Rhegmatogenous Retinal Detachment—An Ophthalmologic Emergency. Dtsch Arztebl Int. 2014;111:12–22.

[3]. Schepens CL. Retinal Detachment And Allied Diseases. Philadelphia: WB Saunders; 1983.

[4]. Schepens CL, Okamura ID, Brockhurst RJ. The Scleral Buckling Procedures. I. Surgical Techniques And Management. Arch Ophthalmol. 1957;58:797–811.

[5]. Lincoff H, Kreissig I. Extraocular Surgery Of Retinal Detachment. Trans Ophthalmol Soc UK. 1972;92:399–409.

[6]. Heimann H, Bartz-Schmidt KU, Bornfeld N, Et Al. Scleral Buckling Versus Primary Vitrectomy In Rhegmatogenous Retinal Detachment (SPR Study). Ophthalmology. 2007;114:2142–2154.

[7]. Campo RV, Sipperley JO, Sneed SR, Et Al. Pars Plana Vitrectomy Without Scleral Buckle For Pseudophakic Retinal Detachments. Ophthalmology. 1999;106:1811–1816.

[8]. Brazitikos PD, Androudi S, Christen WG, Et Al. Primary Pars Plana Vitrectomy Versus Scleral Buckle Surgery For Retinal Detachment. Am J Ophthalmol. 2005;139:327–334.

[9]. Adelman RA, Parnes AJ, Ducournau D. Strategy For The Management Of Uncomplicated Retinal Detachments. Ophthalmology.

2013;120:1804–1808.

[10]. Sun Q, Sun T, Xu Y, Et Al. Primary Vitrectomy Versus Scleral Buckling For Rhegmatogenous Retinal Detachment: A Meta-Analysis. Ophthalmology. 2012;119:2339–2346.

[11]. Sodhi A, Leung LS, Do DV, Et Al. Recent Trends In The Management Of Rhegmatogenous Retinal Detachment. Surv Ophthalmol. 2008;53:50–67.

[12]. Hwang JC. Regional Practice Patterns For Retinal Detachment Repair In The United States. Am J Ophthalmol. 2012;153:1125–1128.

[13]. Wickham L, Connor M, Aylward GW. Vitrectomy And Gas For Inferior Break Retinal Detachments. Br J Ophthalmol. 2004;88:1376–1379.

[14]. Tanner V, Minihan M, Williamson TH. Management Of Inferior Retinal Breaks During Vitrectomy. Eye. 2001;15:55–59.

[15]. Brazitikos PD, Tsacopoulos M, Androudi S. Scleral Buckling For Inferior Retinal Breaks. Retina. 2003;23:309–314.

[16]. Mclaughlin MD, Hwang JC. Trends In Vitreoretinal Fellowship Training. Ophthalmology. 2017;124:143–149.

[17]. Schwartz SG, Flynn HW Jr. Primary Retinal Detachment: Scleral Buckle Or Vitrectomy? Curr Opin Ophthalmol. 2006;17:245–250.

[18]. Adelman RA, Parnes AJ, Michalewska Z, Et Al. Clinical Variables Associated With Failure Of Retinal Detachment Repair. Retina. 2014;34:226–234.

[19]. Kreissig I. Retinal Dialysis: Long-Term Results Of Scleral Buckling. Ophthalmology. 1992;99:1133–1138.

[20]. Mansouri A, Al-Sabti K. Retinal Dialysis: Surgical Outcomes. Retina. 2008;28:1246–1251.

[21]. Ferrone PJ, Trese MT. Pediatric Rhegmatogenous Retinal Detachment. Retina. 1994;14:386–391.

[22]. Weinberg DV, Lyon AT, Greenwald MJ, Et Al. Pediatric Retinal Detachment: Clinical Features And Outcomes. Ophthalmology. 2003;110:1708–1713.

[23]. Gonzales CR, Singh S, Schwartz SD. Pediatric Retinal Detachment Surgery. Retina. 2009;29:1001–1007.

[24]. Wickham L, Bunce C, Wong D, Et Al. Randomized Controlled Trial Of Combined Vitrectomy And Buckle. Ophthalmology. 2014;121:556–561.

[25]. Adelman RA, Parnes AJ, Sipperley JO. Strategy For Retinal Detachment Repair. Retina. 2010;30:103–112.

[26]. Lewis H. Peripheral Retinal Degenerations And Rhegmatogenous Retinal Detachment. Am J Ophthalmol. 2003;136:155–160.

[27]. Arrindell EL, Wu JC. Complications Of Scleral Buckling. Surv Ophthalmol. 1991;36:101–122.

[28]. Smiddy WE, Michels RG. Refractive Changes After Scleral Buckling Surgery. Arch Ophthalmol. 1989;107:1469–1471.

[29]. Kanski JJ. Anterior Segment Ischemia After Scleral Buckling. Br J Ophthalmol. 1975;59:297–300.

[30]. Ryan EH, Ryan SJ. Anterior Segment Ischemia Following Retinal Detachment Surgery. Retina. 1984;4:25–29.

[31]. Jackson TL, Donachie PHJ, Sparrow JM, Et Al. United Kingdom National Ophthalmology Database Study Of Vitreoretinal Surgery. Ophthalmology. 2014;121:643–648.

[32]. Hsu J, Kaiser RS, Sivalingam A, Et Al. Endophthalmitis After Pars Plana Vitrectomy. Ophthalmology. 2014;121:1059–1064.

[33]. Burton TC. Recovery Of Visual Acuity After Retinal Detachment. Trans Am Ophthalmol Soc. 1982;80:475–497.

[34]. Ross WH, Stockl FA. Visual Recovery After Macula-Off Retinal Detachment. Ophthalmology. 2000;107:2143–2149.

[35]. Daly MK, Miller DM. Simulation In Vitreoretinal Surgical Training. Curr Opin Ophthalmol. 2019;30:189–195.

[36]. Arevalo JF, Maia M, Flynn HW Jr, Et Al. Tractional Retinal Detachment Surgery: Evolving Concepts. Retina. 2011;31:217–234.

[37]. Spaide RF, Klancnik JM, Cooney MJ. Ultra-Widefield Imaging Of Retinal Detachment. Ophthalmology. 2013;120:181–187.

[38]. Ting DSW, Pasquale LR, Peng L, Et Al. Artificial Intelligence And Ophthalmology. Ophthalmology. 2019;126:343–363.

[39]. Khan MA, Shahlaee A, Toussaint B, Et Al. Outcomes Of 27-Gauge Vitrectomy. Retina. 2016;36:127–134.

[40]. Eckardt C. Transconjunctival Sutureless 23-Gauge Vitrectomy. Retina. 2005;25:208–211.

[41]. Campo RV. Management Of Pseudophakic Retinal Detachment. Retina. 2004;24:663–669.

[42]. Sharma YR, Karunanithi S, Azad RV, Et Al. Functional And Anatomic Outcome Of Primary Vitrectomy. Indian J Ophthalmol. 2004;52:295–299.

[43]. Gupta D, Azad R. Pseudophakic Retinal Detachment In India. Indian J Ophthalmol. 2008;56:411–416.

[44]. Machemer R, Buettner H, Norton EWD. Vitrectomy: A Pars Plana Approach. Trans Am Acad Ophthalmol Otolaryngol.

1971;75:813–820.

[45]. Wickham L, Connor M, Aylward GW. Vitrectomy For Inferior Breaks Revisited. Eye. 2004;18:104–108.

[46]. Heimann H, Zou X, Jandeck C, Et Al. Primary Vitrectomy For Rhegmatogenous Retinal Detachment. Ophthalmology. 2006;113:435–442.

[47]. De Bustros S, Thompson JT, Michels RG, Et Al. Nuclear Sclerosis After Vitrectomy. Am J Ophthalmol. 1988;105:160–164.

[48]. Thompson JT. The Role Of Vitrectomy In Retinal Detachment. Ophthalmology. 2000;107:198–199.

[49]. Park SJ, Choi NK, Park KH, Et Al. Five-Year Nationwide Incidence Of Retinal Detachment. Ophthalmology. 2013;120:402–409.

[50]. Ahmadieh H, Moradian S, Faghihi H, Et Al. Primary Vitrectomy Vs Scleral Buckling. Retina. 2005;25:871–879.