



Editorial

Scleral schism



1. Practice versus evidence

Editing and managing the scleral lens special edition for this edition of Contact Lens & Anterior Eye may have been one of the most interesting, yet one of the more challenging, tasks we have faced in our careers. The information demonstrates that science and a highly specialised modality such as scleral lenses do not always align. The scleral lens profession, and the scleral lens industry for that matter, is comprised of a group of highly enthusiastic specialists who carefully and systematically conquer terrain in fitting patients who have challenging eyes, partially or completely restoring their vision, and often their functionality, in today's daily society. As mentioned in previous editorials [1–5]: scleral lens fitting does not treat a condition, it treats the entire person - and even entire families.

By now nobody doubts that scleral lenses work; in the 10 years or so since the resurgence of modern scleral lens fitting, many patients who did not have a satisfactory visual correction are visually rehabilitated because of access to this modality. Most scleral lens practitioners share stories from their practices in which patients were highly emotional after being fit with scleral lenses, which provided a significant improvement in quality of life. Scleral lens practice has been called 'the hug clinic' in some settings – which should be taken quite literally. However, all of these subjective 'improvements in quality of life' from our practices are still not the same as 'evidence' in the classical way of thinking, and they say nothing with regard to the significance in scientific and statistical terminology.

2. Science versus specialty

In a specialty lens environment it is not always easy to perform rigorous research in that setting and to be published in peer reviewed journals. One major limitation is the number of patients that can be included in studies. Even if a large practice has hundreds of patients in its database for retrospective analysis – then the variables can be quite outstanding and diverse. Just the indication for wearing scleral lenses varies dramatically (from ocular surface disease, to post-surgical, to primary and secondary ectasia). Even within those groups, massive differences can occur (one eye with keratoconus can be very different from the next, and that is certainly the case for post-surgical patients even when the condition and the surgical technique are the same).

Other major limitations are resources and academic background. Many scleral practitioners are outstanding clinicians, but they do not always work in an academic environment. As far as we are aware, there are at best only a handful of individuals worldwide who have obtained a PhD in the scleral lens arena. Finally, the scleral lens industry is a small specialty lens industry, and (good) research is costly. The funds available to do long-term studies investigating the effects of scleral

lenses are simply limited, and many institutions struggle. In that regard, it is easier and more rewarding to do research in the soft lens arena, where industry provides much more support.

As a result, we, as editors of this special edition, had to reject quite a number of papers that lacked the scientific basis required. This journal has always upheld high standards for novel case reports that can enhance practitioner knowledge and practice patterns. So much of scleral lens literature has been built from case reports, and we have found that many indications as well as fitting and troubleshooting techniques have been well established and previously reported. More work is needed to move beyond cases and to expand into prospective studies that will enhance our understanding of the impact of scleral lenses on ocular physiology. That said, we wish to sincerely thank all authors for submitting their work and hope that the feedback provided can improve their studies in the future. Perhaps some of these papers will appear elsewhere in the literature or at conferences, as many important topics raised deserve attention or at least more in-depth research in the future.

3. Case reports versus the entire scleral lens modality

A number of case reports studying intraocular pressure (IOP) with scleral lenses were presented at the Global Specialty Lens Symposium (GSLS) earlier this year. The discussion around the potential increase in intraocular pressure (IOP) that scleral lenses could induce is interesting, while also being controversial. A significant limitation is that it is obviously difficult to measure IOP with the scleral lens in place. A new method of measuring the IOP through the eyelid (similar to a study presented in a GSLS poster by a different institution) was used in one of the papers in this special edition. This method allows the IOP to be measured with the scleral lens in place. It is very important to note that although the transpalpebral method has been used and validated for IOP measurements, our reviewers emphasised and warned that this has never been done while wearing scleral lenses. This posed a dilemma: do we want to publish a paper with unproven or limited methods? Or, do we want to show practitioners that there is a potential risk, especially in patients that are glaucoma suspects? We opted for the latter, with the disclaimer that we are not sure that there is such an effect - but it could be there, and some caution should be warranted. This is a very important issue that could potentially jeopardise the ocular health of susceptible patients and threaten the scleral lens modality. Therefore, we agreed that this paper be published, and we strongly encourage more research related to this topic. In a review paper 'potential contraindications to scleral lens wear' the topic of potential IOP increase is covered too in this edition.

There was another potentially controversial paper in this special edition. It is a case report series about corneo-scleral lenses for eyes with intracorneal ring implants. The paper showed that in the cases in

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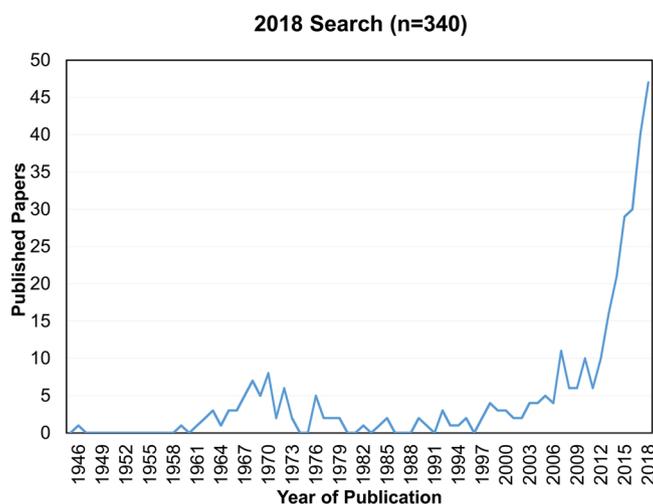


Fig. 1. Publication rate (yearly) in the field of scleral contact lenses as retrieved from the National Library of Medicine search engine (www.pubmed.com) by December 3rd, 2018 using a combination of keywords related to ‘scleral lenses’ and after excluding non-related references (n = 340). Courtesy Rute Juliana Ferreira Macedo de Araújo - University of Minho, Braga (Portugal).

their study (n = 27), patients could wear the lens successfully. The editors have reservations with regard to using corneo-scleral lenses of a smaller diameter in which there is limited clearance between lens and cornea, which can cause corneal contact or bearing, in contrast to scleral lenses that completely vault the cornea and limbus. The problem is that when the lens ‘sinks’ in the conjunctiva, the back surface of the lens could come in contact with the thin cornea overlying the rings. Bearing on this corneal tissue could be disastrous. This calls for caution, especially if the scleral lens practitioner is less experienced with the corneo-scleral modality. At the same time, reviewers approved the paper for its design and outcome. Despite our personal views, the paper was approved for publication, but with our disclaimer to proceed with caution when using corneo-scleral lenses with intrastromal corneal implants.

4. Survey versus study

A number of surveys are included in this special. This is also interesting. On one hand, surveys have the obvious limitation that the investigators are always dependent on who returns the survey. Some bias in that regard is almost unavoidable. Ideally, bias would be prevented in any scientific study. However, with an industry and a modality that is still so much in its infancy and still growing, it is good to get an overview of the field to some degree. These surveys help us understand what fellow practitioners do so that we can learn from these practice patterns, and it is possible that benchmark and maybe ‘best practice’ behaviour can be distilled.

5. Growing pains

It is almost 10 years ago since the initiation of the first edition of a book, the scleral lens guide [6], began which accompanied the resurgence of modern scleral lenses. In it were the contributions of many, and probably the major, experts in the field at the time - including internationally awarded gurus such as Don Ezekiel, Rients Visser, Ken Pullum and Perry Rosenthal. The latter unfortunately passed away recently [7]. Another name that should be mentioned in this regard is the late Rob Breece. He was also an influential pioneer of the revival of scleral lenses, specifically in the USA 10 years ago.

Ten years of modern scleral lenses have shown - to the surprise of even the most passionate and enthusiastic supporters of the modality - the incredible potential of scleral lenses. They have become very popular as well as one of the main lens modalities for irregular and challenging corneas. This is illustrated by a Pubmed search which was a repeat of the search done for our 2013 review paper on modern scleral lenses [8]. The ‘peak’ in publications shown in Fig. 1, in the last five years is quite extraordinary.

At the same time, this modality is still in its infancy, and we are still investigating and experiencing some growing pains. This special in Contact Lens & Anterior Eye presents a number of these growing pains, including issues such as the potential increase in IOP in scleral lens wear, potential limited tear film exchange and oxygen delivery to the cornea and changes to the ocular surface as a result of scleral lens wear - just to mention a few. We tried to the best of our knowledge and ability to accept new papers that can contribute to helping the scleral lens modality become more mature, with the limitations, restraints and restrictions mentioned. We are proud to present this scleral lens special as a ‘state of the nation’ work on where we stand with the modality: for the practice of today, looking toward the scleral lens practice of the future.

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