Nasalis Muscle in Unilateral Cleft Lip Patients: Anatomical study and Surgical Implications

Thesis

Submitted for partial fulfillment of M.D. Degree in Plastic and Reconstructive Surgery

Presented By

Sarah Abdullah Mohammed Attia

M.B.B.Ch., M.Sc.

Ain Shams University

Supervised by

Prof. / Mostafa Abdelrahman Awad

Professor of Plastic and Reconstructive Surgery

Faculty of Medicine - Ain Shams University

Prof. / Amir Samir Elbarbary

Professor of Plastic and Reconstructive Surgery

Faculty of Medicine - Ain Shams University

Dr/ Hisham Ali Helal

Assistant Professor in Plastic and Reconstructive Surgery

Faculty of Medicine - Ain Shams University

Faculty of Medicine

Ain-Shams University

2016

العضله الأنفيه فى مرضى الشفه الأرنبية
دراسه تشريحيه و انعكاساتها الجراحيه

رسالة

توطئة للحصول على درجة الدكتوراه فى جراحه التجميل والاصلاح

مقدمة من

طبيبة/ سارة عبد الله محمد عطية

بكالوريوس الطب والجراحة

كلية الطب - جامعة عين شمس

تحت إشراف

الأستاذ الدكتور / مصطفى عبد الرحمن عوض

أستاذ جراحه التجميل والاصلاح

كلية الطب – جامعة عين شمس

الأستاذ الدكتور / أمير سمير البربري

أستاذ جراحه التجميل والاصلاح

كلية الطب – جامعة عين شمس

الأستاذ دكتور / هشام علي هلال

أستاذ مساعد جراحه التجميل والاصلاح

كلية الطب – جامعة عين شمس

كلية الطب

جامعة عين شمس

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Acknowledgment

First I thank ***Allah*** the merciful for his uncountable blessings. Then, I would like to express my gratitude to all my thesis supervisors for their guidance, friendship, and support throughout the study.

I would like to express my appreciation and respect to ***Prof. Dr. Mostafa Abdelrahman Awad*** for his precious time and valuable feedback.

My deepest gratitude goes to ***Prof. Dr. Amir Samir Elbarbary,*** my mentor. He guided me through this study and taught me dedication and respect to work. His patience and attention to details have helped me to continue this study.

I would also like to express my appreciation, and gratitude for ***Assit. Prof. Dr. Hisham Ali Helal*** for his support, friendship, and the most valuable adivces. His comments and discussions have enriched and broadened the scope of the study.

An Honorable mention goes to ***Prof. Dr. Mahmoud Magdi Sherif*** for suggesting this interesting topic, and providing me with important resources for the research.

I am also using this opportunity to express my gratitude to the department of Plastic and Reconstructive Surgery, Ain Shams University under the supervision of ***Prof. Dr. Saad Elfayoumi*** who supported me throughout the course of this thesis being my second family.

Last but not Least my warmest thanks, gratitude, and appreciation go to my family, my backbone, who always encouraged me. It is to them I dedicate this work.

INTRODUCTION

The anatomic deformity of the unilateral cleft lip primarily involves the soft tissues of the lip and nose. The underlying bony skeleton is also deficient. Anatomical abnormalities contributing to cleft lip nasal deformity include disfigurement and displacement of the lower lateral cartilage, a short columella, and malpositioning of the lesser maxillary segment. Abnormal insertion of the Nasalis muscle has also been described as another contributor to nasal deformity in cleft lip patients ***(Bagatain et al., 1999).***

The interplay of embryonic development begins at the 7th and 8^{th} weeks, at which time the first ossification centers in the middle part of the face make contact with the muscles of facial expression. From this point on, further skeletal growth is governed by the influence of the surrounding soft tissue. This is assisted by the embryonic cartilage in the ethmoid region along with the development of the cartilaginous nasal capsule, which represents primary growth centers ***(Joos, 1989).*** When the muscles are intact, growth stimulants of the nasal septum can be transmitted to the sutures, as well as the nasal, and maxillary periosteum, thus the development of the midface is positively influenced. In a cleft patient, the earliest points of ossification will appear two weeks later when the muscle precursors are already present. So, all the bone formation will take place at the direction and under the

influence of asymmetric muscular forces ***(Breitsprecher et al, 1999).*** Between the 10th and the 15th weeks of fetal life the deformity of the cleft lip nose is complete and is the same as in a new-born where the only skeletal framework is the nasal cartilaginous capsule. ***(Talmant, 2006).***

Kernahan, and Bauer in 1983 described many findings; Rather than forming a complete sphincter around the oral cavity, the Orbicularis Oris muscle fibers are discontinuous and directed upward parallel to the margins of the cleft. These fibers terminate at the base of the nasal ala on the cleft side and the base of the columella on the non cleft side leading to its deviation because of unopposed pull of the muscle.

On the cleft side there is a lack of bony skeletal support for the alar base. It is therefore displaced laterally, inferiorly, and posteriorly when compared to the normal side. The weaker lower lateral cartilage is usually displaced caudally on the cleft side that has relatively shorter medial crus and longer lateral crus which is manifested as a wide and horizontal nostril with a flat alar dome. ***(Bagatain et al, 1999)***

On the cleft side the facial envelope loses its anterior support in the midline and collapses influencing in the same way the underlying bony structures. The vestibular lining of the nostril is stretched and vertically elongated. The lower lateral cartilage