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Survey on Bandage Contact Lens Practice in the United Kingdom

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Abstract

Purpose: To determine the opinion regarding the prescribing practices of bandage contact lenses (BCL) amongst members of the Bowman Club (UK Cornea Society).

Methods: In June 2011, followed by a reminder in July, a questionnaire was sent out to all 128 members of the Bowman Club. The survey included 19 questions regarding indications, preferred type, methods of insertion, concomitant medication, complications related to BCL use among other questions.

Results: The survey was completed anonymously by 52 (40.6%) consultant ophthalmologists either online (88.5%) or by post (11.5%). The most common indication is pain relief by 51 (98%), followed by promotion of epithelial healing by 49 (94.2%) respondents. Silicon hydrogel soft contact lens is the most commonly used BCL by 39 (75%) consultants.

There was a higher incidence of secondary corneal ulcers reported if consultants were using non-sterile (51.9%) versus sterile (15.4%) insertion technique as well as use (26.9%) versus no use of topical prophylactic antibiotic (40.4%).

Conclusions: This is the first survey on practice pattern of BCL use amongst consultant ophthalmologists with expertise in the management of a subspecialty in Ocular Surface Diseases in the UK. It demonstrates that the most common indication for BCL use is pain relief, with silicone hydrogel soft contact lenses being the most frequently used. Secondary corneal ulcers were more frequently seen by consultants that neither use sterile insertion technique nor prophylactic topical antibiotics.

Keywords: Survey; Bandage contact lenses; Practice patterns; Secondary corneal ulcer

Introduction

Although bandage contact lenses (BCL) have been in widespread use in the United Kingdom (UK) [1] for many years, limited data is available on the prescribing practice amongst UK Consultants with subspecialty interest in Ocular Surface Diseases, members of the Bowman Club (UK Cornea Society).

Therapeutic BCL helps to maintain ocular tissue integrity [1] and are used for pain relief [2-7], mechanical protection of the ocular surface [2-4,8,9] and promotion of epithelial healing [10,11]. A barrier effect of therapeutic contact lenses to airborne antigen was identified in ocular allergy [12].

There have been multiple reports about safety and efficacy of BCL for different indications as in recurrent erosion syndrome [13-15], bullous keratopathy [16,17] and immediately after LASEK [18] or phototherapeutic keratectomy [19] in adults and in children [20]. Large-diameter BCL has also been reported as a useful treatment option in the management of refractory vernal ulcers [21]. Gas-permeable scleral contact lenses provide an additional effective management option in severe ocular surface disease (e.g. Stevens-Johnson syndrome) [22]. As the later two uses of BCL are limited to specific indications and high severity of ocular surface disease, they were not assessed in this survey.

Moutray et al. [14] found that BCL were normally well tolerated by patients. Silicone hydrogel materials provide clinicians with a potential alternative to hydrogel BCL [23] as Silicon hydrogel BCL provide additional mechanical protection, safer overnight wear, increased oxygen transmission [24] and relatively low water content [14,25].

Although BCL wear is considered to be safe, complications secondary to BCL use are increasingly noted in patients who are wearing it for longer period [26-31].

The role of prophylactic topical antibiotics to prevent complications is unclear [32]. Ozkan et al. [33] recently showed that topical antibiotics were well tolerated, but there was no significant difference in the numbers and types of microbes recovered from lens sample either treated prophylactically with tobramycin 0.3% or placebo eye drops.

No reports on best insertion technique or concomitant use of pharmaceuticals can be found.

A survey in North America [23] revealed that BCL were most commonly used for corneal wound healing and managing post-operative complications, however this report had a very poor response rate of 3.4%, limiting the reliability of their results. Therefore, the aim of the study was to determine the opinion regarding the prescribing practices of BCL in the UK amongst members of the Bowman Club.

Methods

In June 2011, followed by a reminder in July 2011, a questionnaire (Supplementary file) was sent by email to all 128 members of the Bowman Club. In order to become part of the Bowman Club, members need to hold a consultancy position in the UK and have a subspecialty interest in Ocular Surface Diseases. Name and email addresses of all members are stored by the Bowman Club administration.

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The invitation email to all members included a link to participate in the survey online as well as an attached PDF copy of the questionnaire that could be printed, completed and returned by mail. The survey included 19 questions regarding indications, preferred type, methods of insertion, concomitant medication, complications related to BCL use among other questions. The survey was then returned anonymously by post or online to the study group. Participants in the survey did not receive monetary reimbursement for their participation.

Statistical analysis was performed in order to determine the significance of the association between complications and methods of insertion, using Fisher's exact test.

Results

The survey was completed anonymously by 52 (40.6%) consultant ophthalmologists either online (88.5%) or by post (11.5%). The majority of consultant ophthalmologist with a subspecialty interest in ocular surface diseases had been working for more than 10 years (n=31, 59.6%), whereas 14 (26.9%) were practicing for 5-10 years and 7 (13.5%) for less than 5 years as consultant.

Indication

The most common indication was pain relief (e.g. bullous keratopathy or recurrent erosion syndrome) by 51 (98%), followed by promotion of epithelial healing (e.g. persistent epithelial defects, recurrent erosion syndrome), by 49 (94.2%) respondents. Furthermore, 43 (82.7%) of members use BCL for postoperative protection (e.g. following conjunctival/corneal surgery); 40 (76.9%) for apposition of wound edges (e.g. corneal perforation, after suture removal); 38 (73.1%) for mechanical protection of ocular surface (e.g. trichiasis, entropion) and 24 (46.2%) for maintenance of ocular hydration (e.g. dry eye, corneal exposure) (Table 1).

Type of BCL

Silicon hydrogel soft contact lens is the most commonly used BCL by 39 (75%) consultants among them, PureVision® being the most frequently used by 19 consultants (37.3%) followed by ACUVUE® by 6 (11.8%) and NIGHT&DAY® by 5 (9.8%) consultants. High-water content hydrogel soft contact lens is used by 29 (55.8%) consultants, among them Proclear being the most frequently used by 3 consultants (5.8%) followed by Precision UV by 2 (3.8%) and Permalens by 1 (1.9%) consultant. Nine (17.3%) consultants reported no preference for a particular BCL. No trend was detected for the use of a specific BCL type for a specific indication.

Handling of BCL

39 (75%) consultants insert the BCL manually (e.g. fingertips) and 19 (25%) use sterile forceps technique (or equivalent). BCL replacement protocol is at monthly (48.1%) or six-weekly (19.2%) time interval, but varies according to 25 (48.1%) respondents on the underlying diagnosis (range: fortnightly to quarterly). Replacement takes place in the consultant Ocular Surface Disease clinic (70.6%) and/or optometry department (45.1%), rarely in the community (3.9%). Insertion by optometry department protocol is manually (71.2%) and with sterile forceps or equivalent, e.g. using the nozzle of Minims by suction (13.5%) and the usual patient review by medical staff in this setting is performed three-monthly (37.5%), more than four-monthly (18.8%) or varies (31.3%). Punctum plugs are not routinely inserted (98.0%) in combination with BCL.

Indication	Consultant n(%)
Pain relief (e.g.bullous keratopathy, recurrent erosion syndrome)	51 (98%)
Promotion of epithelial healing (e.g. persistent epithelial defects, recurrent erosion syndrome)	49 (94.2%)
Postoperative protection (e.g. following conunctival/corneal surgery)	43 (82.7%)
Apposition of wound edges (e.g. corneal perforation, after suture removal)	40 (76.9%)
Mechanical protection of ocular surface (e.g. trichiasis, entropion)	38 (73.1%)
Maintenance of ocular hydration (e.g. dry eye, corneal exposure)	24 (46.2%)

Table 1: Indications for Bandage contact lens use.

BCL policy in paediatric patients

22 consultants (42.3%) change their BCL in paediatric patients compared to 18 (34.6%) consultants, who follow the same policy as in adults. Twelve (23.1%) consultants do not treat paediatric patients in their clinic. The BCL policy changes as followed: 17 (32.7%) consultants never prescribe BCL in children, 3 (5.8%) perform BCL replacement more often, 1 (1.9%) replaces BCL only in consultant's clinic and not by the optometry department and 1 (1.9%) uses BCL only for specific indications, e.g., corneal protection.

Concomitant use of pharmaceuticals

All consultants are happy to use concomitant topical treatment for the underlying condition; including antibiotics by 52 (100%), artificial tears by 47 (90.4%), steroids by 45 (86.5%), anti-glaucoma by 32 (61.5%), cycloplegics by 30 (57.7%), non-steroidal anti-inflammatory by 12 (23.1%) and anti-virals by 8 (15.4%). Twenty two consultants responded (42.3%) usually prescribe prophylactic topical antibiotics such as G. Chloramphenicol (95.5%). However, 18 (34.6%) only use preservative-free medication, 25 (48.1%) use preservative-free medication if available and 9 (17.3%) do not use preservative-free eye drops.

Complications

Infected corneal ulcer secondary to BCL use is reported by 67.3% consultants: 1-3 ulcers/year by 48.1%, 4-6 by 15.4%, and >10 by 3.8% in the last 12 months. Majority of corneal ulcers are of bacterial (97.6%) aetiology, one consultant (2.4%) reported a fungal corneal ulcer secondary to BCL use. There was a higher incidence of secondary corneal ulcers reported if consultants were using non-sterile (51.9%) versus sterile (15.4%) insertion technique, although it was not significant(p=0.743) as well as non use of topical prophylactic antibiotic (40.4%) versus the use (26.9%) of topical prophylactic antibiotic (p=0.776).

Discussion

This is the first survey on practice pattern of BCL use amongst consultant ophthalmologists in the UK with a subspecialty interest in ocular surface diseases. It demonstrates that the most common indication for BCL use is pain relief, with silicone hydrogel soft contact lenses being the most frequently used. A high incidence of secondary corneal ulcers per year is reported, and it is important to noticed that topical prophylactic antibiotic management is only used by 42.3% consultants and 75% report non-sterile BCL insertion technique. Secondary corneal ulcers were more frequently seen with non-sterile than sterile insertion technique, use of prophylactic topical antibiotics resulted in less secondary corneal ulcers.

Amongst many possible indications for BCL, in this survey the most commonly reported indications are pain relief, promotion of epithelial healing and postoperative protection. Similar results were reported by Karlsgard [23] and Montero [34]. In contrast, silicone hydrogel BCL PureVision® is most popular amongst consultants in the UK, followed by ACUVUE® and NIGHT&DAY®, which are most frequently used in the US and Canada [23].

Unfortunately, no reports on insertion technique or concomitant use of pharmaceuticals can be found in the literature, therefore, this is the first study reporting two possible risk factors of BCL usage in the UK, i.e., non-sterile insertion technique and no use of prophylactic topical antibiotics that can lead to a higher incidence of secondary corneal ulcers.

Using sterile insertion technique is expected to reduce the risk of contamination, especially as BCL are indicated in patients with compromised ocular surface that are more prone for infection. Although, the role of prophylactic topical antibiotics is unclear, Ozkan [33] reported that instillation of tobramycin 0.3% twice daily did not reduce contamination rate of worn lenses and did not result in significant changes in numbers and profiles of microorganisms colonized on the lens surface over a 3-month study period when compared to a placebo group. The study also showed a rate of 69% of sterile lenses in continuous lens wear. In comparison, Keay [35] reported only 28% sterile lenses when no eye drops were used, this results suggested that prophylactic antibiotics might reduce the risk of BCL contamination. Kalayci [36] demonstrated that ciprofloxacin-pre-soaked contact lenses retained significant antimicrobial activity up to 12 hours and Fraunfelder [13] regards the use of ofloxacin twice daily as a prophylactic dose when compared to four times daily. Therefore, based on our results further investigation regarding the role of prophylactic topical antibiotics is needed.

A strength of this survey is the good response rate of 40.6% amongst members of the Bowman Club, who are consultant ophthalmologist with a subspecialty interest in ocular surface diseases. Furthermore, most of respondents have considerable expertise working in the field for more than 10 years, therefore a good representation of the ophthalmological community at large.

It is inherit to this survey, that the results of complications secondary to BCL use should be regarded as a trend, however, our results may suggest a review of BCL practice by all ophthalmologists using BCL as part of their routine care to include sterile lens insertion using forceps and the use of prophylactic topical antibiotic concomitantly with BCL wear.

General recommendations drawn from this survey may include the use of BCL for indications like pain relief, promotion of epithelial healing and postoperative protection. In order to reduce the risk of secondary corneal ulcer, regular, monthly replacement of BCL, the use of sterile insertion technique and prophylactic topical antibiotics should be considered.

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