

# Surgeon Experience as Predictors of Outcome of Dacryocystorhinostomy Surgery

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## ABSTRACT

**Background:** Dacryocystorhinostomy surgery aims to treat nasolacrimal duct obstruction and are often performed by general ophthalmologists in developing countries. The aim of this study is to estimate the clinical burden, surgeon's experience, and outcome of dacryocystorhinostomy surgery.

**Methods:** A cross-sectional survey of Nepalese Ophthalmologists registered with the Nepal Ophthalmic Society was conducted after ethical clearance from Nepal Health Research Council. The survey form consisted of a single mail-shot questionnaire information including the age and experience, average case per month, and participant-reported post-operative complications and failures. Data were entered onto Microsoft excel (Microsoft Corp) and analyzed using SPSS 22.0. The data were presented in graphical and tabular format and appropriate statistical tools were employed for the analysis.

**Results:** Out of 300 practicing ophthalmologist, 135 (45%) comprising male 60 (44.4%) and female 75(55.6%) responded to the survey. Majority of respondents were general ophthalmologists (37 ,41.6%) followed by oculoplastic surgeons (27,30.3%) and other subspecialties (25,28.1%). More than 70% respondents perform 1-10 surgeries /month and only 3% perform >50 surgeries /month. The success rate of 75-90% was reported by 45(50%) respondents whereas > 90% success rate by 41 (46.1%). More than 80% surgeons experienced an infection rate of <1% regardless of the intubation status.

**Conclusions:** This survey revealed huge differences in surgery practice patterns among ophthalmologists in Nepal. The surgical success rate and post-operative infection rate depends upon surgeon experience. Moreover, uniform surgery protocols and training budding ophthalmologists/ young Oculoplastic surgeons in the best modern dacryocystorhinostomy surgery are required.

**Keywords:** Dacryocystorhinostomy; nasolacrimal duct obstruction; oculoplasty; ophthalmologist.

## INTRODUCTION

Dacryocystorhinostomy is the mainstay treatment for nasolacrimal duct obstruction wherein a surgical bypass is made to anastomose the lacrimal sac directly to the nasal cavity. Various methods are currently practiced for this including the external approach or the endonasal endoscopic approach.<sup>1</sup> The external approach has been the gold standard for many years with a success rate of up to 90%.<sup>2</sup> Since its start by Toti in 1904, this surgery

has been practiced widely and to date is the surgery of choice for dacryocystitis in developing countries. The experience of the operating surgeon, the surgical methods implemented, the selection of patients, demographics, and the cause of the nasolacrimal dysfunction are attributed to the differences in the success rate of the DCR.<sup>3</sup> This study surveys the practice patterns of Nepalese ophthalmologists to find out whether the experience of the surgeon and the surgical load influences the outcome of the DCR surgery.

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## METHODS

This study was a cross-sectional survey of Nepalese Ophthalmologists registered with the Nepal Ophthalmic Society (NOS) or the Nepalese Society for Oculoplastic Surgeons (NESOS) conducted over 3 months' duration (October-December, 2020). The survey form consisted of a single mail-shot questionnaire based on the Google survey platform to prevent duplicate responses from the same participant. The questionnaire was designed following a review of the current literature on DCR variation and with input from a panel of senior oculoplastic and non- oculoplastic ophthalmic surgeons. The questionnaire consisted of seven A4 sheets of 39 questions, including respondent information including the age of the surgeon, the experience of the surgeon, the location of the surgical center, average DCR cases per month, and participant-reported post-operative complications such as postoperative infection and failures.

Data were extracted from google sheets onto Microsoft Excel (Microsoft corp) and analyzed using SPSS 22.0

(IBM Inc., Chicago, Illinois, USA) software. The data were presented in graphical and tabular format and appropriate statistical tools were employed for the analysis. The Nepal Health Research Council (NHRC) provided the ethical clearance for the study (Reference no. 874)

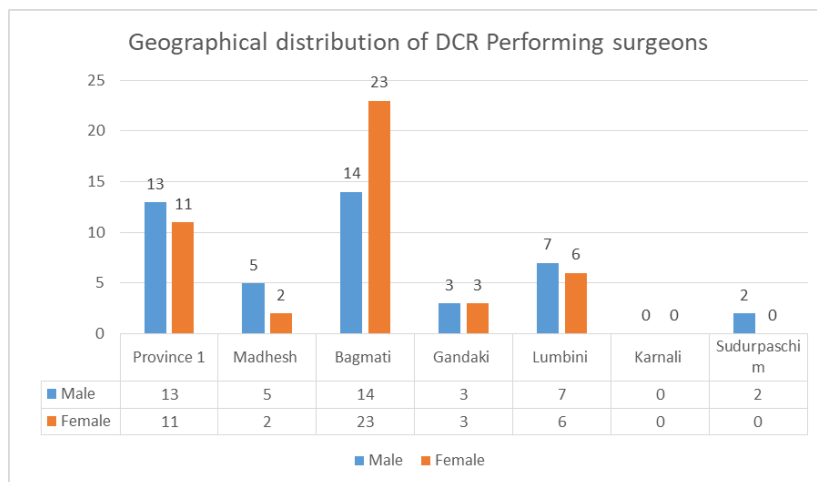
## RESULTS

Out of a total of 300 ophthalmologists currently practicing all over Nepal, 135 (n= 300, 45%) ophthalmologists responded the survey that includes 60 (n= 135, 44.4%) males and 75 (n= 135, 55.6%) females with a male: female ratio of 1: 1.3. Out of total 89 respondents who perform DCR surgery, 62 (n=89, 69.7%) belong to the age group 30-40 years followed by the age group 41-50 years 20 (n=89, 22.5%). Most of the respondents performing DCR were general ophthalmologists 37 (n=89 ,41.6%) followed by oculoplastic surgeons 27(n=89 ,30.3%). The demographic characteristics of respondents are depicted in Table 1.

**Table 1. Characteristics of ophthalmologists performing DCR surgery in Nepal.**

Age group	Category of Ophthalmologist						Total
	General Ophthalmologist		Oculoplastic Surgeon		Other specialties		
	Male	Female	Male	Female	Male	Female	
<30 year	0	1	0	0	0	0	1
30-40 years	16	14	5	12	8	7	62
41-50 years	2	1	4	4	2	7	20
>50 years	3	0	2	0	1	0	6
<b>Total</b>	<b>21</b>	<b>16</b>	<b>11</b>	<b>16</b>	<b>11</b>	<b>14</b>	<b>89</b>

The majority of respondents performing DCR surgery were from Bagmati Province 37(n=89, 41.6%) followed by Province-1 comprising 24 (n=89, 27%) whereas no respondent was from Karnali province as shown in Fig. 1.



**Figure 1. Geographical Distribution of DCR performing surgeons.**

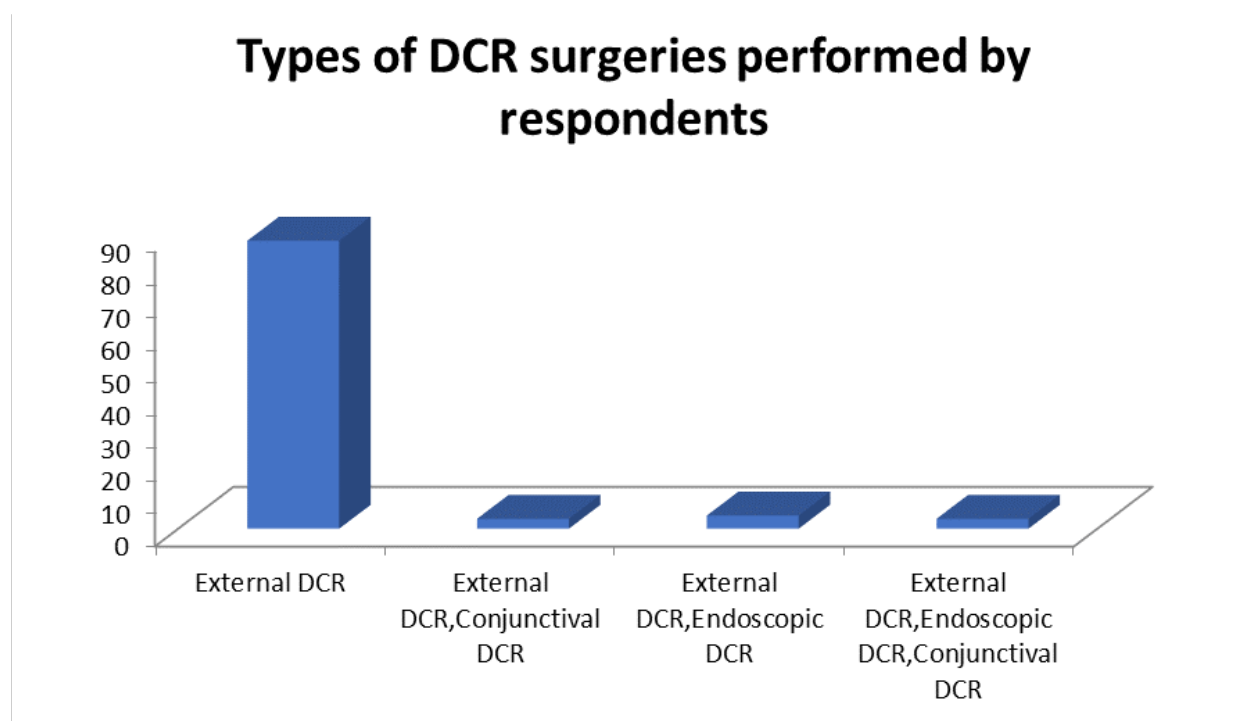
The majority of respondents 63(70.8%) said that they perform 1-10 DCR surgery /month whereas only a few respondents 3(3.1%) were performing >50 DCRs per month. The distribution of respondents based on duration of experiences, and number of DCR per month are as shown in Table 2.

**Table 2. Distribution of surgeons as per experience and DCR surgery performed per month.**

Experience of surgeons	DCR surgeries performed per month				Total
	1-10	11-20	21-50	>50	
<1 year	7	0	2	0	9
1-5 years	37	4	4	1	46
6-10 years	12	4	2	2	20
>11 years	7	6	1	0	14
<b>Total</b>	<b>63</b>	<b>14</b>	<b>9</b>	<b>3</b>	<b>89</b>

**Types of DCR surgeries performed by the participants:**

Most of respondents, 79 (n=89, 88 %) reported that they are performing external DCR as sole practice and only 6 (n=89, 6.7%) respondents were doing Conjunctivo-dacryocystorhinostomy (CDCR) as depicted in Figure 2.



**Figure 2. Types of DCR surgery performed by Ophthalmologists in Nepal.**

In this survey, the surgical success rate (relief of symptomatic epiphora and patency on irrigation after 6 months of surgery) which varying from 75-90% was reported by 45(n=89, 50%) respondents whereas > 90% success rate was stated by 41 (n=89, 46.1%). The majority of the respondents 75 (n=89, 84%) experienced an infection rate of <1% regardless of the intubation status. The distribution of surgeons as per experience, postoperative infection rate and overall surgical success rate are as shown in Table 3.

**Table 3. Distribution of surgeons per experience, success rate and post-operative infection rate.**

Experience of Surgeon (years)	Success rate in %			Post-Operative Infection rate in %		
	< 75 %	75-90 %	>90 %	< 1 %	1-5 %	>5%
<1 year	0	6	3	8	1	0
1-5 years	1	28	17	37	8	1
6-10 years	1	7	12	16	4	0
>11 years	1	4	9	14	0	0
Total	3	45	41	75	13	1

## DISCUSSION

This is the first survey on dacryocystorhinostomy practice patterns in Nepal. Out of 300 ophthalmologists surveyed, 135 (45%) responded, comprising 60 males (44.4%) and 75 females (55.6%). Our response rate (45%) is similar to a survey by the Oculoplastic Association of India (46%)<sup>4</sup> but higher than the American Society of Ophthalmic Plastic and Reconstructive Surgery (38%)<sup>5</sup>. However, lower response rates were observed in surveys by the American Rhinology Society (7.3%)<sup>6</sup> and Portela RA et al. (15%).<sup>7</sup>

Of the 135 respondents, 89 (65.9%) reported performing Dacryocystorhinostomy (DCR), and 83 (61.5%) reported performing Dacryocystectomy (DCT). Surprisingly, 37 (41.6%) of those performing DCR were general ophthalmologists, followed by 27 (30.3%) oculoplastic surgeons and 25 (28.1%) from other subspecialties. The most common practice was external DCR, with 88% (n=79) of respondents preferring this technique which is similar to 86% reported in Nair et al study<sup>4</sup>. Only 4% performed both external and endoscopic DCR, and 3% practiced conjunctival DCR. Endoscopic and conjunctival DCR accounted for 11% and 8% of total DCR procedures, respectively. This preference for external DCR may be due to factors like inadequate instrumentation, surgical setup, limited ENT support, lack of surgical expertise, and the need for general anesthesia which are similar to factors reported in various other studies.<sup>5,9,10</sup>

In terms of age, most DCR performers (69.7%) were in the 30-40 years' age group, followed by 20 (22.5%) in the 41-50 years' group, 6 (6.7%) over 50 years, and 1 (1.1%) below 30 years. The majority (51.7%) had 1-5 years of experience, followed by 22.5% with 6-10 years, 15.7% with over 10 years, and 10.1% with less than 1 year of experience. This distribution differs from a similar survey by Chen et al.<sup>6</sup>

The average age of respondents was 39 years, with

an average experience duration of 10.5 years. Most respondents (70.8%) performed 1-10 DCR procedures per month, while 15.7% performed 11-20, 10.1% performed 21-50, and 3.1% performed over 50 DCRs per month.

Geographically, 41.6% of respondents were from Bagmati Province, 27% from Province-1, 14.6% from Lumbini Province, 7.9% from Province-2, and 3.4% from province-7. Notably, no surgeons from Karnali Province performed DCR, possibly due to equipment and training limitations. This uneven distribution underscores the need for lacrimal surgery training during residency programs and better equipment availability in peripheral hospitals.

Regarding outcomes, 84% of respondents reported a success rate of over 90%, while 46.1% achieved a 90% success rate. However, 3% of respondents reported a success rate below 75%. These findings align with lower success rates mentioned by Guy et al., with endoscopic surgery showing better results (77%).<sup>11</sup>

## CONCLUSIONS

Our unique survey included over 89 DCR-performing ophthalmologists in Nepal, revealing variations in practice patterns. Despite questionnaire limitations and expected response bias, we identified disparities in manpower distribution, DCR success rates, post-operative infections, and the persistence of traditional techniques. Addressing these issues is crucial, and organizations like the Nepal Ophthalmic Society and Nepalese Society of Oculoplastic Surgeons should lead efforts to establish uniform DCR surgery protocols and train young ophthalmologists and oculoplastic surgeons in modern DCR technique.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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