ASSESSMENT OF WOUND DEHISCENCE FOLLOWING UNILATERAL AND BILATERAL CLEFT LIP REPAIR- AN INSTITUTIONAL EXPERIENCE

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ABSTRACT
Cleft lip and palate are the most common craniofacial anomalies that affect children. Cleft lip is the failed fusion of the medial nasal process and the maxillary process. It is most commonly a manifestation of Van der Woude syndrome. The aim of this study was to assess the prevalence of wound dehiscence following unilateral and bilateral cleft lip repair. A retrospective study was done. Data was collected by analysing 86000 records of patients. 35 patients who had undergone both primary and secondary cleft lip repair were included in the study. From this study we observed that only a minimal of 5.7% of children reported with wound dehiscence. Within the limits of the study, no significant association of wound dehiscence to cleft lip repair was found.

Keywords: Bilateral; Cleft lip; cleft palate; unilateral cleft lip; wound dehiscence.

I. INTRODUCTION
Cleft lip and palate are the most common craniofacial anomalies that affect children. (Chowchuen, Prathanee and Rattanayatikul, 2004; Kummer, 2008). Birth of such children also leads to psychological problems among parents. However, such children need immediate attention and surgery to correct the defect. (Augsornwan, 2004) Development of cleft lip or palate occurs early during pregnancy. The extent of cleft varies from a small groove on the upper lip to a large deformity that extends up to the floor of the nose (Malek, 2001; Ricci and Kyle, 2009)

A cleft lip can be classified into complete or incomplete or as unilateral and bilateral cleft. (Chowchuen, Prathanee and Rattanayatikul, 2004). Surgical correction is the only option of treatment. Most commonly used technique is Millards Rotation Advancement. (Chowchuen, Prathanee and Rattanayatikul, 2004). A Secondary surgery may also be required. Surgery may result in wound dehiscence which is a common complication that is due to poor wound healing. (Kummer, 2008)

Wound dehiscence is usually due to excessive pressure on sutures, trauma post surgery or infection. Vitamin C deficiency can also lead to wound dehiscence. (Jones et al., 2010) Wound dehiscence causes unintentional reopening of wound. This usually occurs 7-10 days of post surgery. (Jones et al., 2010)

Jones J et al (Jones et al., 2010) concluded 8 out of 17 patients had wound complications post cleft repair. Previously numerous clinical trials (Jesudasan, Wahab and Sekhar, 2015; Christabel et al., 2016; Mp, 2017; Patil et al., 2017; Marimuthu et al., 2018; Abhinav et al., 2019; Jain et al., 2019) and public awareness studies (Shati, no date; Patturaja and Pradeep, 2016; Mp and Rahman, 2017) over the past 5 years have discussed various methods and techniques regarding comprehensive cleft lip and palate correction starting from basic
dental extraction to more complicated osteotomies of bone. However, this specific field of study is sparsely researched, hence more studies are needed, to better understand any association between wound dehiscence and cleft lip repair. Previously, our team has a rich experience in working on various research projects across multiple disciplines (Neelakantan et al., 2015; Ramamoorthi, Niveditha and Divyanand, 2015; Abdul Wahab et al., 2017; Eapen, Baig and Avinash, 2017; Manivannan et al., 2017; Patil et al., 2017; Ezhilarsan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; Ravindiran and Praveenkumar, 2018; Wahab et al., 2018; Malli Sureshbabu et al., 2019; Mehta et al., 2019; Rajeshkumar et al., 2019; Samuel, Acharya and Rao, 2020; Sathish and Karthick, 2020). The aim of this study was to assess the prevalence of wound dehiscence following unilateral and bilateral cleft lip repair.

II. MATERIALS AND METHODS

Study design and setting:

The study setting is university-based study. A retrospective study was conducted on 35 patients with cleft lip who visited Saveetha dental college. Thus the population includes all patients with cleft lip. The advantage of this study was that the study population belonged to the same ethnic group and also can be used to create awareness among clinicians regarding the field of study. However, the drawback of this study was patient participation, only patients who were ready to cooperate were included in the study.

Data collection

The inclusion criteria was all patients who reported to Saveetha Dental college with cleft lip for surgical correction. The exclusion criteria was any incomplete data that wasn't recorded properly. The patient records were reviewed and analysed between June 2019 and March 2020. All available data were included in the study to minimise sampling bias. Patients of all age groups were included in this study. Collected data was cross verified using photos and case sheets. Data collected was then tabulated in excel sheets and coded accordingly. Inclusion criteria consisted of all patients with cleft lip. Exclusion criteria were patients incomplete data and no follow up.

Statistical Analysis

After tabulation using MS Excel, the data was exported to IBM SPSS software [Version 19: IBM Corporation NY USA] for statistical analysis. Descriptive statistics was done to assess the data collected. The dependent variable was wound dehiscence that occurred post cleft lip repair. The independent variable was cleft lip repair, age, gender.

Ethical Approval

The ethical approval for the retrospective study was obtained from the institutional ethics board. Ethical approval number: SDC/SIHEC/2020/DIASDATA/0619-0320

III. RESULTS AND DISCUSSION

Out of the total 35 children with cleft lips, 31 were unilateral and 4 were bilateral cleft lips. Among this sample, only 2 children with unilateral clefts reported with wound dehiscence. From the study, it is evident that 88.6% of the cases were unilateral cleft lip cases. Among this percentage only 5.7% of children had wound dehiscence.

Figure I shows that only 5.7% of children had wound dehiscence post cleft lip repair. After statistical analysis of the data, p value of 0.605 (p>0.05) was obtained (Figure I) which shows the data collected was statistically insignificant. Males (48.57%) tend to have higher incidence of cleft lip in comparison to females (40%)(Figure II). Figure III shows that cleft lip had a higher rate of occurrence among 0-6 age group (Unilateral -77.14%, bilateral -11.43%). Also, wound dehiscence was present only in 6.45% of the unilateral cleft lip cases (Figure IV). Unilateral cleft lip had a marginally higher prevalence among males (54.84%) than females (45.16%). (Figure V). Unilateral cleft lip had a higher rate of occurrence among 0-6 age group (87.1%). (Figure VI).

From the study it is easy to conclude that wound dehiscence is only seen in a negligible amount. However, significant studies supporting this consensus have been reported.

Ferdous et al (Ferdous et al., 2010) demonstrated cleft lip repair by vomer flap can be an effective procedure. It can be done at an early age and it also reduces the chance of formation of an oronasal fistula. Jones J et al (Jones et al., 2010) claims that children with Van der Woude syndrome are associated with mutations in IRF6 gene. Such
Van der Woude syndrome children also have a defective BMP4 gene which also influences clefting and wound healing. (Knight et al., 2006)

Wound dehiscence may also be due to overweight, diabetes and increasing age. Use of certain anti-inflammatory drugs, reduced blood supply and certain steroids can also lead to wound dehiscence. (Knight et al., 2006).

Augsornwan et al. (Augsornwan et al., 2013) claimed around 2 - 8% of wound dehiscence in cleft lip repair patients. Comparing the various literature available, the results of the study are against the general consensus.

According to various previous studies conducted in Saveetha [Murali et al., 2017] Which showed importance of proper waste management, relieving pain, and anxiety and management of some medical emergencies in oral submucous fibrosis and carcinoma of the oral cavity, we should also apply your knowledge on these and plan accordingly for the treatment of cleft patients if they associated with other diseases like those mentioned above as well as any rare salivary gland complications like Ranula. [Packiri et al]

The children with wound dehiscence will have a lot of pain following wound infection, repeat surgeries, so proper analgesics and antibiotics have to be prescribed. [Rao et al., 2017; Murali et al., 2017] Our institution is passionate about high quality evidence-based research and has excelled in various fields (Pc, Marimuthu and Devadoss, 2018; Ramesh et al., 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai et al., 2019; Sridharan et al., 2019; Vijayashree Priyadharsini, 2019; Mathew et al., 2020). We hope this study adds to this rich legacy.

Limitations and future scope of the study:

Being an institutional study, the sample size is limited to a certain ethnic group and cannot be generalised to a wider group of population. Hence a further study on a larger diverse population, including a variety of races will provide a concrete association between cleft lip repair and wound dehiscence.

IV. CONCLUSION

Within the limits of the study, in our institutional experience, we observed that wound dehiscence is minimal and also not so significant following primary or secondary cleft lip repair surgery in children.

REFERENCES

Figure I: Bar chart shows the correlation between wound dehiscence and type of cleft lip. X axis depicts the type of cleft lip. Y axis represents the patients with cleft lip. Green colour depicts absence of wound dehiscence post cleft lip repair and blue shows presence of wound dehiscence. The graph shows that wound dehiscence was present only in 5.71% of the cleft lip cases. Chi square test done. p value - 0.601 (p>0.05). Therefore, data analysed is not statistically significant.
Figure II: Bar chart shows the gender prevalence of the type of cleft lip. X axis depicts the gender of patients with cleft lip. The Y axis represents the no of patients with cleft lip. Green colour depicts bilateral cleft lip and blue shows unilateral cleft lip. The graph shows that unilateral cleft lip had higher rate of occurrence among both gender; Males(48.57%) and Females(40%). Comparatively males tend to have higher incidence of cleft lip in comparison to Females.
Figure III: Bar chart shows the age distribution of the type of cleft lip. X axis depicts the age group of patients with cleft lip. The Y axis represents the number of patients with cleft lip. Green colour depicts bilateral cleft lip and blue shows unilateral cleft lip. The graph shows that cleft lip had a higher rate of occurrence among 0-6 age group (Unilateral - 77.14%, bilateral - 11.43%).

Figure IV: Bar chart shows the correlation between wound dehiscence and unilateral cleft lip. X axis depicts wound dehiscence that may occur post cleft lip repair. Y axis represents the patients with unilateral cleft lip. Green colour depicts absence of wound dehiscence post cleft lip repair and blue shows presence of wound dehiscence. The graph shows that wound dehiscence was present only in 6.45% of the unilateral cleft lip cases.
Figure V: Bar chart shows the gender prevalence of unilateral cleft lip. X axis depicts the gender of patients with cleft lip. Y axis represents the patients with unilateral cleft lip. Green colour depicts males and blue shows females. The graph shows that unilateral cleft lip had a marginally higher rate of occurrence among males (54.84%) than females (45.16%).
Figure VI: Bar chart shows the age prevalence of unilateral cleft lip. X axis depicts the age of patients with unilateral cleft lip. Y axis represents the patients with unilateral cleft lip. Green color depicts 6-12 age group, red represents patients above 12 years of age, and blue shows 0-6 age group. The graph shows that unilateral cleft lip had a higher rate of occurrence among 0-6 age groups (87.1%).