

# Comparison of Severity of Pain With and Without Sedation in Patients Undergoing External Dacryocystorhinostomy under Local Anesthesia

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## ABSTRACT

**Aim:** To compare of severity of pain with and without sedation in patients undergoing external dacryocystorhinostomy under local anesthesia.

**Methodology:** A total of 240 patients of both gender having chronic dacryocystitis between age 20 and 60 years were included. Patients with gross nasal pathology, previous dacryocystorhinostomy and lower lid laxity were excluded. Then selected cases were placed randomly into two groups i.e. Group A (with sedation) & Group B (without sedation), by using lottery method. In all patients external dacryocystorhinostomy was performed by injecting local anesthetic (lignocain 2%) locally at the site of surgery (lacrimal sac area). At the end of surgery, numerical pain rating scale was used to assess the grading of severity of pain.

**Results:** The average age in group A was  $43.65 \pm 11.65$  years and in group B was  $44.40 \pm 10.5$  years. In group A (with sedation), 89 (74.17%) patients found with mild pain, 20 (16.67%) found with moderate pain and 11 (9.17%) found with severe pain, while in group B (without sedation), 51 (42.5%) patients found with mild pain, 40 (33.33%) found with moderate pain and 29 (24.17%) found with severe pain. Significant difference for severities of pain between the both groups was found.

**Conclusion:** This study concluded that external dacryocystorhinostomy under local anesthesia with sedation is more effective and associated with less pain compared to dacryocystorhinostomy under local anesthesia without sedation.

**Keywords:** Chronic dacryocystitis, dacryocystorhinostomy, pain severity.

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## INTRODUCTION

Dacryocystitis is an inflammation of the nasolacrimal sac which is frequently caused by infection or the obstruction of nasolacrimal duct. It causes pain, redness and swelling over the inner aspect of the lower eyelid and epiphora. When obstruction of nasolacrimal duct is secondary to a congenital barrier it is referred to as dacryocystocele. Staphylococcus aureus and Streptococcus pneumoniae are mostly responsible<sup>1</sup>. Treatment comprises of warm compresses, oral antibiotics and relief of obstruction of nasolacrimal duct by dacryocystorhinostomy<sup>1</sup>.

DCR is commonly used surgical procedure for managing epiphora due to obstruction of nasolacrimal duct<sup>2,3</sup>. It is a bypass procedure that creates an anastomosis between the lacrimal sac and the nasal mucosa via a bony ostium. It may be performed through an external skin incision or intranasally with or without endoscopic visualization. In 1994, external approach was described by Toti

while in 1911, endonasal approach was described by West. The latter approach fell out of favor due to difficult visualization and endonasal access to the lacrimal sac. External dacryocystorhinostomy remains the gold standard for the management of chronic dacryocystitis<sup>4</sup>. Chronic dacryocystitis is the chronic infection and inflammation of lacrimal sac.<sup>5</sup> It is presented with the complaint of epiphora<sup>6</sup>.

DCR is commonly used because this procedure can be done by an external route and success rate is very high<sup>7</sup>.

A successful DCR is a one where there is both anatomical as well as functional patency. The passage should be patent on syringing and the patient should be free of symptoms. The documented rates of success of external DCR in literature varies from 85% to 99%<sup>8,9</sup>. External Dacryocystorhinostomy can be performed under local or general anaesthesia. External Dacryocystorhinostomy under local anaesthesia is preferred because there is increased incidence of postoperative nausea and vomiting, increased bleeding due to vasodilatation and potential threat to patient's life in general anaesthesia as compared to local anaesthesia<sup>10</sup>.

Pain experience during external dacryocystorhinostomy under local

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anaesthesia is the main problem in getting the confidence of the patient in preparing them for surgery. According to a study, bone cracking showed the highest levels of pain experienced during surgery in local anaesthesia.<sup>11</sup> One method to relieve this pain is the use of sedation during surgery under local anaesthesia<sup>12</sup>. According to a study carried out in Nepal, there was a significant decrease in severity of pain when operated under local anaesthesia with sedation as compared to local anaesthesia alone<sup>13</sup>.

We have conducted this study to compare the severity of pain in dacryocystorhinostomy surgery under local anesthesia with and without sedation in our local population. Purpose of this study was to make the surgery comfortable for the patients. This would also improve the confidence of the surgeon during surgery.

### RESEARCH METHODOLOGY

This randomized controlled trial was conducted at Department of Ophthalmology, DHQ Teaching Hospital, Sahiwal, from October 2014 to April 2015. Total 248 patients having complaint of epiphora due to chronic dacryocystitis of >3 months either male or female having age 20 to 60 years were included. Patients with gross nasal pathology, noticeable lower lid laxity, repeat dacryocystorhinostomy surgery for DCR failure and post traumatic lids were excluded from the study. An approval from local ethical committee was taken and informed, written consent was taken from every patient.

All the selected cases for the study were randomly divided into two study groups, study Group A and study Group B. Group-A included those patients who were operated with intraoperative sedation with midazolam (1-2 mg) IV while group B included those patients who were operated without intraoperative sedation with midazolam. The severity of pain was assessed in the patients during surgery by "Numeric Pain Rating Scale". In this scale, '1-3' represents mild pain, '4-6' represents moderate pain, '7-10' represents severe pain. The scale was explained to the patient. The patient was asked to himself choose a number (1-10) from the scale to show how much severity of pain he had experienced during surgery. Grading of pain was done from this number.

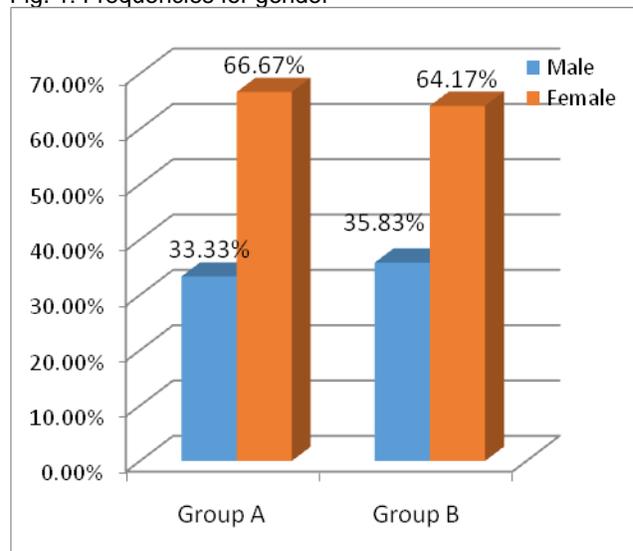
In all patients external dacryocystorhinostomy was performed by injecting local anaesthetic (lignocaine 2%) locally at the site of surgery (lacrimal sac area). A vertical incision of 10 mm was given from the medial canthus. Blunt dissection was done until periosteum reached. Periosteum was incised, lacrimal sac was retracted, fronto-lacrimal suture was opened. An osteum of 10×10 mm was made and

flaps of nasal mucosa and lacrimal sac were created and sutured together, wound was closed in layers. At the end of surgery, Numeric Pain Rating Scale was used to assess the pain. The data was collected through a pre-designed Performa. All the data analyzed by using SPSS version 18. Mean and SD was calculated for age and frequencies were calculated for gender and severity of pain. Chi square test was applied to compare the severity of pain i.e., mild, moderate and severe in both groups and P-value ≤ 0.05 was taken as significant.

### RESULTS

Average age of patients in this study was 43.42±10.33years. The average age of patients in study group A was 43.65±11.65years and in study group B was 44.40±10.5years. Male patients in study Group A and study Group B were 40(33.33%) and 43 (35.83%) respectively. Female patients in study Group A and study Group B were 80(66.67%) and 77(64.17%) respectively (Fig. 1).

Fig. 1: Frequencies for gender



In all patients external dacryocystorhinostomy was performed by injecting local anaesthetic (lignocaine 2%) locally at the site of surgery (lacrimal sac area). In group A (with sedation), 89 (74.17%) patients had mild pain, 20 (16.67%) had moderate pain, 11(9.17%) had severe pain, while in group B (without sedation), 51 (42.5%) patients found with mild pain, 40(33.33%) found with moderate pain and 29 (24.17%) found with severe pain. Significant (P = 0.001) difference between pain severities of the both groups was found (Table 1).

Table 1: Comparison between pain severities among both

groups.

Pain sensitivity	Group A	Group B
Mild	89(74.17%)	51(42.5%)
Moderate	20(16.67%)	40(33.33%)
Severe	11(9.17%)	29(24.17%)

P value 0.001

Stratification of age with respect to pain severity was done and 4 age groups was made, among the patients of age group 20-30 years, insignificant (P=0.475) difference between pain severities of both groups was seen but significant (P=0.043, 0.001, 0.003) difference of pain severities between the both

groups for age group 31-40 years, age group 41-50 years and age group 51-60 years was seen (Table 2).

Stratification of gender with respect to pain severity was done. Insignificant (P = 0.121) difference between the pain severities of both groups for male patients was found but significant (P = 0.001) difference between the pain severities of both groups for female patients was seen (Table 3).

Table 2: Stratification of age with respect to pain severity in both groups.

Age of patients (years)	Group A (n=120)			Group B (n=120)			P-value
	Pain severity			Pain severity			
	Mild	Moderate	Severe	Mild	Moderate	severe	
20-30	11	04	01	9	06	03	0.475
31-40	19	03	03	10	09	05	0.043
41-50	29	08	01	15	10	11	0.001
51-60	30	06	05	15	16	11	0.003

Table 3: Stratification of gender with respect to pain severity in both groups.

Gender	Group A (n=120)			Group B (n=120)			P-value
	Pain severity			Pain severity			
	Mild	Moderate	Severe	Mild	Moderate	severe	
Male	30	07	03	23	15	05	0.121
Female	60	13	07	28	25	24	0.001

## DISCUSSION

DCR is an inflammation of the lacrimal (tear) sac, which is a result of an infection. It may be chronic or acute. For anatomical reasons, it occurs on left side more frequently. An ocular origin for inflammation of the lacrimal system is less common than a nasal origin<sup>14-17</sup>.

This randomized controlled trial has compared the severity of pain with and without sedation in patients undergoing external dacryocystorhinostomy under local anesthesia. The mean age of patients in our study was 43.42±10.33 years. The mean age of patients in group A was 43.65±11.65 years and in group B was 44.40± 10.5 years. Tuladharet al<sup>13</sup> in his study has shown the mean age as 34 years with majority of patients were between 21-40 years. These findings are quite different and much lower than our study. On the other hand, many previous publications have shown larger mean age as compared to our study. Tawfik et al<sup>18</sup> in his study found the mean age of 48 years while Kasae et al<sup>10</sup> and Knezivick et al<sup>19</sup> in their studies have found much larger mean age i.e. 60 and 64 years respectively, compared to our study. One of the reasons of this larger mean age may be due to the fact that in old age, elasticity of the lacrimal system loses and debris does not flush.

Our study has also found more prevalence of dacryocystitis in female patients i.e. 66.67% were females and 33.33% were males. This female predominance was also reported in many previous studies<sup>10,13,18,19</sup>.

Women are most commonly victim of dacryocystitis and it occurs in 70% to 83% women. Some anatomical factors were found to be the reason behind this. These suggested factors are smaller length and size of nasolacrimal duct and more angulation of the canal in females.<sup>13</sup> Another reason behind this was found to be chronic dacryocystitis associated with hysterectomy or serious gynecological pathology which resulted in hormonal imbalance<sup>20</sup>.

In all patients external dacryocystorhinostomy was performed by injecting local anaesthetic (lignocain 2%) locally at the site of surgery (lacrimal sac area). We had found that in group A (with sedation), 74.17% patients found with mild pain, 16.67% found with moderate pain and 9.17% found with severe pain, while in group B (without sedation), 42.5% patients found with mild pain, 33.33% found with moderate pain and 24.17% found with severe pain (p value = 0.001). According to a study carried out in Nepal, there was a significant decrease in severity of pain when operated under local anaesthesia with sedation as compared to local

anaesthesia alone, using numerical pain rating scale. In group A (without sedation) 2% of patients had maximum pain imaginable, 32% found with severe pain, 34% found with moderate pain, 32% found with mild pain, while in group B (with sedation), 8% patients found with severe pain, 20% found with moderate pain and 72% found with mild pain (p value <0.001)<sup>13</sup>.

In a study done by Kratky et al<sup>21</sup> on elderly patients who underwent external dacryocystorhinostomy under local anesthesia with sedation found no adverse effects and none of them had converted to general anesthesia. McNabet et al<sup>22</sup> also concluded that local anesthesia with intravenous sedation for external dacryocystorhinostomy is an effective procedure with high patient acceptability. Similarly, Kasaeet al<sup>10</sup> in his study found that dacryocystorhinostomy could be done effectively under LA with sedation.

In a prospective study, Chaumeet al<sup>23</sup> found local anesthesia associated with sedation for external dacryocystorhinostomy is safe and efficient. He has also found high patient's satisfaction rates (88.4%) and success rate (79.3%). In another study by Sharma et al<sup>24</sup> reported success rate of external dacryocystorhinostomy under local anesthesia with sedation as 88.4%. On the whole it is concluded that external dacryocystorhinostomy under local anesthesia with sedation is more effective and associated with less pain compared to dacryocystorhinostomy under local anesthesia without sedation.

**CONCLUSION**

This study concluded that external dacryocystorhinostomy under local anesthesia with sedation is more effective and associated with less pain compared to dacryocystorhinostomy under local anesthesia without sedation. So, we recommend that external dacryocystorhinostomy should be done routinely under local anesthesia with sedation in order to make the procedure more comfortable and acceptable for patients by decreasing the severity of pain.

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