

Original article

Indian survey on practice patterns of lacrimal & eyelid disorders (iSUPPLE) Report 3 – Cataract and nasolacrimal duct obstruction

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Abstract

Aim: To assess the practice patterns pertaining to pre-cataract screening for nasolacrimal duct obstruction (NLDO) among oculoplastic surgeons in India. The survey was aimed at obtaining data on the current screening and treatment strategies for NLDO and the interval between lacrimal surgery and subsequent cataract surgery.

Methods: An online survey was sent to all members of Oculoplastic Association of India. All valid responses were tabulated and analyzed.

Results: Majority of the respondents (92%) felt that nasolacrimal duct patency should be checked prior to performing cataract surgery: 59.6% felt that checking for regurgitation on pressure over the lacrimal sac (ROPLAS) was sufficient and 32.6% preferred to perform lacrimal irrigation to check for NLD patency. Dacryocystorhinostomy (DCR) was the preferred surgery for NLDO thus detected. The preferred interval between a DCR and subsequent cataract surgery was 4 weeks (48.9%). A small minority (7.9%) of the respondents felt that pre-cataract screening for NLDO was not required. Also, a small but significant number (12.6%) felt that no treatment was required for NLDO in such patients and that to could go ahead with cataract surgery even in the presence of coexisting NLDO.

Conclusions: There is a general agreement on the need for pre-cataract screening for NLDO and a majority indicated that checking for ROPLAS was sufficient. Most surgeons prefer to perform a DCR in cases of NLDO and wait for 4 weeks before intraocular surgery. There is however, a lacuna in the literature on guidelines regarding the optimal interval between lacrimal surgery and subsequent intraocular surgery.

Keywords: Nasolacrimal duct obstruction, PANDO, Cataract, Dacryocystorhinostomy, Endophthalmitis, Dacryocystectomy, India, Lacrimal, iSUPPLE

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Introduction

Obstruction of the lacrimal outflow passage is a common finding among patients. The reported incidence of naso-

lacrimal duct obstruction (NLDO) ranges from 3% to 6.6%.^{1,2} Primary Acquired Nasolacrimal Duct Obstruction (PANDO) consists of those obstructions that occur in adulthood; unrelated to trauma, neoplasm, or systemic disease;

Received 19 April 2017; received in revised form 18 May 2017; accepted 29 May 2017; available online xxxx.

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Peer review under responsibility of Saudi Ophthalmological Society, King Saud University



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and typically seen in women over 40 years of age.¹ However, not all cases of PANDO may present with epiphora. It is not uncommon to encounter a patient without any complaints of watering, harboring an asymptomatic NLDO. The reported mean age of patients presenting with symptomatic acquired lacrimal outflow obstruction ranges from 48 to 59.5 years.³⁻⁵ Given this demographic data, it is quite probable that a significant proportion of these patients with NLDO in this age group may also have cataract-related visual impairment. The presence of ipsilateral NLDO is considered as a risk factor for endophthalmitis following intraocular surgery.^{6,7} Hence, regardless of whether the NLDO is symptomatic or not, it may be prudent to treat it before performing cataract surgery to minimize the possible risk of endophthalmitis. Therefore the coexistence of both cataract and NLDO in the same patient necessitates two surgeries to treat two distinct conditions. However, there are no clear guidelines regarding the model screening strategy for detecting NLDO before cataract surgery and the optimal surgical interval between the two surgeries.

Our survey was aimed at assessing current practice trends in the management of lacrimal disorders among Indian oculo-plastic surgeons. This communication discusses the survey results with respect to the diagnosis and management of NLDO that is detected prior to cataract surgery.

Methodology

An Institutional Review Board (Advanced Eye Hospital & Institute) approved questionnaire that included questions on the management of lacrimal disorders were sent in April 2015 to members of the Oculoplastic Association of India (OPAI) through an e-mail communication. The email clearly explained the nature of the survey and its questions and contained a hyperlink to an electronic survey hosted by a third party website: www.surveymonkey.com. Subsequently, a reminder to take the survey was sent 2 weeks later. The sur-

vey contained 30 questions – most of which were multiple-choice questions. Respondents were also asked questions that included demographic information of the respondent regarding years of practice, age and practice setting. Respondents were also allowed to skip questions in case they did not want to reply to any particular question. The survey was anonymized and did not contain any identifying information. Institutional Review Board approval was obtained prior to commencement of the study. Association between categorical variables was assessed using Fisher's exact test or chi-Squared test. Continuous data were analyzed using a nonparametric test, Mann-Whitney U test. We considered a p value <0.05 as statistically significant. All statistical analysis was performed with GraphPad Prism 6[®] (GraphPad Inc., La Jolla, CA, USA) (see [Table 1](#)).

Results

The email with the invitation to participate in the survey was sent to the members of the OPAI. Of all members, invites were sent to all 267 members had valid or active email addresses (as on April 1, 2015; as per the official website www.opai.in). One of the first questions included the nature of the respondent's practice; all respondents who mentioned that they did not practice oculoplastics and who referred all oculoplastics cases to a specialist were automatically directed to the end of the survey and their responses were excluded from analysis. There was a response rate of 46% with 124 respondents, but only 103 responses were considered valid as the rest indicated that they did not practice oculoplastic disorders and therefore chose not to continue with the survey. However, the total number of responses obtained to each question varied, given that respondents were allowed to skip questions; therefore in the analysis, results have been calculated depending on the number of responses received for each question. The average age of the respondents was

Table 1. List of questions from the questionnaire pertaining to pre-cataract screening for lacrimal diseases.

1. How old are you? (in years) ____
2. How many years of oculoplasty practice do you have? ____
3. How would you best describe your practice with regards to oculoplastic disorders?
 - a. I do not treat and refer them to a specialist.
 - b. I have an interest in oculoplastics and treat simple conditions but refer complicated cases.
 - c. I treat all oculoplastic disorders but I also perform other ophthalmic surgeries including cataract.
 - d. My practice is exclusively oculoplastics.
4. In your opinion, should there be nasolacrimal duct (NLD) patency testing prior to cataract surgery?
 - a. Yes, Irrigation in all cases.
 - b. Yes, Checking for ROPLAS (Regurgitation on pressure over lacrimal sac area) is sufficient.
 - c. No, NLD patency testing is required.
5. In cases of Nasolacrimal duct obstruction detected during cataract evaluation, what is your preferred plan?
 - a. Dacryocystectomy (DCT)
 - b. Dacryocystorhinostomy (DCR)
 - c. Punctal cautery in cases of regurgitation of clear fluid
 - d. Nil intervention – proceed with cataract surgery in asymptomatic NLDO
6. If a DCR has been performed, what is the minimum gap that you prefer prior to allowing a cataract surgery being performed?
 - a. <1 week
 - b. 1–2 weeks
 - c. 4 weeks
 - d. 6 weeks
7. If a DCT has been performed, what is the minimum gap that you prefer prior to allowing a cataract surgery being performed?
 - a. <1 week
 - b. 1–2 weeks
 - c. 4 weeks
 - d. 6 weeks

39 years (range: 27–80; median 38 years). The average experience of the respondents was 10.5 years in practice.

Results

When asked 'Should nasolacrimal duct patency be checked prior to cataract surgery?' 59.6%(53/89) of the respondents replied in the affirmative and that checking for regurgitation on pressure over the lacrimal sac (ROPLAS) was sufficient where as 32.6%(29/89) of the respondents felt lacrimal syringing was needed. 7.9% (7/89) of the respondents, however felt that there was no need to check for lacrimal outflow patency before cataract surgery (Fig. 1). The proportion of respondents who felt screening for NLDO was not required; pre-cataract was significantly higher ($p = 0.048$) among those surgeons who regularly performed cataract surgeries (17.9%; 10/56) than among exclusive ophthalmic plastic specialists (2.7%; 1/37).

The next question asked was 'In cases of Nasolacrimal duct obstruction detected prior to cataract surgery, what is your preferred treatment plan?' In response to this, 77% (67/87) indicated that their preferred surgery in such patients is DCR; 4.6%(4/87) of the respondents preferred performing a DCT; 5.7%(5/87) of the respondents indicated that they would proceed with cataract surgery after performing punctal cautery and 12.6%(11/87) of the respondents indicated that they would not plan any surgical intervention for NLDO and go ahead with cataract surgery. When the surveyed population was split into two groups on the basis of years of experience: it was noted that the proportion of surgeons who felt that no intervention was needed for NLDO was significantly higher among those with 10 years of more of experience as compared to those with less than 10 years of experience ($p = 0.044$). Also in response to this question, all oculoplastic surgeons advised either a DCR or a DCT with none of the oculoplastic specialists advising no intervention or punctal cautery. This is a significant finding given that there is a possibility of a link between nasolacrimal duct obstruction and postoperative endophthalmitis.

The next question asked was 'If a DCR has been performed on a patient, how long would you wait before allowing/performing a cataract surgery on him/her?' Four weeks was the commonest response (48.9%), followed by

1–2 weeks (30.7%) and 6 weeks (19.3%). Only one respondent indicated that they would wait for less than a week (1.1%). The last question was 'If a DCT has been performed on a patient, what is the preferred time gap that you wait prior to allowing a cataract surgery to be performed on him/her?' The most common answer here was 1–2 weeks (55.2%) followed by 4 weeks (21.8%), 6 weeks (13.8%) and one week being the least favored response (9.2%).

In our surveyed population, it is interesting to note that 63% of the respondents, in addition to practicing ophthalmic plastic surgery were also regularly performing cataract surgery and only 37% of the respondents were exclusive oculoplastic surgeons who did not perform cataract surgery.

Discussion

There have been anecdotal reports that have identified chronic NLDO as a risk factor for postoperative endophthalmitis.^{6–9} Kam et al. through a prospective case-control study reported that in their investigation, a higher rate of NLDO was found among patients who developed endophthalmitis post-cataract in comparison with the control group. Based on their findings, they recommended routine screening for symptoms and examination of the lacrimal system prior to cataract surgery.⁷ The rationale behind this being that NLDO can allow bacteria to accumulate in the nasolacrimal duct and lacrimal sac, eventually refluxing back onto the ocular surface. Once these organisms reach the ocular surface, they can be a source of contamination and possibly lead to subsequent infection following intraocular surgery.^{7,9} Even prior to this report, some authors had recommended inclusion of NLD patency assessment as a part of a comprehensive pre-cataract assessment.² It is therefore, surprising to observe that nearly 8% of the respondents felt that there was no need to check for NLD obstruction preoperatively, which we believe is not the ideal practice.

Most respondents in our survey preferred the noninvasive method i.e. checking for 'ROPLAS' over lacrimal irrigation. The ROPLAS test involves identifying the anterior lacrimal crest by tracing the inferior orbital margin medially and superiorly. The index finger is then directed behind the crest and used to apply pressure on the sac area in an upward and medial direction so as to express the contents of the lacrimal

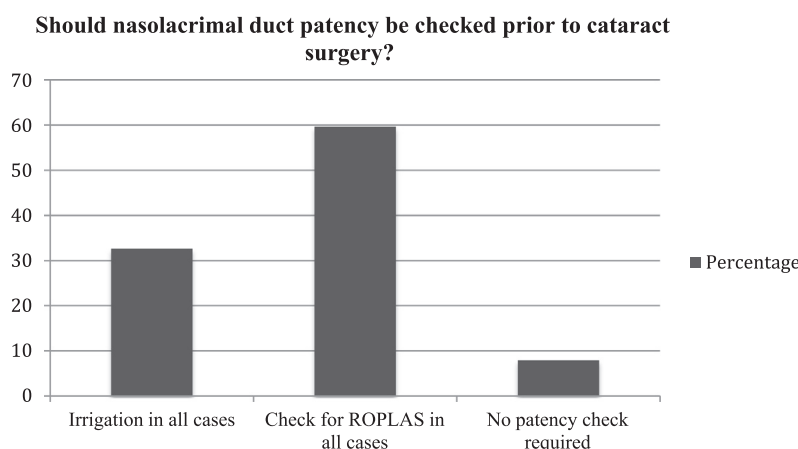


Figure 1. The distribution of responses on the issue of pre-cataract screening for nasolacrimal duct obstruction. (ROPLAS = Regurgitation On Pressure over Lacrimal Sac.)

sac.² Thomas et al. reported the sensitivity and specificity of ROPLAS in detecting NLDO among patients from the Indian subcontinent to be 93.2% and 99.3%, respectively. Furthermore, the negative predictive value of the test was 99.5%. They recommended that when ROPLAS is negative, preoperative syringing in cataract is perhaps unnecessary, unless the findings are equivocal or the index of suspicion for chronic dacryocystitis is very high.² Macrodacryocystogram (MDCG) has reported to be a sensitive investigation in the assessment of NLD patency and predicting surgical findings in 95.5% of cases. But, in comparison, NLD syringing only predicted surgical findings in 54%. NLD syringing agreed with MDCG in only 51% of cases according to one report.¹⁰ There are other tests to assess the function of the lacrimal drainage system: Jones 1 and 2 tests and dye disappearance test among others however their utility in localizing the site of obstruction is limited.¹¹ It has been suggested that nasolacrimal syringing overestimates for NLDO.⁷ Another refinement of the ROPLAS test is the 'Micro-Reflux Test', which utilizes fluorescein to stain the tears, and upon pressure over the lacrimal sac area, the observer uses a slit lamp to look for any subtle regurgitation, which indicates a positive result. There is however no study comparing the surgical findings with preoperative assessment with the findings of ROPLAS/Micro-reflux test, MDCG and lacrimal irrigation.

While our attempt was to assess the current practice patterns among oculoplastics specialists in India, what we also have noted is the lack of evidence in the literature on the optimal time between lacrimal surgery and subsequent intraocular surgery. Owji et al. in their study aimed at determining the time of normalization of conjunctival flora after successful DCR found that the mean time of normalization was 6.2 weeks and 3.9 weeks in patients with and without a silicone tube, respectively. Furthermore, the time of normalization was related to the type of bacteria, colony count, and the presence of silicone tube.¹² Eshraghi et al. largely concurred with the previous study. They reported that the conjunctival cultures in patients with NLDO (both with frank purulent discharge and those without) showed significantly higher colony count as compared to normal controls. Their study was aimed at evaluating the changes in conjunctival bacterial flora after successful DCR. The mean time for conjunctival bacterial cultures to become negative or reach the level of the normal eyes was 3.3 ± 1.3 weeks (range 1–7). They further recommend that after successful DCR, a waiting period of 7 weeks should be allowed for the flora to normalize.¹³ While none of these studies explicitly mention it, we believe that it would not be wrong to extrapolate their findings: a waiting period of 6–7 weeks after a successful DCR negates the possible risk of endophthalmitis that exists while performing an intraocular surgery in the presence of NLDO.

DCT is rarely performed in the western world. However, in developing countries, it is a commonly performed surgery – especially in rural outreach programs conducted in underserved areas. Here, one is often faced with the situation of frail, elderly patients with bilateral advanced cataracts and unilateral or bilateral NLDO. It is believed that excising the lacrimal sac and cauterizing the internal canalicular opening and the puncta allow the usual waiting period of 6 weeks to allow the bacterial flora to normalize to be bypassed. A cataract surgery, often times, is scheduled within a week of a DCT. Other reasons for a DCT include systemic co-

morbidities that necessitate shorter, lesser invasive procedures and the need for earlier visual rehabilitation.¹⁴ There however is no evidence to substantiate the idea that a DCT hastens the bacterial normalization. However, our survey results indicated that most of the respondents believe that one has to wait for a shorter period of time before performing a cataract surgery if a prior DCT has been done when compared to a DCR.

Any survey that solicits voluntary responses always carries with it the inherent shortcomings of self-reporting and selection bias. Our survey's response rate was 46%, which possibly reflects the growing indifference that clinicians now have toward completing online surveys, which have become very commonplace. There however is no previous survey that has assessed the trends of management of NLDO prior to impending cataract surgery. Another crucial question that remains to be answered is 'Would lacrimal surgery be indicated in a patient with asymptomatic NLDO, simply because he is planning to undergo cataract surgery?'; not to mention the additional weight that the already burdened healthcare system would have to bear. Furthermore, the survey did not address the impact of NLDO on the contralateral side. We understand the survey results perhaps raise more questions than answers, but surveys such as these provide a glimpse into the current treatment strategy and help evolve practice patterns among ophthalmologists in India.^{15,16} This survey can provide the basis for further studies that can recommend the ideal safe interval between a DCR and subsequent cataract surgery in patients with NLDO.

Conflict of interest

The authors declared that there is no conflict of interest.

Financial interests

None of the authors have any financial interests to disclose.

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