ABSTRACT

With an average frequency of 1/800 births in France, labio-maxillo-palatal clefts (LMPC) are among the most frequent congenital malformations. They raise functional, esthetic, psychological and socio-familial problems that must be managed with an interdisciplinary approach. Within the medical team, the dentist must, by way of prosthetic restorations, compensate for certain sequelae and deficiencies. According to the severity of the case and the success of the treatments, the typical restoration can be limited to replacing the missing lateral incisor, or the restoration may require undertaking comprehensive treatments involving a much more specialized arsenal of surgical and prosthetic procedures.

KEY WORDS

Labio-maxillo-palatal cleft
Interdisciplinary medical team
Prosthetic rehabilitation
Implants and clefts
Periodontal reconstructive surgery
Sequelae
1 – INTRODUCTION

LMPC are anomalies of embryonic orofacial development which can arise in the absence of partial or complete fusion of certain facial buds. These anomalies which frequently present with LMPC cause functional and esthetic problems requiring medical care from the moment of birth.

The main task of an interdisciplinary team dealing with clefts is to reach a common goal. They achieve this objective by assessing different medical strategies and by then choosing the best treatment for their patients.

Prosthetic rehabilitation is the ultimate goal of comprehensive case management and the role of the dentist in this process is of utmost importance. Given what we now know about periodontal and prosthetic procedures, today it is possible to choose the preferred therapeutic approaches for the management of LMPC sequelae.

In order to select the best treatment plan, the dentist must take into consideration all the anatomical defects encountered during the oral examination of an adult patient with a LMPC who is at the end of the growth period and who has either ended or interrupted surgical and orthodontic treatments.

2 – SURGICAL PROCEDURES

Prosthetic rehabilitation for a patient who is being treated for a cleft, requires planning for very diverse medical conditions. It may be simply a “single lateral” that is missing or as serious as a significant loss of dental structure and crestal bone from the atrophied maxilla. The difference for these patients is the considerable attention that is paid to the special characteristics of LMPC.

2 – 1 – Problems of facial context

The degree of difficulty in obtaining an optimal result with prostheses depends on an individual and comprehensive study of different clinical elements such as facial symmetry, disharmony of the midface in all three planes of space leading to midline asymmetry. The facial context for a patient with a LMPC varies according to the maxillary growth as well as the labial and nasal sequelae.

Maxillary hypoplasia is a frequent sequela in cleft palate patients. It is three-dimensional and presents a concave profile, a flattening of the midface, and a downward curving of the upper lip.

Structural deformities of the lip are hard to distinguish from nasal sequelae. We see thin, long and short lips, as well as defects of the vermilion border, cupid’s bow, and philtrum.

The nasal sequelae vary according to the type of cleft. With unilateral clefts, asymmetry of the face is noticeable and generally we see a shortened columella in cases of bilateral clefts.
These numerous nasal and labial sequelae play an important role in the esthetic success of prosthetic treatment.

2 – 2 – The muco-gingival problem

The deformities of the labial mucosa are frequently manifested by a narrow mouth opening, scarred flanges and frenums as well as palatal and/or residual buccal fistulas (Figs. 1 and 2)\textsuperscript{29,28,37,38}. The frenums can exert traction that is apical in relation to the soft tissues and thereby can participate in the development of recessions. In addition, they work against one another during full denture prosthetic rehabilitation, when attempts are made to obtain a working marginal peripheral junction.

All the abnormalities associated with LMPC, ageneses, supernumerary buds and teeth, delayed eruption, are accompanied by a quantitative decrease in surrounding tissues\textsuperscript{3,34}. A decrease in attached gingiva and alveolar mucosa is evident. These patients are at risk for periodontal diseases and recessions (Fig. 2)\textsuperscript{28}.

2 – 3 – The bone problem

As for an alveolar cleft, we frequently observe epithelialization whether the space is closed or opened by orthodontic procedures (Figs. 3 and 4).

The cleft can be examined by a dental explorer or periodontal probe, without local anesthesia.

The three-dimensional morphology of the missing periodontal structure can present a more or less pinched facial shape, that is either simple, vertical and straight, or more or less complex and laterally oriented\textsuperscript{22}.

Mercier has proposed a way to resolve this particular problem by making gingivoplasties\textsuperscript{21}, a solution that we find inadequate today, because of the indisputable support created by the insertion of conjunctive tissue grafts\textsuperscript{23}.

A prosthetic resolution for treatment is often disrupted or even stopped very frequently by a sequela - the persistence of an alveolar fissure of varying depth (Fig. 5)\textsuperscript{23}.

Figure 1
An example of a persistent palatal fistula.

Figure 2
Fistula and persistent buccal-palatal opening.
The residual alveolus adjoining clefts shows decreased volume both in bucco-lingual and apical-coronal dimensions, at the Class III level in the Seibert classification. This deficiency is sometimes imperceptible but can be verified with a silk thread or an explorer. Practitioners usually follow the status of cleft palate patients with panoramic X-rays throughout the growth period.

But this conventional radiological assessment cannot provide a good tridimensional appreciation of the defect. But with 3D images, a multi-axial recombination of the acquired images reconstructed in two dimensions, practitioners can very rapidly determine that, in the majority of cases, the loss of residual osseous substance is profound, multi-dimensional, invaginated, and complex in form (Fig. 6).

Figure 3
Residual epithelial fold on the alveolar cleft.

Figure 4
Idem on the orthodontically closed space.

Figure 5
The alveolar fissure often penetrates widely as deep as the roots of teeth where it reduces their periodontal cover.

Figure 6
At a high level the cleft narrows but becomes highly invaginated and more complex in its form.
The indications and contra-indications for new grafts do make up the entire basis for management of residual osseous deficits of labio-maxillary-palatal clefts at the end of the growth period. The indications and contra-indications for grafts designed to assist placement of implants and the integration of teeth bordering the cleft also play a role in formation of a prosthetic plan.

Certain very grave osseous sequelae can lead to virtually complete destruction of the maxilla. This development can occur in patients who endured multiple operations or who have disappeared from the surveillance of the treatment team. Sometimes the persistent bone loss at this growth stage is so great that bone grafts are not only needed as preparation for proposed implants but also for reconstruction of a bone crest adapted for future prosthetic rehabilitation.  

2 – 4 – Dental problems

The decision concerning the nature of the final surgico-prosthetic reconstruction depends not only on the volume of residual bone around the cleft itself but also on the status of the teeth surrounding it.

These teeth, which have probably lost much of their periodontal support from gingival recession, may be hypersensitive to thermal changes or to contact because their reduced periodontal coverage can no longer protect them against physiological constraints as they become increasingly mobile. This makes placement of retention devices essential (see clinical case n° 1).

Many teeth on the borders of clefts show malformations of shape and structure (Fig. 7). Forty percent of permanent laterals bordering clefts are congenitally absent and doubling of teeth, dysplasia, hypoplasia and dilacerations are frequent (Fig. 8).

Their prognosis depends upon:
- the quantity of remaining attached gingiva,
- the quantity of alveolar bone,
- the crown root relationship,
– the type of malformation,
– the quality of osseous and soft tissue support,
– the presence, or absence, of gingival inflammation,
– the control of plaque,
– and the type of prosthesis to be employed4.

The practitioner must pay scrupulous attention to the maintenance and integration of teeth bordering the cleft as the prosthetic restoration is conceived, placed, and put into use.

2 – 5 – Occlusal problems

Cleft palate patients that surgeons see will have previously benefited by dentofacial orthopedic and/or orthodontic intervention that, after a long and arduous treatment, has provided them with good functional occlusion supported by skeletal solidity whose stability practitioners must assure with excellent retention procedures14 appropriately conceived to last and to suit the available space and the prosthesis they serve22.

Occasionally we have to serve patients who habitually miss office visits and whose occlusion is unstable. With them we encounter dento-skeletal sequelae that affect the maxilla in the three dimensions of space: maxillary retrusions, endo-maxillae with or without endo-alveoli, and insufficient vertical maxillary development2,6,10. In performing the prosthetic restoration for them, practitioners must strive to create for them an occlusion that is the most harmonious and close to ideal as possible.

But they will have to contend with the faulty arrangement of dental buds that the cleft has provoked in the incisors, canines, and premolars along its side.

2 – 6 – Oral hygiene problems

Factors provoking and maintaining gingival inflammation in patients with clefts are aggravated because gingival edges are interrupted and irregular, teeth are malpositioned, and the necessary orthodontic and retention devices they have to wear all encourage plaque formation. The resultant constant inflammation can provoke gingival destruction with evolving migration of attachment (Fig. 9)22.

To improve oral hygiene, practitioners must not only instruct patients in brushing and use of floss but also must remove any adhesions and supplementary freni and augment the quantity of attached gingiva, those deepening the cheek cavity and, finally, construct prosthesis that

![Figure 9](image)

Bacterial plaque is often found in aggravated quantities in sectors where cleft sequelae are present. Tormented gingiva, invaginated alveolar mucosa, which is sensitive to brushing, and scar tissue adhesions are the responsible factor provoking these accumulations.
reflects the best principles of good oral health.

2 – 7 – Soft palate problems

After the soft palate has been repaired practitioners may be confronted by some residual anatomic problems such as a still divided velum, velum that is too short, inert, or even absent (Fig. 10)\textsuperscript{12}.

But practitioners can seal any remaining defects with a properly designed velo-palatal prosthesis whose hermetic seal allows patients to process foods and liquids correctly.

In contrast to subjects whose loss of maxillary substance is iatrogenic, cleft patients suffer disturbances of phonation. This functional sequela is explained by the congenital nature of the anomaly. It is highly desirable for these patients to have speech therapy to restore muscle tone and to teach them how to make sounds correctly.

2 – 8 – Inter-personal relations problems

In many countries the state does not pay for all labio-maxillary-palatal cleft treatment so practitioners must take the financial status of their patients’ families into consideration\textsuperscript{18} especially when making decisions about the prosthesis. They must consider the socio-economic integration of each patient in order to determine the therapeutic solution best suited to individual needs.

2 – 9 – Problems of prognosis and maintenance

The prognosis for prosthetic treatment of cleft patients depends on:

– the results of the initial treatment,
– the secondary treatment of the alveolar sequelae,
– the practitioner’s learning curve and his knowledge,
– the learning curve of patients and the ability to control plaque.

Numerous case histories have been reported in the literature but very few retrospective or prospective studies on different types of prostheses have been published\textsuperscript{4}.
3 – SPECIFIC FEATURES OF CONVENTIONAL PROSTHESES FOR CLEFT PATIENTS

3 – 1 – Bonded bridges

• **Indications**
  
  A bonded bridge is a temporary solution used to maintain space created by orthodontic treatment. It is esthetically satisfactory but not especially strong in resisting the stress of the normal functional activity of the masticatory apparatus. It can be used in a young patient to replace a congenitally absent lateral incisor or premolar tooth. In this type of reconstruction, an osseous or epithelio-conjunctive bridge should stabilize the alveolar fragments.

• **Criteria for decision-making**
  
  (Table 1).

3 – 2 – Bridge providing a substitute for missing tooth

• **Indications**
  
  This prosthetic solution to the problem of teeth missing from the arch also serves as a working retainer for teeth on the border of the cleft that are often fragile and to prevent relapse, a frequently reported condition related to the presence of fibrous scar tissue.

  According to the report of Roisin et al., in 1988 the presence of continuity between the borders of the cleft is indispensable because it allows practitioners to abide by the

<table>
<thead>
<tr>
<th>Favorable parameters</th>
<th>Unfavorable parameters</th>
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<tbody>
<tr>
<td>Patients younger than 18</td>
<td>Dental dysplasia</td>
</tr>
<tr>
<td>Good plaque control</td>
<td>Broken down teeth</td>
</tr>
<tr>
<td>Healthy dentition</td>
<td>Many mobile teeth</td>
</tr>
<tr>
<td>Sufficient crown height</td>
<td>Many missing teeth</td>
</tr>
<tr>
<td>Agenesis of laterals or premolars</td>
<td>Poor plaque control</td>
</tr>
<tr>
<td>Healthy periodontium of teeth bordering cleft</td>
<td>Serious anterior overbite</td>
</tr>
<tr>
<td>Mobility of teeth bordering cleft more than 1</td>
<td>Many malpositioned teeth</td>
</tr>
<tr>
<td>Osseous or epithelio-conjunctive bridge between borders of cleft (tibial, gingivoperiostoplasty, deep conjunctive graft)</td>
<td>Bucco-nasal communication alveolar breach and/or residual palatal division</td>
</tr>
<tr>
<td>Bone quantity and quality insufficient for implant</td>
<td>Unstable occlusion</td>
</tr>
</tbody>
</table>

*Table 1*
established rules for prostheses made for unimpaired patients. Today, with surgery, the maxillary fragments may be joined together\textsuperscript{6,32}.

Bridges constructed on teeth constitute the treatment of reference when the peripheral dentition is broken down or dysplastic\textsuperscript{30,31}.

Recessions, lack of attached and keratinized gingiva as well as the morphological deficit presented by the edentulous crest must be corrected by specific periodontal treatment\textsuperscript{7,20}.

Some authors\textsuperscript{9,25,35} prefer replacing a missing upper lateral incisor with a bridge, not an implant, which is difficult and risky to place in cleft situations.

- **Clinical case n° 1** (Figs. 11 to 15)
- **Criteria for decision making** (Table II)

### 3 – 3 – Implant borne prostheses

- **Indications**

  Screwed-on implants are now most frequently used for replacing missing or dystrophic upper lateral incisors. But using implant-borne crowns to rehabilitate the sequelae of the cleft confronts practitioners with a truly challenging task. An array of difficulties accumulates to beleaguer practitioners attempting to employ this difficult and sometimes impossible type of rehabilitation. Only the presence of alveolar bone of sufficient quality and quantity can guarantee that practitioners will be able to initially position an implant correctly and then place a single unit adapted restoration properly upon it\textsuperscript{22}.

  For patients with no contra-indications, an implant supported prosthetic replacement is the ideal technique in agenesis cases. The difficulty prac-

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**Figure 11**
This 21 year-old male consulted us after orthodontic treatment because of substantial loss of crestal bone at the site of a left unilateral cleft. Note the weakness of the periodontal support for the upper right central incisor.

**Figure 12**
This 3D image objectifies the bi-cortical osseous deficit and the location of the alveolar bridge created by all the preliminary maxillo-facial interventions of periosteal tibia grafts.
titioners face is to bring cleft patients to a situation equivalent to that presented by a patient who has simply lost a single tooth.

Practitioners must not let the perspective of successful implant placement make them forget the supplementary surgical steps that it imposes, which demand patients undergo additional treatment and bear the cost of financing it.

- **Successful implant surgery**
  Placement of implants is rarely possible at the start of cleft treatment.

  According to Lalo et al., reporting on a small sample of 12 patients, after primary bone grafts, only 75%...
of patients were judged to be good candidates for implants and 50% of this group would need supplementary amounts of osseous support for implants to succeed. So 25% of this sample required three rather serious interventions to make their chosen sites suitable for implants.

We should remember that with patients who have no other arch problems, the success rate for implants in bone grafts ranges from 95.9 to 97.2%.

Finally, these figures reflect only a small evocation of the achievement of the osteointegration needed for implants.

- **Prosthetic and esthetic success**

  No studies evaluating the qualitative and the quantitative aspects of finished esthetics for cleft patients have as yet been published in the literature we reviewed. Many of the articles were deceiving with regard to the gravity of the therapeutic challenge.

  Lalo et al. reported that they used implants to complete 75% of their cases, but they had to be supported by prosthetic rehabilitation with false gingiva, which, unfortunately, diminished the success of the final esthetic result.

  Often, osseous deficit imposes a faulty implant placement that will leave the crowns they support leaning away from an upright position or tilt palatally lending an unpleasing appearance to their profile of emergence and making them imperfectly adapted to biomechanical needs. Even in cases where surgeons place secondary or even tertiary bone grafts we have been forced to observe that the results of reconstructions have been, over the long term, insufficiently consistent (cf. clinical case n° 2, Figs. 22 and 23).

<table>
<thead>
<tr>
<th>Favorable criteria</th>
<th>Unfavorable criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult patient</td>
<td>Healthy dentition</td>
</tr>
<tr>
<td>One or more congenitally absent teeth</td>
<td>Malpositioned tooth or teeth</td>
</tr>
<tr>
<td>Malpositioned tooth or teeth</td>
<td>Mobility of osseous fragments</td>
</tr>
<tr>
<td>Marked hypoplasia or dysplasia of teeth</td>
<td>Significant discrepancy between positions of upper and lower basal bone</td>
</tr>
<tr>
<td>Osseous or epithelio-conjunctive bridge between borders of cleft (tibial, gingivoperiostoplasty, deep conjunctive graft)</td>
<td>Bucco-nasal communication, alveolar breach and/or residual palatal division</td>
</tr>
<tr>
<td>Stable or unstable occlusion, as an effect Retention</td>
<td></td>
</tr>
</tbody>
</table>

*Table II*

3 – 4 – Partial removable prosthesis

• Indications
A partial removable prosthesis (PRP) can be indicated as a temporary prosthesis in order to temporarily replace the missing lateral incisor. The PRP can be indicated as a temporary prosthesis when several teeth are missing or when the status of edentulism is too great for a fixed restoration. The one disadvantage is that the hooks by necessity are often visible.

• Acrylic or metal removable prosthesis?
An acrylic removable prosthesis has the advantage of being the least expensive but it is not recommended when the periodontium is fragile. A cast metal prosthesis is much more expensive but more comfortable and obtains a better result.
Because of its rigid base, it ensures excellent retention. However, the casting of the skeletal plate requires a normal hard palate.

- **Decisional criteria**

**Case n° 2**

*Figure 20*

Double appositional bone graft, buccally and palatally with osteosynthesis with transfixing screws to establish crestal curvature (surgery by Dr. C. Molé).

*Figure 21*

After reconstruction and alveolar healing, the practitioner was able to place the implant under apparently ideal conditions for its three dimensional situation.

*Figure 22*

Three years after the implanto-prosthetic reconstruction, the patient consulted us for nasal surgery. We sent him for a scanner examination: it demonstrated the progressive resorption of the external cortical graft placed before implant insertion.

*Figure 23*

This clinical view shows the supporting tissue deficit around the implant, which is progressively worsening. We are considering a new connective tissue graft to remedy the situation.

**3 – 5 – The full removable denture**

Of course, a full denture is never a solution at the end of the growth period. However, a gross failure to manage the treatment of several patients
resulted in an edentulous upper jaw when they became young adults.

The different anatomical regions used when making a full removable denture in the maxilla are modified for a patient with a cleft. This modification complicates the installation process and the results in obtaining peripheral joint range of motion, which is the only way to guarantee acceptable prosthetic stability.

The role of the prosthesis is to compensate for the loss of alveolar ridge bone and tissue for esthetic

<table>
<thead>
<tr>
<th>Favorable parameters</th>
<th>Unfavorable parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult patient</td>
<td>General contraindications</td>
</tr>
<tr>
<td>Agenesis</td>
<td>Weakened periodontium on border teeth</td>
</tr>
<tr>
<td>Early graft, interceptive surgery or at the time of the implantation&lt;sup&gt;6,17&lt;/sup&gt;</td>
<td>Fine biotype, absence of keratinized gingiva</td>
</tr>
<tr>
<td>Conjunctival epithelial graft</td>
<td>Bergland index score 3 or 4</td>
</tr>
<tr>
<td>Bergland index score 1 and maybe&lt;sup&gt;25&lt;/sup&gt;</td>
<td>Dental malpositions</td>
</tr>
<tr>
<td>Stable occlusion (no need for retention)</td>
<td>Alveolar gap, residual palatal division and/or buccal-nasal opening</td>
</tr>
<tr>
<td></td>
<td>Greater esthetic demands</td>
</tr>
</tbody>
</table>

Table III

<table>
<thead>
<tr>
<th>Favorable parameters</th>
<th>Unfavorable parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraindication of implant surgery</td>
<td>Patient wants to wear a fixed prosthesis</td>
</tr>
<tr>
<td>Contraindication of a fixed prosthesis</td>
<td>For an acrylic removable prosthesis: periodontal disease</td>
</tr>
<tr>
<td>Provisional solution in case of one missing tooth, after mucco-gingival</td>
<td>For cast metal prosthesis: irregular hard palate, fish mouth or bumpy palate</td>
</tr>
<tr>
<td>Stable or unstable occlusion (stabilizes the occlusion)</td>
<td>Supernumerary flanges or frenums</td>
</tr>
<tr>
<td>Healthy or cleaned dentition</td>
<td>Esthetics: hooks</td>
</tr>
<tr>
<td>Alveolar-palatal obturator</td>
<td></td>
</tr>
<tr>
<td>Least expensive, fast</td>
<td></td>
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</table>

Table IV
and functional reasons. The dentist must adapt the prosthesis to the mucous flanges as well as sequelae of the cleft, and must not injure this sensitive region\textsuperscript{12}.

The practitioner must adapt the impression phases to the possibility that oronasal fistulas are present\textsuperscript{11}. The difficulty of class III skeletal malocclusion, typically linked to the evolution of growth in cases involving clefts, often entails an occlusion of convenience or end to end relation occlusion.

3 – 5 – 1 – The supra-radicular removable prosthesis

• Indications
The supra-radicular removable prosthesis is indicated when residual mobility of skeletal fragments, differences between root canal and crown, malpositions and tooth breakage are present\textsuperscript{13,32} (Figs. 24 and 25).

This prosthesis can support the velo-palatal prosthesis\textsuperscript{19}.

The disadvantages of this type of rehabilitation are numerous:
– dental undercuts are an unfavorable parameter,
– transfer of caries bacteria to confined zones,
– cost of bar gold copings and attachments,
– corrosion of the magnet sensor elements,
– residual mobility.

3 – 5 – 2 – The removable implant retained prosthesis

• Indications
The removable implant retained prosthesis is indicated in cases involving sequelae that affect the osseous bases causing patients to become completely edentulous with a hypotrophic or even totally destroyed maxillary\textsuperscript{30}.

This prosthesis facilitates the management of Ballard class III skeletal discrepancies often encountered in patients with a cleft.

Figure 24
Partial edentulism of a patient presenting sequelae of a bilateral cleft. Some roots have been saved for implantation of magnetic anchors.

Figure 25
Removable complete denture with retention screws and magnetic stabilizers.
Lastly, the removable implant retained prosthesis is a solution to keep in mind for all cases where the residual mobility of a removable prosthesis is unacceptable.

Osseointegration of dental implants is a valuable alternative for obtaining an increased mechanical retention, a strong support base, and an effective stabilization of the removable prosthesis that at times supports an obturator\(^1\,16\,26\) (cf. clinical case n° 3 Figs. 26-31).

- **Clinical case n° 3** (Figs. 26 to 33)

  Ideally, the dentist should be able to minimally install two small fragment implants. The research data show that a continuous bar retainer can be used to connect the pillars and strengthen the two small...
fragment implants in cases of unilateral LMPC.

Two separate bar retainers are sometimes preferable since it is difficult to achieve passivity and not exert pressure on the anchor. The implants are buried for approximately 5 to 6 months and afterward the prosthetic stages are the same as those used for a patient who does not have a cleft.

According to Williams, the combination of ERA bar plus 4 clips Hader design was the most retentive attachment⁴⁰.

- Decisional criteria (Table V)
In the case of an alveolar-palatal prosthesis, the obturator part is made after the plate.

- **Indications**
  The indications for alveolar-palatal prostheses are relatively limited (Fig. 34):
  - contra-indications to surgery or general anesthesia,
  - refusal of the patient to undergo surgery,
  - previous surgical failures impossible to resume,
  - surgical insufficiency.

### 3 – 5 – 3 – Alveolar-palatal prosthesis

In the case of an alveolar-palatal prosthesis, the obturator part is made after the plate.

### 4 – CONCLUSION

Two main ideas, that are more or less opposed to one another, describe the prosthetic rehabilitation of a patient with a LMPC:

- the idea that it is difficult to generalize and to create a standard protocol in this type of rehabilitation, since the sequelae and the clinical

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**Table V**

<table>
<thead>
<tr>
<th>Favorable parameters</th>
<th>Unfavorable parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely edentulous patient</td>
<td>Contraindication of bone/implant surgery</td>
</tr>
<tr>
<td>Alveolar sequelae</td>
<td>Insufficient osseous quantity/quality</td>
</tr>
<tr>
<td>Atrophy of the premaxilla bones</td>
<td>Financial cost</td>
</tr>
<tr>
<td>Significant discrepancy of bone bases</td>
<td></td>
</tr>
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</table>

**Figure 34**

Tertiary mold made with polysulfurs after peripheral remargining with Kerr’s paste.

**Figure 35**

Supplemental retention and obturation for the velar extension created by the palatal prosthesis.
shapes of clefts are too numerous and varied;
– the idea that a prosthesis, in technical terms, has no particular specificity and that all the classic possibilities, can be considered. However, the oral-facial region particular to LMPC indicates numerous constraints that can add up to often make rehabilitation very complicated.

The choice and the fabrication of a prosthesis must be adapted to the sequelae, to functional problems and to end result esthetic demands. These two factors depend on the alveolar-dental management of the patient in advance. The strategy leading up to the surgical prosthesis must adhere to a multi-factorial analytical approach and must be integrated into a harmonious interdisciplinary therapy.

Managing the prosthetic rehabilitation of a patient presenting sequelae of LMPC requires the practitioner to implement an array of skills that include a solid understanding of both the specific pathology and the therapeutic history specific to each case. The dentist must therefore intervene comprehensively by implementing a strategic team approach, with the orthodontist and other medical staff.

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REFERENCES