

# Measuring patient-reported outcomes after refractive surgery to assess patient satisfaction

BY JESPER HJORTDAL

Patient-reported outcomes enable surgeons to evaluate patients' symptoms and satisfaction after laser vision correction.

The great majority of patients are pleased with their outcomes from laser vision correction, whether it is with photorefractive keratectomy, laser in-situ keratomileusis (LASIK), or small incision lenticule extraction (SMILE) [1,2]. However, even if the procedure was performed flawlessly and clinical results are excellent, a segment of patients may not be satisfied with their outcomes.

In many cases, we are not sure why this occurs, but visual fluctuations, subjective symptoms, and other factors may be to blame that cannot be measured with currently available standard instruments.

As we strive to obtain excellent visual outcomes, it is critically important to achieve patient satisfaction. Our patients have high expectations of laser vision correction and anticipate that they will be pleased with their results. Moreover, patient satisfaction is important to the future of our practices because many patients are referred by friends and family who have had refractive procedures.

In the effort to increase patient satisfaction, patient-reported outcome measures are an important tool. They reveal important information about patients' results and their visual experience after surgery, which they may not share fully with their surgeons [1]. Furthermore, they also indicate areas for improvement so refractive surgeons can reach new levels of patient satisfaction.

## Assessing patient satisfaction – PROWL 1 and 2

The Patient-Reported Outcomes With Laser In Situ Keratomileusis (PROWL) studies used a detailed questionnaire to assess symptoms and patient satisfaction after LASIK.

These prospective, observational studies were performed in two groups. PROWL-1 studied responses from 262 active duty

Navy personnel serving at a military centre who had LASIK, and PROWL-2 obtained responses from 312 civilians at five centres [1]. Participants completed online questionnaires regarding dry eye symptoms, visual symptoms, and satisfaction with their vision before and after surgery (PROWL-1: one, three, and six months after surgery; PROWL-2: one and three months after surgery). The PROWL-1 online questionnaire completed before surgery included 161 questions and PROWL-2 had 154 questions, whereas the PROWL-1 questionnaire offered before surgery had 129 items and PROWL-2 had 112 questions [3].

In most patients, dry eye and visual symptoms decreased after surgery (PROWL-1, normal Ocular Surface Disease Index [OSDI] before surgery 55% vs. 73% six months after surgery; PROWL-2 normal OSDI 44% vs. 65% three months after surgery) [1].

However, in PROWL-1, among patients who had no visual symptoms before surgery, 43% had new symptoms three months after surgery, and 46% of those with no symptoms before surgery had symptoms three months postoperatively. In the group with visual symptoms before surgery, three months after surgery 46% of those in PROWL-1 and 34% of patients in PROWL-2 had no visual symptoms [1].

There was some correlation between OSDI and visual symptom scores.

During the study, patients more often stated their ocular and visual symptoms on the questionnaires than to their clinicians.

The authors concluded that outcomes continued to improve from one to three months and even up to six months, which confirms that we should at least wait three months before assessing patient satisfaction.

The study recommended educating patients before surgery about potential new symptoms postoperatively and

demonstrated the value of asking patients to complete a questionnaire after surgery to evaluate their experiences after the procedure.

## Streamlined assessment

Since 2011, we have systematically administered a very simple, four-question questionnaire after SMILE, asking our patients to rate their overall satisfaction with the procedure and services, dry eye discomfort, night vision disturbances, and their need for supplementary spectacle correction (Figure 1).

Figure 2 shows our patient-reported outcome measures in 1680 SMILE patients who completed the questionnaire.

Analysing patient satisfaction enables surgeons to identify trends and patient responses to care. For example, if we modify treatment or begin prescribing a new

### Aarhus Questionnaire

#### Overall Satisfaction

- Very satisfied
- Somewhat satisfied
- Not satisfied

#### Dry eye discomfort

- None
- Mild
- Somewhat
- Severe

#### Night vision disturbances

- None
- Mild
- Somewhat
- Severe

Figure 1: Aarhus questionnaire.

## Patient-Reported Outcomes 3 Months After SMILE

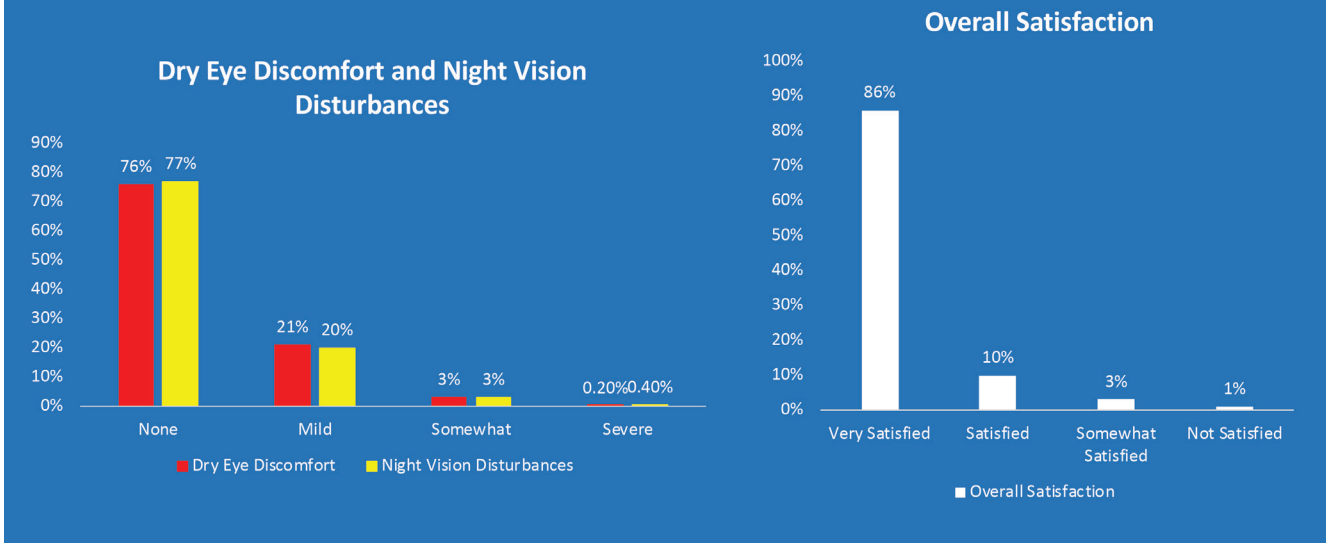


Figure 2: Patient-reported outcomes three months after SMILE in Aarhus practice.

postoperative medication, patient-reported outcomes will demonstrate how these changes impact patient satisfaction.

In addition, we can share our precise surgical outcome data with refractive surgery candidates, so they understand what they can expect on average in our practice rather than relying only on published results of procedures performed in different settings.

We determined that a number of factors appear to affect patient satisfaction after laser vision correction.

Three months after SMILE, there was no predictive significant effect of gender, type of preoperative correction, preoperative spherical or astigmatic refraction, or expected postoperative refraction on low overall satisfaction. However, patients older than 50-years-old were significantly less satisfied with their outcomes. Although we explain to patients before surgery that presbyopia is a natural condition that affects everyone as they age, patients who are older than 45 still may not recognise that they will need reading glasses for good near visual acuity.

Patients were also less satisfied if they had poor uncorrected visual acuity or night vision disturbances three months after surgery. There was no significant predictive effect of lower best-corrected visual acuity, difference between the achieved and expected refractive error, and dry eye discomfort.

Overall, our patient-reported outcome measures showed very high patient satisfaction with SMILE surgery (greater than 95%) and few severe night vision disturbances and dry eye complaints (less than 1%).

### Increasing patient satisfaction

To improve patient satisfaction after laser vision correction, it is important to manage patients' expectations and educate them about the procedure.

This process begins before the preoperative examination, when we assess patients' expectations of surgery. Questionnaires are a valuable tool in this process. If their expectations exceed the limits of what we can provide and they have unrealistic expectations even after we have discussed the pros and cons of the surgery, we should not operate.

We also should set their expectations. When treating very high myopia, patients should know that they can expect to perform most daily tasks without vision correction after surgery, but we must let them know that we cannot guarantee perfect, sharp distance vision for all eyes because of biologic variation. They may need correction when driving at night.

It is also important to discuss presbyopia with pre-presbyopic and presbyopic patients so they understand how it affects their postoperative vision. Patients should know that if they have presbyopia, they will require reading glasses unless they choose monovision laser vision correction.

We also need to explain that they may

experience dry eye symptoms and night vision disturbances for a while, but these complaints usually disappear with time. They will be less satisfied if they are surprised by their symptoms.

Dry eye symptoms may last for a few weeks or months after the procedure, which may require topical eye drops. In our practice, we have performed 5000 to 6000 SMILE procedures, and patients have not had objective signs of severe dry eye three months after surgery. To help prevent postoperative dry eye, we treat preoperative ocular surface disease, typically prescribing topical drops for a period before we examine the patient again. Research also has shown that patients are less likely to experience dry eye after SMILE vs. LASIK [4].

It is good standard of care to incorporate patient-reported outcomes into a refractive surgery practice, and it is easy to integrate into the refractive surgery process. Patients can complete an internet-based questionnaire before they arrive for an examination or provide responses on an electronic tablet in the waiting room before their appointment. To reduce bias, patients should complete the questionnaire before seeing their health care professional. I recommend using a brief survey, so patients

**“It is good standard of care to incorporate patient-reported outcomes into a refractive surgery practice, and it is easy to integrate into the refractive surgery process”**

are not inconvenienced by a long list of questions, which may impact follow-up.

In addition, in our practice patients see the same optometrists for their preoperative evaluation and postoperative assessments.

### Conclusion

Despite excellent clinical outcomes, a number of refractive surgery patients may not be satisfied with their postoperative results. Patient-reported outcomes provide valuable information about patient satisfaction after refractive surgery. It is good standard of care to integrate this practice when providing refractive surgery services.

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**Declaration of competing interests:** None declared.

### TAKE HOME MESSAGE

- Obtaining patient-reported outcome measures is invaluable in assessing patient satisfaction and postoperative symptoms, as shown in the PROWL-1 and -2 studies and in patient-reported outcomes in our practice.
- When providing laser vision correction, the surgeon's goal should be to underpromise results to patients to avoid unrealistic expectations and overperform in delivering the best possible outcomes.
- To improve patient satisfaction, it is important to evaluate and set patients' expectations before surgery. We also need to educate them before surgery about the impact presbyopia may have on their postoperative visual outcomes, as well as the possibility of postoperative visual disturbances or symptoms.
- In our experience, it is easy to integrate an internet-based questionnaire into daily practice if it is brief and offered before patients arrive for office visits or in the waiting room before the patient is examined.