

30-Year Outcomes and Revision Surgery Rates in a Large Cohort of Patients Undergoing Nasoalveolar Molding Therapy



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INTRODUCTION

Nasoalveolar molding (NAM) is a presurgical technique used to decrease nasolabial cleft severity prior to repair. However, long-term outcomes are lacking regarding the revision rate to the lip and nose in patients who undergo NAM preparation. This study ascertains the rates of revision surgery in a large cohort of patients with a cleft who underwent NAM and were followed to facial maturity.

METHODS

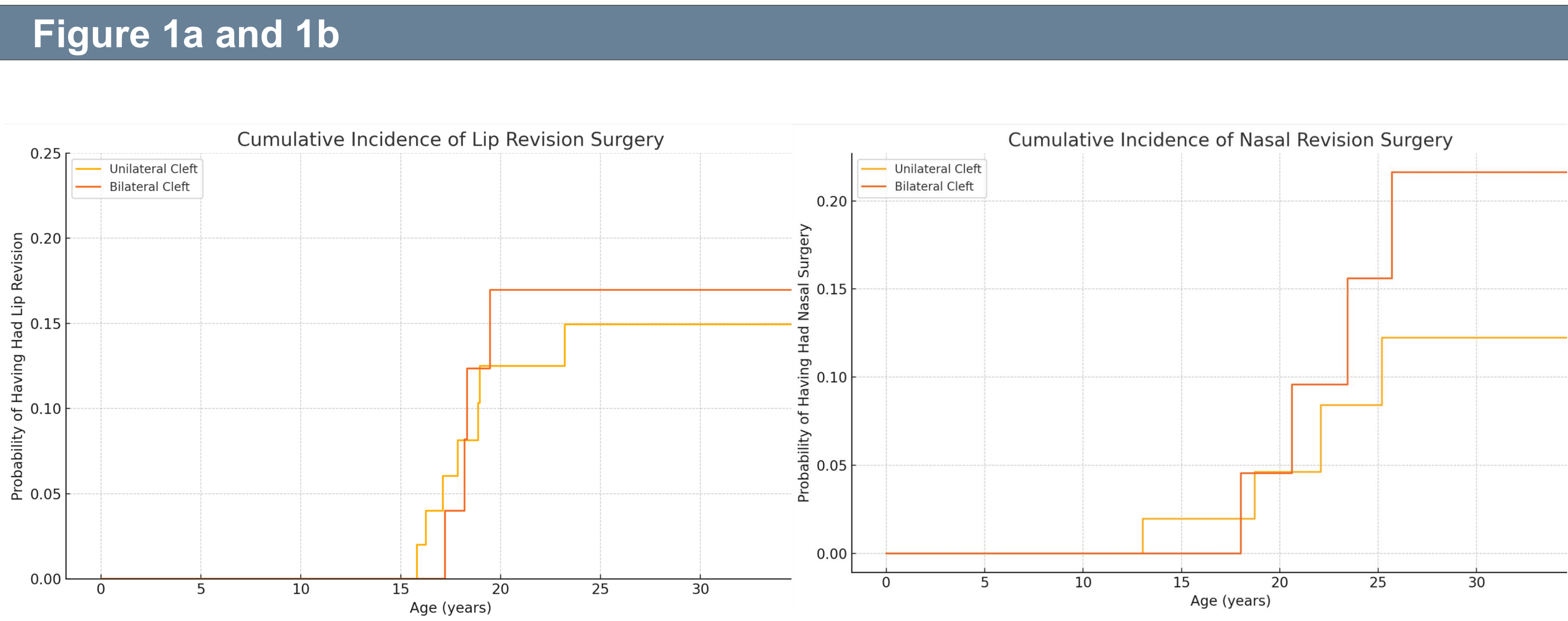
A single-institution retrospective review of all patients with a cleft who underwent NAM from 1995 to 2005 was performed. Operative reports were reviewed from 1995 to 2024 to record all surgeries to the lip and nose performed through facial maturity. Primary surgery was defined as the initial reconstruction to the lip and nose. Revision surgeries were defined as any follow up surgery to the lip and nose. Revision surgery was subcategorized into procedures performed prior to facial maturity (immature) and after facial maturity (mature). Patients with incomplete medical records or any who were lost to follow-up prior to reaching skeletal maturity were excluded. Pearson correlation coefficient and two-paired student t-tests were employed for data analysis.

Table 1.

Indication for Lip Revisions	No. of patients	% of Total Indications	% of Pts with Indications
Shortened lip height	5	14%	6%
Widened/unaesthetic scar	6	17%	8%
Vermilion deficiency	22	61%	27%
Vermilion fullness	2	6%	2%
Peaked cupids bow +/- tethered scar	5	14%	6%
Transverse deficiency, narrow width	2	6%	2%
White roll step off	2	6%	2%
Flattened cupids bow	3	8%	4%
Procedure Types	No. of patients	% of Total Procedures	% of Pts Receiving Procedure
Fat grafting	22	61%	27.16%
Fat grafting as only procedure	7	19%	8.64%
Re-repair with straight line	3	8%	3.70%
Re-repair with rotation advancement	3	8%	3.70%
Local tissue rearrangement	5	14%	6.17%
Abbe flap	2	6%	2.47%
Z-plasty			

Table 2

	Unilateral n=52	Bilateral n=29	P-value
Lip Revisions	25 (48%)	11 (38%)	0.38
Immature Rhinoplasty	12 (23%)	3 (10%)	0.18
Mature Rhinoplasty	30 (58%)	16 (55%)	0.83
Total Revisions	26 (50%)	13 (45%)	0.66
Total Surgeries	207 (3.98 average)	134 (4.62 average)	0.033



RESULTS

A total of 81 patients were studied, 46 male and 35 female, with 52 (64%) unilateral cleft and 29 (36%) bilateral. Average age at last follow-up visit was 18.8 years old. All patients underwent a single-stage lip repair by a single surgeon employing a Cutting-Mohler technique for unilateral repair and a retrograde single stage repair for bilateral clefts.

Revision to the lip was carried out in 36 (44%) of patients, and only 3 (3.7%) prior to reaching facial maturity. Patients with a unilateral cleft had a higher rate of revision than patients with a bilateral cleft, though this was not statistically significant (48% v. 37.9%, p=0.38). Number of lip revision procedures was comparable between unilateral and bilateral patients. The most common indication for lip revision was vermilion deficiency (Table). Re-repair was performed in 10 (12%) patients.

Immature cleft rhinoplasty was performed in 3 (4%) patients, and more common among patients with a unilateral cleft (23%) than bilateral cleft (10%), p=0.18. Mature rhinoplasty was performed in 46 (57%) patients, similarly between unilateral cleft (58%) and bilateral cleft (55%). Nasal revision following mature rhinoplasty was performed in 8 (10%) patients. Surgical techniques employed are outlined in Table.

Patients underwent an average of 4.21 cleft-related surgeries from infancy to adulthood. Patients with a bilateral cleft underwent significantly greater procedures (4.62 versus 3.98, p=0.03).

CONCLUSIONS

Nasoalveolar molding is an effective adjunct to surgical management in achieving improved long-term lip and nasal aesthetic outcomes and reduce the burden of operative revisions as patients reach facial maturity.