

Original Research Article

Assessment of velopharyngeal insufficiency and oronasal fistula after primary surgery of cleft palate

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ABSTRACT

Background: Cleft palates are the most common congenital craniofacial anomalies in children, and their treatment is challenging in terms of outcomes. The objective of the study was to determine the incidence of velopharyngeal insufficiency (VPI), and of the oronasal fistula after a veloplasty.

Methods: By a retrospective study, over a period of 2 years, going from January 2017 to December 2018, carried out in the department of ENT and head and neck surgery of the August 20 hospital in Casablanca, Morocco. The inclusion criteria were all patients operated on for a cleft palate. The main results were the incidence of VPI, and of the oronasal fistula after a primary repair of the palate.

Results: Out of a total of 21 cases, the average age was 4 years, and the sex ratio was 0.61, the average postoperative follow-up duration was 1 year and 9 months. VPI was found in 13 patients (62%), it was mild in 3 patients (14%), moderate in 6 patients (28%), and severe in 4 patients (19%), the frequency of VPI increased significantly with increasing age ($p=0.05$). The oronasal fistula was found in 5 (23.8%) patients, this fistula was more frequent when the patient benefited from the operation at an early age.

Conclusions: Age is the most important factor in the management of cleft palates.

Keywords: Cleft palate, Velopharyngeal insufficiency, Oronasal fistula

INTRODUCTION

Velopharyngeal insufficiency (VPI) is a rare pathology that can be the cause of a real handicap, the cleft palates represent its main etiology.¹

Clefts are the most common craniofacial birth defects in children, with significant effects on facial growth, hearing, and speech.² The management of a patient with a cleft is complex and requires a multidisciplinary team that includes surgeons, orthodontists, speech therapists and pediatricians.^{3,4}

Their treatment, if it is a source of perplexity, represents a challenge to its results.

The objective of our work was to evaluate our practices by studying the results of surgery of the cleft palates (determining the incidence of velopharyngeal insufficiency, and of the oronasal fistula) to improve our care.

METHODS

This was a retrospective monocentric study, over a period of 2 years, going from January 2017 to December 2018.

This study was carried out in the department of ENT and head and neck surgery at the August 20 hospital in Casablanca, Morocco. Were included in the study all patients operated on for primary surgery of a cleft palate, and were excluded all patients whose parents refused to participate in the study, or patients who presented an associated cleft lip, or which have been resumed after failure of the first surgery. Surgical management was carried out by four senior surgeons.

The statistical analysis was carried out with SPSS version 23 software (SPSS Inc, Chicago, IL, USA). First, the frequency of VPI and oronasal fistula was calculated; then, the correlation of these two variables with sex, age at the time of surgery and the type of cleft was analyzed using non-parametric tests (chi-square and Spearman correlation).

RESULTS

We managed during this period 21 cases, with an average age of 4 years, with extremes ranging from 1 year to 8 years, the sex ratio was 0.61. We did not find any associated malformation, heart disease, neurological disorder or psychomotor delay in any of our patients.

The symptomatology was dominated by a hypernasal resonance, audible nasal emission, and a reflux of food towards the nasal cavity in all our patients. Clinical examination showed a soft palate cleft in nine (42.8%) patients, and a soft and hard palate cleft in twelve (57.1%) patients (Table 1). The surgical technique used for all our patients was the two-flap palatoplasty technique.

Table 1: Gender and type of cleft in our population.

Variable		N	%
Gender	Male	8	38
	Female	13	62
Type of cleft	Soft palate only	9	43
	Soft and hard palate	12	57

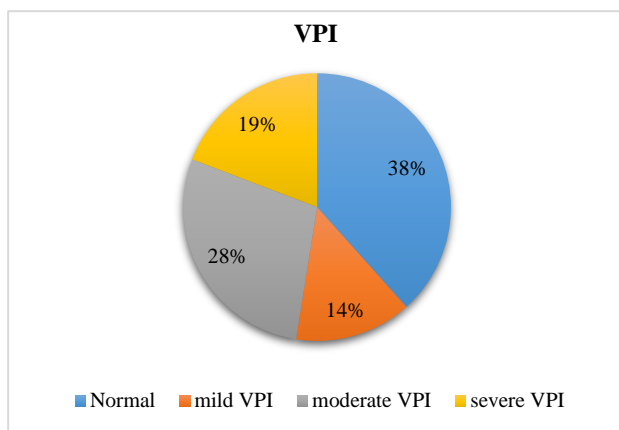


Figure 1: Prevalence of VPI in our population.

The average post-operative follow-up time was 1 year and 9 months.

According to the results, normal velopharyngeal function was found in 8 patients (38%), and VPI in 13 patients (62%), the VPI was slight in 3 patients (14%), moderate in 6 patients (28%), and severe in 4 patients (19%) (Figure 1).

Table 2: VPI and oronasal fistula rates by time of operation.

VPI and oronasal fistula rates	<12 months (n=10) N (%)	12-18 months (n=5) N (%)	>18 months (n=6) N (%)
Degree of VPI			
Normal	7 (70)	1 (20)	0 (0)
Mild	2 (20)	1 (20)	0 (0)
Moderate	1 (10)	2 (40)	3 (50)
Severe	0 (0)	1 (20)	3 (50)
Oronasal fistula	3 (14.3)	2 (9.5)	0 (0)

We noted that VPI was more common, and more severe in patients with a soft and hard palate cleft, than patients with a soft palate cleft, but this difference was not statistically significant (p=0.45). The frequency of VPI increased significantly with increasing age (p=0.05) (Table 2).

The oronasal fistula was found in 5 (23.8%) patients, no fistula was observed in patients operated on after the age of 18 months, while 14.3% (n=3) and 9, 5% (n=2) of patients in the age groups of less than 12 months and 12 to 18 months presented with an oronasal fistula (Table 2), but with no statistically significant difference (p=0.36).

DISCUSSION

Several techniques have been described to repair the cleft palate, all of which share a single objective, which is to establish the velopharyngeal function. The success of the operation is measured by both structural and functional integrity of the palate.⁵

Velopharyngeal insufficiency

In this study, 62% (n=13) of our patients experienced some degree of VPI after primary surgery. This is a very high rate of VPI compared to other studies, which have a rate of VPI from 4.6% to 26.4%.⁶⁻⁸

In this study, good velopharyngeal function, or mild VPI was found in patients who underwent surgery before at 12 months of age, compared to those who underwent surgery at an age greater than 18 months, our study proves that age of the palatoplasty is a major factor for obtaining good velopharyngeal function, this is in agreement with other studies.⁹⁻¹¹ which found better

velopharyngeal skill in infants who have had a cleft repair between the ages of 7 and 11 months.

Normalizing the velopharyngeal valve before the child begins to speak allows him to catch up and develop appropriate language. There is also less risk of the child developing compensatory language due to the absence of adequate velopharyngeal function.¹² The optimal age for a palatoplasty to have good speech results in the United States is between 9 and 18 months to promote normal speech.⁷ In other centers, the lip and soft palate are repaired simultaneously at 4 months, followed by the closure of the residual hard palate at the age of 12 months.¹³

Oronasal fistula

The loss of structural integrity after a palatoplasty leads to a fistula, depending on the size of the fistula, the velopharyngeal competence may be impaired, as well as the reflux of food to the nasal cavity. In the present study, the incidence of oral fistula was 14%, our results are comparable to other recent publications.¹⁴ These studies reported a rate of fistula ranging from 4.7% to 60%.^{15,16}

Although in our study there was a trend for a higher rate of fistula in patients who underwent surgery at an early age, less than 12 months, compared to those who underwent surgery after the age of 18 months, in the literature we found controversial results, several studies have reported that there is no link between the incidence of oronasal fistula and the age of surgery.¹⁷

Limitations

The size of the population in this study due to loss of sight, as well as the duration of post-operative follow-up which is not very long, compared to other centers which assess patients after decades of evolution.

CONCLUSION

Early age of cleft palate management determines functional results, raising parent's awareness of this pathology improves treatment, as well as long-term post-operative follow-up.

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