vertically, which nullified most of the forward mandibular growth that reduced the class II relationship.

In the current study, there was no significant maxillary molar extrusion in the 1-phase group, but not in the 2-phase group.

In the 1-phase group, the patient was asked to wear class II elastics, which might cause elongation of molar and a downward and backward rotation of the mandible. But these adverse effects had been offset by the J-hook type of headgear appliance, providing good control of vertical maxillary molar followed by anticlockwise rotation of occlusal plane. In the 1-phase group, the patient was asked to wear class II elastics, which might cause elongation of molar and a downward and backward rotation of the mandible. But these adverse effects had been offset by the J-hook type of headgear appliance, providing good control of vertical maxillary molar followed by anticlockwise rotation of occlusal plane.19

A more important reason was mesial movement of molars in the 1-phase group associated with closure in the mandibular plane angle. The present results agreed with the results of many previous studies that advocated extraction of teeth “to close down the bite.”20

In our study, the residual space in the mandibular arch, which was calculated by subtracting the space uprighting the lower incisor from 85 to 95 degrees with the mandibular plane from the extraction space, was occupied by moving the molar forward. The position of the lower incisor was according to Tweed’s specialty guidelines of mandibular incisors.21

The residual space in the maxillary was calculated by subtracting retraction of the upper incisor from the extraction space. The maxillary incisor position was determined by the position of the mandibular incisor and mandibular growth. The more forward the mandibular growth during treatment, generally the less the need for the retraction of the upper anterior teeth to achieve normal overjet. As a result, the above points could perhaps explain the increased forward movement of the pogonion in the 1-phase group as well the closure of the mandibular plane angle.

CONCLUSIONS

This study not only provided an optional means to promote the development of mandibular retrognathism, but also made us recognize an unfavorable effect of the proclined lower incisors on mandibular growth in growing individuals. Only with the function appliance, the tendency of the lower incisors moving facially was inevitable.

In nonhypodivergent growing individuals with proclination of the lower incisors, the treatment with extraction of 4 premolars by fixed appliances is preferable to functional orthopedic appliance because of their evident skeletal effects and positive changes in the profile. But for the low-angle patients with the lingual inclination of the anterior incisor, functional orthopedic appliance is still the best candidate.

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Endoscopic Removal of Throat-Packing Gauze Swallowed During General Anesthesia

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Abstract: Throat packing is commonly placed in the pharynx before starting oral and maxillofacial surgery under general anesthesia to protect the airway from aspiration of blood and surgical debris. Complications such as airway obstruction may arise if any of the throat packing is retained after extubation, and less commonly, swallowing of the throat packing has been reported. We report endoscopic removal of throat packing gauze swallowed during general anesthesia.

Key Words: Throat pack, general anesthesia, swallowing, complication

Throat packing is commonly placed in the pharynx before starting oral and maxillofacial surgery under general anesthesia to protect the airway from aspiration of blood and surgical debris. Complications such as airway obstruction may arise if any of the throat packing is retained after extubation, and less commonly, swallowing of the throat packing has been reported. To our knowledge, there are few reports of swallowed throat packs. To et al.1 reported packing gauze swallowed into the gastrointestinal tract without airway obstruction. The patient vomited, and the gauze was regurgitated in the vomitus. In our case, fortunately the packing gauze was swallowed into the stomach without airway obstruction, and endoscopic removal was performed successfully. The gauze was probably swallowed at the time of extubation or during intraoperative swallowing. To allow for the identification of retained packs, packing material with a radiopaque marker should be used, as was done in our case.

Kneipl and Blackburn1 investigated the management of throat packs in oral and maxillofacial surgery in the United Kingdom. In only 9% of cases were no throat packs used. The causes of retained packs were false statement of pack removal, change of anesthetist, pack forgotten, unfamiliar anesthetist, more packs placed than removed, and unexpected rapid recovery from anesthesia. Although including the pack in the nurse’s count improves safety, only 29% of cases included the pack in the count.

Several methods have been suggested to prevent these complications, such as placement and removal of the pack by the same person; attaching a heavy gauze suture to the end of throat pack, which then extends several centimeters outside the mouth; nonuse of second packs and loose swabs; sutting the pack to the tracheal tube; and placing a label on the tracheal tube, in a prominent site, or on the ventilator’s main control knob. However, errors in the count procedure may allow material to be inadvertently retained after surgery. As the gauze tied with suture was used as packing material in our theater, the incorrect nurse’s count caused the retention. Because surgeons found no suture in the oral cavity after the count, retention of the packing gauze was not suspected. To prevent retention, we have subsequently changed our management of the packing gauze. A checklist for insertion and removal of packing gauze was created. Moreover, a suture tied to the packing gauze is now routinely fixed to the cheek by adhesive tape as a label, and the surgeon who placed the packing gauze removes the pack. All members of the theater team share responsibility for ensuring that throat packs are removed and always confirm removal of the packing before extubation.

CLINICAL REPORT

A 23-year-old man with facial fibrous dysplasia was referred to our department. Computed tomography revealed enlargement of the zygoma and maxilla. The patient underwent correction of facial asymmetry under general anesthesia. After nasotracheal intubation, a packing gauze (20 × 20 cm) tied with 2-0 silk was placed in the pharynx by one of the surgeons. The patient awoke once and swallowed during surgery. Postoperatively, the patient was breathing spontaneously and was extubated. When the patient was transferred to the recovery room, he felt throat discomfort and swallowed something. Chest radiograph showed a radiopaque band of packing gauze in the stomach (Fig. 1). The packing gauze had been inadvertently retained in the pharynx, as the surgeons and anesthesiologists did not confirm its removal as part of the nurse’s swab count before extubation. We explained the situation to the patient and family, and endoscopic removal of the packing gauze was agreed upon. A flexible endoscope was inserted transorally into the stomach under sedation, and the gauze was located endoscopically in the stomach (Fig. 2). The gauze was removed successfully without any complications (Fig. 3). Chest radiograph after the removal showed no retained radiopaque objects.

DISCUSSION

Throat packs are generally used in oral and maxillofacial surgery under general anesthesia to prevent aspiration, pharyngeal and tracheal contamination, and passage of blood into the stomach.1,4 Although postoperative sore throat after throat packing has been reported, a randomized clinical trial showed no significant differences in the incidence or severity of postoperative sore throat between patients with and without packing.1 However, retained throat packs have been reported to cause airway obstruction.1,2,6,7 Although the whole pack was retained in most reports,2,7 Gray et al.1 reported a small piece retained because of tearing of a foam throat pack. To our knowledge, there are few reports of swallowed throat packs.2 To et al.1 reported packing gauze swallowed into the gastrointestinal tract without airway obstruction. The patient vomited, and the gauze was regurgitated in the vomitus. In our case, fortunately the packing gauze was swallowed into the stomach without airway obstruction, and endoscopic removal was performed successfully. The gauze was probably swallowed at the time of extubation or during intraoperative swallowing. To allow for the identification of retained packs, packing material with a radiopaque marker should be used, as was done in our case.

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Interfaces of Titanium Implants and a Vascularized Osteocutaneous Scapular Graft Revisited With Distraction Osteogenesis

Hideharu Hibi, DDS, PhD, Minoru Ueda, DDS, PhD

Abstract: This report assessed the bone-implant contact (BIC) and interthread bone density (BD) of 3 titanium implant interfaces retrieved from a mandible that was reconstructed with a vascularized osteocutaneous scapular graft and revised with multidirectional distraction osteogenesis before implant placement. The BICs and BDs were 86.9% and 92.8%, 67.3% and 80.6%, and 61.3% and 77.1%, respectively, for each of the implants in the graft that were revised 0 times, 1 time, and 2 times with distractions, respectively. The average rates of the BIC and BD of these 3 implants were 73.9% and 84.7%, respectively. The present assessment indicates that there was sufficient osseointegration of the implants in the vascularized scapular bone graft even after revision with distraction osteogenesis.

Key Words: Bone-implant contact, vascularized scapular flap, distraction osteogenesis

Dental implants of free vascularized bone grafts are used for functional oral rehabilitation in the reconstruction of large maxillary and mandibular defects. Although these grafts can be revised with distraction osteogenesis to correct their size or form for proper implant placement, the integration of tissue into implants of distracted bone grafts has not been reported. This report histomorphometrically assessed the interfaces of titanium implants that were retrieved from a vascularized scapular graft that was revised with multidirectional distraction osteogenesis before implant placement.

METHODS

The implant specimens were harvested from a previously reported case, as briefly summarized below. A 40-year-old ex-smoker female patient with a segmental defect of the mandibular body and malunion of the bilateral fractured condylar processes due to a severe trauma underwent a reconstruction comprising a vascularized osteocutaneous scapular flap (Fig. 1A). The reconstruction resulted in a small, retropositioned, and deformed mandible. Four months after the mandibular reconstruction, the patient was referred to our department for occlusal reconstruction with dental implants. For resizing and reforming of the reconstructed mandible, (1) both rami were distracted vertically using 4 distractors for 10 mm to recover the ramus height, which had decreased because of the condylar neck fractures; (2) the reconstructed mandibular body was distracted horizontally using 2 hinged distractors for 20 mm to recover the mandibular width (Fig. 1B); and (3) the horizontally distracted mandibular body was then distracted vertically to make it high enough by using a distractor for 15 mm for the placement of the dental implants (Fig. 1C). These distraction procedures proceeded uneventfully at rates of 0.5, 0.375, and 0.25 mm twice per day after 7 days of latency following osteotomies that were performed at 8, 10, and 14 months, respectively, after the reconstructive surgery. Twenty-three months after the reconstruction, 6 threaded titanium porous oxide-surfaced implants that were 3.75 mm in diameter (Bränemark-System Mark III RP TiUnite; Nobel Biocare AB, Göteborg, Sweden) were installed in the mandibular body. Following a 3-month healing period, all of the osseointegrated implants were uncovered, and the surrounding bony surfaces were covered with grafted palatal mucosa for vestibuloplasty. The mucosal grafts took except for the buccal side of the 3 left implants, and these implants consequently suffered from refractory peri-implantitis despite conservative treatments for 15 months (Fig. 1D). These 3 implants were retrieved using a 4-mm internal diameter trephine from the left canine and first and second premolar equivalent sites (specimens A, B, and C) so that new implants could be