

## Outline

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### **Replacing a Full Set of Teeth**

Mrs. Kristine Elwood enters the dental office; she warmly greets the receptionist with a toothless smile. It quickly becomes apparent that she will need to replace her permanent teeth with an appliance containing a full set of artificial teeth. After Mrs. Elwood is seated in the dental chair, the dental assistant kindly asks her if she has ever considered replacing her missing teeth. Mrs. Elwood's response is, "Yes, having teeth would make life much easier; however, living on Social Security restricts my budget." Having to depend on Social Security for financial assistance does limit her options; however, Mrs. Elwood can still receive a set of teeth. Her options include receiving either denture-supported implants or dentures to replace the missing teeth.

Tooth loss can occur for several reasons. One cause is loss due to an accident or physical injury. "Teeth may be injured during a fall or a sport activity. A tooth may be knocked out" ("Mouth and Dental"). This occurrence is not as infrequent as many might think. People who are engaged in sports are most likely to have this problem.

A second cause of tooth loss is poor oral hygiene. Poor oral hygiene begins as soon as a person decreases their brushing and flossing activity. "Good oral hygiene is the back bone of preventing dental disease" (Taintor and Taintor 17). "When we do not properly care for our teeth, plaque, a sticky substance, loaded with bacteria, clings to our teeth" (Balshi 6). When plaque is not removed after 24 hours, it begins to harden. The microorganisms in the plaque start to produce acid that will erode the tooth structure. This acid eventually affects the gums if the plaque is not properly removed. When a person has their regular dental check-up, the hygienist

checks for plaque and will remove any buildup. If a dentist notices evidence of weak points in homecare, the dentist will intervene and correct the situation as best she can (Taintor and Taintor 16). Should the patient neglect the dentist's instructions, more calculus (tartar or calcified deposits on the teeth) will develop. Soon the gums will begin to recede exposing the root of the tooth (Balshi 6). "The roots are coated with cementum, a substance softer than enamel, which is the hard thin coating covering the outer layer of the tooth, making them susceptible to decay" (Balshi 6). Once the roots are exposed, the tooth is not firmly secured in the mouth and will fall out.

Associated with poor oral hygiene is periodontal disease, which is a third cause of tooth loss. Periodontal disease can be caused by either smoking or an increase in bacteria in the mouth due to poor oral hygiene. The disease affects the tooth root, gums, supporting tissues, and bone of the tooth. "The disease takes a rather predictable course, starting with bleeding gums and advancing to swollen, inflamed and painful gums, ending with loosening teeth and then tooth loss" (Schissel and Dodes 6). To detect the presence of periodontal disease, the dentist and hygienist will use a periodontal probe to measure the pocket depth of the gums. Using this method, the dentist can measure the degree of periodontal disease by the height of the gum. When the probe reaches one-three millimeters, the gum is considered healthy. When the probe reaches four, the gum is considered to be in the beginning stages of periodontal disease. A measurement of five or higher would necessitate immediate treatment if the teeth and gums can be saved. This treatment may include gum surgery. If the gum recedes too far from the teeth, the pocket between the gum and the tooth becomes infected, gum tissue and bone are destroyed, and the teeth may loosen and fall out or require extraction ("Periodontal ...").

Once a patient begins to experience tooth loss, they face several challenges. One significant challenge is difficulty eating. Teeth assist in chewing and breaking up food into smaller particles for the body to digest. When teeth are no longer present, there is an absence of hard surfaces to grind and shred food. This limits the variety of food choices a patient can eat. Many patients who need to limit their choices do not enjoy the food choices available to them (Davis). Soft foods will be most comfortable for the patient; however, they are not always the most tasty to eat.

Leaving the house to go out in public requires confidence for anyone; when teeth are missing, a person's level of confidence is diminished. The patient feels embarrassed, so she avoids eating, laughing, and going out in public, and she avoids forming close relationships (Davis). This lack of self-confidence is a challenge to the patient because it affects her daily activities. She is not able to enjoy the lifestyle to which she is accustomed.

A further challenge is dealing with the changes in facial appearance that occur with tooth loss. "If teeth are lost due to caries or periodontal disease, the jawbone which held the missing teeth will begin to deteriorate. In extreme circumstances, all of the alveolar process is lost, with only the basal bone of the maxilla and mandible remaining" (Serio 10). When the alveolar process is lost, the support structure for the teeth is gone, and the bones in the mouth begin to resorb. This changes the base that the facial muscles rest on; the realigning of the facial muscles changes the structure of the facial features. It is important to resolve the problem of missing teeth so the muscles around the jawbone do not shrink or realign. Once the structure of the oral cavity changes, it can be readjusted, but requires support to remain stable and functional. Artificial teeth can be used to support the jaw and facial structure.

Determining and discussing what type of appliance is appropriate will be the first step in addressing the edentulous patient's problem. One possible solution for a patient needing a full set of artificial teeth would be implant-supported dentures. "The implants themselves are tiny titanium posts which are inserted into the jawbone where teeth are missing" (Ettinger). "It acts as an anchor for a false tooth or a set of false teeth" (Davidoff). Using implants to replace a full set of teeth requires using a screw/cylinder inserted into the gum and bone, an abutment attached to each screw/cylinder, and a bar attachment system designed to hold the denture in place attached to the abutments. This is considered to be an implant-supported denture. The implants securely hold the denture in the oral cavity. Implants supporting the denture can eliminate problems such as dentures shifting and sores that are created from movement. "Dental implants integrate with your jawbone, helping to keep the bone healthy and intact" ("Dental...").

When a periodontist or oral surgeon places implants in the oral cavity, she makes an incision in the gum and uses a torquing drill to cut a hole through the bone in order to place the fixture. Different drill widths and lengths are used to create the proper-sized hole (Carter). Once placed, the fixtures are covered by the gums, which are then sutured together. The gums will take from two to six months to heal. A denture can be worn after approximately four weeks following the procedure. If a denture is not already in use, a temporary denture will be made before the surgery. Once the temporary denture is finished, a copy of it will be used as a guide to help the surgeon place the implants in the proper positions for the bar attachment system ("Implant-Supported..."). Holes are drilled in the copy of the denture, so the surgeon can see where the implants should be placed ("Implant-Supported..."). Once healed, the implants will be uncovered by making an incision in the gums. A healing abutment collar, a round piece of metal,

will be placed on the head of each implant for ten to fourteen days (“Implant-Supported...”).

After the two weeks, the permanent abutment will replace the healing collar. Once the gums are healed enough, an impression will be taken of the gums and implants. This allows a model to be used to construct the framework and teeth (“Implant-Supported...”). The framework consists of a bar attachment system. This system attaches to the abutments, and the denture clips to it. After the metal bar is adjusted and properly secured, the teeth are set in wax and will be tried in the patient’s mouth. Following necessary adjustments, the dental lab will create the final denture. Once the denture is constructed and set in acrylic, it will be clipped into the bar attachment system, so it is secured in the oral cavity. For all practical purposes, the patient now has her full set of teeth. “After a short time, you will experience a restored confidence in your smile and your ability to chew and speak” (“Dental ...”).

The denture must be removed and cleaned at least twice a day. The patient must go to the dentist to have the dentures cleaned once every three months. At cleaning visits, the dentist will check the fit and bite of the dentures. Any movement of the dentures can create sores, so regular checking is necessary to avoid the development of irritation. The dentist will also check the plastic clips, which usually need to be replaced every six to twelve months (“Implant-Supported ...”).

The patient must be aware that the cost for implant-supported dentures is based on several procedures, not one. The surgical fee for the placement of the implant can range from \$900-\$2,100. Many oral surgeons charge by the implant, with costs ranging from \$1,500-\$2,000 per fixture. The abutments cost around \$395 each. The bar attachment and denture are an

additional charge. The general dentist's fees, which include the manufacturer's price and a maintenance fee, will add to the total cost.

Mrs. Elwood may also consider dentures to solve her problem. "Generally made of plastic or cast metal, dentures are custom-fitted to match and adhere to the upper or lower jaw"(Doundoulakis 40). Dentures fit over the gums and are held in place by suction. They are used to retain the oral cavity's shape when they are in place inside the mouth. A full set of dentures includes a maxillary (top teeth) and a mandible (bottom teeth). Dentures range in cost from \$500-\$2,500. With dentures suction can be a problem, more so with the mandible because of its horseshoe shape. This suction problem leaves the patient uncomfortable and prone to sores since the dentures are shifting and sliding around.

Fitting a patient with dentures requires several appointments. Each appointment accomplishes a task needed to create the final product. First, a consultation will be scheduled. The consultation includes a discussion with the dentist concerning what is to be expected during this procedure and an examination of the oral cavity to determine if it will provide proper support to hold and maintain the denture. During the appointment, X-rays will be taken to assure the dentist that the oral cavity is free of disease and any jaw conditions that would rule out the use of dentures (Schissel and Dodes 113). Impressions will also be taken with an edentulous tray at this appointment. Beading wax or a similar material will be used to cover the edges of the tray to create a muscle mold to achieve closer adaptation of the impression tissues in the mucobuccle fold (Bird and Robinson 838). The alginate impression will be used to fabricate a custom tray for the next appointment. At the second appointment, elastometric impression material will be used to fill the custom tray inserted into the patient's mouth; this assures accuracy when the lab

creates the base plate and occlusal rims. The dental lab builds the base plate onto the master casts, and then the occlusal rims are built of wax and attached to the base plate. During the third appointment the base plate, which has been returned to the dental office, is checked for fit. The occlusal rims are removed from the master cast, and the dentist records the vertical dimensions, occlusal relationship, smile line, and canine eminence. This is necessary to ensure accurate bite and comfortable fit. This appointment also includes finding the correct mold, shade, and material that will be used for the artificial teeth. An occlusal registration, which includes the centric relation, protrusion, retrusion, and lateral excursion, is required. These terms are all movements of the patient's jaw; the exaggerated motions simulate the actual movements of the mandible as it functions in the acts of mastication, biting, yawning, and speaking (Bird and Robinson 839). All of the information gained from this appointment will be sent to the dental laboratory and used to create a wax try-in. Once the wax try-in is created, it returns to dental office, and the try-in appointment will be scheduled. The wax try-in consists of the base plate with the artificial teeth that are set in wax. The patient will reenact the exaggerated movements that were done during the third appointment. When the try-in fits and feels comfortable, it will be sent back to the dental lab for the proper adjustments to be made and will be set in acrylic. Lastly, the insertion appointment will include the patient trying on the final product - the denture. The patient will get a feel for the denture by speaking and biting. If any part of the denture creates sore spots, the dentist will make the necessary adjustments. After the patient feels comfortable in the dentures, the dentist will send the patient home with a satisfied smile and homecare instructions. In the beginning, the denture may feel awkward or bulky; however, the patient will eventually become accustomed to wearing them ("Removable ...").



Taking care of the denture is important. Rinsing off food particles and brushing the denture is suggested. Hand soap or mild dishwashing detergent is fine to use as long as the denture is not exposed to harsh abrasives. When the patient is sleeping, the denture can be either worn or removed. If the denture is removed, it must be kept moist. "At night, the denture should be placed in a soaking solution or water". "Over time, adjustments may be necessary" ("Removable ..."). The oral cavity could shift if the dentures are not fitting properly. Returning to the dentist is important if the dentures become uncomfortable or break. Dentures can fall out if they are not inserted properly, so being cautious is important. Dentures will improve a patient's outlook and daily activities by giving the patient confidence while eating, speaking, and smiling.

Like implant-supported dentures, the cost of dentures includes several appointments and materials. The dentures range in price from a few hundred to a few thousand dollars, depending on the complexity and quality of the workmanship and materials ("Dentures ..."). Generally, they are less expensive than implant-supported dentures.

Discussing the desires of what the patient is looking for whether it is improvement or intentions determines the route the patient will decide to take (Carter). Mrs. Elwood's initial consultation revealed that she was on a restricted budget. Therefore, even though she is physically a candidate for either option, due to her strict budget she must stay with the least expensive appliance - dentures. While implants would keep the denture more stable in the oral cavity, Mrs. Elwood cannot afford the cost of the implants. Dentures will supply enough stability of the oral cavity for her to perform daily tasks such as speaking and eating. By wearing dentures, Mrs. Elwood will solve her problem of being edentulous and still stay within her budget.

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