Application of 4-Meta Adhesive Resin to the Occlusal Surface During Surgery Facilitates Postoperative Occlusal Management

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Abstract

Purpose Orthognathic surgery is generally used to correct facial deformities and establish functional occlusion. Pre-operative orthodontic treatment is important for stabilizing and establishing the postoperative occlusion. However, sufficient preoperative surgical orthodontic treatment might be sometimes difficult in patients with an abnormally shaped maxilla or mandible or severe jaw deformity.

Methods We performed this technique over 10 patients with jaw deformities after insufficient presurgical orthodontic treatment. Adhesive resins are attached to the maxillary palatal cusps to during surgery for disclusion of the premolars and molars.

Results The resins which are interfered during the post-operative orthodontic treatment can be removed gradually with a bur. Postoperative orthodontic treatment can be subsequently facilitated with a stable occlusion.

Conclusion This technique should be applied for surgery-first orthognathic surgery and avoidance of multi-piece Le Fort I osteotomy, and can facilitate postoperative orthodontic treatment following gradually removal of cusp interferences.

Keywords Bite raising block · Multiple segmental osteotomy · Surgery-first · Inadequate preoperative orthodontics

Among orthognathic surgeries for correction of malocclusion, Le Fort I osteotomy and bilateral sagittal split osteotomy are commonly performed. However, for patients with severe jaw deformities, presurgical orthodontic treatment is sometimes insufficient because of the patient's narrow or wide dental arch and transverse decompensation. If orthognathic surgery are to be performed for these patients with insufficient presurgical orthodontic treatment, relapse may occur after surgery due to instability of the occlusion [1–3]. Therefore, more complex surgical techniques or a combination of multiple segmental osteotomies have been considered to improve the malocclusion. However, these approaches may induce problems such as root injury, periodontal problems, tooth pulp damage, and aseptic necrosis [4]. To overcome these problems, we report here application of 4-meta adhesive resin to the occlusal surface during surgery to facilitate postoperative occlusal management for patients with insufficient presurgical orthodontic treatment.

We performed this technique over 10 patients with jaw deformities after insufficient presurgical orthodontic treatment such as a scissor or cross bite (Fig. 1). Adhesive resins, which are currently widely used in dental clinics for cementing inlays, crowns and post cores and for bonding orthodontic brackets because of their ease of handling, high bond strength and reliability, [5] are attached to the maxillary palatal cusps to during surgery for disclusion of the premolars and molars after plate fixation of bony segments using the final occlusal wafer (Fig. 2). The 4-meta adhesive resin fills the space between the upper and lower premolars and molars caused by insufficient presurgical orthodontic

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Fig. 1 Disclusion of premolars and molars caused by insufficient presurgical orthodontic treatment

Fig. 2 Adhesive resins are attached to the maxillary palatal cusps to during surgery for disclusion of the premolars and molars

Fig. 3 The 4-meta adhesive resin fills the space between the upper and lower premolars and molars caused by insufficient presurgical orthodontic treatment

treatment (Fig. 3), and the resins which are interfered during the postoperative orthodontic treatment can be removed gradually with a bur. Postoperative orthodontic treatment can be subsequently facilitated with a stable occlusion.

This technique should be applied for surgery-first orthognathic surgery and avoidance of multi-piece Le Fort I osteotomy, although stability of orthognathic surgery requires sufficient preoperative orthodontic treatment. Even if there was a scissors or cross bite after orthognathic surgery, this technique can facilitate postoperative orthodontic treatment following graduate removal of cusp interferences.

Compliance with Ethical Standards

Conflict of interest We have no conflicts of interest.

Informed Consent The authors certify that they have obtained all appropriate patient consent forms.

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