

## Reading 6

# Dental Implants

A dental implant is a medical device that fuses (“osseointegrates”) with bone in the jaw or skull to support a dental prosthesis—such as a crown, bridge, denture, or facial prosthesis. Tooth loss due to injury or disease can result in complications, including rapid bone loss, defective speech, or changes to chewing patterns, and people with missing teeth sometimes feel self-conscious about smiling or talking. Moreover, bite abnormalities caused by tooth loss can adversely affect eating habits, which may lead to health problems such as malnutrition. Thus, use of a dental implant to replace a lost tooth can greatly improve patients’ health and quality of life.

Dental implant systems typically comprise an implant body and implant abutment. The implant body is surgically inserted into the jawbone, in place of the tooth root. The implant abutment is usually attached to the implant body with an abutment fixation screw and extends beyond the gumline into the mouth so that it can support the attached prosthesis. Most dental implant systems are made of titanium or zirconium oxide, although other materials are sometimes used.

The final prosthesis can be fixed—i.e., the denture or teeth cannot be removed from the mouth—or removable. In both cases an abutment is attached to the implant body. If the prosthesis is fixed, the crown, bridge, or denture is attached to the abutment with screws or dental cement. If the prosthesis is removable, a corresponding adapter is placed in it so that the two pieces can be secured together.

**fuse**  
結合する, 融合する

**osseointegrate**  
骨結合する

**prosthesis**  
プロテーゼ, 補綴物

**denture** 義歯

**complication**  
合併症

**adversely affect**  
悪影響を及ぼす

**malnutrition**  
栄養失調

**abutment**  
アバットメント

**gumline (gum line)**  
=gingival margin  
歯肉線

**titanium**  
チタン

**zirconium oxide**  
酸化ジルコニウム

Implant success depends on the patient’s systemic and oral health. Stresses to which the implant and prosthesis are exposed during normal oral function are also assessed. Ensuring the long-term health of a prosthesis requires careful planning of the number and position of implants, as biomechanical forces generated during chewing can be substantial. Implant positioning is determined by analyzing the positions and angles of adjacent teeth, by laboratory simulation, or by using computed tomography with computer-aided design/computer-aided manufacturing (CAD/CAM) simulation and surgical guides called stents. The long-term success of osseointegrated dental implants depends on the presence of healthy bone and gingiva. Because both can atrophy after tooth extraction, procedures to recreate optimal bone and gingiva are sometimes needed before placing an implant.

**gingiva**  
歯茎, 歯肉

**atrophy**  
萎縮する

**tooth extraction**  
抜歯

## Exercise 5

### T or F

If the following sentence is true mark T (true), if it is not true mark F (false).

- A prosthesis is used to support a dental implant.
- A possible complication of dental implants is malnutrition.
- The abutment supports the prosthesis.
- Biomechanical forces help ensure the long-term health of dental implants.
- The success of dental implants requires procedures that recreate optimal bone and gingiva.