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# Implant Surgery and Assistant's Understanding

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## ABSTRACT

**Objectives:** This study introduces the assistance process of dental hygienists during an implant surgery. The purpose of the study is to promote high-quality implant surgery assistance in order to increase the success rate of implant surgeries.
**Materials and Methods:** The authors introduce the implant surgery procedures during the treatment of patient K, who visited Y Dental Department in City G in January of 2020. Surgical procedures and cautions with a focus on the assistance of dental hygienists during a surgery are listed. The roles of a surgical assistant; patient management during surgery; assistive roles in soft tissue incision, retraction, bond preparation, and implant placement; cases that give special attention to suctioning; and medical assistance including sutures are introduced with pictures and explanations.
**Results:** Dental hygienists must maintain accuracy, agility, and composure along with the practitioner when providing assistance. In addition, dental hygienists' medical assistance affects the amount of time required for surgery; occurrence of trauma during surgery, post-surgery edema and pain, and post-surgery infection; and surgery failure rate. The role of a dental hygienist in assisting implant surgeries is essential. A patient-centered assistance is important, and a dental hygienist must maintain the patient's comfort level and psychological stability through communication with the patient.
**Conclusion:** Dental hygienists' medical assistance affects the amount of time required for surgery; occurrence of trauma during surgery, post-surgery edema and pain, and post-surgery infection; and surgery failure rate.
**Clinical Relevance:** Introducing dental hygienist assistance and protocols for implant surgery.

**Keywords:** Implant, Surgery, Assistant, Dental hygienist, Suction, Retraction
**Abbreviations:** Implant: A foreign material that is inserted into or attached to the scrotum to support the tooth tube; Surgery: Dental (medical), oral (medical); Assistant: Assistant Dental Clinic, Assistant; Dental hygienist: Personnel in charge of dental assistance and preventive treatment; Suction: To suck in water or saliva during dental treatment, inhalation; Retraction: When dental treatment is performed, the cheek or tongue is towed to help secure medical care

## INTRODUCTION

As the demand for high-quality medical services increases, specialized personnel is subdivided and systematically stationed to maximize the efficiency of treatment and to provide the optimal convenience and high-quality medical services to patients. Dentists and dental hygienists perform four-handed dentistry. Dental hygienists play a role of professionals with expertise, skills, and a mindset of a service provider [1]. In order to cut off the infection path and to prevent infection within a dental office, dental hygienists investigate and confirm the medical history of the patients who visit the dental clinic, observe these patients' overall health, and take immediate measures when an infectious disease is identified [2]. Dental hygienists, along with dentists, prevent oral diseases, educate on oral care methods, and implement preventive measures against infections. They also serve as oral health educators [3]. Therefore, it is important for dental hygienists as well as dentists to maintain calmness, accuracy, agility and composure during an implant surgery. Patient-centered assistance is important, and it is essential to communicate with patients to help them maintain a comfortable physical state and psychological stability. A dental hygienist should develop and train oneself on implant surgery assistance. It is important for dental hygienists to develop the ability to effectively communicate and collaborate with the surgical team. Dental hygienists

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must reassure the patients by explaining all the processes and procedures associated with the surgery and check the anxiety level and physical conditions of the patients. The purpose of retraction is to secure the visibility of the surgical site. The retractor is placed at a right angle to the bone surface and should not press on the soft tissue or slip. The rest of the fingers are placed on the face adjacent to the retraction site to secure a stable rest, and the dental hygienist should not press on or pull the soft tissues of the mental foramen. Dental hygienists must inform the patient to raise their hands if they feel pain or tingling sensations before beginning the bond preparation. They should inform the patient to breathe through the nose as water will continue to flow and be sucked into the suction tip. Contact between the implant and the patient's blood affects the success rate of the implant surgery. No saline or saliva should touch the implant site until one-third of the abutment is implanted. A special attention to suctioning is needed during bone graft, soft tissue transplantation, removal of crushed bone fragments, and shielding and collagen procedures. Especially during a maxillary sinus graft, the suction should be placed slightly away from the window boundary and strictly kept outside the window. During the suturing process, dental hygienists must retract with the left hand while holding the mirror and grabbing the suction or tamponade in the right hand. After the surgery, dental hygienists must encourage the patient to stand up slowly and praise the patient for their composure. After the confirmation of radiation results, they should explain the surgery outcomes for the patient's understanding. They should wash their hands and disinfect and sterilize equipment required for dental treatment. Dental care providers must acquire and practice knowledge on infection paths and infection control measures in an effort to protect themselves and the patients visiting the clinic from any infections [4]. From a national dental survey in Korea in 2006, more than 80% of Koreans have symptoms of periodontal disease such as gingival bleeding or calculus deposit in mid-1940s [5]. In 2007, the Korean Ministry of Health and Welfare declared periodontal disease as the main causative chronic disease of teeth loss after age 40 [6]. The roles and duties of dental assistants during an implant procedure affect the amount of time required for surgery; the occurrence of trauma during surgery, post-surgery edema and pain, and post-surgery infection; and surgery failure rate. The purpose of this study is to improve the effectiveness of assistants' performance to increase the success rate of implant surgeries.

## MATERIALS & METHODS

This study reports the implant procedures on a 40-year-old patient who visited Y Dental Department in City G in January, 2020. The authors listed the precautions to be taken during the surgery, focusing on the tasks of dental assistants. The research was approved by the Honan University Institutional Review Board (IRB NO 1041223-201912-HR-18). The subjects were selected through direct recruitment of participants, and the study retrospectively evaluated previously gathered data or documents. The subjects were healthy individuals, and the study excluded research participants in vulnerable environments. The experimental study was conducted using both invasive and non-invasive procedures with medical instruments. The study method involved behavioral observations, and this is a patient/control group study. The extent of information collection and use is clinical information. For recruitment of study subjects, a patient was randomly selected among patients who underwent implant surgery at Yang Dental Clinic. Written and oral (statement of reasons attached) consents for participation were obtained. In supportive research, an additional consent clause for the collection and use of participant's data and biological samples is not applicable.

Participants' private information that is individually identifiable will be kept confidential and will not be made publicly available. Signing a written consent form means that the subject is authorizing access to research records, and if the results of the study are published, the subjects identify will remain confidential. New information related to the research will be provided to the subjects. Investigators and sponsors who can convey research outcomes to participants, medical professionals, the public and other related organizations (e.g. publications, database report and other data-sharing agreement) deliver published papers and oral hygiene care products.

Instruments and materials are as follows: Two No. 4 rear surface mirrors, 22 mm (Osung, Korea, 2019); basic pincette tweezers, 151 mm (Osung, Korea, 2019); utility pincette tweezers, 155 mm (Osung, Korea, 2019); periodontal explorer, XP23-WHO (Osung, Korea, 2019); metal suction tip, SNC45 (Osung, Korea, 2019); surgical suction tip, snf25set (Osung, Korea, 2019); probe, BHWHO (Osung, Korea, 2019); retractors, RTP90-1 (Osung, Korea, 2019); blade holder, SHF (Osung, Korea, 2019); #15 blade (Osung, Korea, 2019); periosteal elevator, EP9; surgical curette (Osung, Korea, 2019); Mosquito Hemostat, HTM130 (Osung, Korea, 2019); iris scissors, SCT115 (Osung, Korea, 2019); dean scissors, SCD170 (Osung, Korea, 2019); needle holder, SSA1 (Osung, Korea, 2019); suture set, Black Silk # w8114-0 with corner needle, 13 mm, 3/8 45 cm, coated vicryl (Germany, 2019); saline (Osung, Korea, 2019); gauze (Osung, Korea, 2019); surgical forceps (Osung, Korea, 2019); foil (Osung, Korea, 2019); irrigation syringe (Osung, Korea, 2019); irrigation tip (Osung, Korea, 2019); ampoule (Osung, Korea, 2019); needle (Osung, Korea, 2019); fixture implantation; Lindamann drill, lls21 (Osung, Korea, 2019); implant depth gauze, dg1 (Osung, Korea, 2019); caliper, lpc90 (Osung, Korea, 2019); bone graft; bone spreaders, boc22 (Osung, Korea, 2019); bone expender hand kit, bepd (Osung, Korea, 2019); bone expender engine kit (Osung, Korea, 2019); bone expender hand kit (Osung, Korea, 2019); micro saws 08 (Osung, Korea, 2019); trephine burs 30, 60, and 90 (Osung, Korea, 2019); surgical drill stand, dsta16 (Osung, Korea, 2019); convex osteotomes, bovx28 (Osung,

Korea, 2019); block bone clamps 197 (Osung, Korea, 2019); bone collect chisel 1 (Osung, Korea, 2019); bone collector 1 (Osung, Korea, 2019); hexa wrench 7-15n (Osung, Korea, 2019); bone crusher 3 (Osung, Korea, 2019); bone crusher mallet 29 (Osung, Korea, 2019); bone mill (Osung, Korea, 2019); bone syringes 47 (Osung, Korea, 2019); bone well, bwsus1 (Osung, Korea, 2019); bone carrier, bsc3539 (Osung, Korea, 2019); bone packer, gp3340 (Osung, Korea, 2019); membrane forceps, mf01 (Osung, Korea, 2019); sinus ronger 100 (Osung, Korea, 2019); crestal approach kit (Osung, Korea, 2019); lateral approach kit (Osung, Korea, 2019); bone screw (Osung, Korea, 2019); bone tack kit (Osung, Korea, 2019); tissue punches 35c (Osung, Korea, 2019); screw removal kit (Osung, Korea, 2019); implant curettes (Osung, Korea, 2019); PRF & GRF Box (Osung, Korea, 2019); surgical mirror (Osung, Korea, 2019); surgical ruler (Osung, Korea, 2019); ice pack (Osung, Korea, 2019); hexamidine 205 ml, 17163 (Bukwang Pharmaceutical Co. Ltd., Seoul, Korea, 2019). First, cover the patient's face with a whole towel, apply an anesthetic on the surgical site, and wait for 10 minutes. Sterilize the site with hexamidine for 1 min. Cover the patient's face again with a sterilized whole towel and sterilize the outer part of the mouth with alcohol cotton balls. Subsequently, sterilize the oral cavity with potadine, spray it with saline, and administer anesthetics once more. Make an incision on the gingiva of the surgical site. Peel off the gingiva with a periosteal elevator. Perform implant drilling in order and measure the depth with a depth gage. After placing and tightening the fixture, insert healing. Sew the implant placement site using a suture set. Prepare panorama photos, ice packs, and precautions for the patient. Insert saline-soaked gauze into the surgical site. After taking the last panorama, inform the patient of the postoperative precautions. Perform surgery in order. The following is the role of an assistant in soft tissue incision. After implant placement, the patient should be informed about the progress of the surgery and be calmly reassured about recovery.

In this study, the researchers want to analyze the baseline, the final value, and the change in the time of event occurrence in the median and proportion of the systolic blood pressure to illustrate the primary and secondary results, including the time points for each result. Please refer to **Table 1** for more details.

**Table 1.** Systolic blood pressure before and after surgery.

| Item | During surgery Blood pressure/frequency | Median During surgery | Proportion During surgery | After surgery Blood pressure/frequency | After surgery median | Proportion after surgery |
|---|---|---|---|---|---|---|
| **At baseline change** | 119.00(2) | 120.00 | 33.3 | 118.00(1) | 120.500 | 16.7 |
| | 120.0(3) | | 50.0 | 120.00(2) | | 33.3 |
| | 126.0(1) | | 16.7 | 121.00(1) | | 16.7 |
| | | | | 123.00(2) | | 33.3 |
| **Final value** | 115.00(1) | 119.500 | 16.7 | 118.00(1) | 120.00 | 16.7 |
| | 116.00(1) | | 16.7 | 119.00(1) | | 16.7 |
| | 119.00(1) | | 16.7 | 120.00(2) | | 33.3 |
| | 120.00(2) | | 33.3 | 121.00(1) | | 16.7 |
| | 126.00(1) | | 16.7 | 126.00(1) | | 16.7 |
| **Time (check 6 times every 10 min)** | 10.00(6) | 10.00(6) | 100.0 | 10.00(6) | 10.00 | 100.0 |

The changes from baseline in systolic blood pressure should be evaluated. During surgery BP/frequency and proportion were 119.00 (2) 33.3%, 120.0 (3) 50.0%, and 126.0 (1) 16.7%, respectively; postoperative BP/frequency and proportion were 118.00 (1) 16.7%, 120.00 (2) 33.3%, 121.00 (1) 16.7%, and 123.00 (2) 33.3%. In the change from baseline, the during surgery median was 120.00 and postoperative median was 120.500 d. In final values, the During surgery BP/frequency and proportion were 115.00 (1) 16.7%, 116.00 (1) 16.7%, 119.00 (1) 16.7%, 120.00 (2) 33.3%, and 126.00 (1) 16.7%. During surgery BP/frequency and proportion were 118.00 (1) 16.7%, 119.00 (1) 16.7%, 120.00 (2) 33.3%, 121.00 (1) 16.7%, and 126.00 (1) 16.7%. In the change from baseline, the During surgery median was 119.500 and postoperative median was 120.00. With respect to time (measured six times every 10 min), During surgery BP/frequency and proportion were 10.00 (6) 100.0% and postoperative BP/frequency and proportion were 10.00 (6) 100.0%. Regarding the clinical relevance between efficacy and negative outcomes, the risk of soft tissue incision is associated with tension arising with patient's discomforts when incision begins. After a blade passes across, incision lines are confirmed and the flap is elevated using a periosteal elevator, and the suction tip is closely placed. Suction should

be carefully performed while paying attention to patient's breathing and swallowing. Physicians should closely monitor if the patient has difficulty in breathing through the nose. After a blade passes across, the suction tip is closely positioned to observe the type of incision. While determining the incision line and elevating the flap using a periosteal elevator, suction should be mainly placed adjacent to the surgical site. In regards to the risk of retraction, soft tissues of the mental foramen should not be pressed or pulled out. A retractor should be positioned perpendicular to the bone surface at the site slightly away from the mental foramen. Nerve palsy may occur when a retractor presses on the mental foramen. A retractor is placed to pass across the center of the lip avoiding pressing the corners of the mouth. Saline solution or Vaseline is applied to the mouth corners or retractor to prevent dry lips). As the efficacy of retraction, the purpose of retraction is to secure the view of the surgical site. A retractor is positioned perpendicular to the bone surface. Retraction should be carefully performed to ensure that the soft tissues are not pressed and slip down. The rest of the fingers are placed adjacent to the face to ensure stable rest.

The risk of bond preparation is that a dental assistant needs to perform proper suction by spraying saline solution on the bone surface and implant drilling sites. If not, the success rate of implants decreases due to apoptosis on the bone surface of the implant site. For efficacy, it is important to instruct patients to raise their hand when they are experiencing pain or sore sensation and to ask patients to breathe through the nose because a continuous flow of water will be sucked away with suction. Placing the suction tip approximately 5 mm below the drill is ideal. Considering implant precautions, it is better for the patient's blood to first come into contact with the implant. Saline solution should not be sprayed until one-third of the implant is inserted. Implant success rates are decreased if the implant first comes in contact with saliva or saline. Patients must be instructed to open their mouth as wide as possible, and caution should be taken to ensure there is no contact with the implant during the use of a metal tip. For efficacy, while spraying saline solution, the cooling effect should be maintained by suction approximately 5 mm away from the implant site. When determining the depth of the implant, thoroughly clean with saline solution and completely remove blood in the connection area of healing abutments and cover screws. The cases that require special attention during suction is that suction should be positioned slightly away from the boundary of the window, and it should not enter the window during the maxillary sinus graft. For efficacy, it is important to secure the surgeon's view. The implant should be placed at an accurate position. The position of the retractor should be swiftly changed, and stable status should be maintained when suturing. The suction should be immediately performed at the surgical site with a perpendicular approach.

**Surgical tray preparation**

The materials needed for the implant are the following: Mirror, pancetta tweezers, dental explorer, periodontal probe, Minnesota retractors, blade Nos. 12 and 15, blade holder, periosteal elevator, surgical curette, Mosquito Hemostat, iris scissors, dean scissors, needle holder, suture set, saline, gauze, surgical towel, foil, irrigation syringe, irrigation tip, ampoule, needle, Lindemann drill, implant depth gauze, caliper, bone spreader, bone expander hand kit, bone expander engine kit, bone expander hand kit, micro saws, trephine burs, surgical drill stand, convex osteotomes, block bone clamps, bone collect chisel, bone collector, hex wrench, bone crusher, bone crusher mallet, bone mill, bone syringes, bone well, bone carrier, bone packer, membrane forceps, sinus ronger, crestal approach kit, lateral approach kit, bone screw, bone tack, tissue punches, screw removal kit, implant curettes, surgical mirror, surgical ruler, ice pack, and hexamidine. Arrange them primarily according to the user's convenience. The needle holder handle should be positioned toward the operator and dean scissors toward the assistant.

**Soft tissue incision**

In cases of soft tissue incisions, the assistant should cautiously secure the field of view with the mirror using the left hand and the suction tip using the right hand at a right angle to the soft tissue surface. The assistant checks with the patient whether there is any discomfort when the incision begins. **Figure 1** presents the making of incision line and placement of the retractor.

**Retraction**

The purpose of retraction is to secure the view of the surgical site. The retractor is placed at a right angle to the bone surface, neither pressing on soft tissue nor slipping. The rest of the fingers should be securely rested on the face adjacent to the surgical site, and the soft tissue of the mental foramen should not be pressed or pulled. The retractor should be perpendicular to the surface of the bone and slightly away from the foramen. It should not put pressure on the depressor anguli oris or levator anguli oris. The assistant must position the retractor to pass the central part of the lips and apply saline or Vaseline on the mouth or the retractor to prevent the lips from drying. The assistant should position the retractor slightly away and higher from the foramen. The retractor is placed stably at a right angle to the bone surface. When the retractor presses the foramen, nerves are pressured, causing sensory abnormalities. When the retractor presses the lower part of the foramen to open the valve, nerves are stretched and damaged, also causing sensory abnormalities.

**Bond preparation**

Before removing the bone, the patient is instructed to slightly raise a hand or to speak if he/she feels pain or tingling. The patient is asked to breathe through the nose as there will

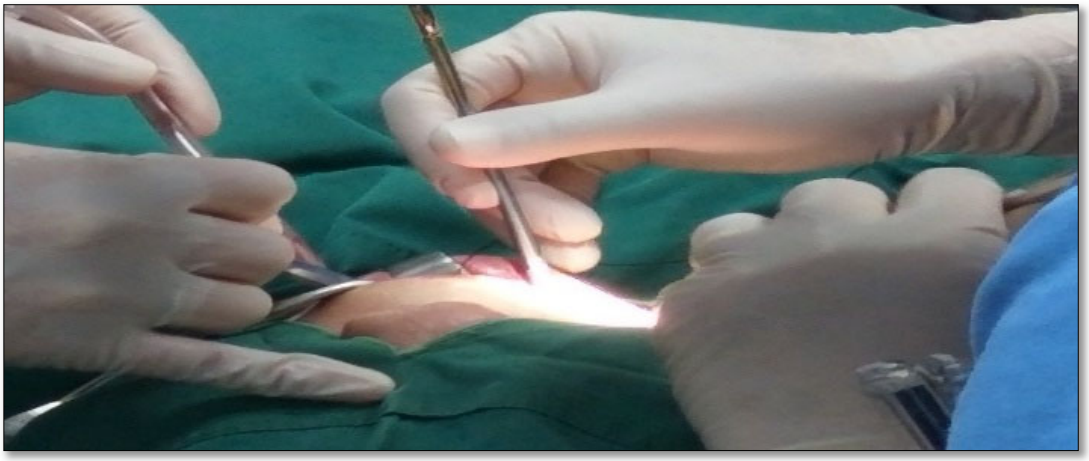

**Figure 1.** Place the suction tip close to the path of the blade to ensure visibility of the incision line. Check the incision line with a periosteal elevator, and position the suction around the proximal area where the operation is performed even when lifting the valve. The retractor is positioned perpendicular to the bone surface. Place the retractor slightly away from and slightly above the pore. Stabilize the retraction in the direction perpendicular to the bone surface. When the retractor presses the pore, the pressure on the nerve causes sensory abnormalities. When the retractor is pushed to the lower part of the pore to open the valve, the nerve is stretched and damaged, causing sensory abnormalities. Place the retractor slightly away from and above the pore and orient it perpendicular to the bone surface to stabilize it.

be a continuous flow of water, which will be sucked away with suction. If the assistant were to directly spray saline on the site of the procedure, then it is sprayed on the area where the drill meets the bone surface while simultaneously administering an appropriate amount of suction. It is recommended to place the suction tip around 5 mm below the drill. **Figure 2** depicts the implant drill and water spray procedure.

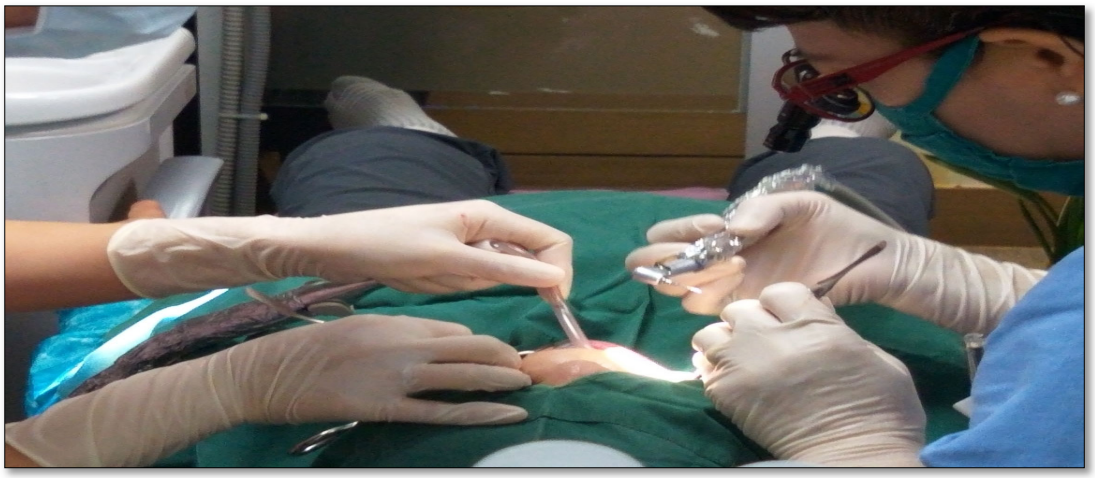

**Figure 2.** During tap drilling, request the patient to open the mouth wide so that the drill does not touch the opposite side when removing the drill in reverse rotation. Be careful not to let foreign objects come into contact with the implant and retract sufficiently. When the implant is inserted to some extent, start spraying with saline and place the suction tip approximately 5 mm away. Wash the inner groove of the implant connection with saline and perform suction. Connect the cover screw when the connection groove is cleaned.

**Implant precautions**

It is better for the patient's blood to first come into contact with the implant. Saline should not be sprayed until a one-third of the implantation is completed. The cooling effect should be maintained by suctioning around 5 mm away while spraying the saline solution. The patient must be instructed to open the mouth as wide as possible, and caution must be taken to ensure there is no contact with the implant during the use of a metal tip. Suction should be performed at a proximity while checking the placement depth. During the connection of healing abutments or cover screws, the grooves of the connecting parts should be washed and suctioned with saline

to remove any blood. After the implant insertion, the patient must be informed about the progress of the operation and calmly reassured about his/her recovery. **Figure 3** describes implant precautions taken in cases that require special attention during suction.

Rolled gauze is hold with a mosquito and pressure should be applied during bone grafts, soft tissue grafts, crushed bone fragments, collagen shields, and shielding procedures. The suction tip is kept slightly away from the window boundary and it should not enter the window during the maxillary sinus graft.

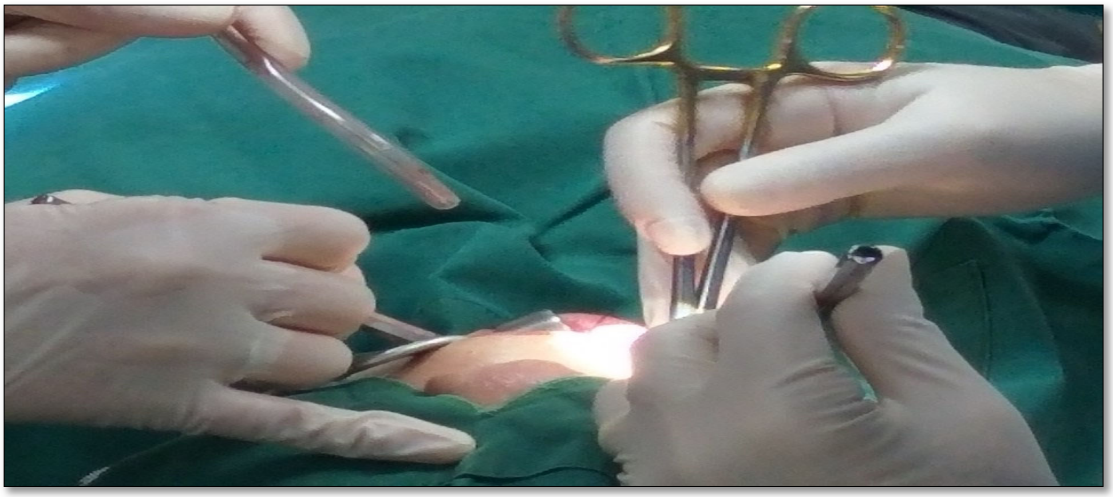

**Figure 3.** It is better for the patient's blood to first come into contact with the implant. Saline should not be sprayed until a one-third of the implantation is completed. The cooling effect should be maintained by suctioning around 5 mm away while spraying the saline solution. The patient must be instructed to open the mouth as wide as possible, and caution must be taken to ensure there is no contact with the implant during the use of a metal tip. Suction should be performed at a proximity while checking the placement depth. During the connection of healing abutments or cover screws, the grooves of the connecting parts should be washed and suctioned with saline to remove any blood. After the implant insertion, the patient must be informed about the progress of the operation and calmly reassured about his/her recovery.

**Suture**

During the suture, the left hand should be used for retraction while holding the mirror, whereas the right hand should be used to hold the suction or tamponade. The mucous membrane or tongue is retracted with the mirror during the suture of a horizontal incision in the alveolar bone area. For the suture of a vertical incision in the buccal cavity, the mirror is placed directly below the incision and it is pulled downward from the incision. When the first and second knots are connected, the hemostasis and blood marks are removed with tamponade or suction, and the suture is checked. The third knot is completed with scissors that are to be used with the right hand, and the knot is rested while securing the view with retraction. The nylon suture is cut for about 1–2 mm from the knot. In case of complaints of discomfort during treatment after surgery, a stopper can be heated with the alcohol lamp to reduce the length of the suture and make it round. After the surgery, the patient is instructed to rise slowly. In addition, the patient should be praised for his/her composure during the operation. After confirming the radiation results, the patient of the surgical conditions must be informed to help him/her understand the surgical results. **Figure 4** presents the suture and conformance conditions.

## RESULTS

The arrangement of equipment on the surgical tray should be based on the convenience of the user. The handle of the needle holder should be placed toward the operator and the dean scissors should be placed toward the assistant. The purpose of retraction is to secure the visibility on the surgical site. It is placed at a right angle to the bone surface, and it must be ensured that it does not press on soft tissues or slips. Before beginning the bond preparation, the patient is instructed to raise a hand if he/she feels pain or tingling. Therefore, the patient is informed about the continuous running of water, which will be sucked into the suction tip. The patients should importantly be advised to breathe through the nose. If the assistant needs to spray the saline, then the saline is sprayed on the area where the drill meets the bone surface and appropriate amount of suction must be simultaneously administered. It is desirable to place the suction tip 5 mm below the drill. Assistants should keep in mind that it is

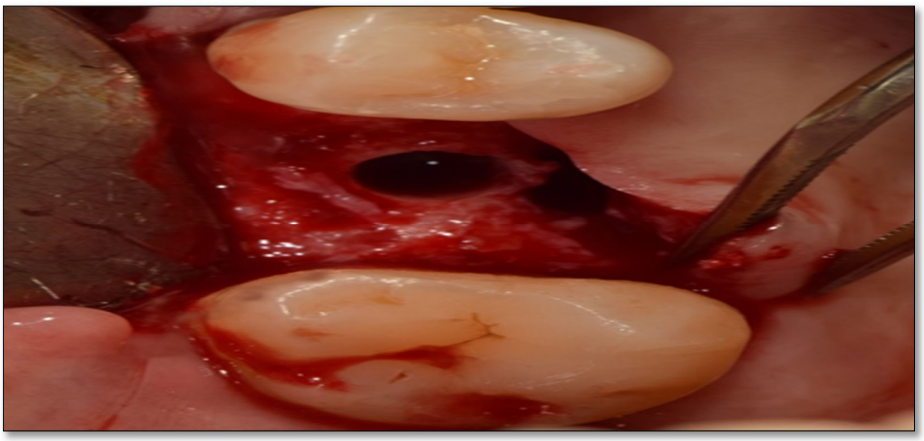

**Figure 4.** The mirror is held in the left hand and tamponade in the right hand; hold the mirror in the left hand and perform suction with the right hand. Position the mirror directly below the vertical incision line, and pull it downward so that the mucosal parts of the valve do not overlap and straighten at the correct position. If the mirror position and the pulling direction are wrong, the position of the valve changes and the mucosal parts wrinkle and overlap. Retracting the buccal mucosa and the tongue with a mirror secures space for vision and needle movement. As soon as the first knot is completed, remove the blood using suction or tamponade and check the suture and fit it. Separate the sutures one by one and cut them 1-2 mm away from the knot. This can make the tip of the nylon sutures less likely to stand up. The front suture is cut short, and its tip is pointing downward, so it is less likely to cause discomfort. On the other hand, the suture on the back is not only long but also facing upward, which may stab the soft tissue in the oral cavity, possibly causing discomfort. Place a stopper that is heated on an alcohol lamp at the tip of the nylon suture to melt it in order to make the suture shorter and round, which reduces discomfort.

preferable for the patient's blood to come in contact with the implant first rather than saline; therefore, saline should not be sprayed until one-third of the implant is inserted. Once saline spray has begun, suction should be performed around 5 mm away from the site to maintain its cooling effect. Cases that require special attention during suction include bone grafts, soft tissue grafts, crushed bone fragments and collagen shields. A rolled gauze is held with a mosquito and pressure is applied. During a maxillary sinus graft, the suction should be placed slightly away from the window boundary and never inside the window. A tamponade or suction should be used to remove the hemostasis and blood marks to check the suture when the first and the second knots are connected. The scissors are used from the right hand to complete the third knot, while securing the view with retraction. Thereafter, the site is given a rest. The nylon suture is cut about 1-2 mm from the knot.

## CONCLUSIONS

Dental hygienists' medical assistance affects the amount of time required for surgery; occurrence of trauma during surgery, post-surgery edema and pain and post-surgery infection; and surgery failure rate. Clinical relevance introducing dental hygienist assistance and protocols for implant surgery.

## DISCUSSION

Infectious diseases rely on the host susceptibility and other factors among patients, operators and colleagues and their families [7]. Because of the nature of dental treatment where most procedures are performed in a narrow oral cavity, anyone can be exposed to a wide variety of bacteria or viruses present in the blood and saliva of patients. In particular, infections can occur through various paths, such as sharp medical devices, needles, exposed wounds, and aerosol. A room contaminated with various secretions from patients can be a medium of infection [8]. The purpose of this study is to introduce the help process of dental hygienists during implant surgery and promote high-quality implant surgery support to increase the success rate of implant surgery. Thus, compared with the purpose and results of this study, accuracy, agility and composure are required in the role of surgical assist. This is because it affects the degree of time required for surgery, trauma during surgery, edema and pain after surgery, initial infection after surgery and surgical failure. Breathing with the dentist is very important and patient-centered assist increases the patient's comfortable condition and psychological stability through interaction and dialogue with the patient. And the dental hygienist himself stresses the need for surgical assistance and training. It is recommended that every healthcare practitioner must pay special attention toward hand washing and regularly wash hands. Medical personnel in constant contact with patients should wash hands before and after any interaction with a patient; however, many studies report that dentists and dental hygienists neglect the practice of washing hands [9]. It is recommended that every healthcare practitioner must pay special attention toward hand washing and regularly wash hands. Today, most patients undergoing implant surgery have been treated as a treatment to restore their masticatory function after losing their teeth as the main

cause of periodontal disease since they were in their 40s. However, there are reports that tissue around implants causes peri-implantitis, which is caused by plaque, excessive load, or uncontrolled whole-body diseases, which results in many implant failures [10]. In this study, the dental hygienist's assistance to reduce implant failure is described below. Position the retractor slightly away from the mental for men, slightly higher than the mental for men, and approach stably with the direction perpendicular to the bone surface. And you should be very careful because pushing the retractor downwards of the mental for men and opening the valve will cause nerves to stretch and damage, causing sensory abnormalities. Then, if the assist has to spray saline himself, spray saline on the area where the drill meets the bone surface and properly hydrate it. It is advisable to position the suction tip about 5 mm downstream from the drill. At this point, the retractor shall be positioned slightly above the mental foramen from the position slightly away from the mental foramen and shall be stabilized at a right angle to the bone surface. When you do tap drills, explain to the patient that the mouth is wide open so that it does not touch the other side when removing the drill with reverse rotation and continue to observe. Take care not to touch the implant when you install the implant, and sufficiently retraction it. When the implant is partially inserted, start spraying saline and place the suction tip 5 mm away. Clean and suction the inner groove of the implant connection with saline solution. Connect the cover screw while the groove of the connection is clean. The dental hygienist's care points for medical assistance during implantation are as follows. Since it is recommended that the patient's blood contact the implant first, do not spray saline until it is cooled one-third first, and isolate the saline solution. When saline is sprayed, it is important to maintain the cooling effect by suction at a point about 5 mm away. Pay attention to the patient so that the patient's oral cavity can be widened as much as possible, and when using metal tips, be careful not to touch the implant. When checking the depth of the implantation, perform suction in a close proximity and wash the groove of the connection with saline solution and tighten the cover screw to prevent blood loss. After implantation, it helps patients to understand the progress of surgery and to feel safe. In this study, the following are some examples of special attention to suction. In bone grafts, soft tissue transplants, pulverized bone fragments and shielding membranes, collagen rolls up gauze and grabs it with a mosquito to press and suction. During an upper-arm transplant, be careful not to enter the window at all times, with the suction slightly away from the window interface. If bone transplantation is performed using Bio Oss, which is a pulverized bone form, be careful not to touch the bone grafting material. Also, when fixing non-absorbable shielding over bone grafting materials, it is important to pay close attention to the suction as the shielding bone grafting material may escape if the close part of the shielding membrane is suctioned. For example, due to a lack of residual bone in the upper and lower courts, If an upper-arm transplantation was required, a window was formed on the upper part of the narrow-sided area and the upper-arm bronze membrane was raised. At this time, do not enter the Sangak-dong with suction tips and be careful not to touch the window limb. Implant procedure has continuously evolved since 1969, when the result of Branemark's implant operation was first published. Previously, a load was added to the implant if a sufficiently mineralized bone was identified around the implant after a healing period of 3-6 months following the implant procedure [11]. Conventional loading generally refers to add a load in the maxillary sinus 6 months after the operation and in the mandible 3 months after the operation. Implant survival occurs when the implant is not removed due to a failure and remains undamaged without causing any special pain or malfunctioning. It is considered as a successful implant when there is no radiographic image around the implant, no pain during use, and no effect on the surrounding anatomical structures while less than 1.5 mm of the upper alveolar bone is lost within the first year upon the initial use of the implant and less than 0.2 mm per year in the subsequent years [12]. In this study too, we do not spray the saline solution until one-third of the implant is inserted as it is better for the blood of the patient to come in contact with the implant before the saline. The cooling effect is maintained by performing suction around 5 mm away from the site when spraying the saline. The patient is asked to open their mouth as wide as possible, and the implant is not touched during the use of a metal tip. The suction is performed at close proximity while checking the placement depth. The connecting groove is cleaned with saline while performing suction during the connection of healing abutments or cover screws to prevent blood from collecting on the site. Assistants' duties such as informing the patient of the operation results to help them remain relieved help in increasing the success rate of implants. We also emphasize that every healthcare provider should pay special attention toward hand washing and regularly practice the same. In the implant surgery, the surgeon's convenience should be a priority of the assistant. Sterilization and disinfection should be thoroughly performed. During the surgery preparation, dentists' equipment should be arranged based on the convenience of the surgeon. Above all, assistance should be centered on the patient. The operation procedures should be explained in a calm voice to the patients so that he/she is aware of the progress of the operation and remains physically and psychologically relaxed. Precautions before and after the surgery should be explained to the patient in detail. The symptoms such as bleeding and pain should be checked via telephone after the patient returns home. The purpose of this study is to help the assistants in effectively performing proper assistance to increase the success rate of implant surgeries. We wish to conduct research on implant management in the future. The author's research limits were not able to carry out the study with time limits on the probability of causing tooth decay and periodontal disease, preventing systemic diseases, maintaining healthy implants longer, and maintaining patient health through continuous management research of dental

hygienists causing inflammation of the implants. Patients undergoing implant procedures induce repeated education and behavioral correction of oral hygiene for six months. Continuing management and oral health education should be given constant attention for six months so that plaque control ability can maintain oral hygiene ability. The following points are intended to be continued in future studies: The theory is well known that severe periodontal diseases such as blood vessels and diabetes can increase the probability of developing systemic diseases such as cerebral apoplexy 2.8 times and dementia 1.2 times. Chronic lung disease is 4.2 times more common, cardiovascular and heart disease 2.7 times more common, premature birth seven times more common and erectile dysfunction twice more common. So, it has to be controlled. Controlling the early stages of periodontal disease or periodontal disease and oral micro regulation related to periodontal disease or periodontal implant would be a very important task.

## ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

Research involving human participants and/or animals: The research was approved by the Honam University Institutional Review Board (Ethics approval number: 1041223-201912-HR-18).

## CONSENT FOR PUBLICATION

The consent of the patient, chief dentist and dental hygienist was obtained. The patient was given a training subject, and the gift was delivered as an expression of gratitude Disclosure of potential conflicts of interest: The author declares that there is no conflict of interest. Written and oral (statement of reasons attached) consents for participation were obtained. The consent of the patient, chief dentist, and dental hygienist was obtained. The patient was given a training subject, and the gift was delivered as an expression of gratitude.

## COMPETING INTERESTS

Possible.

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