Factors influencing patient choice of refractive surgery or contact lenses and choice of centre

An investigation of demographics and motivation among patients presenting for refractive surgery and contact lenses, by Navneet Gupta and Dr Shehzad Naroo

REFRACTIVE SURGERY has shown an active growth over the last few years. It has become increasingly useful to practitioners involved in this work, and indeed routine optometric practice, to be aware of patient motivations for refractive surgery and/or contact lenses.1

Controversially, studies have suggested that there may be a relationship between myopia and psychological traits such as distress, low self-esteem and high intelligence.2,3 These factors may be involved in patients’ decisions in selecting refractive surgery and/or contact lenses, which give a spectacle-free corrective option, and may therefore be driving the increasing popularity of these methods of correcting ametropia. Furthermore, the access to refractive surgery has become more widespread and patients are now presented with a number of options to decide on a provider.4 This study aims to examine patient demographics and motivations for refractive surgery or contact lenses and their reasons for the choice of a particular centre.

PATIENTS AND METHODS

Patient motivations were investigated in the form of a questionnaire (Table 1). This was not a validated questionnaire but was based upon a questionnaire used in earlier work by the author, and results were compared, where appropriate to this paper.5 The questionnaire covered patient demographics, previous contact lens history, reasons for opting for and against refractive surgery or contact lenses, and reasons for selecting a particular centre. The latter question investigated motivations between each refractive surgery centre used, and between each contact lens centre used.

All centres pre-approved the questionnaire and informed consent was obtained from them and from each patient. Patients were asked to provide all motivational factors and not just their single primary factor. The results were then calculated as percentages representing the proportion of the total number of patients citing each reason, for each group.

In total, 212 consecutive refractive surgery patients and 115 consecutive contact lens patients were recruited. Consecutive patients ensured a 100 per cent completion rate and the authors collected all data to avoid any recruitment bias from clinic staff. No patient refused to participate. Magnitude and type of refractive error were not used as exclusion criteria. Data were collected from all centres over the same three-month period.

The refractive surgery group comprised patients from four different centres. Clinic A is a new high-street refractive surgery practice and relies heavily on direct private referrals of patients from co-management optometrists. Clinic B is a long-established laser refractive surgery practice with many branches across the UK. Clinic C is a high-street practice and is part of an optical chain, forming part of a nationwide healthcare retailer. Clinic D is the private refractive surgery clinic of an NHS consultant ophthalmologist.

The contact lens group consisted of patients from three different centres.
Clinic X is an independent practitioner, based in a city centre location, specialising in contact lens work. Clinic Y is a high-street practice also involved in refractive surgery, forming part of a nationwide healthcare retailer. Clinic Z is a high-street practice with many branches and a reputation for providing value for money spectacles and contact lenses.

RESULTS

The refractive surgery group comprised 81 males and 131 females and the contact lens group comprised 37 males and 78 females. This difference was not statistically significant (Chi-Test $\chi^2$, $p=0.28$). However, an increased number of females presented at Clinic D compared to the other refractive surgery centres, which was statistically significant (Chi-Test $\chi^2$, $p=0.05$).

The refractive surgery patients (mean age $39.23 \pm 10.56$ years) were statistically significantly older than their contact lens counterparts (mean age $32.01 \pm 12.43$ years) (ANOVA, $p<0.0001$). However, if all patients under 21 are excluded (due to the minimum age recommendation for refractive surgery patients by the Royal College of Ophthalmologists), the mean age of contact lens patients increases to $36.54 \pm 10.89$ years which remains statistically significant, but less so (ANOVA, $p=0.048$).

Among the refractive surgery patients, 71 per cent had previously worn contact lenses while 29 per cent had not; of those that had worn contact lenses previously, 77 per cent had worn soft lenses, 17 per cent had worn RGP lenses and 6 per cent had worn hard (PMMA) lenses.

In the contact lens group, 82 per cent of patients had previously worn or were currently wearing contact lenses; 83 per cent were soft lens wearers, 9 per cent were RGP lens wearers and 8 per cent were hard lens (PMMA) wearers.

The differences in occupational group are shown in Figure 1. Clerical patients (28 per cent) and professional patients (24 per cent) represented the largest proportions of the refractive surgery group while there were few students (1 per cent) and retired (2 per cent) patients. Professional patients (22 per cent) and students (22 per cent) represented the largest proportions of the contact lens group while there were few unskilled (3 per cent) and retired (3 per cent) patients. The overall difference in occupational group was found to be statistically significant (Chi-Test $\chi^2$, $p<0.0001$). In fact, professional and retired patients represented the only similar proportions between refractive surgery and contact lens patients.

The reasons given by all patients for choosing refractive surgery or contact lenses is shown in Figure 2. Cosmetic reasons were higher in the contact lens group while there were few students (1 per cent) and retired (3 per cent) patients. Professional patients (22 per cent) and students (22 per cent) represented the only similar proportions between refractive surgery and contact lens patients.

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the contact lens group (52 per cent).

Advertising had very little influence for both refractive surgery and contact lens patients (9 per cent and 3 per cent respectively) while professional advice, including prescription-related reasons, were more popular in the refractive surgery group (30 per cent) compared to the contact lens group (3 per cent).

The reasons for not opting for contact lenses given by the refractive surgery patients are shown in Figure 3. Inconvenience of contact lenses or spectacles (79 per cent) was by far the most popular response, while over-wear of lenses (22 per cent) and dry eyes (20 per cent) were fairly common complaints. Advice from friends against contact lenses (5 per cent) had the least influence.

Figures 4a and 4b compare the responses of previous contact lens wearers to non-contact lens wearers within the refractive surgery group. Reasons for not opting for contact lenses are very similar between previous contact lens wearers and non-wearers. The major differences occurred in contact-lens related problems such as dry eyes (23 per cent in previous wearers compared to 15 per cent in non-wearers) and over-wear of lenses (29 per cent in previous wearers compared to 3 per cent in non-wearers). Also, more non-contact lens wearers had been advised against selecting contact lenses by friends (11 per cent) compared to previous wearers (2 per cent) and prescription-related reasons were more popular with non-wearers (15 per cent) compared to previous wearers (7 per cent).

Primary motivations in selecting refractive surgery were also similar between non-contact lens wearers compared to
non-wearers. Differences occurred with sports-related reasons, which were more popular in previous wearers (38 per cent) compared to non-wearers (20 per cent); in cosmetic reasons, which were also more popular with previous contact lens wearers (68 per cent) compared to non-wearers (56 per cent) and in professional advice, which was more popular in non-wearers (18 per cent) compared to previous wearers (12 per cent).

The reasons for not opting for refractive surgery given by patients presenting for contact lenses are shown in Figure 5. Lack of information (42 per cent) was the commonest reason, while the cost of surgery (36 per cent) was also a contributing factor. Not many patients were influenced by bad publicity (3 per cent) or negative advice by either friends or professional persons (3 per cent).

Patient motivations for their selection of a particular centre are shown for the refractive surgery and contact lens groups in Figures 6a and 6b. Patients at refractive surgery Clinic A cited advertising (63 per cent) as the most influential factor but few were influenced by the variety of options (1 per cent) and previous good experiences (1 per cent). The reputation of Clinic B (65 per cent) was the most popular motivation cited by its patients. No patients had presented for the variety of options or because of bad experiences elsewhere.

Patients cited the reputation of Clinic C (80 per cent) as the most influential factor for presenting there but none had presented because of the cost or as a result of bad experiences elsewhere. Most patients had presented at Clinic D based on professional advice (91 per cent) while the cost of surgery was not considered as a motivation by any of the patients there.

The most popular reason given by patients presenting at Clinics X and Y was the reputation (66 per cent and 67 per cent respectively). No patients cited bad experiences elsewhere as reasons for selecting either Clinic X or Y, while no patients presented at Clinic Y based on professional advice. The most popular factor cited by
patients at Clinic Z was the location (34 per cent), though reputation was nearly as popular (32 per cent). The least motivating factors for patients at Clinic Z were bad experiences elsewhere (4 per cent) and the variety of options (4 per cent).

The magnitude of refractive error is compared for the refractive surgery and contact lens groups for both spherical and cylindrical elements in Figures 7a and 7b. All of the data include the refractive error of both eyes. Magnitude of error was used since positive and negative signs that indicate hypermetropia and myopia respectively would have resulted in erroneous mean and standard deviation calculations. There was no statistically significant difference in the spherical refractive error between the refractive surgery group and the contact lens group (ANOVA, p=0.49). However, there was a statistically significant difference in the cylinder refractive error between the two groups (ANOVA, p=0.0005). The mean spherical error (MSE) for the refractive surgery group was 3.71 ± 2.36 DS and for the contact lens group was 3.77 ± 2.18 DC. This difference was not found to be statistically significant (ANOVA, p=0.74).

DISCUSSION

It has been argued that postoperative patients may be influenced in their responses based on their very recent past experience, particularly a negative influence if their experience was poor.6 Indeed half of patients in one study declined surgery on the second eye for this reason.7 For this reason, patients presenting for their preoperative consultation or first postoperative assessment in the refractive surgery group were included in the study. The first postoperative assessment is carried out within the first few days after the day of surgery. The little time and recovery that passed would therefore have had negligible effect.

In the refractive surgery group no patient presented with any complications at this first postoperative visit. In the contact lens group, most of the patients were existing wearers and were presenting for either refits or aftercare appointments. New contact lens patients were not excluded as they help our understanding of primary motivations for selecting contact lenses.

The refractive surgery patients were found to be significantly older than the contact lens patients. This may partly be explained by the minimum age recommendation for refractive surgery as if the contact lens group was to be age matched (ie, all under 21 patients excluded from the contact lens group) then the difference in mean age between the two sets of patients is only just significant.

Of interest is that the mean age of both groups of patients was found to be higher than previous findings by the author, where mean age for the refractive surgery patients was 36.5 ± 9.5 years and for contact lens patients was 26.3 ± 8.4 years.8 The larger shift in age was among the contact lens group with only a slight increase in age for refractive surgery patients.

This may be a result of an increasing availability of improving presbyopic contact lens options. Although in refractive surgery attempts have been made to provide techniques that cater for the presbyopic patient, such as monovision, accommodating intraocular lenses, multifocal intraocular lenses and reading implants, these techniques are in their infancy. A very early study found the mean age for refractive surgery patients to be even lower at 29.1 years (no standard deviation quoted in the paper) but this study only addressed refractive surgery patients who presented after contact lens complications.8

The difference in occupational groups between the refractive surgery and contact lens patients may also be explained by these age findings. The refractive surgery group was represented primarily by clerical and professional patients, whereas the contact lens group was represented primarily by students and professionals, but also included a greater number of unemployed patients. The contact lens group therefore seems to comprise patients who may not necessarily afford the initial outlay of refractive surgery costs, but can better manage the smaller, more regular payments for contact lenses.

In this study, more females presented for contact lenses than males but in the refractive surgery group, as shown by another recent study,9 there now appears to be a similar trend with the refractive surgery patients also. Of importance is that there now appears to be no significant difference between the two groups, unlike in earlier studies.8,10 In the previous study by the author there were an equal number of males and females presenting for refractive surgery.5 This indicates a trend towards similarity of male to female ratios for both refractive surgery and contact lenses, which can be explained upon analysis of motivations for refractive surgery.

In studies that had more or less equal male to female ratios,10,11 cosmetic reasons were not very popular. This is unlike the findings of this study, where large proportions of patients in both the refractive surgery and contact lens groups cited cosmetic reasons as one of their motivational factors. Although cosmetic reasons were more popular in the contact lens group than the refractive surgery group, this difference can be explained by the availability of coloured lenses. If, however, the general cosmetic effect of refractive surgery and contact lenses is considered, the former can be seen as a more permanent approach than the latter to achieve the same end cosmetic effect. It would therefore appear that those patients initially selecting contact lenses are now opting for refractive surgery.

This possibility is further substantiated when other popular motivations for selecting refractive surgery or contact lenses are considered. The inconvenience of contact lenses was overwhelmingly the most popular motivation for not opting for contact lens wear in the refractive surgery group, supporting previous findings.12

This indicates that despite the availability of daily disposable lenses and continuous wear lenses, together with simpler cleaning systems for monthly disposable lenses, such as all-in-one and one-step peroxide systems, many find these still to be inconvenient. This may relate to issues regarding visibility of coloured lenses, which would inevitably be more popular with contact lens wearers as they are more likely to experience these contact lens-related problems, and with advice from friends, which may reflect the influence of their own contact lens experiences on others’ decisions. More non-contact lens wearers may have cited prescription-related reasons than previous wearers if they are unaware of the range and type of correction offered by contact lenses.

The more noticeable difference in primary motivations for selecting refractive surgery between non-contact lens wearers and previous contact lens wearers was in citing sports-related reasons, which were more popular with the latter. This can relate to previous experiences in wearing contact lenses for certain sports which may lead to a realisation of their unsuitability. This is unlike non-contact lens wearers who would not be aware of any restrictions, especially if they have not discussed these issues with a contact lens practitioner. The difference in professional advice, which was more popular with non-contact lens wearers, may reflect the influence of referrals and co-management systems towards refractive surgery.

The above findings indicate that motivations for selecting refractive surgery and for not opting for contact lenses appear to be independent of whether patients may have worn contact lenses previously.
or not. Furthermore, those patients that have worn contact lenses before may have issues relating to contact lens wear not meeting expectations, thus driving them to refractive surgery, an issue that could be improved. Among the contact lens group, motivations against refractive surgery seem to surround a lack of knowledge about procedures as well as apprehension, both of which were popular motivations against refractive surgery. Many are also discouraged by the long-term effects of early refractive surgery procedures such as haze, dry eyes, glare and haloes.13,14 The cost of surgery was also enough to discourage some patients, which again may be related to the impact of a one-off significant payment, compared to the smaller and more regular payments involved with contact lenses. The inconvenience of spectacles, cited by some patients, can partly be explained by the need for suitable and safer correction for sports and work, both of which were popular motivations in this group.

MOTIVATION AND REPUTATION

Patient motivations for selecting a refractive surgery centre were quite varied between the centres. The most popular motivation at Clinic A was advertising. This reflects the role of the media in promoting refractive surgery, but may also be solely down to a better marketing strategy or possible promotional offers. Reputation of centre was a very popular motivation at all of the centres, but was more influential at Clinics B and C. This may primarily be due to the long-established history of the two centres in refractive surgery and healthcare respectively. The location of both centres was also a popular motivation, reflecting the importance of city centre positioning and consequently access to large populations. These views will undoubtedly depend on distances travelled by patients as those travelling shorter distances will inevitably find the centre to be in a good location.

Patients had presented at Clinic D primarily due to professional advice and, unlike the other centres, some as a result of bad experiences elsewhere. These findings reflect the nature of the work carried out by the consultant ophthalmologist, who is likely to receive referrals from practitioners for procedures such as clear lens extraction (CLE) and lamellar grafts, which may not be available at high-street centres, as well as referrals of unsuccessful refractive surgery procedures. This can be contrasted to professional advice cited by patients at Clinic A, where a co-management scheme is in place with local optometrists.

In the contact lens group, the reputation of a centre was also the most popular motivation at Clinics X and Y. Patients at these two centres were also influenced by their locations; given a city centre positioning it would enhance accessibility for patients as with Clinics B and C in the refractive surgery group. Patients at Clinic Y also cited costs and previous good experiences as motivational factors. This reflects the reputation this centre has for its healthcare at reasonable expense.

Although the reputation of Clinic Z was also a motivational factor for presenting there, its location was the most popular factor. This can be explained by its location in a town centre with access to bus and tram networks very near. Other factors that were also popular included previous good experiences, which would no doubt be dependent on the quality of aftercare provided, and advertising, which reflects the reputation Clinic Z has for providing value for money.

There was no statistically significant difference in the magnitude of spherical refractive error data or the MSE data between the refractive surgery group and the contact lens group. Unlike the previous study by the author, where the MSE was approximately 1D less in the contact lens group compared to the refractive surgery group,5 this suggests that patients presenting for refractive surgery or contact lenses have similar refractive errors, further supporting the increasing similarity between patients opting for refractive surgery or contact lenses. The only significant difference between the groups was in magnitude of cylinder refractive error which may reflect the advancement of refractive surgery procedures allowing for an increased range of reliable correction.

CONCLUSION

It would appear that demographics of refractive surgery and contact lens patients are becoming increasingly similar, the only difference being in occupational groups, which may simply be due to matters of financial constraints and effective management of expenses based on income. There appears to be an increasing influence of cosmetic reasons and inconvenience of contact lenses and spectacles behind the choice of refractive surgery, regardless, it would appear, of previous contact lens experience. It seems that refractive surgery is becoming more of a lifestyle choice that may be based on perceptions and psychological aspects that need to be investigated.

Although other motivations for refractive surgery do exist, including sports and work-related reasons, few patients suffer from contact lens-related problems, such as dry eyes and over-wear syndrome. For some patients the inconvenience alone of using an ocular appliance may always be sufficient reason for refractive surgery despite an increasing range of contact lens types, modalities, materials and parameters, together with simpler cleaning systems. Motivational factors behind the choice of a providing centre are based largely on reputation and/or the convenience of location.

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References


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