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Results of Single and Double Flap Anastomosis in External Dacryocystorhinostomy Surgery

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Background: Dacryocystorhinostomy (DCR) is one of the most common oculoplastic surgeries. In this study, we aimed to compare single and double flap anastomosis results in external dacryocystorhinostomy surgery.

Materials and Methods: Between January 2016 and November 2017, 156 patients who underwent external DCR were evaluated retrospectively. All cases were performed under general anesthesia. In the first group, 86 patients (52 female, 34 male) had a double flap external DCR. In the second group, 70 patients (40 female, 30 male) had a single flap external DCR.

Results: The mean follow-up period was 18.2±8.6 months in the double flap group and 16.4±5.4 months in the single flap group. The mean age was 48.2±16 in the double flap group and 46.3±17 in the single flap group. The success rate was 96.6% in the double flap group and 95.8% in the single flap group.

Conclusion: In our study, there was no difference in surgical success in patients undergoing single and double flap external DCR surgery.

Keywords: External dacryocystorhinostomy, single flap, double flap

Introduction

Chronic dacryocystitis is a disease that is very common in the population and generally affects middle-aged women (1). The most common cause is the nasolacrimal duct blockage in which the lacrimal sac is opened to the nasal cavity. Nasolacrimal duct blockages are characterized by frequent epiphora and recurrent episodes of acute dacryocystitis (1, 2). Agents that cause chronic dacryocystitis make eye susceptible to external infections. Although antibiotics may improve disease in the acute phase, the primary treatment is surgery. External dacryocystorhinostomy (DCR) surgery described by Toti in 1904 is the standard surgical method (1). The surgical procedure in which the front and rear flaps are sutured developed in 1921 by Dupey-Dutemps and Bourget is generally used today (2).

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Although all successful results have been obtained with endonasal DCR in recent years, external DCR is applied as the gold standard due to its success rate of 80-98% (3-14). Different methods of mucosal anastomosis have been used, although the external DCR method of the lacrimal sac and the lower and upper flaps formed from the nasal mucosa is highly successful.

This study aimed to compare the results of single and double flap anastomosis in external DCR operations.

Materials and Methods

Study Design

Between January 2016 and November 2017, 156 patients who underwent external DCR were evaluated retrospectively. Those who had undergone lacrimal drainage surgery, those with lower and upper canalicular obstruction, common canalicular obstruction, trauma to the nose and orbital region, and septal deviation were excluded from the study.

Comprehensive ophthalmic examinations of all patients were performed. Punctum lavage was made to locate the occlusion. Water's view was presented to all patients.

All operations were performed under general anesthesia by the same doctor. Adrenaline sponge was placed in the nasal mucosa, and upper and lower punctum was dilated. Skin and subcutaneous cuts (10-15 mm) were performed at a distance of 7-8 mm from the inner canthus. Skin and subcutaneous wounds started from the upper part of the adhesion of the inner canthal ligament. Blunt dissection was performed, and the periosteum was reached. The lacrimal sac was isolated from the lacrimal fossa. The periosteum was dissected. The bone window was opened using the Kerrison punch. H-shaped flaps were formed from the sac and mucosa. The flaps were mainly kept in single flap patients. A silicone tube was inserted in all the patients and connected in the nose. The flaps were sutured with 6/0 vicryl and flaps were hanged to the orbicularis muscle with the same suture. Skin and subcutaneous tissue were sutured with 6/0 vicryl. Systemic antibiotic, nasal decongestant, and topical antibiotic + steroid drops were given routinely to all patients in the postoperative period. All operations were finished without complications.

The patients were called for the control examination at 1^{st} day, 1^{st} week, 1^{st} month, 6^{th}, and 12^{th} months after the surgery. The bicanalicular silicone tube was removed at postoperative 6^{th} month. The operations in patients who had open duct and no epiphora at the last follow-up were considered as successful.

Statistical Analyze

SPSS v21.0 program was used in the analysis. In descriptive statistics of data, mean, standard deviation, frequency, median lowest, highest, and ratio values were used. Independent Samples T-test (between the two groups) was used to compare normally distributed parametric variables between the groups. χ^2 test was used for the comparison of customarily distributed categorical variables. The p-value <0.05 was accepted to be statistically significant.

Results

Of the 156 patients included in the study, 86 patients underwent double flap, and 70 patients underwent single flap external DCR. Ninety-two patients were female, and 64 were male. In the first group, 52 patients were female, and 34 were male. In the second group, 40 patients were female, and 30 were male. The mean age

was 48.2±16 in the first group with a double flap. The mean age was 46.3±17 in the second group with a single flap. There were no statistical differences in age and gender.

The mean follow-up period was 18.2±8.6 months in the first group. The mean follow-up time was 16.4±5.4 months in the second group. Recurrence was observed in three (3.4%) of 86 patients who underwent double flap DCR. Tube dislocation was found in one patient. Tubes were removed after development of purulent secretion in two patients two months after surgery. The patients underwent revision DCR.

Recurrence was observed in 3 of 70 patients (4.2%) who underwent a single flap DCR. Intranasal granulation tissue was found in one of the patients. The patient underwent revision DCR. The other two patients had epiphora when the tubes were removed. Patients did not interfere since the lavage of these patients was open.

Discussion

Epiphora due to the blockage of the lacrimal drainage system and recurrent infection attacks in the sac is both uncomfortable and dangerous for the patient. The treatment aims to create a new path between the lacrimal route and the nasal mucosa. For this purpose, external DCR is still the most successful method despite new methods such as endonasal DCR, endoscopic DCR, and balloon dacryoplasty. The success rate of external DCR varies between 80% and 99% in different studies (11-13). In our study, the success rate was 96% in both single flap and double flap cases.

For the success of DCR, nasal mucosa and lacrimal sac flaps must have adequate suturing as well as an appropriate size of nasolacrimal clearance. External DCR is an application that is not easy and requires surgical experience. The difficult suturing of the mucosal flaps during surgery, the blockage of the newly formed path with granulation tissue, and the adhesion of the flaps are the reasons for the failure of the operation. To overcome, various modifications are made in traditional DCR surgery. Alterations in the formation of mucosal flaps are applied nowadays. Bayhan et al. have achieved a success rate of approximately 96% in 111 cases in which they formed a single large flap and used a similar surgical technique (7).

Baldeschi et al. have shown that single flap DCR surgery is a reliable and easily applicable method in which the top flaps are as large as possible and hanged into the orbicularis muscle (3). Serin et al. (63 patients) have determined that there is no difference between the success rate of a single flap and double flap external DCR operations (4). Rizvi has reported a success rate of 92% in the cases of single flap external DCR (5). Deka et al. have achieved a 99% success rate in the double flap anastomosis technique (6). In 168 cases, Mat et al. have made a success rate of 95% in both groups (8). Kazancı et al. have found a success rate of 92% in the single flap group and 96% in the second flap group. There is no statistically significant difference in terms of surgical success (9). Haefliger et al. have reported that the non-flap method does not hurt the success of external DCR (10). Takahashi et al. showed that surgery was successful for 53 sides (93.0%) in the double-flap group and 138 sides (93.2%) in the no-flap group. There was no statistically significant difference in success rate between the groups.

In conclusion, our results were consistent with the literature. Our findings supported that double flap anastomosis during external DCR

operations was not superior to the single flap technique. There was no difference in surgical success between single/double flap applications performed in external DCR operations. It can be concluded that a unique flap surgical technique was more effortless and appeared not to affect the success of DCR surgery.

Conflict of Interests

None of the authors has a conflict of interest with the present article.

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