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Current concepts in cleft care: A multicenter analysis

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ABSTRACT

The current surgical techniques used in cleft repair are well established, but different centers use different approaches. To determine the best treatment for patients, a multi-center comparative study is required. In this study, we surveyed all craniofacial departments registered with the German Society of Maxillofacial Surgery to determine which cleft repair techniques are currently in use. Our findings revealed much variation in cleft repair between different centers. Although most centers did use a two-stage approach, the operative techniques and timing of lip and palate closure were different in every center. This shows that a retrospective comparative analysis of patient outcome between the participating centers is not possible and illustrates the need for prospective comparative studies to establish the optimal technique for reconstructive cleft surgery.

1. Introduction

Cleft surgery has always been an important focus of the maxillofacial surgeon. For more than a century, various surgical techniques and treatments have been developed for cleft lips and palates, and these are all clinically established (Campbell et al., 2010; Demke and Tatum, 2011). Today, there is a high degree of variability in the techniques used by different centers. In most cases, the surgical approach is based entirely on the surgeon's personal preference, and most surgical centers have their own technique of choice (Sitzman et al., 2008; Tan et al., 2012).

To determine which technique is best suited to which patients, a comparative analysis of the different techniques needs to be performed across multiple centers. So far, systematic reviews of the published literature have revealed no consensus on which treatment provides the best patient outcome (Manna et al., 2009; de Ladeira and Alonso, 2012; Lee and Liao, 2013; Farronato et al., 2014; Shaye, 2014). To investigate whether a comparative analysis of different techniques is feasible among German-speaking departments, we conducted a survey of all craniofacial surgery departments registered with the German Society of Craniomaxillofacial Surgery, to see which, if any, technique is the most popular.

2. Material and methods

In September 2015, we contacted all craniofacial surgery departments that were registered with the German Society of Craniomaxillofacial Surgery. E-mail messages were sent to the head of each department, asking for information on the technique that they used to close the lip and/or palate. In addition, we asked at what time point the operations were performed. Four months after the initial e-mail was sent out, the results were collected and evaluated.

3. Results

We contacted a total of 84 craniofacial departments and received complete answers from 37 institutions in Germany (33), Austria (2), Switzerland (1), and Norway (1). Of the participating centers, 51% were from university hospitals, and the remaining 49% were from non-university hospitals.

3.1. Approach to lip and palate closure

The most popular approach to lip and palate closure was the two-stage approach (29/37 centers), followed by the three-stage (6/37 centers) and one-stage (2/37 centers) approaches (Fig. 1).

3.2. Operative techniques for lip and palate closure

Six different techniques were used by the 37 participating centers for one-sided lip closure (Fig. 2). These were the Randall-Axhausen, Tennison, Pfeiffer, Delaire, Millard, and Tennison-Randall techniques. The Millard (12/37 centers) and Tennison-Randall (14/37 centers) techniques were the most popular.

For two-sided lip closure, the Pfeiffer, Delaire, Millard, Veau, and Tennison techniques were used (Fig. 3). The Veau and Millard techniques were the most popular, while the Pfeiffer and Delaire techniques were the least popular and used in only one center.

The palate was closed by pedicled flaps, bridge flaps, vomer flaps, and other techniques (Fig. 4). The pedicled flap was used by most centers, followed by the bridge flap and vomer flap.

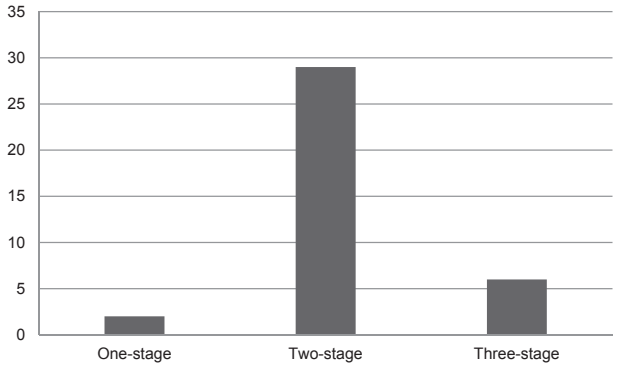

Fig. 1. Approaches to lip and palate closure in participating centers.

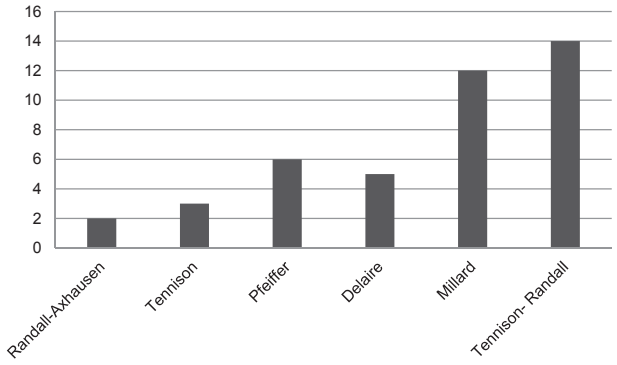

Fig. 2. Preferred techniques for one-sided lip closure.

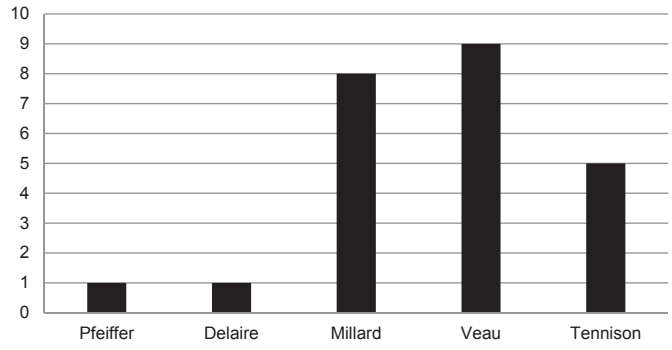

Fig. 3. Preferred techniques for two-sided lip closure.

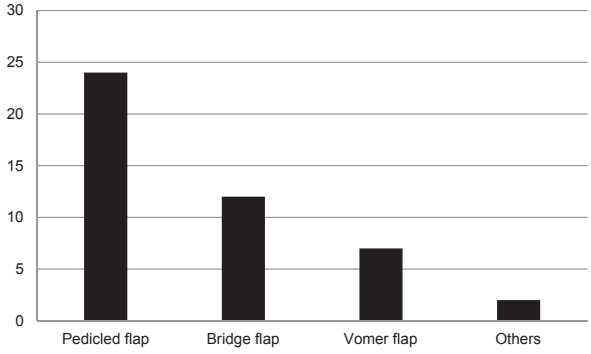

Fig. 4. Preferred techniques for palate closure.

3.3. Time of lip and palate closure

In most centers, the lip was closed between 2 and 6 months of age. No center reported lip closure between 7 and 8 months (Fig. 5). The preferred time for palate closure was more heterogeneous (Fig. 6); most centers chose to close the palate between 9 and 12 months of age.

4. Discussion

The current techniques for cleft repair are well established, but different centers have their own specific adaptations of established protocols, which are usually developed based on surgeons' preference. Many reports have been published that describe the advantages of a particular procedure on patient outcome (Adeyemo et al., 2013). However, these reports are usually based on the findings of a single center and cannot be applied to the general population. Unfortunately, very few randomized controlled trials have approached cleft treatment, and even fewer have focused on the surgical repair of clefts (de Ladeira and Alonso, 2012). Therefore, a comparative multi-center analysis is required to reduce the variety of treatment types and to determine which, if any, of these techniques is the most effective.

To determine whether a comparative retrospective analysis of patient records from different German-speaking centers is possible, we surveyed all craniofacial departments registered with the German Society of Craniomaxillofacial Surgery to find out which techniques are currently the most popular. Our survey revealed a high variability in the techniques currently used in cleft repair between different centers. Similar findings have been reported in other countries (Colbert et al., 2015; Kling et al., 2014) and by systematic reviews of the existing literature (Manna et al., 2009; de Ladeira and Alonso, 2012; Farronato et al., 2014). Although we found that most centers used a two-stage approach to lip and palate closure, there was a great deal of variability in the operative techniques. There was also no consensus in the timing of lip and palate closure. These variations likely reflect the anatomical situation in different patients, as well as the personal preferences of the surgeon.

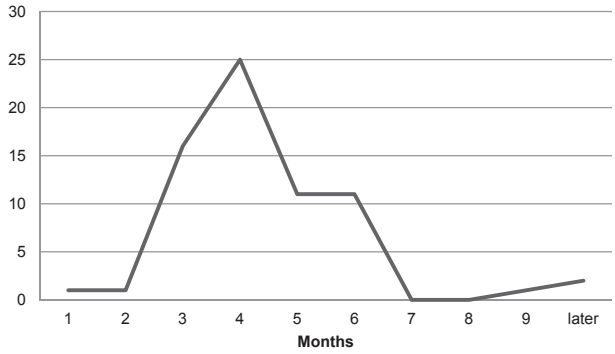

Fig. 5. Preferred time of lip closure.

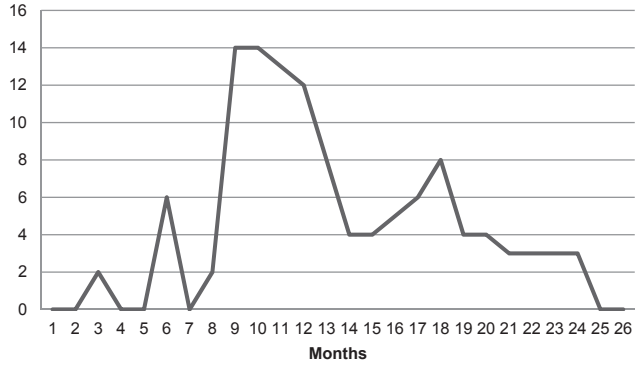

Fig. 6. Preferred time of palate closure.

5. Conclusion

These findings indicate that a retrospective comparative study is not possible among the participating centers, highlighting the need for prospective analyses. To facilitate future prospective studies, it will be necessary to implement standardized approaches for each

of the established cleft repair techniques. This may reveal an optimal cleft treatment in the future. However, achieving a consensus for a standardized treatment will be difficult, because most surgeons are inclined to adhere to their preferred approach. Indeed, adhering to an unfamiliar protocol may have a negative effect on the surgeon's performance and will restrict any modifications to the operative procedure based on the patient's situation. Although the findings of a prospective comparative analysis of the different cleft techniques could be potentially very interesting, one may question whether this is really necessary, considering that many centers report satisfactory results with their own techniques.

Conflicts of interest

This study did not receive any funding, and the authors declare that there are no conflicts of interest.

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