

https://dspace.org/

Evaluation of unilateral cleft lip repairs and the evolution of a new technique based on experience and research

Christofides, Efthimios Andreas

2011-04-14
http://hdl.handle.net/10539/9456

Downloaded from a DSpace repository. https://dspace.org/

EVALUATION OF UNILATERAL CLEFT LIP REPAIRS AND THE EVOLUTION OF A NEW TECHNIQUE BASED ON EXPERIENCE AND RESEARCH

Efthimios Andreas Christofides

A Research Report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Master of Science in Medicine in the branch of Plastic and Reconstructive Surgery (SURG7021 Research Report (MMed Pl&Recon Surg).

Johannesburg, 2010

DECLARATION

I, Efthimios Andreas Christofides declare that this research report is my own work. It is being submitted for the degree of Master of Science in Medicine in the branch of Plastic and Reconstructive Surgery at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree at this or any other university.

Signed: _____ Date: _____

Name: Efthimios Andreas Christofides

To my loving wife Aikaterini, for her understanding and support without which I would not have been able to complete this work. Thanks for your patience and all the laughs.

PUBLICATIONS AND PRESENTATIONS ARISING FROM THE STUDY

Presentations:

1. A LONG TERM SUBJECTIVE AND OBJECTIVE ASSESSMENT OF UNILATERAL CLEFT LIP REPAIRS USING THE MILLARD TECHNIQUE WITHOUT REVISIONAL SURGERY

   Annual Congress of the Association of Plastic and Reconstructive Surgeons of South Africa (APRSSA) – 2002
2. HORIZONTAL UPPER LIP DIMENSIONS AND DYNAMIC CHANGES OVER TIME IN AFRICAN BLACK PEOPLE

   Annual Congress of the Association of Plastic and Reconstructive Surgeons of South Africa (APRSSA) – 2003

Publications:

1. A LONG TERM SUBJECTIVE AND OBJECTIVE ASSESSMENT OF UNILATERAL CLEFT LIP REPAIRS USING THE MILLARD TECHNIQUE WITHOUT REVISIONAL SURGERY

   British Journal of Plastic Surgery 2006; 59(4):380–6
2. ULTIMATE STRAIGHT LINE REPAIR FOR UNILATERAL CLEFT LIPS

   J Plast Reconstr Aesthet Surg. 2009 Jan; 62(1):50–5.

ABSTRACT

Evolution of cleft lip repair has been ongoing for many years. The reason for the various techniques stems from the advances relevant to function and aesthetics of the repair. Unfortunately, the literature does not reveal the long term results of many of these procedures with reference to normal lip anthropometrics. The reason for this is that the normal lip anthropometrics have not been adequately described. This study aims to describe a new technique for unilateral cleft lip repair and to substantiate its evolution by comparing it to the normal upper lips as well as to the most popular current technique of cleft lip repair (Millard technique). This will be done by the following steps:

1. Evaluate the most commonly used current technique of unilateral cleft lip repair (Millard rotation advancement), both objectively and subjectively.
2. Assess the normal anthropometric measurements of the horizontal lip dimensions.
    a. To assess normal horizontal lip dimensions according to different age categories to serve as reference values for further studies.
    b. To assess the timing where the lip is fully developed.

c. To assess Cupid’s bow length in relation to horizontal lip length at different ages, thereby assessing dynamic changes with growth.

3. Compare the currently used technique of unilateral cleft lip repair to normal values indicating the anatomical drawbacks to the technique.
4. Describe a new technique for unilateral cleft lip repair which eliminates some of the unwanted drawbacks of the Millard technique.

This new technique has the distinct advantage of maintaining better lip symmetry and not breaching anatomical landmarks of the lip. This technique is referred to as the straight line repair and is easy to teach and the results are reproducible.

ACKNOWLEDGEMENTS

I would like to acknowledge the time-consuming guidance, teaching and mentorship of my supervisor Prof LA Chait. Thank you.

I would like to mention my gratitude to Dr Potgieter and Geoff Candy who assisted me in obtaining, capturing and analysing the data in this study.

To Daphne Grebe, thank you for your hard work and typing.

TABLE OF CONTENTS

PAGE

1. INTRODUCTION 1

   1.1 Cleft Lip History and General Information 1

   1.2 Overall Aims of Study 10

2. HORIZONTAL UPPER LIP DIMENSIONS AND DYNAMIC CHANGES OVER TIME 12

   2.1 Aim 12

   2.2 Method 13

   2.3 Results 17

   2.4 Discussion 22

      2.4.1 Width of Cupid's Bow in relation to age 22

      2.4.2 Size of the lateral lip segments in relation to age 23

      2.4.3 Width of the mouth in relation to age 25

      2.4.4 Cupid's Bow to lip length ratio in relation to age 26

      2.4.5 Males versus Females 30

   2.5 Conclusion 33

3. A LONG TERM SUBJECTIVE AND OBJECTIVE ASSESSMENT OF UNILATERAL CLEFT LIP REPAIRS USING THE MILLARD TECHNIQUE WITHOUT REVISIONAL SURGERY 36

   3.1 Aim 36

   3.2 Materials and Methods 38

   3.3 Results 43

3.3.1 Subjective Evaluation 43

3.3.2 Objective Evaluation 47

3.4 Discussion 51

3.5 Conclusion 54

4. ULTIMATE STRAIGHT LINE REPAIR FOR UNILATERAL CLEFT LIPS 55

4.1 Introduction 55

4.2 Operative Technique 57

4.3 Materials and Methods 61

4.4 Results 62

4.4.1 Nature of scar 63

4.4.2 Height of lip on the cleft side 63

4.4.3 Peaking of vermilion on the cleft side 64

4.4.4 Notching of the lip border 65

4.4.5 Cupid’s Bow width 65

4.5 Discussion 66

4.6 Conclusion 75

5. CONCLUSION 76

APPENDIX A

Results table for Lip measurements taken in chapter 2 80

APPENDIX B

Statistical analysis of all data taken for this study 87

REFERENCES 102

LIST OF FIGURES

		PAGE
2.1	Vernier Caliper	13
2.2	Lip Dimensions Measured	14
2.3	Cupid's Bow width	23
2.4	Lateral lip segment length	24
2.5	Commissure to Commissure length	25
2.6	Cupid's Bow to lip length ratio	29
2.7	Males versus Females for Cupid's Bow length	30
2.8	Males versus Females for Cupid's Bow to lip length ratio	31
2.9	Males versus Females for Commissure to Commissure length	31
2.10	Males versus Females for lateral lip segment length	32
3.1	Upper, Middle and Lower part of scar	41
3.2	"Peaking" and "Notching" of the Vermilion	41
3.3	Cleft Lip Group Measurements Taken	42
3.4	Subjective Evaluation of scar	44
3.5	Graph showing most bothersome part of scar	46
3.6	Philtral Column Transgression with Millard Repair	49
3.7	Cupid's Bow to Lip length ration in Millard Repaired lips	50
4.1	Straight Line Repair	58
4.2	Patient with Pre-operative Markings	59
4.3	Post-operative result of Straight line repair	60

4.4 Lip dimensions measured in patients with straight line cleft repair 64

4.5 Cupid's Bow to Lip Length Ratio Comparison between Normal Population, Millard repaired cleft lips and Straight Line repaired cleft lips 68

4.6 Example 1 of straight line cleft lip repair showing before (A) and after (B) pictures 70

4.7 Example 2 of straight line cleft lip repair showing before (A) and after (B) pictures 71

4.8 Example 3 of straight line cleft lip repair showing before (A) and after (B) pictures 72

4.9 Example 4 of straight line cleft lip repair showing before (A) and after (B) pictures 73

4.10 Example 5 of straight line cleft lip repair showing before (A) and after (B) pictures 74

LIST OF TABLES

		PAGE
2.1	Gender and Age-group Numbers	15
2.2	Average Lip Dimensions in each Age Category	18
3.1	Patient Questionnaire	39
3.2	Objective scar evaluation	40
3.3	Subjective Results for each Category	43
3.4	Patient happiness with Upper, Middle and Lower part of scar	45
3.5	Presence of Peaking or Notching	48
4.1	Measurements of upper lip dimensions for straight line cleft repair patients	62

PREFACE

As Plastic Surgeons, we are constantly striving for better results for our patients. The fundamentals of plastic surgery are to restore function first and then concentrate on the aesthetic appearance. There are no other fields of plastic surgery that marry these two fundamentals better than cleft lip surgery.

Many surgical principles exist for cleft lip repair such as complete preservation of the Cupid's Bow. However, the cleft lip is repaired prior to growth of the child and this growth together with the surgery many result in an outcome which is different to that which is expected. This has been my experience with the abnormally large size of the Cupid's Bow in cleft lip children who have had Millard repairs.

I would also like to point out that a true analysis of a technique can only be performed on children who have had a cleft lip repair and have not had revisional surgery. Obviously multiple revisions would alter the original operation.

This study analyses some of these points.