e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15(12); 1799-1802

Original Research Article

Our Experience in Utilizing a Tongue Flap to Close an Anterior Palatal Fistula

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Received: 25-10-2023 / Revised: 23-11-2023 / Accepted: 26-12-2023
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Conflict of interest: Nil

Abstract:

Background: Palatal fistula generally occurs after cleft palate repair. The main cause of this complication is tip necrosis of palatal flaps. Displacement of adjacent tissues leads to the closure of smaller palatal fistulas, but these localized tissues are not adequate for the cessation of larger fistulas. The main aim of the present research is to examine the advantages of tongue flaps in the closure of anterior palatal fistula.

Methods and Materials: This is a prospective study carried out for one year in Patna Medical Colege & Hospital, Patna in Bihar, India. 50 patients were included in this study in which the anterior tongue flap was utilized for the treatment of a bigger anterior palatal fistula. Selection of the subjects was done on the base of the dimension of the fistula, damaged localized palatal tissues, or reappearance of the fistula.

Results: In the current study 50 patients with palatal fistula were treated with tongue flap. The majority of patients were in the age group of 2-6 years. It was more prevalent in females. The biggest dimension of the treated fistula was 3×2 cm. No flap necrosis occurred in any patients.

Conclusion: Tongue flap is an outstanding and adaptable alternative for the cassation of big fistulas with greater successful outcomes. Tongue flap is the first choice for the treatment of anterior palatal fistulae, the only disadvantage is the long procedure which makes patients uneasy.

Keywords: Fistula, Tongue Flap, Tissue Necrosis.

Introduction

Fistula development occurs due to the disintegration of palatal repair. Palatal fistulas are divided into parts per dimension which are small, medium, and large [1, 2]. Small fistulas are less than 2mm in diameter, medium fistulas are 2-3mm in diameter and large fistulas are greater than 5mm. Displacement of adjacent tissues leads to the closure of smaller palatal fistulas, but the cessation of bigger fistulas is very tough and complicated [3-5]. The outstanding supply of blood and a fine amount of tissue availability make the tongue flap a suitable choice for the cessation of big palatal fistulas.

The patient should be evaluated for the position of the fistula and the reaction it has on performance. Functioning disablement includes leakage of air through the nose and speech impairment. A fistula without any symptoms does not require any treatment. Patients with intraoral fistulas require observation. Smaller fistulas should be observed for some time as these may cease automatically. Fistulas without having symptoms should be observed until they become symptomatic. Symptoms may appear after orthodontic treatment. Fistulas with symptoms should be treated with two layers and loose cessation. A large number of surgical techniques are used for the cessation of fistulas[3].

Fistula cessation can be done by well-built obturators (dental) and many patients are willing to wear complete or partial dentures. However, many patients are not comfortable with the dentures and opt for the surgical treatment. Deformity remodeling in the oral cavity is generally difficult. The deformity can be remodeled with localized or tissue grafts. Anatomy of deformity, position, and dimension are the main elements in designing treatment plans and deciding the kind of flap needed for remodeling type [6]. Prime treatment of cleft palate must lead to dissociation of the oral cavity from the nasal cavity. Nonetheless, many causes like the dimension of the defect, failed healing, necroses, trauma, etc may lead to breakdown and leaving palatal fistula in the palate [7]. It must be considered that the connection in the alveolar process is at the anterior part. Surgical procedures like tumor resection, serious infections, fistula in the cleft palate, or cleft lip patients can lead to deformity in the oral cavity

which can be treated by using a tongue flap. Deformity caused by radiation therapy can also be treated by tongue flap. Anterior flaps are indicated for the cessation of the oral mucosa (anterior), hard palate, and lips deformity [5]. Posterior flaps are used for the cessation of molar area, oral mucosa (posterior), and hard palate defects. Posterior flaps are safe because of the blood supply but anterior flaps are more adaptable in terms of motility and flexibility. Recurrent fistula formation suggested tongue flaps, palate with too much trauma, and deformity that is bigger than 1 cm. Defects with a dimension less than 1.5 cm can be treated by localized flap [8]. The main aim of the present research is to examine the advantages of tongue flap in the closure of anterior palatal fistula.

Materials and Methods

Study design and population: It is a prospective study including 50 patients carried outin a hospital. 20 male and 30 female patients were there, and the median age was 2-18 years. Subjects were chosen on the base of the dimension of fistula, damaged palatal tissue, or recurrent fistula formation.

Study location and duration: This research was carried out in PMCH in Bihar, India. This study was conducted for 1 year between 2021 to 2022.

Inclusion Criteria: Patients with big anterior palatal fistula were operated on utilizing anterior tongue flap, gave consent.

Exclusion Criteria: Not given consent.

Bias: There was a chance that bias would arise when the study first started, but we avoided it by giving all participants identical information and hiding the group allocation from the nurseswho collected the data.

Ethical Consideration: The study protocol was approved by the Ethics Committee and written informed consent was received from all the participants.

Statistical Analysis: SPSS version 21 was used for the statistical analysis. A paired T-test was carried out for the collation of tuition classes and problem-based learning discussions.

An unpaired T-test was conducted to differentiate the scores obtained by two methods.

Results

Table 1: Number of patients according to gender

Gender	Number of patients
Male	20
Female	30

As shown in Table 1, 20 patients were male, and 30 patients were female.

Table 2: Age group of the patients treated with tongue flap

Age group	Number of patients
2-6 years	32
6-12 years	10
12-18 years	8

As shown in Table 2, 32 patients were in the age group of 2-6 years when the tongue flap was done. 10 patients were in the age group of 6-12 years and 8 patients were in the age group of 12-18 years whose tongue flap was done.

Table 3: Classification according to the type of fistula

Types of fistulae	Number of patients
Type 1 (bifid uvula)	3
Type 2 (soft palate)	5
Type 3 (junction of the soft and hard palate)	2
Type 4 (hard palate)	10
Type 5 (junction of the primary and secondary palate)	25
Type 6 (lingual alveolar)	4
Type 7 (labial alveolar)	1

In Table 3, it is shown that most patients had type 5 fistula that is in the junction of the primary and secondary palate followed by hard palate. 3 patients had type 1 fistula whereas 5 patients had type 2 fistula. 2 patients had type 3 fistula. 4 patients had type 5 and 1 had type 7 fistulas.

Table 4: Fistulae size range

Dimension of fistulae	Number of patients
1 cm	2
1-1.5 cm	3
1.5 -2 cm	4
2-2.5 cm	35
3-5.5 cm	1

In Table 4, the majority of them had fistulas in the size range of 2-2.5 cm. 2 patients had fistulas of 1 cm. 3 and 4 patients had fistulas in the size range of 1-1.5cm and 15-2cm. 1 patient had a fistula in the size range of 3-3.5 cm.

Discussion

The tongue flap is suitable for complicated palatal fistulae and lack of tissues [4]. Guerrero-Santos and Altamirano [9] were the first who described the utilization of lingual flap for the restoration of hard palate fistulae. The abundant blood supply from the lingual artery increases the adaptability of the tongue flap. A fair quantity of tissue obtainable from the tongue can be utilized for the cessation of larger palatal fistulae. Recurrence of fistula in the secondary palate is seen in 9-35% of the patients [1]. The severeness of the actual deformity increases the possibility of fistula development. In a study conducted byMusgrave and Bremner [10], it was evaluated that incomplete cleft palate occurred in 4.5% of cases, unilateral clefts occurred in 7.8% of cases, and complete bilateral clefts were seen in 12.6% of cases. The palatal deformity causes irritation and impairment in speech, deglutition, and gulping. Inresearch conducted by Jackson [11], he utilized the veau flap and buccal flap but observed that the tongue flap is very good for larger deformity. Gordon and Brown [12], in their study, evaluated that deformities that are small in size can be treated by using localized tissues, but bigger deformities need a tongue flap. Piggot et al [13] advised cessation of cleft palate using 2 layers similar to the present study. Guerrero-Santos et al and Pigott et al [13,14] have emphasized the significance of the accurate design of the base of the flap, the structure of the flap, and resources of sufficient tongue motility with a stalk of suitable length. The size of the flap should cover the anterior-posterior region of the fistula leaving 1cm additional, to give some space for tongue mobility. A study carried out by Busić et al [15], observed that the anterior tongue flap is a secure and efficacious technique for the cessation of bigger deformity. The criteria for a successful flap involve the adequate length of the flap, a flap bigger than deformity, and appropriate flap thickness.

Conclusion

The tongue flap is an outstanding and adaptable method of cessation of bigger palatal fistulas with great outcomes. A tongue flap is the first choice for the treatment of anterior palatal fistulae, the only disadvantage is the long procedure and making the patient uneasy.

Limitation: The limitation of the present research includes a small sampling of people who were involved in this study. The observation of this research cannot be generalized for a greater sampling of people.

Recommendation: The tongue flap is a great choice for the cassation of big fistulas. It is a very secure method for bigger fistulas.

Acknowledgment: We are thankful to the head of the department for helping and supporting this study. We are also grateful to the assisting faculty of our college who helped in this research.

Abbreviation

SPSS- Statistical Package for Social Sciences

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