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DIPLÔME D'ÉTAT DE DOCTEUR EN MÉDECINE

DES Chirurgie Maxillo-Faciale

par

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STABILITE DES OSTEOTOMIES DE LE FORT 1 CHEZ LES PATIENTS PORTEURS DE SEQUELLES DE FENTES LABIO-MAXILLO-PALATINES BILATERALES

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Docteur Jean-Philippe PERRIN

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Abbreviations

ANS, PNS	Anterior/Posterior nasal spine
BCLP, BCLA	Bilateral cleft lip and palate/alveolus
CLP	Cleft lip and palate
ICC	Intraclass correlation coefficient
LF1	Le Fort 1 osteotomy
NS	Non-significant
OS	Orthognathic surgery
Pti	Pterygoid inferior point
UCLP, UCLA	Unilateral cleft lip and palate/alveolus

Retrospective evaluation of Le Fort 1 osteotomy stability within bilateral cleft lip and palate patients

ABSTRACT

Objective: Measure relapse after Le Fort 1 osteotomy in bilateral cleft lip and palate patients and identify factors of influence

Material and methods: Sagittal and vertical position of maxilla was assessed on lateral cephalograms preoperatively, postoperatively, at 1 year and at the last follow-up.

Results: 71 subjects were investigated, 54 had complete data at 1-year follow-up and 30 at long-term follow-up. Mean advancement was 6.05mm and mean relapse 0.5 and 1.2mm at 1 year and at the last follow-up respectively. Maxilla was upward positioned for 12 patients (mean 3.4mm), downward positioned for 31 patients (mean 2.65mm) and had neutral vertical movement for 11 patients. There was 40 to 50% of relapse in vertical dimension. The main factor influencing relapse was amount of surgical movement. Number of missing teeth worsened sagittal tardive stability. Complications altered vertical stability. A decrease of alveolar ridge was shown within smokers.

Conclusion : Maxillary advancement was stable whereas vertical dimension was more sensitive to relapse. Amount of surgical movements was the main predicting factor of relapse.

Keywords

Bilateral cleft lip and palate
Le Fort 1 osteotomy
Lateral cephalogram
Sagittal, vertical dimension
Relapse tendency

Introduction

Adults patients with cleft lip and palate (CLP) usually present with depressed middle face. Maxilla is often deficient in all 3 dimensions and is accompanied by constriction of the maxillary dental arch. Growth deficiencies in CLP are caused more by negative effects of scarred tissues than the malformation itself (1) even though actual techniques for primary lip and palate closure are more conscientious about sparing tissues (2), minimizing scars(3) and restoring a functional anatomy(4).

Specific characteristic of patients with bilateral cleft lip and palate (BCLP) is protrusion of the premaxilla which is conspicuous at birth before cleft lip closure. Protrusion of the premaxilla decreases during facial growth(5), under pressure from the lip and the scars, and the sagittal position of anterior nasal spine (ANS) tends to be normal at the end of growth while the alveolo-dental compartment can often be retropositioned with clockwise rotation(6,7). However generalization is inappropriate in some cases because of individual discrepancies of premaxilla position, especially in vertical dimension(8).

During growth period, treatment of patient with clef lip and palate aims to restore facial esthetic and functional balance. This requires interdisciplinary early approach including speech and language therapy, surgical treatment of velopharyngeal insufficiency, surgical revision of the lip and nose and orthodontics(9). Despite prevention and treatments, maxillary hypoplasia remains challenging to correct and orthognathic surgery (OS) is often necessary at the end of growth. Proportion of patients in need of orthognathic surgery may depend on a lot of parameters, such as type of cleft, timing and types of surgical procedures, interceptive orthodontic treatment, and center inclination to perform orthognathic procedures, which explain a wide interval from 13,3 %(10) to 69,6%(11) of orthognathic surgery among BCLP.

However OS is not easy to perform on these patients who have undergone multiple surgeries. Success of previous treatments, especially restoration of a continuous alveolar arch and closure of palatal fistulae, makes OS safer but it remains more unstable than among non-cleft patients(12). Scarred tissues from preceding surgeries, missing teeth, surgical technique and severity of the cleft had been evocated(13) to explain instability, but large cohorts of BCLP are scarce(14).

This study aimed to assess sagittal and vertical stability of Le Fort 1 osteotomy at 1 year follow-up within the specific population of adult patients with bilateral clef lip and palate, and to examine correlation between post-surgical relapse and population characteristics and surgical movements. Secondary outcomes were skeletal stability and influencing factors at the last follow-up.

Patients and Methods

Population selection

This was a monocentric, intra unit, retrospective study on available data. Due to the retrospective nature of this study, it was granted in written an exception of ethics committee from the Nantes University Hospital, as per French legislation article L. 1121-1 paragraph 1 and R1121-2 of the Public Health Code.

We screened all medical records of patients with BCLP and BCLA who underwent Le Fort 1 osteotomy in the Maxillofacial Surgery and Stomatology department in Nantes University Hospital from 1990 to 2020. Computer archiving database for diagnostic and medical procedures was used for files after 2000. To ensure the exhaustiveness of our study, screening was done twice: once from diagnosis of facial malformation and once from maxillary osteotomy. Files were looked over for assessing inclusion criteria and data were then crosschecked. For files older than 2000, we used a pre-existing personal register.

Inclusion criteria were patient with history of BCLP or BCLA, LF1 osteotomy performed in Nantes University Hospital, and at least 1 year of follow-up. Exclusion criteria were no lateral radiographs available at any time of the study (pre-operative, immediate post-operative, 1-year follow-up), and no lateral radiographs to scale 1:1.

We collected epidemiological data such as gender, age (at surgery time), type of cleft, associated malformation or syndrome, care recourse (treated from birth at Nantes University Hospital or not), medical history of pharyngeal flap and alveolar bone graft, and smoking habit ; dental status (number of missing teeth, management of missing teeth and specifically lateral incisors) ; information about surgery (date, fragmented LF1, type of osteosynthesis, associated mandibular osteotomy or genioplasty, associated bone grafting) and post-operative long-term maxillary contention.

Surgical procedure and post-operative protocol

The same LF1 procedure was performed by several practitioners. Most of the procedures were performed by one operator (JMM). It consisted in a conventional Le Fort 1 maxillary osteotomy technique as described by Bell(15). Maxilla was mobilized and held in occlusion with maxilla-mandibular fixation on a preformed splint. Fixation was completed with 4 miniplates and screws, or 2 miniplates on canine pillars and 2 wires on zygomatic arches, mostly in the oldest cases. Then mandibular osteotomy and genioplasty was executed if needed. When a reduction genioplasty was

performed, the removed bone was placed into the LF1 osteotomy, or on both sides of the pyriform rims. Bone grafting from another surgical site was never performed in this series. Donor site was mandibular (from genioplasty or posterior part of the distal segment from mandibular osteotomy) or part from the sinuses wall or bony nasal septum.

Post-operative antibiotic therapy was administrated if there was a concomitant bone grafting. During the osseous consolidation time of 6 weeks, soft diet was preserved and elastics maxilla-mandibular fixation with occlusal splint was continued, during night and several hours a day. Orthodontic treatment could start again after this stage.

Radiographic measurements

Standardized lateral cephalograms were obtained at 3 times (4 times if available): pre-operative, immediate post-operative, 1 year post-operative and at the last follow-up (at least 2 years after the surgery.

Cephalometric tracings were based on stable structures: outlines of nasal bone, cranial vault and sella turcica. These structures enabled to superimpose radiographs accurately at the various times. This method has been tried and tested for a long time(16) and is still widespread(17) Figure 1.

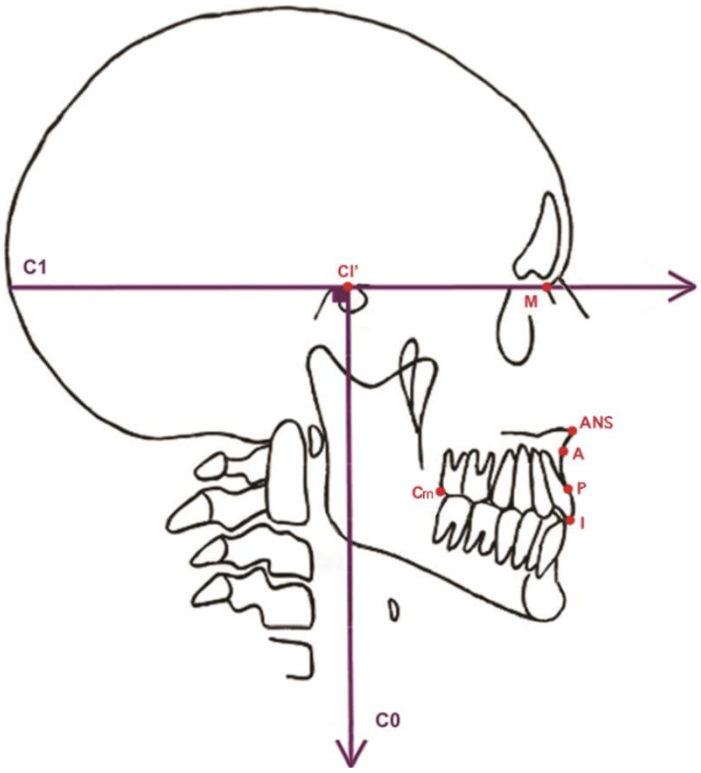

Figure 1 : Cartesian coordinate system based on lateral cephalograms

The analysis focused on 5 landmarks: ANS anterior nasal spine, A subspinal point (deepest point on the anterior contour of the upper alveolar process), P prosthion (lowest and most anterior point of the upper alveolar process), I incisor (inferior edge), Cm cusp of molar (distal cusp of the second molar, or first molar if the second was missing or impacted). Orthonormal coordinates system was defined in abscissa by C1 line from Delaire's analysis(18), and in ordinate by an orthogonal line from C1, named C0 by Nimeskern(19). Horizontal and vertical coordinates were measured for each landmark at each time.

To ensure reliability of the radiographic measurements, all of them were determined twice by the same examiner, at an interval of three months at least.

Statistical analysis

Accuracy of cephalometric measurements was tested by intraclass correlation coefficient (ICC). The interpretation of reproducibility was based on the following scale:

If ICC > 0.8 = excellent

If ICC between 0.6–0.8 = good

If ICC between 0.4–0.6 = moderate

If ICC < 0.4 = poor

Normal distribution of measurements was verified with Shapiro-Wilk test. A Student t-test was used to analyze the impact of surgical movements on relapse. An analysis of variance (ANOVA) was perform to evaluate the others factors. Spearman's rank correlation was tested for continuous variables, such as age and amount of surgical movement and relapse. Finally multivariate analysis was achieved by multiple linear regression with variables which had appeared significant in univariate analyses. A *P* value less than .05 was considered statistically significant.

Results

Population baseline characteristics

Between 1990 and 2020, 71 LF1 for BCLP/BCLA were performed in the Department of Oral and Maxillofacial Surgery in Nantes University Hospital. Baseline characteristics of these patients are described in Table I. 54 patients met inclusion criteria for primary outcome analysis and 30 for secondary outcome analysis (Figure 2). Patients included in the long term assessment had a mean radiological follow-up of 55 months.

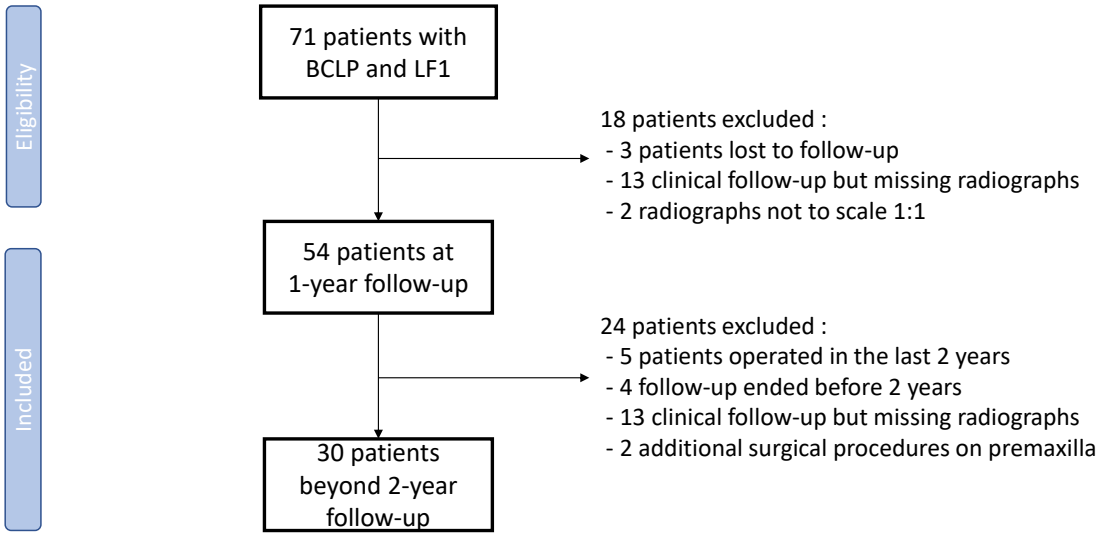

Figure 2 : Population selection

Most of patients presented with complete BCLP (68.2%), and 20% had associated syndrome. Thirty-one patients had undergone pharyngeal flap. This procedure had been the first-line treatment for velopharyngeal insufficiency after speech therapy failure; but was progressively replaced by intravelar veloplasty and pharyngeal autologous fat injection which was supposed to less interfere with facial growth. Growth was achieved at the time of osteotomy.

Variable (total)		n (%)
Gender (71)	M/F	48 (67.6) /23 (32.4)
Type of cleft (66)	Complete BCLP	45 (68.2)
	Asymmetrical BCLP	17 (25.8)
	BCLA	4 (6.06)
Syndrome (65)	Yes/no	13 (20.0) /52 (80.0)
Previous pharyngeal flap (56)	Yes/no	31 (55.4) /25 (44.6)
Previous alveolar bone graft (59)	Yes/no	48 (81.4) /11 (18.6)
Age (71)	Mean [range]	21.4 [15.3;45.3]
	Median [quartile]	18.8 [17.8;21.4]

Dental status		
Missing teeth (69)	Mean [range]	3.5 [0;17]
Lateral incisor spaces (68)	Closed/maintained	32 (47.1) /36 (52.9)
Year of procedure (71)	[1990-2000]/[2001-2010]/[2011-2020]	18 (25.3) /31 (43.7) /22 (31.0)
Intra-operative data		
Fragmented LF1 (71)	1/2/3 fragment(s)	52 (73.2)/ 13(18.3)/6(8.5)
Mandibular osteotomy (71)	1-jaw/2-jaw	52 (73.2)/ 19 (26.8)
Genioplasty (71)	Yes/no	36 (50.7)/ 35 (49.3)
Osteosynthesis (71)	4 plates/2 plates + 2 wires	47 (66.2)/ 24 (33.8)
Bone grafting (69)	Yes/no	11 (15.9)/58 (84.1)
Smoking (68)	Yes/no	17 (25.0)/51 (75.0)
Long-term contention (46)	No	9 (19.6)
	Partial denture	6 (13.0)
	Palatal archwire	8 (17.4)
	Splint or retainer	23 (50.0)

Table I: Patients baseline characteristics

Reproducibility of measurements

Reproducibility intra-observer was excellent for sagittal and vertical position of the 5 studied landmarks (Table). Next results are expressed as an average of the two measurements.

ANS xT0	**ANS xT1**	**ANS xT2**	**ANS xT3**	**ANS yT0**	**ANS yT1**	**ANS yT2**	**ANS yT3**
0,931	0,906	0,932	0,980	0,913	0,939	0,925	0,955
A xT0	A xT1	A xT2	A xT3	A yT0	A yT1	A yT2	A yT3
0,992	0,986	0,987	0,992	0,975	0,968	0,961	0,978
P xT0	P xT1	P xT2	P xT3	P yT0	P yT1	P yT2	P yT3
0,994	0,989	0,986	0,990	0,990	0,962	0,958	0,972
I xT0	I xT1	I xT2	I xT3	I yT0	I yT1	I yT2	I yT3
0,995	0,995	0,990	0,995	0,996	0,992	0,994	0,995
Cm xT0	Cm xT1	Cm xT2	Cm xT3	Cm yT0	Cm yT1	Cm yT2	Cm yT3
0,976	0,984	0,972	0,977	0,992	0,986	0,978	0,991

Table II: Reproducibility intra-examiner analysis using intra-class correlation coefficient

Surgical movements and relapse

Surgical movements were assessed according to their changes in the horizontal and vertical reference lines. For horizontal movement, maxillary advancement was designated as positive. For vertical movement (based on the movement of the A point), maxillary impaction was designated as negative, and downward positioning as positive.

All of the movements had a normal distribution which allowed their representation by their mean and standard deviation (*Table* III).

		ANS	A	P	I	Cm
Sagittal movement	Per-operative (T0T1)	4.1 ± 3.7	6.3 ± 2.7	6.3 ± 2.8	5.9 ± 3.3	5.7 ± 2.8
	1 year follow-up (T1T2)	-1.6 ± 1.9	-1.0 ± 1.1	-0.8 ± 1.0	-0.1 ± 1.8	-0.2 ± 1.5
	Last follow-up (T2T3)	-0.1 ± 1.7	-0.6 ± 1.1	-1.0 ± 1.4	-1.0 ± 1.4	-0.0 ± 1.2
	Total movement (T0T3)	3.0 ± 3.6	5.2 ± 2.6	4.9 ± 2.9	5.0 ± 3.1	5.9 ± 2.9
Vertical movement Impaction n=12	Per-operative (T0T1)	-0.9 ± 3.2	-3.3 ± 1.9	-3.7 ± 2.0	-3.5 ± 2.2	-3.0 ± 3.1
	1 year follow up (T1T2)	0.3 ± 1.2	0.7 ± 1.3	0.5 ± 1.0	0.5 ± 1.0	0.7 ± 2.2
	Last follow up (T2T3)	-0.7 ± 2.5	-0.3 ± 2.7	0.2 ± 1.7	1.2 ± 1.9	1.2 ± 1.5
	Total movement (T0T3)	-1.2 ± 2.6	-2.3 ± 2.8	-2.8 ± 1.9	-1.6 ± 2.7	-1.1 ± 1.3
Vertical movement Downward positioning n=31	Per-operative (T0T1)	3.8 ± 2.4	3.1 ± 2.3	3.0 ± 2.5	3.1 ± 2.3	1.4 ± 2.3
	1 year follow-up (T1T2)	-1.3 ± 2.3	-1.1 ± 2.1	-1.1 ± 2.1	-1.0 ± 1.9	-0.2 ± 1.3
	Last follow-up (T2T3)	0.2 ± 1.4	-0.6 ± 1.5	-0.6 ± 1.6	0.3 ± 0.8	0.4 ± 0.8
	Total movement (T0T3)	2.3 ± 2.3	0.8 ± 2.4	1.0 ± 3.1	2.3 ± 2.8	1.1 ± 1.5

Table III: Per-operative movement is defined by the difference of landmark position between T0 and T1. 1 year relapse is the difference between T1 and T2 and tardive relapse is the difference between T2 and T3 (1 year to the last follow-up). Total movement shows the resultant of surgery (T0 to T3)

In sagittal plane, we observed that the mean surgical advancement was lower for ANS than for the others landmarks. This can be explained by the frequent resection of part of ANS during surgery,

because of its abnormal length in patients with retrusive maxilla(20). For this reason ANS coordinates changes were not considered as clinically relevant as A, P and I coordinates. When ANS is neglected, maxillary mean advancement was 6.05mm. At 1 year follow-up, sagittal relapse was 0.5mm (8.7%) for the four most compelling landmarks and close to zero for dental anterior(I) and posterior(Cm) landmarks. At the last follow-up, mean relapse was 1.2mm (19.4%).

In vertical plane, maxilla was impacted within 12 patients whereas it was down-repositioned in 31 cases, and had neutral vertical movement in 11 cases. Mean impaction was 3.4mm upon A, P, I, Cm, with a mean relapse of 0.6mm (17.8%) at 1 year and 1.65mm (42.2%) at the last follow-up. Mean down-repositioning was 2.65mm with a mean relapse of 0.85mm (32.1%) and 1.35mm (50.9%) at 1 year and at the last follow-up respectively.

Neither gender, age, associate syndrome, nor care recourse significantly influenced stability of LF1 osteotomy. There was no evidence of influence of dental status on relapse except for the number of missing teeth on Cm in univariate analysis (p=0.0295) at 1-year follow-up ; however at the last follow-up there was a correlation between number of missing teeth and horizontal relapse over A and P (p=0.0012 and p= 0.0019).

Fragmented LF1 did not influence stability, neither did the type of osteosynthesis or simultaneous genioplasty. Whereas mandibular osteotomy associated to the LF1 significantly changed sagittal stability of dental landmarks I and Cm (Table IV) at 1 year follow-up, where they tend backward when LF1 was performed alone and tend forward when mandibular procedure was associated. This observation at 1 year remained significant after correction of confounding factors, but disappeared at last follow-up.

Landmark	**1-jaw surgery**	**2-jaw surgery**	**p**
ANS	-1.5 ± 1.8	-1.8 ± 2.1	0.6193
A	-1.15 ± 0.9	-0.7 ± 1.3	0.19
P	-0.8 ± 0.9	-0.7 ± 1.2	0.71
I	-0.5 ± 0.3	0.8 ± 0.4	**0.0178**
Cm	-0.5 ± 0.2	0.6 ± 0.4	**0.0137**

Table IV: Post-operative movement at 1 year follow-up (expressed in millimeters) depending on the type of surgery. Advancement is designated positive and backward movement is designated as negative.

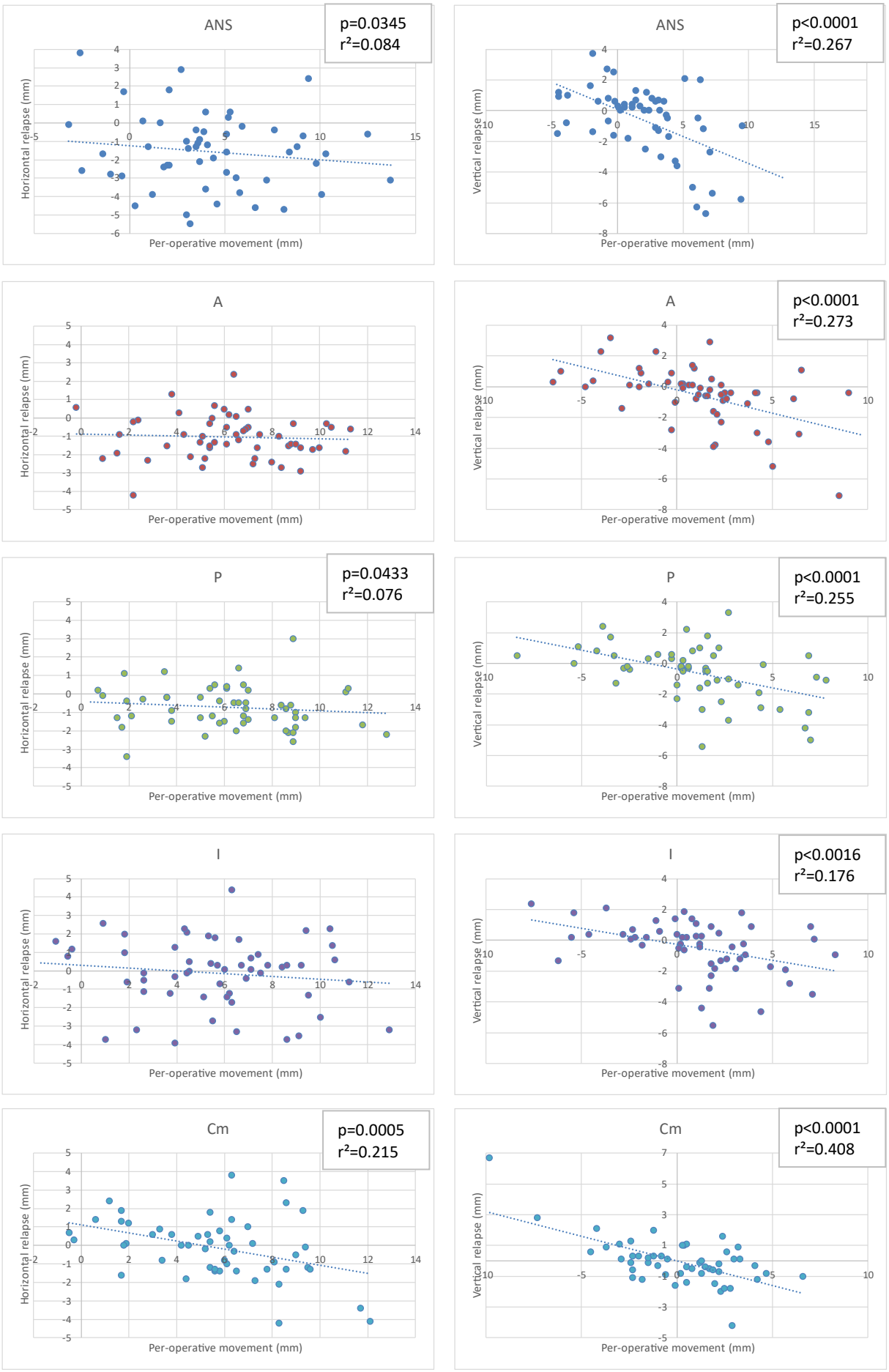

Figure 3: Relapse at 1 year depending on maxillary surgical movements

Multivariate regression demonstrated a strong and linear negative correlation between vertical surgical movement and vertical stability for all the five landmarks ($p<0.0016$ to $p<0.0001$ and $r^2=0.176$ to $r^2=0.408$). A less important but significant linear negative correlation was shown between surgical advancement and sagittal stability upon ANS, P and Cm ($p=0.0345$, $p=0.0433$ and $p=0.0005$ respectively). These outcomes are shown in Figure 3.

Active smokers had a significantly higher position of P than non-smokers at 1 year follow up (1.6mm average, $p=0.0008$), and this result persisted at last follow-up (additional 1.2mm, $p=0.0443$). There was no significant horizontal change, and no significant change for the other landmarks depending on smoking status. Finally, occurrence of post-operative complication altered vertical stability upon ANS, A, C, I, Cm ($p=0.0026$, $p=0.0004$, $p=0.0206$, $p=0.0149$, $p=0.0242$ respectively), both in uni- and multivariate analyses (except for I which was non-significant in multivariate analysis) with a mean reascent of 2.1mm.

Discussion

This study aimed to assess LF1 stability in sagittal and vertical dimension within 54 BCLP patients. It represented by far the largest cohort of orthognathic surgery within BCLP(14) in a single tertiary care cleft center. Factors influencing positively or negatively stability of the maxilla have never been successfully shown due to small series of patients.

Maxillary advancement was 6.3mm on the average, with a 1.0 mm of relapse at 1 year on A landmark. This result was comparable to a recent review, that reported 5.9mm maxillary advancement and 1.1mm of horizontal relapse(21).

Amount of maxillary advancement is the most reported factor influencing relapse (12,22,23) in CLP and was encountered again in our study. However, even in the greatest sagittal movements, mean horizontal relapse was moderate to low, inferior to 2mm at every landmark at last follow-up. Maxillary advancement proved to be stable and there were very few factors that influenced relapse: maxillomandibular osteotomy at 1 year post operatively and number of missing teeth at last follow-up.

Maxillomandibular osteotomy is usually recommended over maxillary osteotomy alone in any type of CLP patients(23), however no better stability has ever been described in large cohorts (16,22,23). Worse still Velasquez recently highlighted a higher horizontal relapse rate after maxillomandibular osteotomy(21), maybe because of clockwise rotation of the mandibula when a setback is performed to compensate a large theoretical maxillary advancement(24). The present study found a significant change on anterior and posterior dental landmarks (Table IV) at 1 year, which has been described on A landmark by Baumann(25) before. This change was minor (about 1mm at 1 year) and was not significant at last follow-up. That being said authors think that there is not enough evidence to recommend performing or avoiding an associate mandibular procedure in BCLP and that appropriateness of maxillomandibular osteotomy should be decided only on individual clinical examination and radiological findings.

Influence of number of missing teeth on LF1 stability has been evocated but significant results were lacking(23). In this study, tardive sagittal relapse was negatively influenced by the number of missing teeth. There was no significant change in early relapse probably because of the orthodontic treatment going on during the first post-operative year. Number of missing teeth being also a predictive factor for the need of FL1(26), this reinforce the importance of oral hygiene and preservation of dental assets to achieve good clinical results in cleft patients.

Evidence on vertical stability in BCLP is even scarcer than on sagittal stability. Only one study evaluated vertical movements in BCLP(27) after maxillary down repositioning only (5 to 10mm downward movement with vertical relapse of 1.3mm or 17.8%). In the present study vertical movements were downward or upward (Table III). There was a strong negative linear correlation between vertical relapse and vertical surgical movement, as previously described by Marion(22) and Hirano(23) within UCLP and CLP patients. Besides the influence of amount of vertical movement during surgery, occurrence of complication was the main factor that worsened vertical stability.

Vertical position of P changed significantly within smokers (1.6mm average). This observation may not be linked to instability of the maxilla: pre-existing poor vascularization and periodontal fragility of premaxilla, with convergence of ischemic effect of smoke and surgery may trigger acute periodontal damages with retroceding gums and alveolar bone. Loss of alveolar height (represented by P landmark) did not recovered at last follow-up and therefore is suggested to be definitive. Smoking is an important and well known predictive factor of impaired healing in general surgery(28), oral(29) and maxillofacial surgery and orthognathic surgery, and is associated with wound non-union, delayed consolidation and surgical site infection(30). Nevertheless, to the best of our knowledge, decrease of anterior alveolar ridge has never been described within smokers following orthognathic surgery, neither among patients with CLP nor in general population. Potential bias of maxilla aseptic necrosis, more frequent within smokers and patients with facial clefts(31), was explored but did not seem to be relevant because it only happened once in the analysis of stability ; twice in the whole center population but one patient had been excluded before primary analysis because of lack of radiographs. These results reinforce the importance of smoking cessation during healing period and at least 4 to 6 weeks before surgery(32), as an independent, important, and avoidable factor of complications.

This study suffers numerous biases. This was a retrospective study, but the rarity of BCLP makes prospective collection of data very difficult and randomized controlled trial nearly unrealizable. We attempt to describe a cohort as close as possible to the reality of orthognathic surgery among patients with repaired bilateral cleft lip and palate, therefore we did not excluded patients with syndrome associated to the cleft. Syndromic cleft involved 13 patients (19.4%) in our study, which is comparable to other centers(10,11). Although maxillary advancement was greater among syndromic cleft patients, stability was not statistically different from others.

Three-dimensional acquisition and analysis is the latest tool, but 2D cephalometric analysis remains relevant for scientific publications and clinical use. However the main restriction of this type of study is the lack of evaluation of transversal dimension, this may explain the non-significance of several variables especially dental status and fragmentation of LF1.

A traditional technique for cephalometric measurements was preferred to digitization because the original radiographs would have been spoiled. Besides this technique has been proved reliable(22,33). Variate skeletal (ANS, A) and dentoalveolar (P, I, Cm) landmarks were used to increase reliability, and study both anterior and posterior stability. We wished we would use more posterior landmarks, specifically posterior skeletal landmarks, and investigated posterior nasal spine (PNS, the end of the bony palate) and inferior pterygoid point (Pti)(18) but none of them were workable : medially PNS was very difficult to distinguish and sometimes absent considering patients had cleft palate, and laterally Pti reossification after surgery blurred the point. Dental landmark in relation with occlusion seemed to be more accurate and more relevant from a clinical point of view.

Conclusion

Orthognathic surgery in BCLP is a stable technique which should not be avoided when indicated because it permits great improvements of occlusion, facial esthetics and functional balance. Planification should as usual rely on clinical and radiological findings but take into account 1.5mm of relapse in sagittal plane. Vertical dimension is less stable than sagittal advancement and is particularly sensitive to occurrence of complication. Finally, due to uncertain vascularization of premaxilla in BCLP, practitioner should be even more attentive to smoking habits within this population before performing maxillary osteotomy.

The authors declare that they have no competing interest.

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Titre de Thèse : Stabilité des ostéotomies de Le Fort 1 chez les patients porteurs de séquelles de fentes labio-maxillo-palatines bilatérales

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RESUME

Objectif : Mesurer la récidive après ostéotomie de Le Fort 1 et évaluer les facteurs qui l'influencent chez les patients porteurs de fentes labio-maxillo-palatines (FLMP) bilatérales.

Matériels et Méthodes : Mesure de la position sagittale et verticale du maxillaire (basée sur 5 repères, osseux et dentaires) sur des téléradiographies de profil prises avant et après l'intervention, au suivi à 1 an et au dernier suivi.

Résultats : 71 patients porteurs de FLMP bilatérales ont bénéficié d'une ostéotomie de Le Fort 1, 54 patients avaient un suivi radiologique complet à 1 an et 30 à long terme (>2 ans). L'avancée maxillaire était de 6,05mm en moyenne et la récidive de 0,5 et 1,2mm respectivement à 1 an et au dernier suivi. Dans le sens vertical, 12 patients avaient reçu une impaction maxillaire (3,4mm en moyenne), 31 patients un abaissement (2,65 en moyenne) et 11 patients un mouvement neutre (*ie* avancée maxillaire pure). La récidive vertical était de l'ordre de 50 à 60%. La récidive était principalement influencée par le mouvement per opératoire. Le nombre de dents manquantes dégradait la stabilité sagittale à long terme. La survenue de complications altérait la stabilité verticale. L'os alvéolaire était moins haut en post opératoire chez les fumeurs.

Conclusion : L'avancement maxillaire apparait stable alors que les mouvements verticaux sont sujets à des dégradations post-opératoires. Le facteur le plus déterminant pour la stabilité maxillaire était l'amplitude du mouvement per-opératoire.

Mots-clés

Fente labio-palatine bilatérale, fente labiale, fente palatine
Ostéotomie de Le Fort 1, chirurgie orthognathique
Récidive post-opératoire
Dimension sagittale, dimension verticale
Téléradiographies de profil