This is a case report of a patient with soft-palate muscle weakness, which caused difficulties with phonation. A provisional palatal lift prosthesis (PLP) was developed, and the patient underwent simultaneous speech therapy. The elevation level of the palatal lift was subjectively assessed, along with nasalance analysis and the results of the Urimal Test of Articulation and Phonation. The final PLP was applied to improve comfort and efficiency, and the patient continually underwent regular speech therapy. The patient showed satisfactory improvement in speech and pronunciation. PLP development combined with speech therapy can improve the accuracy of pronunciation in patients with palatal incompetence, thereby improving quality of life. Int J Prosthodont 2021;34:395–398. doi: 10.11607/ijp.6720

Palatopharyngeal closure plays an important role in phonation and swallowing. Palatopharyngeal inadequacy is a condition wherein there is inadequate closure of the soft palate against the pharyngeal wall during phonation and swallowing.1 Palatopharyngeal inadequacy causes hypernasality due to the leakage of air passing through the nasal cavity during speech.2 Palatopharyngeal inadequacy is classified into palatal insufficiency and palatal incompetence. The former is an anatomical problem of the soft palate, and the latter is a functional problem even if the structure of the soft palate is normal.3,4 This case report is of a patient who presented with difficulties in pronunciation due to palatal incompetence.

CASE REPORT

A woman, 19 years of age, presented to the Department of Prosthodontics with difficulties in accurate pronunciation due to muscle weakness with inadequate neuromuscular activation. An oral examination revealed soft-palate muscle weakness, which is characterized by relaxation of the posterior soft palate (Fig 1a). Analysis of the cast model further confirmed the relaxation of the posterior soft palate, which was most likely attributed to the weakness and inadequate activation of the muscles (Fig 1b). Therefore, a diagnosis of failure to achieve palatopharyngeal closure due to a functional problem was made. A provisional palatal lift prosthesis (PLP) was developed with acrylic resin and wire clasps to determine the level of elevation of the soft palate and to evaluate patient adaptation. The level of elevation was evaluated using a mouth-mirror test5 conducted in the oral cavity. The result indicated that the soft palate needed to be raised further by 10 mm.
The patient did not express discomfort after application of the provisional PLP. However, due to the lack of improvement in pronunciation, the soft palate was raised further using acrylic resin and a soft liner.

During the follow-up visit after the first week of delivery, the patient had no problems except for the lack of improvement in pronunciation. Further modifications were made to the level of the hard palate (Fig 2). The patient was followed up regularly every 2 weeks. The appliance was adjusted once again, after which the phonation was re-evaluated. After approximately 5.5 months, an overall improvement in pronunciation was observed. During this period, an objective examination of the effect of combined provisional PLP and speech therapy conducted 15 times revealed that the nasalance scores were almost normal. Moreover, the findings of the Urimal Test of Articulation and Phonation (U-TAP) showed significant improvements (Tables 1 and 2). Therefore, the final PLP was applied to improve comfort and efficiency (Fig 3).

The patient continually underwent regular speech therapy. The U-TAP revealed an improvement of up to 100% (Table 2). During the follow-up assessment, the patient demonstrated a significant improvement in the accuracy of phonation. The patient was given oral hygiene and denture care instructions and received regular follow-up visits to minimize the risk of developing caries. The importance of maintenance visits was highlighted.

**DISCUSSION**

Although individuals with palatal incompetence undergo speech therapy to correct phonation, the effects may not be as significant as desired. However, this case report showed that treatment with a PLP can effectively improve phonation.

In addition to analyzing the subjective feedback from the patient, the accuracy of phonation was assessed via nasalance analysis and U-TAP to obtain more objective findings. The evaluation of Korean pronunciation using...
**Fig 2** (a) Provisional palatal lift prosthesis lined with a soft liner. (b) Intraoral view with the provisional palatal lift prosthesis in place.

**Table 1** Results of the Nasalance Analysis

<table>
<thead>
<tr>
<th></th>
<th>First visit</th>
<th>After delivery of the provisional PLP</th>
<th>After delivery of the provisional PLP + 10 sessions of speech therapy</th>
<th>After delivery of the provisional PLP + 15 sessions of speech therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>High nasalance score</td>
<td>61</td>
<td>56</td>
<td>55</td>
<td>52</td>
</tr>
<tr>
<td>(normal variation: 51 ± 8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low nasalance score</td>
<td>32</td>
<td>33</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>(normal variation: 12 ± 5)</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

PLP = palatal lift prosthesis.

**Table 2** Results of the Urimal Test of Articulation and Phonation

<table>
<thead>
<tr>
<th></th>
<th>First visit</th>
<th>After delivery of the provisional PLP</th>
<th>After delivery of the provisional PLP + 10 sessions of speech therapy</th>
<th>After delivery of the final PLP + 20 sessions of speech therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonation accuracy with words, %</td>
<td>76.74</td>
<td>88.37</td>
<td>93.02</td>
<td>100</td>
</tr>
<tr>
<td>Phonation accuracy with a sentence, %</td>
<td>81.39</td>
<td>90.69</td>
<td>97.67</td>
<td>100</td>
</tr>
</tbody>
</table>

PLP = palatal lift prosthesis.
these tests before and after wearing the PLP revealed that the accuracy of consonant pronunciation significantly increased.

Moreover, the use of combined PLP and speech therapy led to a greater improvement in pronunciation than the use of a prosthetic appliance alone. Thus, collaboration among dentists, otolaryngologists, and speech therapists may help patients with pronunciation disorders achieve a better treatment outcome.

CONCLUSIONS

This case report presented a successful palatal lift prosthetic treatment in a patient with palatal incompetence. After various examinations, an improvement in phonation was observed, and further improvements are expected with continuous follow-up and concurrent speech therapies.

ACKNOWLEDGMENTS

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REFERENCES