

Evaluation of the effect of nasoalveolar molding on orbicularis oris muscle dimensions and its impact on the surgical repair of unilateral cleft lip in infants

Ahmed Mohamed Khairy, Mohamed Abdelazim Abu Heba, Omar Mostafa Fawzy, Omar Ahmed Fata

Department of general surgery, pediatric surgery unit, Faculty of Medicine, Alexandria University

Introduction

Orofacial clefts have a wide spectrum of presentations. It is mostly presenting as cleft lip with or without cleft palate. The optimal management of a case with cleft lip requires a multidisciplinary approach involving multiple specialties. The concept of presurgical orthodontics, including NAM (nasoalveolar molding), has been introduced in order to improve the outcome of lip repair.

Aim of the work

The aim of this study is to evaluate the effect of NAM on orbicularis oris muscle dimensions and the impact of this effect on the outcome of surgical repair of unilateral cleft lip at the Pediatric Surgery Department, El Shatby Children’s Hospital, Smouha Children’s Hospital, Alexandria University, Egypt.

Patients

This prospective case series study was conducted on 20 patients diagnosed as complete unilateral cleft lip. Patients with microfrom cleft lip, cleft face and bilateral cleft lip were excluded from this study.

Methods

Each case underwent NAM starting from 2 weeks after birth. Modified Millard repair was performed on each case. Three measurements were taken : philtral length, nasal width, alar base position at three different periods : pre NAM, post NAM and postoperative. The measurements were compared between the pre NAM and post NAM periods and between the post NAM and postoperative periods.

Results

Our study showed that there was a significant increase in both philtral length and nasal width between the pre NAM and post NAM periods and a significant decrease in alar base position between the post NAM and postoperative periods.

Table (1): Comparison between the different periods according to philtral length (n = 20)

	Pre NAM	Post NAM	Post-operative	P ₁	P ₂
Philtral length					
Min – Max.	3.21 – 9.19	3.94 – 11.35	5.64 – 13.63	0.001*	0.068
Mean ± SD.	5.88 ± 1.56	7.49 ± 2.26	8.98 ± 2.38		
Median (IQR)	5.74 (4.97 – 6.74)	6.58 (5.83 – 9.45)	8.39 (7.14 – 10.73)		

Table (2): Comparison between the different periods according to nasal width (n = 20)

	Pre NAM	Post NAM	Post-operative	P ₁	P ₂
Nasal width					
Min – Max.	23.92 – 31.36	24.93 – 33.37	24.36 – 31.39	<0.001*	0.486
Mean ± SD.	27.12 ± 2.38	28.53 ± 2.71	28.01 ± 2.28		
Median (IQR)	27.32 (24.96–28.73)	28.03 (26.21–30.87)	28.19 (25.79–29.81)		

Table (3):Comparison between the different periods according to alar base position (n = 20)

	Pre NAM	Post NAM	Post-operative	P ₁	P ₂
Alar base position					
Min – Max.	7.87 – 18.41	9.03 – 17.76	7.38 – 16.03	1.000	<0.001*
Mean ± SD.	12.51 ± 3.07	12.71 ± 2.67	10.08 ± 2.31		
Median (IQR)	12.27 (9.70 – 14.98)	12.66 (10.37–15.06)	9.43 (8.82 – 10.22)		

Conclusion

NAM has significant effect on orbicularis oris muscle dimensions and could facilitate the surgical repair of unilateral cleft lip in infants.