

Assessment of Commonest Surgical Procedure used to Treat Cleft Palate Cases in a Private Hospital In Chennai - An Institutional Study

Research Article

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Abstract

Cleft palate is the most common congenital facial malformation and has a significant developmental, physical and psychological impact on those with the deformity and their families. Various prevalent surgical techniques are presented, but no universal agreement exists on the appropriate treatment strategy. There is a need for well-controlled, prospective studies to establish the validity of the widely used different claims of superior results from various techniques. This study aims at evaluating the commonest surgical technique used to treat cleft palate in a hospital setting. The study was conducted in a university set up sample consisting of all patients who underwent cleft palate surgery from June 2019 – April 2020, were examined and included in our data collection. A total of 36 case sheets were reviewed. For a comparison between different variables, Statistical Package IBM SPSS version 21.0 software analyser was used. The data was analyzed using a chi-square test. The p value of less than 0.05 was considered to be statistically significant. In this study, we can contemplate that the majority of cleft palate patients were treated using Von Langenback's Palatoplasty (58.3%). Whereas, people of age groups 0-5 years (44.4%) have undergone more cleft palate correction. There was a significant difference between the surgical techniques used to treat cleft palate in patients. (p value < 0.05). Within the limitations, it can be concluded that Von Langenback's Palatoplasty is used more than Bardach's Palatoplasty despite both the surgical techniques being the commonest in treating cleft palate.

Keywords: Von Langenback's Palatoplasty; Bardach's Palatoplasty; Cleft Palate.

Introduction

The cleft lip and palate (CLP) is one of the most common congenital malformations in the human race, it is caused by lack of fusion of the embryonic facial processes. The ideal objectives of palatoplasty are (a) closure of oronasal communication from incisive foramen to uvula; (b) creation of a dynamic soft palate that functions well for speech; and (c) performing this without undue consequences to growth. Surgery must not simply be aimed at closing the palatal defect, but rather at the release of abnormal muscle insertions. Muscle continuity with correct orientation should be established so that the velum may serve as a dynamic structure [1].

Palatoplasty techniques have undergone many innovations in the 150 years since Le Monnier. Variations in these techniques have been aimed at adding length to the soft palate to reduce the incidence of VPI, reducing the incidence of fistula formation, decreasing the adverse effects on mid facial growth, and, in the most recent decades, accomplishing a functional muscular reconstruction of the soft palate to maximize its potential in terms of achieving normal velopharyngeal function [2]. In essence, palate repair techniques can be described in terms of management of the hard palate or techniques for dealing with the soft palate.

The principal variations on the two-flap palatoplasty, as they are now commonly referenced, are the Veau-Wardill-Kilner push-back, the von Langenback, and the Bardach two-flap palatoplasty [3].

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The von Langenbeck palatoplasty involves the creation of two bipediced, oral side, mucoperiosteal flaps with only lateral releases and no anterior release incision that can then be mobilized medially for a tension-free repair. These flaps were historically combined with routine ligation of the greater palatine pedicle to further ease medial mobilisation of the flaps [4, 5]. The technique offers no mechanism to lengthen the velum and may impair access and visibility for repair of the nasal lining at its most anterior extent. Some have also criticised the procedure for limiting access to the cleft velar musculature for its reconstruction. This technique tends not to leave large areas of denuded bone laterally as length is gained on the oral flaps, as they not only translate medially but also reduce the height of the palatal vault [6, 7].

The Bardach two-flap palatoplasty involves the creation of two axially patterned mucoperiosteal flaps pedicled on the greater palatine neurovascular bundles. Access and visibility for the nasal repair and velar muscular reconstruction are excellent. Once the nasal layer and muscular reconstruction are complete, the flaps are medialized and annealed in the midline. Similar to the von Langenbeck technique, large areas of denuded bone are generally not created except in very wide clefts owing to the length gain from rotating the flaps down at the expense of palatal vault depth [8-12].

There are studies that compare the different techniques of palatoplasty through features of speech, although it is known that there are many factors that contribute to the failure of the primary palatoplasty related to speech [13]. There are various studies conducted in the institution based on grafts used in OSMF, oral ranula in pediatric patients but there is very few articles related on technique used to correct cleft palate. Previously our team have conducted numerous clinical trials, few review papers and surveys [14-28]. This study aimed at evaluating the commonest surgical technique used to treat cleft palate in SDC.

Materials and Method

Study setting and sampling

This study is a single-center retrospective study, carried out in the Department of cleft palate centre in a private dental college, Chennai. Our study was approved by the ethical board of Saveetha dental college – Institutional ethical committee [IEC] (Ethical ap-

proval number: SDC/SIHEC/2020/DIASDATA/0619-0320). and was in accordance with the ethical standards that were stipulated. All available records of cleft palate patients treated from June 2019 - April 2020, were examined and included in our data collection. A total of 36 case sheets were reviewed. Cross verification of data for error was done by presence of additional reviewers and by photographs evaluation. Simple random sampling was done to minimise sampling bias. It was generalised to the south Indian population. Two examiners were involved in the study.

Data collection/Tabulation

Acquisition of data was done from the hospital digital database which records all patient details. The data were entered in the system in a methodical manner. For this study, Data on the number of patients underwent cleft palate surgery and clinical variables such as gender, and age at the start of treatment were collected. The data was then entered in excel manually and imported to SPSS for analysis. Incomplete or censored data were excluded from the study.

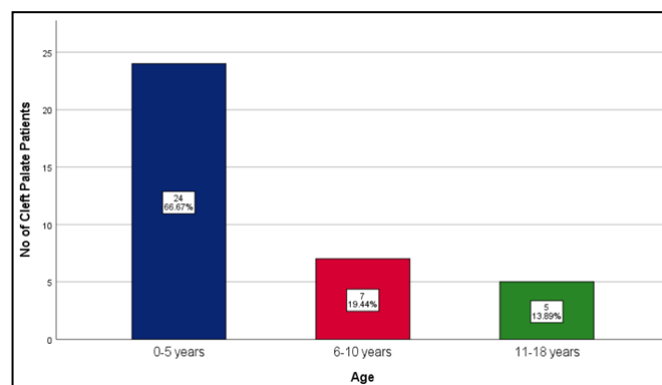
Statistical analysis

Descriptive statistics were used to summarise the demographic information of the patients included in this study. Descriptive statistics is used for the acquisition of frequency of distribution of the data. The number of patients underwent cleft palate surgery and clinical variables such as gender, and age at the start of treatment were collected. For a comparison between different variables, Statistical Package IBM SPSS version 21.0 software analyser was used. The data was analyzed using a chi-square test. The p value of less than 0.05 was considered to be statistically significant.

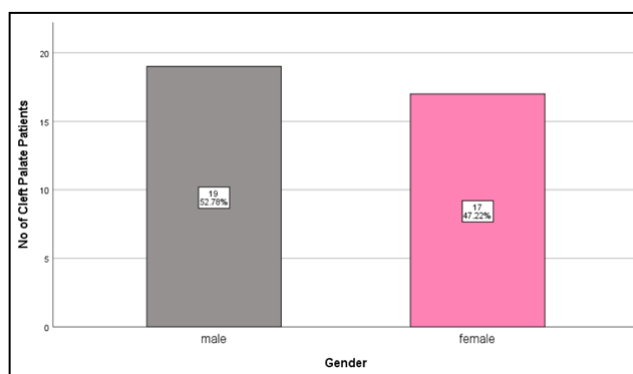
Results and Discussion

From this study, we can contemplate that the majority of cleft palate patients were treated using Von Langenbeck's palatoplasty and there is no significant difference between the surgical technique used to treat cleft palate in patients. This was similar to a study done by Fabio Ricardo, in which he stated that the Von Langenbeck technique was more effective in closing the Cleft Palate and Cleft Lip. His study was carried out to evaluate two palatoplasty techniques - Von Langenbeck and Veau-Wardill-Kilner and concluded that the Von Langenbeck technique presents a better clos-

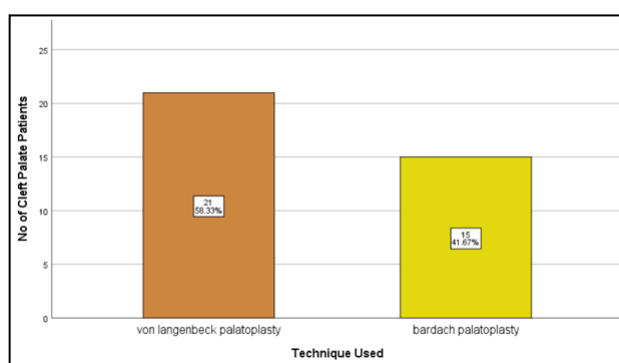
Graph 1. The bar graph showing frequency of age wise distribution of cleft palate patients. X Axis represents the age and Y Axis represents the number of cleft palate patients. The highest frequency was noted at the age group 0-5 years (66.67%) when compared to other groups.



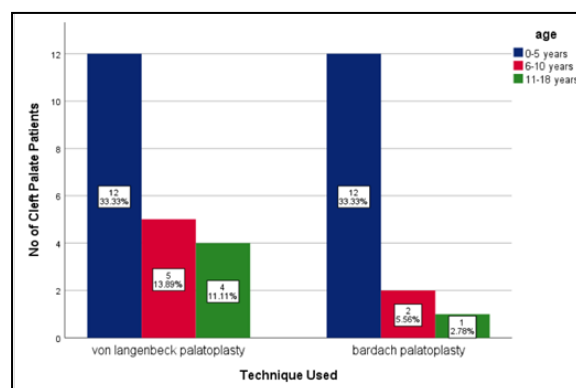
Graph 2. The bar graph showing frequency of gender wise distribution of cleft palate patients. X Axis represents the gender and Y Axis represents the number of cleft palate patients. It is observed that high prevalence was observed in males (52.78%) when compared to females.



Graph 3. The bar graph showing frequency of surgical technique used to treat cleft palate patients. X Axis represents the surgical technique and Y Axis represents the number of cleft palate patients. It is observed that Von Langenbeck Palatoplasty technique (58.33%) was more common than Bardach's Palatoplasty (41.67%).



Graph 4. The bar graph represents the association of age and surgical technique used to treat cleft palate patients. From the graph it is evident that in children with age group of 0-5 years, both the surgical techniques Bardach's two flap palatoplasty and von Langenbeck techniques equally performed. So there was no statistical significant difference between the age and surgical technique used to treat cleft palate patients. (Chi-Square, p value: 0.342 ($p > 0.05$ statistically not significant))



ing index on the first surgical time (67%), when compared to the Veau-Wardill-Kilner technique (50%) [13].

Spauwen et al., compared Furlow and Von Langenbeck's technique and stated that there were no significant differences in their study between the techniques in respect of articulatory skills, language comprehension, language production as well as hearing. Also added that Technically, the Furlow technique is more difficult to perform, particularly in wide clefts [29].

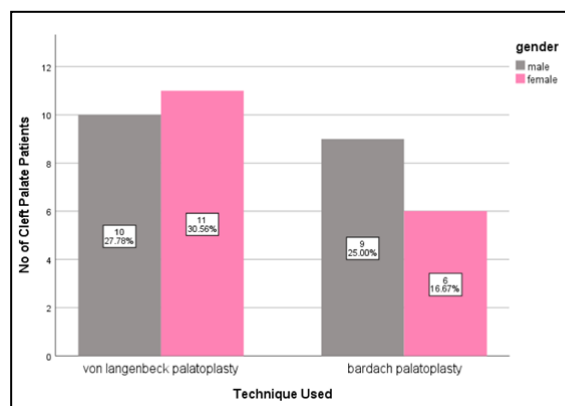
Trier and drier stated that, Primary von Langenbeck palatoplasty with levator reconstruction is a safe and reliable operation for palate closure. It presently provides velopharyngeal competency in

89% of patients followed for an average of four years and seven months following primary palatoplasty [7].

Salyer et al., concluded in his study that The two-flap palatoplasty is a reliable technique that has yielded excellent surgical and speech outcomes. Early and regular speech assessments and appropriate treatment when indicated are an integral part of the multidisciplinary approach to achieve good speech outcome [30].

The ideal technique of palatoplasty is the one which gives perfect speech without affecting the maxillofacial growth and hearing. A large number of techniques are available in literature, and also every surgeon incorporates his own modification to make it a var-

Graph 5. The bar graph represents the association of gender and surgical technique used to treat cleft palate patients. It is observed that in both the genders, prevalence of performing von Langenbeck technique is more when compared to Bardach technique. (Chi-Square, p value: 0.463 ($p > 0.05$ statistically significant)). From the graph, it is evident that there is no statistically significant association between genders and types of palatoplasty technique.



iation. However, the techniques are still evolving and the surgeons are advised to know all the techniques and variations so that one can choose whichever gives the best result in one's hands.

The pros of the study includes, flexibility of the study, less time consumption and accessibility. The cons of the study are limitations in population group, Varied population- ethnicity, and it cannot be accepted for a large population. Hence future studies should focus on larger sample size and long term follow up is needed.

Conclusion

Within the limitations, it can be concluded that Von langenbeck's palatoplasty is used more than Bardach's palatoplasty especially despite both the surgical techniques being the commonest in treating cleft palate cases.

Authors Contribution

First author, Sandhya performed the data collection by reviewing patient details, filtering required data, analysing and interpreting statistics and contributed to manuscript writing.

Second author, Dr. Senthil Murugan P contributed to conception of study title, study design, analysed the collected data, statistics and interpretation and also critically. Also participated in the study and revised the manuscript. All the two authors have discussed the results and contributed to the final manuscript.

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