Occlusion and Weight Change in a Patient After Esophagectomy: Success Derived from Restoration of Occlusal Support

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Occlusal support may be an important factor affecting nutritional support after major surgery. This report presents a patient who gained body weight after receiving a new prosthesis. The patient was an 82-year-old man with thoracic esophageal carcinoma. He did not have occlusal support because of multiple caries lesions. His body weight slowly increased after surgery, but almost stopped in the period of 54 to 68 days after surgery. After treatment with dentures (day 72 postsurgery), body weight gain was observed again, although his medical treatment had not changed. An appropriate prosthesis could contribute to perioperative nutrition support and may lead to earlier recovery after surgery. *Int J Prosthodont 2013;26:574–576. doi: 10.11607/ijp.3622*

Malnutrition enhances the risk of postoperative complications in esophageal cancer patients. Fifty-eighty percent of esophageal cancer patients present with malnutrition at diagnosis.¹ A recent educational review indicated the importance of nutritional support in the treatment of esophageal cancer patients.¹ Early oral feeding after gastrectomy is safe, with no evidence of increased morbidity, and early postoperative oral feeding is also effective in reducing hospital stay.²

Occlusal support that enables the promotion of oral feeding may be an important factor affecting surgical recovery. There have been few reports regarding the relationship between occlusion and nutrition after surgery. This report presents a patient who

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successfully gained weight after the restoration of occlusal support. The detailed clinical course is presented, and the importance of dental intervention in occlusal support for patients after esophagectomy is discussed.

Case Presentation

The patient was an 82-year-old Japanese man with thoracic esophageal carcinoma (T3N1M0, Stage III). His height was 155.9 cm. Body weight before preoperative chemotherapy was 43.3 kg (47 days before surgery). Body mass index (BMI) was 17.8 (underweight). Written informed consent for this case report was obtained.

Following preoperative chemotherapy, an esophagectomy was planned. The patient was referred to the Division of Hospital Dentistry (Dental Section of Perioperative Management Center) for oral examination and treatment.

The appearance of the oral cavity and dental radiography are shown in Figs 1 and 2, respectively. Dental hygiene was very poor. There were many teeth with infrabony caries and pus discharge. Most of the teeth were root stumps. He had no occlusal support.

Between preoperative chemotherapy and surgery, dental treatments were performed to prevent postoperative pneumonia and surgical site infection. Extraction of root stumps and teeth with infrabony caries (total: 20 teeth) was performed. Periodontal treatment for the remaining teeth and oral care were also performed.

A high-density liquid diet was started on the day after surgery. Thirteen days after the operation, gruel feeding was also started. The diet could not be

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Fig 1 (*above*) The appearance of the oral cavity at the first dental examination.

Fig 2 *(right)* Radiograph at the first dental examination.

Fig 3 The course of serum albumin level and body weight changes.







Fig 4 The condition of the oral cavity 147 days after surgery. **(a)** Without denture, **(b)** with denture.



changed from gruel to normal food because of loss of occlusal support. Denture restoration was planned. Seventy-two days after surgery, dentures had been made and occlusal support was constructed.

Figure 3 shows the course of serum albumin level and body weight changes. Serum albumin level decreased remarkably on the day of surgery and increased with a high-density diet and gruel feeding. Body weight slowly increased after surgery, but almost stopped 54 to 68 days after surgery with a weight change from 42.6 kg to 42.8 kg (BMI change: 17.5 to 17.6). In this period, the patient was considered capable of taking more intensive oral nutrition, but had no occlusal support. After setting of dentures (day 72 after surgery), body weight gain was observed again, although the patient's medical treatment had not changed, and corresponded to the ability to take normal food. Eightynine days after surgery, the patient's body weight had reached 44.1 kg (BMI: 18.1). The condition of the oral cavity in this period is shown in Fig 4.

Discussion

Esophagectomy may be performed in patients with resectable esophageal cancer. Gastrointestinal continuity is restored by gastric tube reconstruction, pulling the stomach up into the thorax or neck. More than half of patients who undergo the surgery develop functional disorders after surgery,³ such as delayed gastric emptying, dumping syndrome, reflux, and dysphagia, mainly caused by newly established anatomy. Esophageal cancer patients are often advised to divide daily intake into five or six small meals.¹ Therefore, occlusal support is important for nutrition in patients after esophageal surgery.

Dental intervention to prevent postoperative pneumonia⁴ and infection is important in esophagectomy. However, dental treatments to remove odontogenic infection, eg, tooth extraction, often result in a loss of occlusal support. Oral feeding after surgery should also be considered. In this case, body weight elevation was observed after fitting an appropriate prosthesis that provided occlusal support. On reflection, the making of dentures could have been started earlier. Furthermore, the patient's BMI was elevated but had not reached the normal range during the observation period. After hospital discharge, the patient's body weight slightly decreased because of increasing physical activity. More oral nutrition appeared to be required. Collaboration between the surgeon and clinician may contribute to earlier recovery after surgery.

Conclusion

A patient who gained body weight after restoration of occlusal support was reported. A prosthesis could contribute to perioperative nutrition support.

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Literature Abstract

Reliability of implant surgical guides based on soft-tissue models

This study was designed to investigate how accurate conventional implant surgical guides made on study casts were when compared to a CT scan of the patient. Sixteen patients with a total of 47 edentulous sites (24 maxillary and 23 mandibular) were assessed. Pilot holes were drilled into the study casts in the "ideal" implant positions which were related to the surgical guide with radioopaque rods. CT scans were made of the patient wearing the surgical guide which was therefore effectively a radiographic guide. Simulated implant placement using computer software was done following the long axes of the radiographic rods. Implant placement was considered to be inaccurate if there was perforation/dehiscence of the buccal or lingual plates. Forty-seven percent of the edentulous sites were considered to be accurate for implant placement (54% maxilla and 39% mandibular). The authors concluded that there is a high degree of inaccuracy using implant surgical guides based on a soft tissue cast and that knowledge of the underlying bone morphology is key to successful implant placement. This paper reminds us that overlying soft-tissues can mask underlying bone morphology and that precise implant positioning requires further assessment than just using a study cast alone.

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576 | The International Journal of Prosthodontics

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