Contact Lens Update
CLINICAL INSIGHTS BASED IN CURRENT RESEARCH

Medical Use of Contact Lenses

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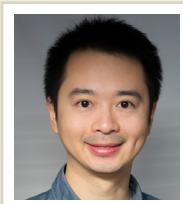

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Jacobs DS, Carrasquillo KG, Cottrell PD, et al. CLEAR – Medical use of contact lenses. Cont Lens Anterior Eye 2021;44:289-329.

Contact lenses have evolved to treat complex ocular conditions in addition to refractive errors. Recent advances in lens materials and designs have extended the medical applications of contact lenses. This summary aims to outline the current evidence for the medical use of contact lenses by all eye care practitioners.[1]

All lens types have been used for medical purposes. Soft contact lenses are effective bandage lenses. Larger diameter soft lenses can be used for bleb leaks or unusual scleral topography. Rigid corneal lenses play a role in visual rehabilitation where they neutralise corneal irregularities and scleral lenses can be used in the management of both ocular surface disease and in visual conditions characterised by irregular astigmatism.

Current evidence supports the use of bandage contact lenses after surgical corneal procedures such as photorefractive keratectomy, phototherapeutic keratectomy, and corneal collagen crosslinking. The use of soft bandage contact lenses has been shown to promote epithelial healing and reduce postoperative pain. Soft bandage contact lenses are also considered standard therapy for persistent epithelial defects, along with lubrication and epithelial debridement. Other uses include protection of the ocular surface from mechanical erosions, and in patients with corneal abrasion and recurrent corneal erosion syndrome to help reduce pain and promote re-epithelialisation. Review of the evidence supports the medical intervention of bandage lenses over lubricants alone, ideally using materials with high oxygen transmissibility.

There is not enough evidence to support whether bandage lenses may be beneficial in the following scenarios: over amniotic membranes, immediately post-LASIK, penetrating keratoplasty post-op, post pterygium removal, and post intracorneal ring implantation. However, it is essential to apply soft bandage lenses after treating corneal perforations or lacerations with tissue adhesive (glue), as the surface of the adhesive is rough and the glue may be dislodged by blinking.

Ocular Surface Diseases that warrant treatment with contact lenses include exposure keratopathy, mucous membrane pemphigoid, neurotrophic keratopathy and corneal dystrophies (Reis-buckler, Meesmann, Epithelial Basement Membrane Dystrophy). There is limited evidence in treating Sjogren syndrome with soft lenses in combination with autologous serum tears. Scleral lenses improved symptoms in patients with Sjogren's but may fail due to increased inflammatory response on the ocular surface. In severe cases of filamentary keratitis, use of contact lenses for pain relief and to promote healing may be considered after other treatments (e.g. mucolytics, topical steroids) have failed.

Irregular astigmatism and high refractive errors arising from keratoconus, pellucid marginal degeneration, trauma, and penetrating keratoplasty can often be managed with rigid corneal or scleral lenses. Hybrid lenses may provide improved comfort when compared to rigid corneal lenses, but their utility is limited in some designs due to low oxygen transmission and breakage at the lens skirt junction. Using a piggyback system offers lens stabilisation and reduction of mechanical trauma from rigid lenses in keratoconic patients, but requires special attention to oxygen transmission due to the increased thickness of a two-lens system.

Tinted contact lenses can be used for glare (aniridia, coloboma etc), amblyopia treatment (occlusive treatment), photophobia (e.g. stemming from albinism) and various prosthetic, cosmetic or therapeutic reasons.

The use of contact lenses for drug delivery is an active area of development and more can be found on this topic in the CLEAR futures report. Glaucoma medication and antibiotics delivered through contact lenses have increased medication retention time on the ocular surface and reduced systemic absorption of the drugs.

A common concern with the use of therapeutic contact lenses is the risk of microbial keratitis (MK) especially where steroid is applied concurrently to manage inflammation or where the ocular surface is already compromised due to the underlying disease. The risk of MK was usually minimal and evidence supports the aforementioned use in many cases, despite the risks of infection. There has been little data on optimal fitting characteristics of contact lenses used in medical applications and more evidence is needed to address questions such as the optimal base curve, size, material, wearing time and follow-up schedule of medically applied contact lenses.

Contact lenses play an important role in the management of disease, particularly those conditions with no good pharmacological or surgical options. To learn more ways of using contact lenses in medical applications, read the full CLEAR report here.

REFERENCES:

1. Jacobs DS, Carrasquillo KG, Cottrell PD, *et al.* CLEAR – Medical use of contact lenses. *Cont Lens Anterior Eye* 2021;44:289-329.