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Aims and Scope

본 학회지의 명칭은 "대한국제임플란트학회지"로 명한다. 본 학회지의 목적은 임플란트 관련 연구 및 임상의 발전을 위함이다. 본 학회지는 임플란트와 관련된 치과의사, 의사, 치위생사를 포함한 모든 연구자를 대상으로 하며 매년 2회 발간된다.

The Journal of International Congress of Oral Implantologists KOREA is the official journal of the Korean Society of Oral Implantologists and is published two times per year. The aim of Journal of International Congress of Oral Implantologists KOREA is to contribute to the development of basic study and clinical practice related to dental implant. The journal publishes original articles, case reports, reviews, editorials, specialized serial articles and provides a discussion forum through letter to the editor, and the journal covers all aspects of the implant.

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Case Reports

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Original Article

Multi-center prospective clinical study of 7-mm short implants

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Purpose: The objective of this study was to verify the stability of 7-mm short implants.

Methods: A multi-center prospective clinical study on 7-mm short implants was conducted at 4 Korean medical centers. In 53 patients, 92 implants of 2 types were placed. Through clinical and radiological evaluation, the survival and success rate of the implants, peri-implant tissue condition, and complications were examined. The subjective functional evaluation of patients was performed by the distribution of a questionnaire at the final follow-up observation appointment.

Results: Among 92 implants, 5 implants failed and were thus removed. The failed implants were all from the GS II system. The implant survival rate of the GS II system was 92.7% and the SS II system was 100%; nonetheless, it was not statistically significantly different ($P>0.05$). The success rate of GS II was 83.9% and SS II was 97.2%, and a statistically significant difference was shown ($P<0.05$). In the evaluation of the peri-implant tissue condition, crestal bone loss was significantly smaller in the SS II system. In the short-term observation, 7-mm short implants showed good clinical outcomes.

Conclusion: According to this analysis, if surgery that causes minimal trauma on the crestal bone is performed and implants with appropriate designs are selected, better clinical outcomes can be obtained.

Keywords: Dental implant, Multi-center prospective clinical study, Short implant

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INTRODUCTION

In cases where an edentulous state is maintained for a long time and vertical or horizontal bone resorption is present, the available bone height needed to obtain sufficient stability is limited or the possibility of the invasion of the important anatomic structure such as inferior alveolar canal is increased. Moreover, the crown-to-implant ratio may become poor. Particularly, reduction in vertical dimension of the anterior mandibular area is 4 times larger than the maxilla, and among the mandibles, the posterior area shows more vertical bone resorption than the anterior area. In addition, vertical resorption is more prominent than horizontal resorption in the

mandibular molar area, and thus, particular attention should be paid to the deficiency in vertical bone volume of the mandibular molar area.[1-3] To overcome this, diverse surgical methods such as a ridge augmentation and inferior alveolar nerve repositioning have been proposed. Nonetheless, in these cases, it is clear that the implant failure rate is higher than implants placed in the jaw in good condition and there is a lot of surgical trauma. Therefore, the possibilities of developing complications, resorbing alveolar bone, and soft tissue recession during the healing period are significant. Recently, much attention has been paid to short-length implants that can reduce the burden of surgical procedures and the possibility of developing complications. Particularly, if good stability can be predicted, short implants can be a very useful treatment choice in the mandibular molar area in places where the bone volume is not sufficient.

Upon the recent commercialization of products with improved surface treatments and designs, short implants placed in the mandible have been reported to show relatively good clinical outcomes; and in the Branemark and ITI implant system, high long-term success rates of short implants measuring 6 to 8.5 mm in length have been reported.[4,5]

To evaluate the short-term prognosis of implants measuring 7 mm in length that were placed in the mandibular molar area using minimally invasive surgical procedures, we examined the early failure rate and the short-term clinical outcome of implants placed at 4 Korean medical institutions.

MATERIALS AND METHODS

This study was conducted after obtaining approval from the Institutional Review Board, Seoul National University Bundang Hospital (IRB No. B-0703-043-002).

1. The patient selection criteria

1) Patients in healthy general condition, and patients with systemic diseases that could be controlled.

2) Patients who were edentulous in the mandibular 2nd premolar area, the 1st and 2nd molar area, cases with residual alveolar bone with insufficient height to the mental foramen and inferior alveolar canal.

3) The buccal width of alveolar bone is more than 6mm.

4) Cases that the vertical resorption of the alveolar bone is severe, and thus the crown-to-implant ratio is anticipated to be higher than 1:2 were excluded.

2. Treatment procedure

The study subjects were selected by pre-surgical clinical and radiological examination, and implant surgery was performed in 4 medical centers. Implant surgeries were performed from February 2008 to July 2008. At the Seoul National University Bundang Hospital, Chosun University Dental Hospital, and Jeju Yena Dental clinic, 7-mm GS II implants (Osstem implant co. Busan, Korea) were placed; in the Seoul University Bundang Hospital and Apsun Dental Hospital, 7-mm SS II implants (Osstem implant co. Busan, Korea) were placed. The use of submerged or non-submerged technique was chosen at the time of surgery according to the condition of the bone quality and preference of surgeons. For cases that needed guided bony regeneration, BioOss (Geistlich, Wolhusen, Germany) and BioGide membrane (Geistlich, Wolhusen, Germany) were used. For 5 days after surgery, antibiotics and anti-inflammatory analgesic agents were administered; after 7 to 10 days, suture was removed. As the interval to the second surgery or the impression taking for prosthetic treatments, approximately 2-3 months were allowed, and 3 to 4 months after implant placement, the final prosthesis was installed. Digital periapical radiographs implant placementumbers listed here. what their different results were.s should be installed"here; ridge impace were taken and complications and the peri-implant condition were recorded in the standardized record form at four times: 7 to 10 days after surgery, after 3 months, after the completion of prosthetic treatments, and 1 year after installation of the functioning prosthesis.

3. Implant survival and success rate

Among the cases without mobility, pain, inflammatory

reactions in the adjacent soft tissues or radiolucency findings, those showing less than 1.5 mm of bone loss one year after prosthesis installation were considered successful. Cases with implants and prostheses remained at the last follow-up observation regardless of the peri-implant condition were considered as survival. Regardless of the cause, the cases with adjacent marginal bone loss of more than 1.5 mm were considered failures.[6]

4. Peri-implant tissue condition

One year after prosthetic functioning, the gingival inflammatory index (GI), plaque index (PI), buccal pocket depth, and width of buccal keratinized mucosa were measured.

1) Index of gingival inflammation (GI)[7-9]

The following scale was used to determine the GI:

0: Normal gingiva.

1: Mild inflammation-slight change in color, slight edema. No bleeding on probe.

2: Moderate inflammation-redness, edema, and glazing. Bleeding on probe.

3: Severe inflammation-marked redness and edema, ulceration. Tendency to spontaneous bleeding.

2) Plaque index (PI)[7-9]

The following scale was used to determine the PI:

0: No plaque in the gingival area.

1: A film of plaque adhering to the free gingiva and adjacent area of the tooth. The plaque may be recognized only by running a probe across the tooth surface.

2: Moderate accumulation of soft deposits within the gingival pocket, on the gingival margin or adjacent tooth surface, which can be seen by the naked eye.

3: Abundant soft matter within the gingival pocket or on the gingival margin and adjacent tooth surface.

3) Buccal pocket depth

Using a plastic periodontal probe, the peri-implant pocket depth of the buccal side of implant was measured.

4) The width of keratinized mucosa

The width of the keratinized mucosa and the distance from the rim of gingiva of placed implant to the border of alveolar mucosa was measured.

5. Crestal bone loss

To calculate the amount of resorption, the baseline crestal bone level measured on the peri-apical radiograph taken immediately after surgery was compared with the crestal bone level on the mesial and distal sides on the periapical radiograph taken at 1 year after prosthetic loading. The magnification rate was adjusted using the length of the placed implants, the mesial and distal sides were measured, and the mean value was calculated.

6. Functional evaluation of the implant

At the last follow-up observation, the following questions were assessed by distributing a questionnaire:

(1) Can you chew foods such as peanuts, kimchi, gakduki (radish kimchi), and spareribs well?

(2) Subjective evaluation of peri-implant gingival condition:

- Was the gingiva swollen?
- Was the gingiva painful?
- Did the implants move?

7. Statistics

For the comparison of the survival rate and success rate of the GS II group and the SS II group, a Chi-squared test was performed. For the comparison of the peri-implant tissue conditions, the Mann-Whitney test was performed. For statistical analysis, the SPSS 12.0 (SPSS Inc., Chicago, USA) was used, and $P<0.05$ was considered to be the significant level of all statistical values.

RESULTS

During the study period, 7-mm short implants were placed in 92 cases of 53 patients at 4 institutions. The age of patients was ranged from 20 to 71 years, with an average of 53 years. Regarding the width of the placed

implants, 5.0-mm implants were placed in 33 of the cases and 4.8-mm implants were placed in 32 of the cases (Table 1).

In 5 patients, 5 implants were removed because of initial osseointegration failure, peri-implantitis, or nerve injury. All of the failed implants were from the GS II system. Excluding the failed implants, a single implant prosthesis was used in 25 cases, and a fixed partial prosthesis was used in 62 cases, totalling 87 total prosthetic cases. The opposite tooth was the natural tooth in 34 cases and a crown in 30 cases (Table 2). One patient (who had 3 implants) dropped out of the study during the follow-up observation period.

Excluding the patient who dropped out and the patients with failed implants, the peri-implant tissue condition of 84 implants that survived was evaluated. The follow-up period after the functioning of prostheses was from 12 months to 26 months, with an average of 21 months. Regarding the peri-implant condition that was assessed 1 year after prosthetic loading, the mean crestal bone loss was measured to be 0.38 mm, the mean plaque index was 1.15 mm, the mean pocket depth was 3.13 mm, the mean gingival index was 0.85 mm, and the mean width of keratinized mucosa was 1.8 mm.

Fifty-six implants (16 implants in the males and 40 implants in the females) of the GS II system were placed in 32 patients (12 males and 20 females); their ages ranged from 20-65 years, with an average age of 50 years. Five implants failed, and a 91.1% survival rate was shown. After 1 year of wearing the functional prosthesis, 4 implants had more than 1.5 mm of crestal bone loss, and an 83.9% success rate was shown (Table 3, Figs. 1, 2). The failed implants experienced crestal bone loss and ultimately failed; thus, they were removed.

Thirty-six SS II system implants (15 in the males and 21 in the females) were placed in 21 patients (9 males and 12 females); their age ranged from 42-71 years, with an average age of 57.3 years. None of implants failed, and a 100% survival rate was shown. One year after the functioning of the implants, 1 implant showed more than 1.5 mm of crestal bone loss, and a 97.2% success rate was shown (Figs. 3 and 4).

The survival rate and success rate of the GS II system and the SS II system did not show statistically significant differences ($P>0.05$) (Tables 4, 5). The peri-implant tissue condition one year after the functioning of the prosthesis is shown in Table 6. The crestal bone loss of the GS II system

Table 1. Width of implants

Width (mm)	Number
4.0	12
4.1	4
4.5	11
4.8	32
5.0	33
Total	92

Table 2. Types of opposing tooth

Types	Number
Natural tooth	34
Crown	30
Restorative treatment	14
Implant	5
Denture	4
Total	87

Table 3. Analysis of crestal bone loss more than 1.5 mm

Age	Sex	Medical	Site	Diameter	Implant placement method	Type of prosthesis	Opposing tooth
52	F	No	45 47	4 4	One-stage	Fixed partial	Crown
24	M	No	47	5	One-stage	Single	Crown
55	M	No	35	5	One-stage	Fixed partial	Natural tooth

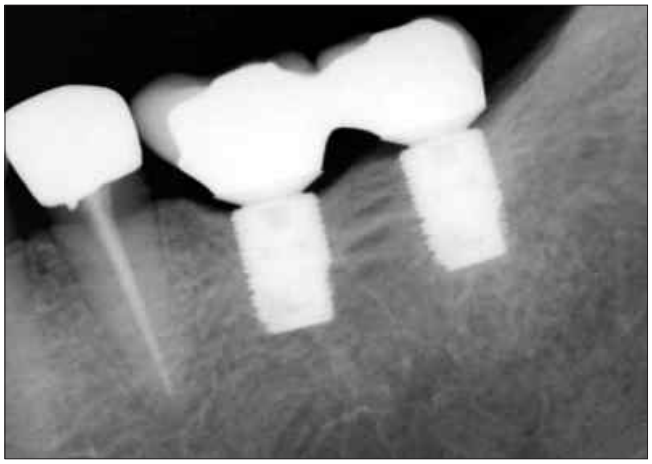

Fig. 1. Periapical radiograph 25 months after prosthetic loading. The crestal bone level has been maintained.

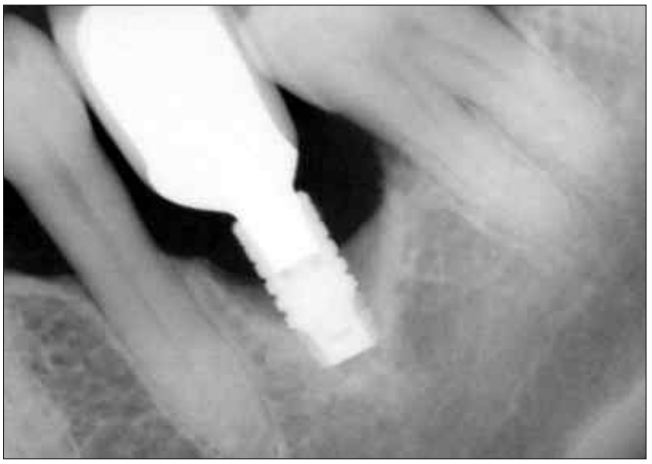

Fig. 2. Periapical radiograph 23 months after prosthetic loading. Progressive crestal bone loss is observed.

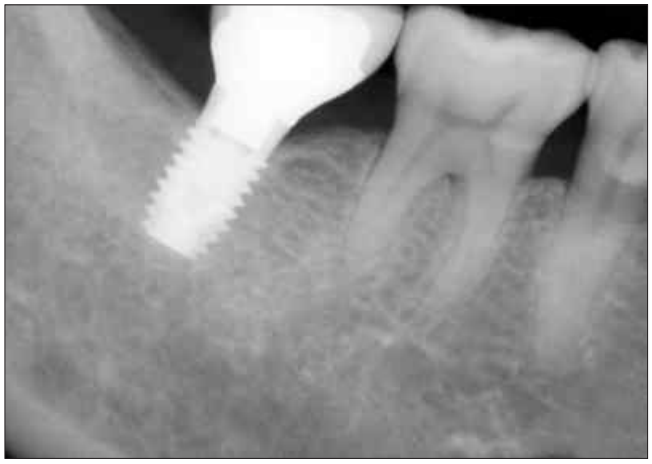

Fig. 3. Periapical radiograph 17 months after prosthetic loading. The stable level of the crestal bone is maintained.

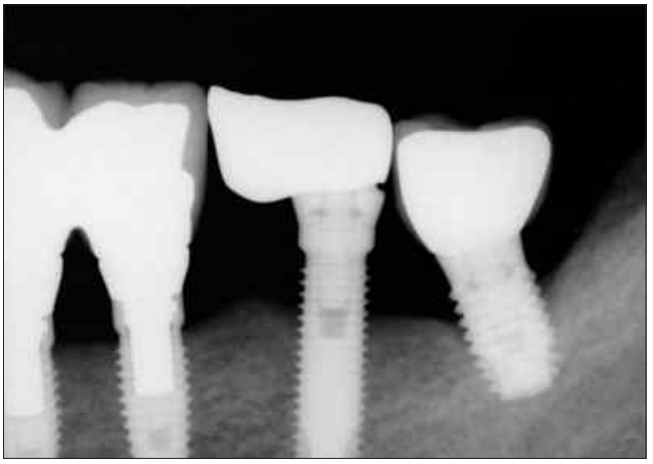

Fig. 4. Periapical radiograph 1 year after prosthetic loading. Approximately 2.4 mm of crestal bone loss is shown.

Table 4. Survival rate between GSII and SSII group

	GSII	SSII
Survival	51	36
Fail	5	0
Survival rate (%)	91.1	100

Chi-square test was performed; no significant differences were seen between GSII and SSII group (P>.05).

Table 5. Success rate between GSII and SSII group

	GSII	SSII
Success	47	35
Fail	9	1
Success rate (%)	83.9	97.2

Chi-square test was performed; significant differences were seen between GSII and SSII group (P=0.046).

was significantly different from the SS II system, and other factors did not show a large difference.

Regarding complications, peri-implant diseases were found in 6 of the cases, which was most prevalent, and implant mobility, neurologic problems, and prosthetic problems were shown (Table 7). Five implants that failed and were removed were initially placed in the 2nd molar and the 1st molar areas, and most cases failed within one year of wearing the functional prosthesis. After removal, the implants were replaced, and prostheses were mounted.

Table 6. Periodontal index comparison between GSII and SSII group

	GSII (n=48)		SSII (n=36)		P
	Mean	SD	Mean	SD	
Crestal bone loss (mm)	0.44	0.60	0.11	0.46	.000*
Plaque index	1.09	0.82	1.24	0.90	.489
Pocket depth (mm)	3.03	0.75	3.10	0.70	.778
Gingiva index	0.70	0.58	1.00	0.91	.166
Attached gingiva width (mm)	1.75	0.98	1.89	1.08	.274

P-values calculated with Mann-Whitney Test.
*Indicates statistically significant difference (P<.05).

Table 7. Types of complications

Types	Number
Implant mobility	3
Neurologic complication	2
Peri-implantitis	6
Screw loosening and fracture	1
Upper prosthesis dislodgement	1
Neuropathic pain	1

One case was removed 25 months after implant placement because of the progressive bone loss caused by peri-implantitis (Table 8).

A total of 26 patients answered the questionnaire at the last follow-up observation that evaluated the performance function of the implants. Twenty-one patients reported that they could chew peanuts, kimchi, gakduki, spareribs, and other hard food; five patients reported that they could not chew well. When evaluating the peri-implant condition, 2 patients reported experiencing gingival edema, and 24 patients reported that they did not experience edema. When asked if the gingiva was painful, 3 patients reported that they experienced pain, and the other 23 patients reported no pain. When asked if the implants moved, 2 patients answered yes, and 24 patients reported that mobility was not felt at all.

DISCUSSION

The prognosis of short implants is still controversial. Herrmann et al.[10] reported that implants measuring 7 mm in length show the low survival rate at 78.2%, and short implants closely correlate to the failure rate. According to Weng et al.,[11] 60% of the failed cases were with implants shorter than 10 mm, and the cumulative success rate of short implants showed substantially lower values than the entire implants. On the other hand, the opinion that the failure rate of short implants was comparable to other implants was introduced.[12] Actually, Maló et al.[5] placed 408 short Brånemark implants, and the survival rate of 131 cases of the 7-mm implants was 96.2%; in 277 cases of 8.5-mm implants, the survival rate was as high as 97.1%. In addition, Romeo et al.[4] reported that the 14-year cumulative survival rate of short implants and standard implants was 97.9% and 97.1%, respectively; in the analysis of the 5-year success rate and survival rate of implants with TPS and SLA surface treatment, the success rate and survival rate of short implants and standard implants were not statistically different. The results reflect that the prognosis of short implants has improved due to the advancement of surgical techniques, implant surface treatments, and designs. In this study, during the average 21-month follow-up observation period after the installation of the prostheses, a 94.6% survival rate was shown. When it was examined by dividing the 2 systems, the survival rate of the GS II system was 91.1%, and the success rate was 83.9%. The survival rate of the SS II system was 100%, and the success rate was 97.2%. The survival rates of the two systems did not show statistically significant differences, nonetheless, the success rates

Table 8. Failure analysis

Age	Sex	Medical	Site	Diameter	Implant placement method	Type of prosthesis	Period of failure (months)	Cause
49	F	No	47	5	One-stage	No	2	
50	F	DM	37	5	Two-stage	Single	8	Poor primary stability
54	F	No	36	5	Two-stage	No	1.5	
34	F	No	37	4.5	One-stage	No	5.5	Neurologic
52	F	No	36	4.5	Two-stage	Single	25	Peri-implantitis

showed a significant difference.

According to the study by Romeo et al.[4] that compared 111 implants measuring 8 mm in length and 154 implants measuring 10 mm in length in 129 patients for 3 years to 14 years, at the last follow-up observation, the mean crestal bone resorption of the implants with 8 mm and 10 mm in length was 1.6 mm and 1.7 mm, respectively. In other words, a statistically significant difference could not be detected between the bone resorption volume of short implants and standard implants.

Recently, it has been accepted that the level of stress distribution cannot be determined by the implant length only. Misch[13] has emphasized that as the implant length becomes longer, the total surface area increases; however, the occlusion force that is delivered to the root area is weak, and thus it cannot exert effects of reducing stress on the alveolar ridge area. Therefore, the functional surface area should be considered instead of the total surface area. In other words, the factors that more heavily influence the resorption of alveolar bone are the diameter and design of screws, not the implant length. In this study, an average of 0.38 mm of bone loss was shown after an average of 21 months after the installation of the final prosthesis. The GS II underwent 0.58 mm of bone loss, and the SS II system underwent 0.11 mm; the SS II system showed significantly less bone loss. It is speculated that the reason for the high failure rate of the GS II system and the abundant crestal bone loss is that during the implant procedures, the crestal bone was compressed excessively. In other words, after the final drilling, counter-sinking with a cortical drill is required. Under a situation where this procedure is omitted and implants are placed by the self-tapping method, the alveolar crest is excessively compressed. This leads to a high possibility of bone necrosis and resorption during the healing period, which further leads to an increased risk for failure of osseointegration of the short implants. Therefore, when implants with the microthread design are placed in the mandible with hard ossein, sufficient drilling, countersinking, and tapping procedures are thought to be very important.

It has been suggested that in short implant placement, the crown/implant ratio (C/I ratio) becomes poor; therefore, the possibility for developing mechanical complications is high, and several theories on the association of C/I ratio with alveolar bone resorption have been reported. Rangert et al.[14,15] reported that when the C/I ratio is poor, non-axial loading is developed, and resorption of the alveolar bone occurs without failure. In contrast, Blanes et al.[16] reported that by statistical analysis, as the C/I ratio becomes larger, the resorption of the alveolar bone occurs less. Rokni et al.[17] and Tawil et al.[18] reported that when occlusion occurs in the area closest to the implant axis, the C/I ratio does not mediate effects on the resorption of the marginal bone in the vicinity of implants. Generally, the crown-to-root ratio is one of the clinical markers that is applied to evaluate the prognosis of the abutment for selection in the partial denture in the natural teeth.[19] Because the level of alveolar bone is lowered to the root and thus the lever arm above the alveolar bone is lengthened, the opportunities for increase in adverse lateral force becomes abundant. When the ratio is 0.5, the best prognosis can be anticipated; when the ratio is a minimum of 1, it can be used as an abutment.[20] Nevertheless, until now, clinical guidelines for the C/I ratio had not yet been reported.

In this study, crestal bone loss according to the C/I ratio was not evaluated. However, if the C/I ratio becomes very disadvantageous in the short implants, long-term prosthetic problems and crestal bone loss may develop. Additional studies are required.

The complications of short-length implants that have been reported in clinical studies are temporary sensory anomaly, exposure of cover screws due to wound dehiscence, peri-implantitis, loosening of screws, prosthesis destruction, etc.[5,17-19] In short implants, excessive crestal bone loss may mediate adverse effects on the long term prognosis of implants. Regarding the Branemark-type implant design, approximately 1.5 mm of bone resorption is unavoidable during the first year after placement; in short implants with that amount of bone resorption, the prognosis cannot be guaranteed.[6,21] In experimental studies on crestal bone loss of submerged and non-submerged implants, the infiltration of inflammatory cells and the development of bone resorption were observed between the fixture and the abutment focusing on the microgap, and the tendency of less crestal bone loss in the vicinity of nonsubmerged type implant was shown.[22,23] Therefore, more attention should be paid to cause less compression of the crestal bone during the procedure, and it is better to select implants that cause less crestal bone loss. When products are selected with the microthread design in the cervical area of the implants, the effective distribution of stress can be obtained; it reacts as a retention element of the crestal bone and minimizes bone loss.[24] In cases involving the submerged technique, more attention should be paid to not develop wound dehiscence. Wound dehiscence and exposure of cover screws during the healing period may become a major cause of initial crestal bone loss.[25] Rangert et al.[14] mentioned that to minimize load factor risks, several implants should be placed to provide stability, and a splinted fixed prosthesis should be installe. Nonetheless, Isidor[26] found that even one year after the functioning of a single implant prosthesis, the sign of crestal bone loss due to overloading was hardly detectable, and the failure rate was also low.

In this study, complications of peri-implant diseases developed in 6 cases, implant mobility developed in 3 cases, neurologic problems in 2 cases, screw loosening and fracture in 1 case, upper prosthesis dislodgement in 1 case, and neuropathic pain developed in 1 case. The 3 implants that showed implant mobility, the one implant that resulted in persistent neurologic problems, and the one case that resulted in progressive bone loss due to peri-implantitis were removed.

The subjective evaluation pertinent to the function of patients was shown to be generally satisfactory. Koreans favor kimchi, fresh bacon, bone, and other hard, tough foods that result in dynamic overloading of implants. In this study, most patients responded to the questionnaire stating that they could chew Korean-style foods such as peanuts, spareribs, and kimchi that require substantial occlusion force. Some of the patients that developed peri-implant diseases responded that they experienced gingival swelling or pain; nonetheless, the correlation of short implants to the development of peri-implant diseases was not clear. In some cases, clinical peri-implant disease symptoms were shown; however, the patients did not notice the symptoms well. It is important to observe well through regular maintenance managements. Similar to the initial bone resorption, if bone loss progresses due to peri-implant diseases, the long-term prognosis of short implants is inevitably poor.

The limitations of this study are that despite being a prospective clinical study, the follow-up observation was carried out at multi-centers leading to some observation records being omitted. This may have exerted influences on the statistical analysis. Furthermore, the response rate to the questionnaire was merely 50%. In addition, the difference in the surgical techniques of surgeons at the multi-centers may have exerted effects on the crestal bone loss and the failure of the GS II system.

CONCLUSION

A multicenter prospective study on 7-mm short implants was conducted, and good results were obtained. The GS

II system showed worse results than the SS II system, and implant designs and surgical procedures may have been influenced the outcomes. Therefore, it is thought that if surgical procedures can improve stability after implant placement and deliver less compression to the crestal bone and that if implants with appropriate designs are selected, short implants in the mandibular molar area can show good survival rates.

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Original Article

Cumulative survival rate of dentium implants: a retrospective analysis

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Purpose: The aim of this article is a short-term retrospective analysis of the stability and prognosis of dentium implant system (Implantium, superline) according to patient's condition and dental implant sites.

Methods: A short-term retrospective analysis was conducted in 46 patients with Dentium implant placement at the Chosun University Dental Hospital from January 2009 to December 2012. A total of 111 implants were included in this study. There were 23 male patients and 23 female patients and all the patients completed prosthetic restoration at least six months ago. All patients were followed up for over 6 months after prosthetic treatments were completed and survival rate was assessed with follow-up of patients during 30 months at most

Results: After total of 111 implants were placed, survival rate was assessed every 6 months. The result showed clinical success of all dental implants and there were no differences according to dental implants sites, bone condition and bone graft.

Conclusion: The short-term survival rate of dentium implant is 100%.

Keywords: Dental implants, Success

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INTRODUCTION

성공적인 임플란트 식립을 위해선 임플란트와 골조직간의 직접적인 결합이 중요하다. Brånemark가 osseointegration의 중요성을 보고한 이후로 Albrektsson은 성공적인 골유착을 위해 재료의 생체 적합성, 모양, 표면처리, 수술부위 상태를 핵심적인 요소 중 하나로 강조하였으며 또한 여러 저자들에 의해 임플란트 성공에 영향을 미칠 수 있는 인자에 대해 보고되었다.[1-6]

임플란트 성공은 술자, 환자, implant system 간의 조화가 이루어졌을 때 좋은 결과를 예측할 수 있다. 이중 implant systems은 success rate를 증가시키고 평가함에 있어 용이하기 때문에 오늘날 다양한 implant systems이 소개 및 연구되고 있다.[4,5,7]

본 논문의 목적은 환자의 상태, 식립 위치에 따른 dentium implant system (Implantium, superline)의 안정성과 예후에 대해 후향적으로 short-term analysis하는 것이다.

MATERIALS AND METHODS

1. Patients and material

2009.01부터 2012.12까지 조선대학교 치과병원에서 Implantium, Superline (Dentium, Seoul, Korea) implant를 식립한 환자 46명, 총 111개의 임플란트를 대상으로 하였다.

Table 1. The number of implants by patient age, sex

Age (yr)	No. of implants		Total
	Male	Female	
20	4	1	5
30	0	0	0
40	3	16	19
50	13	15	28
≥60	32	27	59
Total	52	59	111

Table 2. Distribution of implant location

Location	No. of implants			Total
	Incisor	Premolars	Molars	
Mx.	20	11	9	40
Mn.	16	18	37	71
Total	36	29	46	111

Mx.: Maxilla, Mn.: Mandible.

남녀의 비율은 각각 23명으로 모든 환자는 최소 6개월전에 보철물 수복이 완료되었다(Table 1).

위치에 따른 분포를 보면 상악은 총 40개, 하악은 총 71개가 식립되었으며 상악의 경우 전치부에 20개, 하악은 대구치에 37개로 주된 식립 위치에서 차이를 보였다(Table 2).

임플란트 직경은 3.4 mm/3.8 mm/4.3 mm/4.8 mm/5.0 mm가 사용되었으며 임플란트 길이는 7 mm-14 mm까지 다양하였다(Tables 3, 4).

2. Methods

모든 환자는 임플란트 식립전 구내 및 방사선학적 검사를 시행하였으며 전신질환 혹은 심한 흡연자의 경우 식립 대상에서 제외되었다. Bone status에 대한 평가는 Lekholm and Zarb's classificatioin (1985)에 따라 Cone Beam computed tomography (CBCT)에서 평가하였다.[8] 임플란트 수술 과정(1-stage 혹은 2-stage)이나 골이식여부 및 이식재료, 임플란트 식립 위치, 임플란트 폭경 및 길이에 대한 자료는 환자의 chart에서 얻었다. 총 4명의 환자에서 골이식을 시행하였으며 모두 동종골[Allo-oss (CG Bio, Seongnam, Korea)]을 사용하였다. 상악동 거상술 시행환자는 없었다.

모든 환자는 보철적 치료가 완료된 이후 최소 6개월 이상의 follow-up기간을 가졌으며 최대 30개월까지 추적 검사하였다.

Table 3. Distribution of implant diameter

Diameter (mm)		Incisor	Premolar	Molar	Total
Mx.	3.4	4	0	0	4
	3.8	9	2	2	13
	4.3	7	9	5	21
	4.5	0	0	0	0
	4.8	0	0	2	2
	5.0	0	0	0	0
Mn.	3.4	3	3	1	7
	3.8	10	7	3	20
	4.3	3	6	19	28
	4.5	0	1	4	5
	4.8	0	1	8	9
	5.0	0	0	2	2
Total		36	29	46	111

Mx.: Maxilla, Mn.: Mandible.

Table 4. Distribution of implant length

Length (mm)		Incisor	Premolar	Molar	Total
Mx.	7	0	0	0	0
	8	2	0	0	2
	10	12	5	2	19
	12	6	5	5	16
	14	0	1	2	3
Mn.	7	0	1	6	7
	8	0	5	15	20
	10	8	8	9	25
	12	6	4	7	17
	14	2	0	0	2
Total		36	29	46	111

Mx.: Maxilla, Mn.: Mandible.

Survival crteria는 Buser et al.[9,10] (1990, 1997)에 의거해 다음 사항에 해당할 경우 성공으로 간주하였다. : 1) 압력을 가했을시 임플란트 동요도가 없어야하며 2) 방사선사진상 임플란트 치근단 부위에 투과상이 보이지 않아야하고 3) 통증이나 감염의 증상이 없어야 한다.

본 연구는 조선대학교 치과병원 Institutional Review Board의 승인을 받았다(CDMDIRB1322-113).

Table 5. Distribution of bone quality

Bone quality	Mx.	Mn.	Survival rate
D1	0	3	100
D2	11	51	100
D3	25	15	100
D4	4	2	100

Mx.: Maxilla, Mn.: Mandible.

Table 6. Survival rate of implant according to follow-up period

Interval (mo)	No. of implants	No. of failed of implants	Survival rate
0-6	111	0	100
6-12	111	0	100
12-18	111	0	100
18-24	105	0	100
24-30	79	0	100

RESULTS

46명의 환자에서 총 111개의 임플란트가 식립되었으며 Follow기간은 최대 30개월까지 조사하였다. 임플란트 길이는 10 mm (30.6%), 직경은 4.3 mm (44.1%)가 가장 많이 사용되었다. 31개의 임플란트가 1-stage로 진행되었으며 남은 80개는 2-stage로 식립되었다. 골 상태(quality or quantitiy)에 따라 골이식 여부를 결정하였으며 4개의 임플란트에서 골이식을 시행하였다. 보철 치료는 임플란트 식립후 평균 5.7개월에 진행되었다.

골질에 따라 분류시 상악의 경우 25개(62.5%)가 D3 타입이였으며 하악은 51개(71.8%)가 D2 타입이였으며 survival rate 평가시 100%를 나타냈다(Table 5). 임플란트 식립후 6개월 단위로 survival rate를 평가하였을 때 30개월까지 모든 임플란트에서 임상적인 성공을 보였으며 결과적으로 임플란트 식립위치나 골 상태, 골이식에 따른 차이는 보이지 않았다(Table 6).

DISCUSSION

임플란트 성공에 있어 골유착의 중요성이 대두된 이후로 임플란트 재료의 형태와 표면처리에 대한 많은 연구 및 변화가 있었으며 현재도 더 나은 골유착을 얻기위해 연구중에 있다. 임플란트와 관련하여 long-term evaluation에 대한 연구 결과들도 있는데 평균적으로 90% 이상의 높은 성공률을 보이는 것으로 보고 되고 있다.[10,11] 본 연구의 목적은 다양한 임플란트 system중 하나인 Dentium implant (Implantium, superline) system에 대한 short term survival rate에 평가하는 것이다.

술전 평가에서 골 상태(bone status)는 CBCT를 이용해 측정하였다. 현재 치과계에 널리 사용중인 CBCT는 기존의 CT와 비교시 방사능 노출을 줄일 수 있는 이점이 있을 뿐 아니라 bone quality나 quantity 측정에 있어 어느정도 신뢰할 수 있는 걸로 알려져 있다.[12,13] 골질의 경우 일반적으로 상악이 하악에 비해 좋지 않고 치조골 흡수가 심하며, 상악동 함기화가 심하면 임플란트 안정성을 방해해 임플란트 실패율이 높은 것으로 알려져있는데[14] 본 연구에서는 CT 평가 결과 상악은 D3, 하악은 D2로 평가 되었으나 골질에 따른 survival rate는 차이를 보이지 않았으며 quantitiy평가에서 bone graft가 필요해 시행한 환자는 4명으로 역시 survival rate에서는 차이를 보이지 않았다.

임플란트 종류에 따른 Short-term survival rate에 대한 여러 연구가 있는데 survival rate를 보면 93.9%-100%까지 다양하게 나타났다.[15-18] 본 연구에서는 식립위치 및 골상태, 골이식 여부 등 조건이 다름에도 불구하고 survival rate는 100%로 나타났다. 임플란트 실패는 부적절한 술식(수술 중 인접골에 overheating), 감염, 부적절한 치료계획 등 여러 고려사항이 있어 직접적인 비교 평가는 어려우나 Dentium implant (Implantium, superline) system은 적절한 진단 및 술식이 뒷바침 된다면 충분히 좋은 결과를 나타낼 수 있음을 보여준다.

Conclusion

지금까지 사항을 종합해볼 때 Dentium implant (Implantium, superline) system는 short-term follow-up시에 survival rate는 100%를 나타냈다. 임상적 적용에 있어 충분한 효과를 보이는 것으로 사료된다. 본 연구에서는 follow up기간이 짧아 clinical success를 평가하지 않았다. 앞으로 장기간 추적 검사 후 cumulative success rate 및 survival rate를 평가하여 자료의 신뢰성을 높이는게 필요할 것이다.

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Case Report

Prognosis of intentional sinus-perforated implants: two case reports

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The purpose of this study was to evaluate the prognosis of intentional sinus-perforated implants. Patients who received implant placement in the posterior atrophic maxilla accompanied with the perforation of the sinus membrane were included in this study. The patients were followed. Panorama and CT radiographic images were taken. Sinusitis symptoms associated with the maxillary sinus were not observed on clinical and radiographic features after implant placement. These results suggest that a perforated maxillary sinus membrane may not affect the implant prognosis or survival rate in posterior atrophic maxillae.

Keywords: Dental implant, Perforation, Schneiderian membrane

INTRODUCTION

Implant placement is currently and has been universally used as an alternative for restoring defective teeth. In many studies, implant placement provides the appropriate stability to implants with a standard length and diameter and is most successful with a good prognosis in patients with moderate bone mass and density.[1-3] However, implantation in the maxillary posterior region has a relatively low success rate and poor prognosis.[4] When tooth loss occurs in the maxillary posterior region, the alveolar bone shrinks, and due to maxillary sinus pneumaticity, bone mass not only becomes insufficient, but the patient may develop type IV bone in the region.[5] Accordingly, implant placement in the maxillary posterior region is difficult.

If an implant is placed in the maxillary posterior with insufficient bone mass and type IV cancellous bone, there is a tendency toward a synostosis being destroyed due to a load compared to implants placed in regions with sufficient bone mass and good bone substance.[6]

Many surgeries have been introduced to overcome the problems associated with implantation in the maxillary posterior region. These surgeries include maxillary sinus floor elevation, maxillary augmentation, and the placement of short and wide implants.

However, despite all of the aforementioned methods, sinus membrane perforation is the most common complication of maxillary posterior region implant placement. According to many studies, the incidence rate of maxillary membrane perforation is approximately 7-35%.[7,8]

The maxillary sinus is composed of the periosteum and the Schneiderian membrane, which is involved in moving residues or bacteria within the maxillary sinus.[9]

In implant placement, when perforation of the maxillary sinus occurs, many complications can arise, including maxillary sinusitis, spread of infection to other paranasal sinuses, formation of a maxillary sinus polyp, and increased risk of other maxillary diseases.[10,11] Despite all of these possibilities, a bilateral cortical bone fixation that involves passage through the maxillary sinus has been suggested as a method to increase the success rate of implants placed in the maxillary posterior region.

In a 10-year investigation of implants that pass through the maxillary sinus membrane, there were no particular symptoms or signs observed. In addition, there was an implant success rate of 77% after 10 years. However, there are hardly any reports concerning the prognosis of implants involving an intentionally perforated maxillary sinus. Hence, in this study, to obtain a bilateral cortical bone fixation, we evaluated the prognosis of cases where the maxillary sinus membrane was intentionally perforated.

CASE REPORT

1. Case report 1

The patient was a 34-year-old female who came for an office visit as an outpatient with the chief complaint of prosthesis omission of tooth #17 on May 4th, 2010. From a radiograph, a vertical fracture of a dental crown in tooth #17 was observed. The patient was referred to our department for tooth extraction.

We performed an extraction of tooth #17 on May 4th, 2010 and October 17th, 2010. Lidocaine with epinephrine 1:100,000 (0.01 mg/ml) was used as a local anesthesia. After lifting the full thickness, an Astra implant with a 4-mm diameter and an 11-mm length was placed. After the surgery, we administered an injection of 1.2 g of Augmentin (amoxicillin sodium 1 g, potassium clavulanate 200 mg), 1 ampule of dexamethasone, and piroxicam potassium 22.3 mg/ml. In addition, we prescribed cefixime for 10 days. The patient was regularly examined for progress.

A week after placement, we identified the perforation

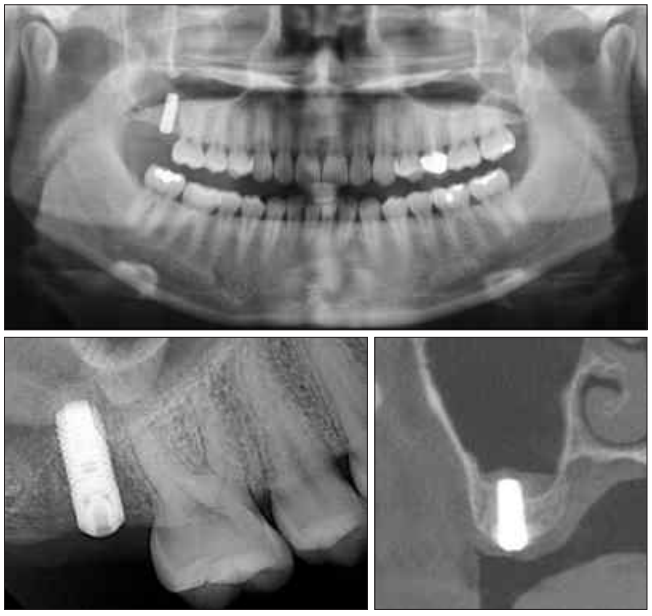

Fig. 1. Radiographic image of a perforated right sinus membrane. The CT image depicts the sinus membrane thickening around the implant.

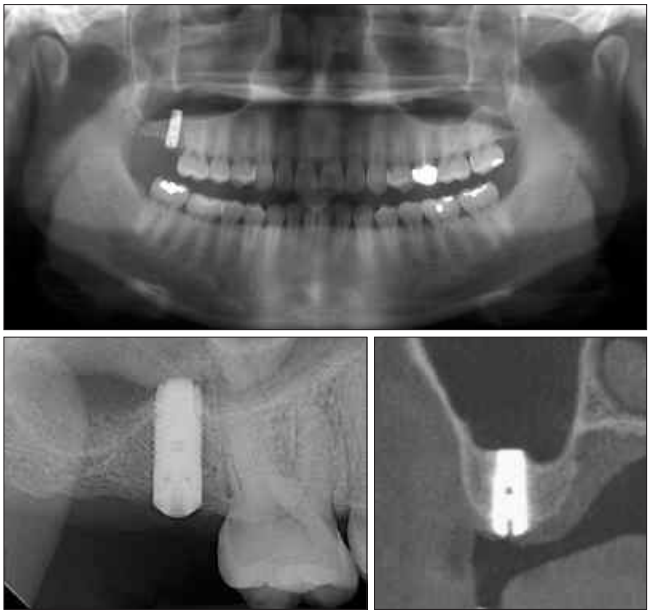

Fig. 2. Three months follow-up radiographic image. The radiographic image shows the perforated sinus membrane. The CT image indicates decreased sinus membrane thickening.

of the maxillary sinus on panoramas, periapical view, and computed tomography (CT). Although we observed a small amount of hypertrophy in the maxillary sinus membrane, there were no other particular symptoms or signs observed from the patient (Fig. 1).

Six months after the surgery, on panoramas and CT, there were no observed symptoms of maxillary sinus infection, such as hypertrophy in the maxillary sinus membrane around the maxillary sinus perforated implants. There were no subjective symptoms or signs observed, and we performed a secondary surgery.

On panoramas and CT re-taken a month later, there were no symptoms of maxillary sinus infection observed (Fig. 2). Clinical signs or symptoms were not observed, so we referred the patient to the prosthetics department for a prosthetic restoration.

2. Case report 2

A fifty-five-year-old male patient was referred to the department for implant restoration of #26 and #27 on January 11th, 2011. On 8th of April, 2011, we performed an Astra implant placement of #26 and #27 using a 4-mm diameter and 11-mm length implant under local anesthesia. After the surgery, we gave an injection of 1.2 g of Augmentin (amoxicillin sodium 1 g, potassium clavulanate 200 mg), 1 ampule of dexamethasone, and piroxicam potassium 22.3 mg/ml. In addition, we prescribed cefaclor, airtal, and Gasmotin for 10 days.

On a radiographic image, we identified a perforation of the maxillary sinus and observed a small amount of hypertrophy on the membrane around the implants; however, no other symptoms or signs were observed (Fig. 3). We gave instructions for a regular follow-up visit to monitor the patient's progress. Approximately three months later, the patient returned for an office visit. We again performed panoramic imaging, root apex radiography, and laminagraphy. There were no symptoms indicating complications such as maxillary sinus infection (Fig. 4) on the radiographs. The patient did not report any particular symptoms or signs, and we informed the patient of their normal progress and our observations.

DISCUSSION

Implant placement in the maxillary posterior region is a difficult process. Generally, to place an implant of an appropriate length in the atrophic maxillary posterior region, different methods such as maxillary sinus floor

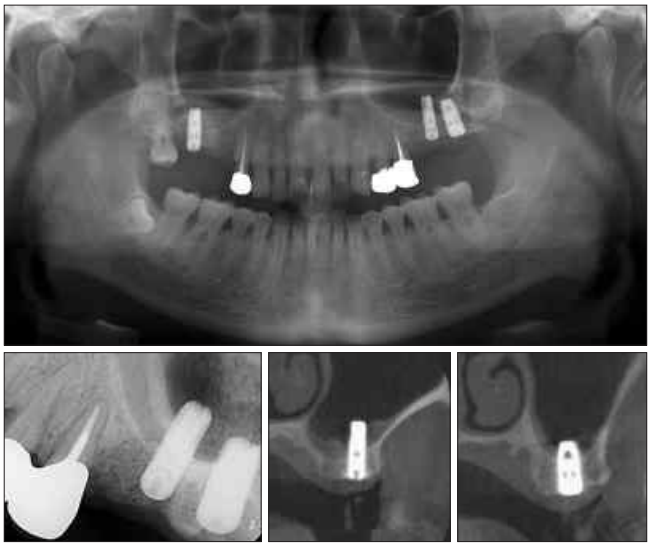

Fig. 3. Radiographic image of the perforated Rt. sinus membrane. The CT image indicates the sinus membrane thickening around the implant.

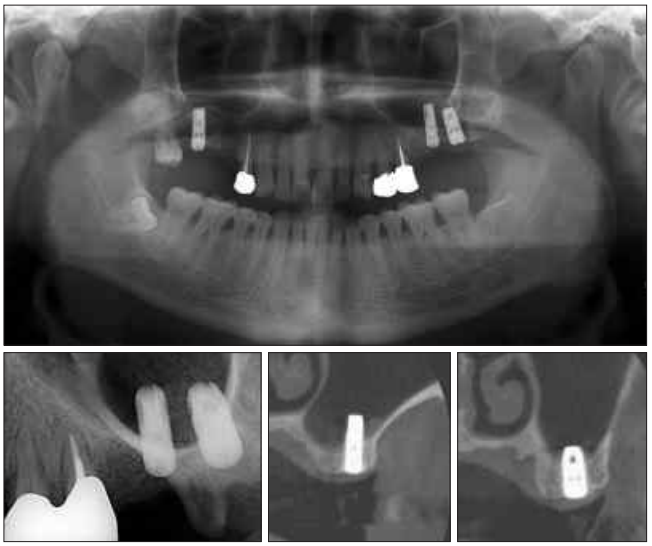

Fig. 4. Three-month follow-up radiographic image. The radiographic image depicts the perforated sinus membrane. The CT image indicates decreased sinus membrane thickening.

elevation, maxillary augmentation, and short and wide implant placement have been used.

In 1986, Tatum[12] first introduced a maxillary sinus floor elevation, and many dentists have began to employ the technique. Maxillary sinus floor elevation is known for its high success rate and lack of particular complications, but the procedure is still somewhat associated with the perforation of the maxillary sinus membrane, maxillary sinusitis, cysts, myxoma, hematoma, and wound healing delay.[13] There is also a report indicating risks and complications from performing a bone graft on the bottom of the maxillary sinus.[14] In other studies, there have been successful cases of placing short, wide implants in the maxillary posterior region.

In addition, there is a report that indicates that if one could increase the bonding strength with bone through a surface treatment, then it is more advantageous to increase the width rather than the length to provide stability.[15]

Compared to implants that were not passed through the maxillary sinus, the occurrence rate of complications was not high, and the success rates are comparable.[16]

In other reports, the perforation of the maxillary sinus membrane that occurred when performing a maxillary sinus floor elevation or when placing an implant healed well without any serious complications, such as maxillary sinusitis, and did not have a large correlation with the failure rate of implants.[13,17]

In our cases, we also were able to observe healing without any symptoms or signs of maxillary sinusitis.[3] However, some studies have reported that when perforation of the maxillary sinus membrane occurs, the risk of maxillary sinusitis increases and the success rate of implants could decline.

According to a study by Proussaefs et al. in 2003, the survival rate of implants with a perforation of the maxillary sinus membrane was 54.5%, while the survival rate of implants without perforation was 100%.[18]

In other studies, the survival rate of implants with perforation of the maxillary sinus membrane was 94.4%, while the survival rate of implants without perforation was 93.3%. In addition, the studies indicated that perforation of the maxillary sinus membrane does not have a close relationship with implant success rate.[19]

Therefore, it is debatable that maxillary sinus membrane perforation has a large influence on the survival rate of implants.

In our patients, a week after implant placement and perforation of the maxillary sinus membrane, a small amount of hypertrophy in the maxillary sinus membrane was observed on an x-ray, but no subjective symptoms or signs, such as maxillary sinusitis, were identified. These results indicate that even when the maxillary sinus is perforated, healing can take place without any particular problems.

However, our report differs from other studies in that the maxillary sinus was intentionally perforated to increase the initial stability of the implants by obtaining a bilateral cortical bone fixation. Our case reports have a limitation in that we have 2 cases, and their prosthetic treatments have not been completed. They also had unloaded implants. In addition, when evaluating the prognoses, we only evaluated radiography and clinical symptoms. Because the evaluation period was short, a longer study is needed.

Despite the limitations mentioned above, when we intentionally perforated the maxillary sinus to obtain bilateral cortical bone fixation, maxillary sinusitis did not occur. The fact that the implant did not fail is medically significant.

In the future, a long-term study with a significantly large patient population that includes loaded implants after prosthetic treatment should be conducted. Additionally, in evaluating the prognosis of implants, the changes of maxillary sinus membrane on radiographic images should be observed, but in there should be an evaluation of the degree of marginal bone loss and the histological change of the maxillary sinus tissues.

This study indicates that placing implants in the maxillary posterior region with an intentional perforation of the maxillary sinus membrane can help obtain stable initial fixation strength and is advantageous in reducing treatment time of the patient due to the use of a simplified surgical technique. The technique could prove to be one

of the most useful methods for implant placement in the maxillary posterior region. However, additional research should be conducted in the future.

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Case Report

Evaluation of efficacy of mini-implant in retention and support of temporary prosthesis: 3 case reports

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The object of this study was evaluation of efficacy of mini-implant in temporary prosthesis by 3 clinical patient case. Among patients treated for rehabilitation of complete or partial edentulism at Sun Dental Hospital Implant Center, 3 cases where mini implants were placed for retention and support of temporary prostheses were selected. In the 3 cases presented in the study, mini implants served well in providing retention and support for temporary removable prostheses. Although mini implants are known to be able to resist less occlusal force than conventional implants, opposing dentition consisted of provisional removable denture with reduced occlusal forces.

Keywords: Dental implants, Maxillary sinus

INTRODUCTION

Mini implant, according to Glossary of oral and maxillofacial implants (GOMI), is "implant fabricated of the same biocompatible materials as other implants but of smaller dimensions. Implants can be made as one piece to include an abutment designed for support and/ or retention of a provisional or definitive prosthesis."[1)] Although there are no dimensional specifications, it is generally agreed that mini implants are those with diameters less than 3 mm.[2)]

Major advantages of mini implants are: 1) low cost--half to one fourth the cost of conventional implants; 2) applicability on narrow ridges; and 3) low barrier of entry and ease of placement including lack of need for flap surgery.

Notable disadvantages include: 1) limited clinical and scientific evidence on long-term survival; 2) fracture potential; 3) reduced resistance to occlusal forces; and 4) other disadvantages related to flapless surgical technique such as limited visibility during surgery and inability to irrigate the bone.[3)] Mini implant has wide variety of applications including retention and support for temporary or permanent prostheses and orthodontic anchorage.[4-6)] In the following cases presented, mini implants were placed to support temporary prostheses while conventional dental implants and bone graft materials were allowed to settle.

Among patients treated for rehabilitation of complete or partial edentulism at Sun Dental Hospital Implant Center, 3 cases where mini implants were placed for retention and support of temporary prostheses were selected.

CASE REPORTS

1. 〈Case 1〉 Full-mouth rehabilitation

1) Background Information

Age/Sex: 52/Male

CC: 전반적인 치과치료 원한다.

PI:

(1) Generalized severe chronic periodontitis

(2) Rampant caries

(3) Reduced VDO

PMH: Cirrhosis (+) - Grade A, medical consult completed

PDH: N/S

2) Clinical Findings

(1) Poor oral hygiene

(2) Multiple caries

(3) Residual roots (15, 16, 48)

(4) Loss of VDO

3) Radiographic Findings (Fig. 1A)

(1) Generalized alveolar bone resorption

(2) Missing teeth (27, 34, 35, 37, 42, 44, 45, 47)

(3) Mesial angulation (31, 32, 33, 36, 38)

4) Treatment Plan

(1) Full-mouth extraction

(2) Implant placement with bone graft as needed

- 10 conventional + 2 mini on maxilla
- 8 conventional + 2 mini on mandible

(3) Mini implant-retained removable temporary prostheses

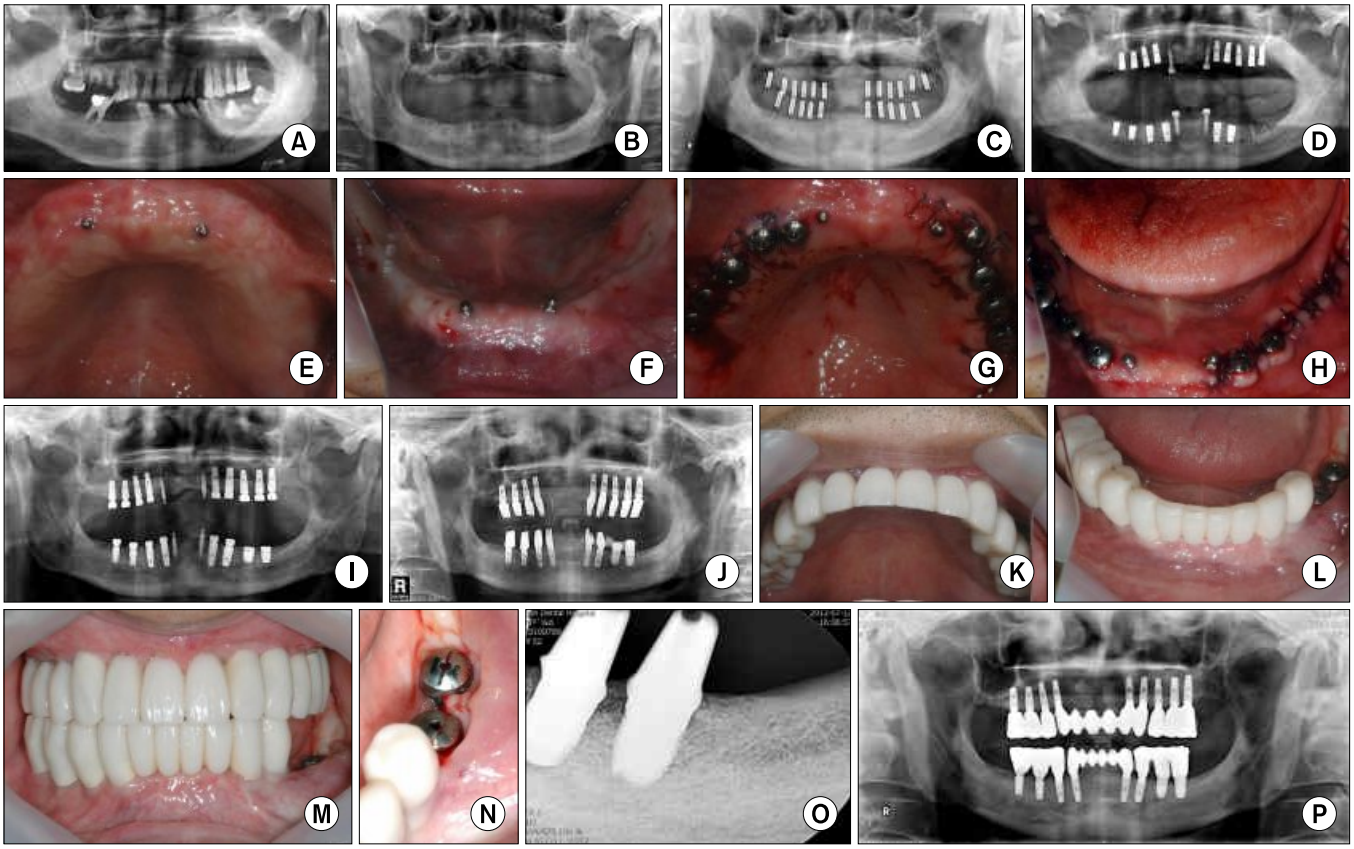

Fig. 1. (A) Pre-operation pamorama. (B) Post extraction tooth panorama. (C) Surgical stent panorama. (D) Post operation panorama-1st OP. (E) Intra-oral view;post operation 6 month (upper). (F) Intra-oral view;post operation 6 month (lower). (G) Intra-oral view; after 2nd operation (upper). (H) Intra-oral view; after 2nd operation (lower). (I) Post operation panorama-2nd OP. (J) Abutment connection panorama. (K) Intra-oral view; Provisional prostheses (upper). (L) Intra-oral view; Provisional prostheses (lower). (M) Intra-oral view; Provisional prostheses. (N) Additional implants placed on bone graft site. (O) Periapical view; #35, 36 abutment setting. (P) Final prostheses panorama.

(4) Mini implant removal
(5) Implant-retained fixed partial denture splints

5) Treatments (Fig. 1B–L)
2011.05.11 - Max/mand. left exodontia
2011.05.19 - Max/mand. right exodontia
2011.05.26 - Temporary removable prostheses delivery
2011.08.11 - Implant placement
(Mini implant; Intra-lock®System MDL 2.5/10 Ti)
2011.08.31 - Temporary prostheses relined to incorporate mini implants
2012.02.17 - 1. Second surgery upper & lower part
2. Implant placement #35, #36
2012.04.24 - 1. Mini implant removal
2. Provisional delivery
2012.07.12 - #35, 36 abutment setting
2012.10.31 - Maxillary final prostheses delivery
Mandibular left posterior and anterior final prostheses delivery
2012.12.31 - Mandibular right posterior final prosthesis delivery

2. 〈Case 2〉 Mandibular implant-supported overdenture using titanium bar

1) Background Information
Age/Sex: 75/Female
CC: 아래 의치가 흔들리고 불편하다.
PI:
(1) Max., mand. RPD
(2) #35, 42, 43 hopeless
(3) Generalized chronic periodontitis
PMH: HTN (+) - Med(+), Anticoagulant (-), medical consult completed

2) Clinical Findings
(1) Poor oral hygiene
(2) Max. missing teeth (#16, 17, 26)
(3) #35, 42, 43 remain in mand.
(4) #35, 42, 43 mob(++)

3) Radiographic Findings (Fig. 2A)
(1) #35 periradicular radiolucency

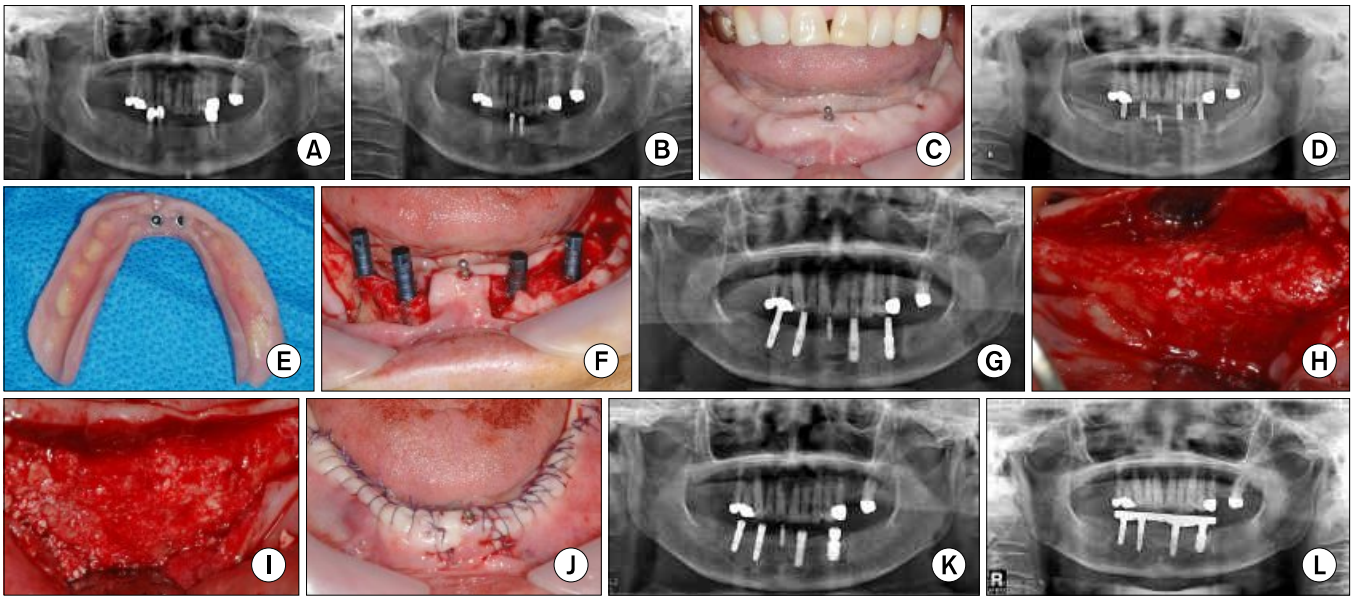

Fig. 2. (A) Pre-operation panorama. (B) Post extraction tooth panorama. (C) Intra-oral view; #41 mini implant fixation. (D) Surgical stent panorama. (E) Intra-oral view; Temporary removable prosthesis. (F) Intra-oral view; 4 implant placement. (G) Post-operation panorama-1st OP. (H) Intra-oral view; Bone garft was done (Rt.side). (I) Intra-oral view; Bone garft was done (Lt.side). (J) Intra-oral view; Primary closure. (K) Post-operation panorama-2nd OP. (L) Titanium bar adaptation panorama.

4) Treatment Plan

(1) #35, 42, 43 exodontia with #31, 41 mini implant placement

(2) Mini implant-retained removable temporary prostheses

(3) #32, 34, 42, 44 implant placement with bone graft as needed

(4) Mini implant removal

(5) Milled titanium bar splint fabrication

(6) Implant-titanium milled bar-supported overdenture

5) Treatments (Fig. 2B–L)

2012.01.18 - 1. #35, 42, 43 exodontia
2. #31, 41 mini implant placement
(Intra-Lock® System MDL 2.5/10 Ti)

2012.02.20 - #31 mini implant lost
#41 mini implant retained teaporary prosthesis correction

2012.03.08 - #32, 34, 42, 44 implant placement

2012.06.12 - 2nd surgery

2012.11.14 - Titanium bar placement

3. 〈Case 3〉 Full-mouth rehabilitation

1) Background Information

Age/Sex: 44/Male

CC: 이가 안좋다. 비용 때문에 임플란트 고민중이다.

PI:

(1) Generalized severe chronic periodontitis

(2) Missing teeth: #26, 31, 37, 46, 47

(3) Hopeless except for #23-25

PMH: N/S

PDH: N/S

2) Clinical Findings (Fig. 3A–D)

(1) Poor oral hygiene

(2) Mobility (++ ~ +++) : 12-22, 32-42
(+++) : 18-14, 34-36, 44-46

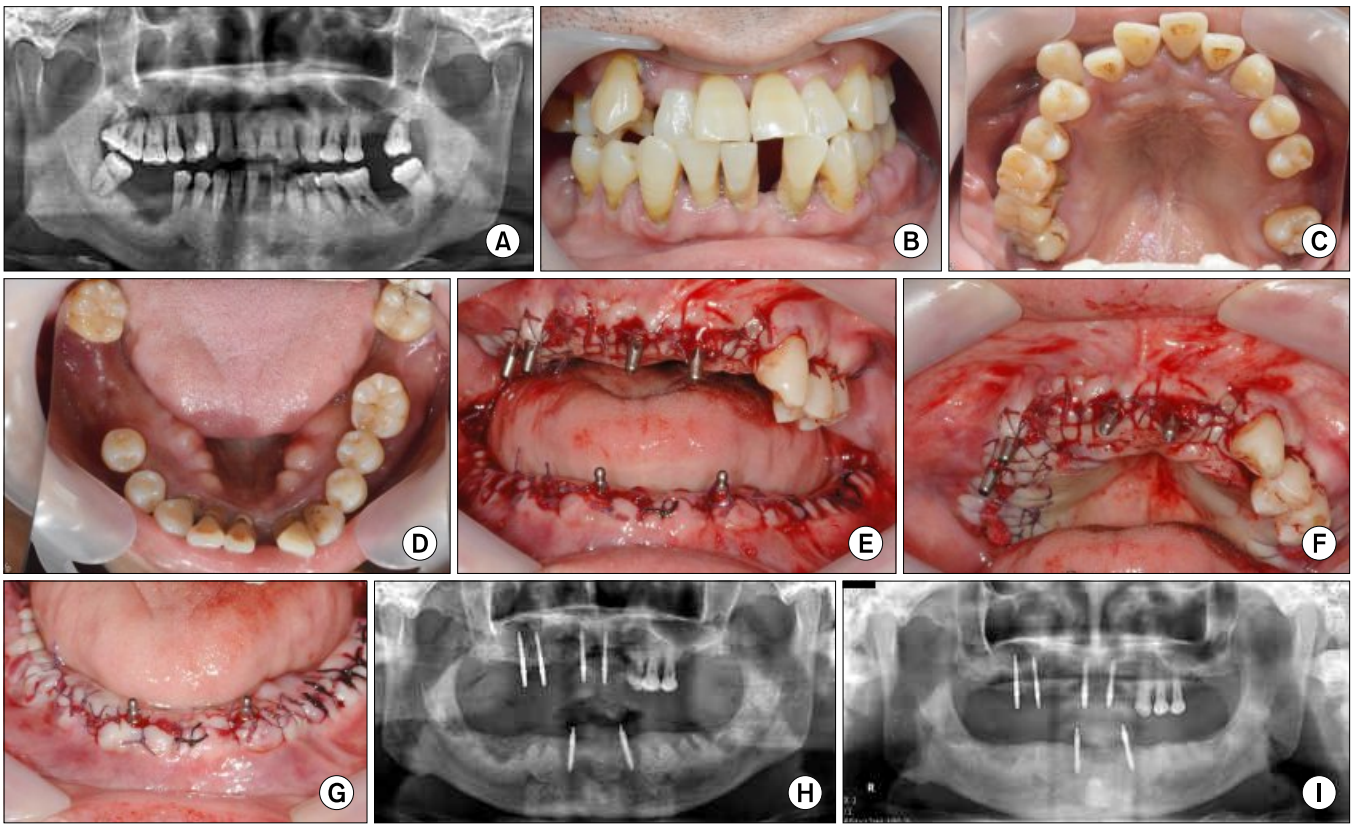

Fig. 3. (A) Pre-operation panorama. (B) Intra-oral view; First visit. (C) Intra-oral view; First visit. (upper). (D) Intra-oral view; First visit. (lower). (E) Intra-oral view; post extraction & Bone graft state. (F) Intra-oral view; post extraction & Bone graft state (upper). (G) Intra-oral view; post extraction & Bone graft state (lower). (H) Post-extraction tooth panorama. (I) Post-extraction tooth after 1 year panorama.

(++) :13, 23-25, 33, 43
(3) PDL space of #13: 12 mm
(4) Torus on Man.(both sides)

3) Radiographic Findings
(1) Generalized alveolar bone resorption
(2) Missing teeth: #26, 31, 37, 46, 47

4) Treatment Plan
(1) Full-mouth extraction except #23, 24, 25
Mn. torus removal (Bone graft as needed)
Mini implant placement (#15, 14, 11, 21, 32, 42)
(2) Implant placement
- 7 implants on maxilla (#16, 15, 14, 13, 12, 11, 21, 22, 27)
- 8 implants on mandible (#36, 35, 34, 33, 43, 44, 45, 46)
(3) Mini implant-retained temporary prostheses (Max: fixed, Mand: removable)
(4) Mini implant removal
(5) Implant-retained fixed partial denture splints

5) Treatments (Fig. 3E–I)
2013.08.28 - Full-mouth exodontia except #23, 24, 25
- Mn. torus removal (Both lingual side)
2013.08.28 - #17~#22 area Bone graft (Bio-oss®+Auto bone-torus bone)
- mini implant placement (DUO® 2.5/12, post type (upper))
- mini implant placement (DUO® 2.5/14, ball type (lower))
2013.09.14 - Temporary removable prostheses delivery and patient did not visit d/t high cost
2014.08.11 - Revisit patient, but he did not implant placement d/t high cost

DISCUSSION

The rate of success of dental implants has been meticulously studied over many years worldwide, and its reliability has lead dentists to extend the application of dental implants from replacement of single missing tooth to rehabilitation of completely edentulous arches. Along with establishment of clinical reliability came research and development of highly evolved surgical techniques and the introductions of special components for functional and esthetic improvements.[7] Standard-sized or wide-diameter implants allow favorable bone-implant contact surface.[8] Occasionally, however, lack of mesiodistal space or thin remaining alveolar ridge make it difficult to place implants of such dimensions. One solution to restoring single non-load bearing tooth with limited available space is the use of mini-implant.

Van Steenberghe[9] evaluated the prognosis of the osseo-integration technique in the rehabilitation of partially edentulous jaws in a multicenter retrospective study. The observation time varied between 6 and 36 months after prosthetic reconstruction. The success rate for the individual implants in the maxilla and mandible was 87% and 92%, respectively. In a prospective study, Zarb and Schmitt[10] evaluated the results of osseointegrated implants placed in partially edentulous areas in the posterior zones. One hundred five implants were placed in 46 edentulous areas in 35 patients. After periods of loaded service ranging from 2.6 to 7.4 years (mean 5.2 years), 40 of the 41 implants placed in maxillae (97.6%) and 59 of the 64 placed in mandibles (92.2%) remained in function, with an overall implant survival rate of 94.3%. Zarb and Schmitt[11] also reported an average success rate of 91.5% for implants placed in the anterior part of partially edentulous mouths both in the maxilla and in the mandible. With regard to single-tooth restorations, Cordioli et al.[7] reported survival rate of 94.4% for single-tooth implants in 47 patients. Engquist et al.[12] evaluated the outcomes of single-tooth restorations using Brånemark implants from 1984 to 1989, and reported an overall survival rate of 97.6%. McMillan et al.[13] investigated the nature, timing, and frequency of complications associated with singletooth implant therapy in a dental hospital and 2 dental offices and they reported implant survival rate of 96%.

In the 3 cases presented in the study, mini implants served well in providing retention and support for temporary removable prostheses.

In <Case 2>, one of two mini implants failed during

temporary loading. Initially, two mini implants were not on the same vertical level and one that failed had unfavorable crown-to-root ratio. Also the two implants were placed too close to each other due to lack of sound bone structure in the anterior mandible.

In <Case 3>, 4 mini implants on maxilla supported 8-unit fixed provisional partial denture. Although mini implants are known to be able to resist less occlusal force than conventional implants, opposing dentition consisted of provisional removable denture with reduced occlusal forces. Occlusal surfaces of provisionals were designed to avoid lateral forces. Despite reported difficulty in removal, all mini implants were successfully removed before final prostheses delivery.

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대한국제임플란트학회 회칙

제정 2006. 03. 12
1차 2006. 08. 01
2차 2009. 02. 28
3차 2009. 06. 13
4차 2011. 03. 12
5차 2014. 02. 22

제 1 장. 총 칙

제 1조 [명칭]

본 회는 ICOI-Korea : 대한국제임플란트학회 라 칭한다.

제 2조 [목적]

본 회는 구강임플란트학 및 연관학문에 관한 연구 및 의료발전과 회원 상호간의 교류확대 및 친목을 도모함을 목적으로 한다.

제 3조 [설립]

본 회는 대한치과의사협회 정관 제 58조에 준하여 설립한다. (지부에 관한 내용임)

제 4조 [사업]

1. 본 회는 2 조의 목적을 달성하기 위하여 다음의 사업을 행한다.
2. 치과임플란트학에 관한 학술연구 및 발표
3. 정기 및 비정기 학술대회, 심포지엄, 집담회의 개최
4. ICOI World와 긴밀한 협조관계유지
5. 치과임플란트학의 국제적 교류
6. 회원의 친목 및 교류에 관한 사항

본회는 재무, 회무 모두 독립적으로 운영되며 ICOI-WORLD와 업무 협조 시 적극적으로 협조한다.

제 5조 [지부]

본 회는 대한민국 내에 사무소를 두며, 지부는 두지 않는다.

제 2 장. 회 원

제 6조 [회원]

본 회는 정회원과 명예회원으로 구성한다.

1. 정회원(Member)은 본 학회 취지에 동조하는 자로서 소정의 입회절차를 받은 치과의사로 한다.
2. 명예회원(Honorary Member)은 본회의 발전에 공로가 현저한 자, 또는 66세 이상의 정회원으로서 이사회의 추천, 승인을 받은 원로 회원으로 한다.

제 7조 [고문 및 자문위원]

본 회는 직전 회장이 명예회장이 되며, 임원회의 추천, 승인을 받아 고문과 자문위원을 둘 수 있다.

1. 명예회장 : 직전 회장으로써 회장의 자문에 응하며 회장의 대내외 활동을 돕는다.
2. 고문 : 고문은 명예회장을 제외한 전임 회장과 본회의 발전에 공로가 지대한 회원중에서 이사회 추천 승인을 받아 회장이 추대한다.

제 8조 [입회]

대한치과의사 협회 정관 58 조에 의거 부속학회 설립목적에 동의하고, 본 학회의 입회를 원하는 자는 본 회 소정의 입회원서를 작성하여 소정의 입회비와 함께 제출하고, 임원회의 승인을 받아 회칙에 정하는 바의 회원으로서의 권리와 의무를 갖는다.

제 9조 [회원의 권리와 의무]

1. 모든 회원은 각종 학회의 사업과 회의에 참여할 수 있고, 학회지 및 제 증명을 받는다.
2. 정회원은 선거권과 피선거권을 갖는다.
3. 회원은 본회의 회칙, 제 규정 및 의결사항을 준수하고 소정의 회비 및 부담금을 납부하여야 한다.

제 10조 [상벌]

1. 학술연구 및 본회의 발전에 현저한 공을 세운 회원은 임원회의 의결에 따라 표창할 수 있다.
2. 본 회의 의무를 준수하지 않거나 본회에 재산상 손해나 명예를 훼손한 때에는 임원회의 의결로 배상청구 또는 징계할 수 있다.
3. 2년 이상 회비를 납부하지 않거나 소명에 응하지 않는 경우 회장직권 및 임원회의 의결로 제명할 수 있다.

제 3 장. 기구 및 임원

제 11조 [회원]

본 회는 회무수행을 위하여 다음의 임원을 둔다. 본 회의 임원은 회장 1명, 수석부회장을 포함한 부회장 2인 이상, 위원회 위원장 및 감사로 구성된다.

제 12조 [임원의 의무]

본 회의 임원은 정회원 입회가 의무이고 필수적으로 ICOI 회원자격을 유지하며, Fellowship/Diplomate 자격을 유지하며 다음의 임무를 수행한다.

· 회 장 : 본 회를 대표하며, 회무를 총괄하고 각종 회의를 소집한다.
· 부 회 장 : 회장을 보좌하며 회장 유고 시 그 임무를 대행한다.
· 학 술 대 회 장 : 정기 학술대회를 주관한다.
· 이 사 : 다음의 각 위원회에 소속되어 분담된 회무를 수행하며 각 위원회는 위원장을 둔다.
· 총 무 위 원 회 : 회원 및 사무관리, 회무의 연락과 업무협조를 담당한다.
· 재 무 위 원 회 : 회비수납 및 학회의 재정에 관한 업무를 담당한다.
· 학 술 위 원 회 : 학술집담회, 심포지엄, 연수회 및 기타 학술활동에 관한 사항을 담당한다.
· 공 보 위 원 회 : 학회홍보 및 출판물의 발간에 관한 사항을 담당한다.
· 기자재 위원회 : 최신 기자재에 대한 정보입수 및 평가와 회원에 대한 정확한 정보전달을 담당한다.
· 국 제 위 원 회 : 외국 및 국제학회와의 학술 및 회원교류에 관한 사항을 담당한다.
· 정보통신위원회 : 홈페이지 관리 및 회원 상호간의 정보교류를 목적으로 한다.
(단 예산은 독립적으로 운영하며 잉여금은 본회에 귀속 시킨다)
· 후 생 위 원 회 : 회원의 복지 및 후생에 관련된 업무를 담당한다.
· 법 제 위 원 회 : 본회 및 회원의 권익보호를 위한 법적인 업무를 담당한다.
· 회원관리위원회 : 회원 간 단합과 신입회원 및 회원의 입회 및 탈퇴 관리 업무를 담당한다.
· 인 사 위 원 회 : 차기회장, 감사를 선출한다. 구성은 역대회장, 고문, 감사, 회장, 부회장, 그리고 각 위원회 위원장으로 한다.
· 섭 외 위 원 회 : 본회와 관련 있는 단체등과 상호 연락 업무 협조 요청에 관한 일을 담당한다.
· 연 구 위 원 회 : 학문의 연구에 관련 업무를 담당한다.
· 교 육 위 원 회 : 본회 주관 연수회및 회원 교육에 관한 사항을 담당한다.
· 조 직 위 원 회 : 회원의 단합과 조직의 원활한 상호 관계를 위한 업무를 담당한다.
· 편 집 위 원 회 : 학회지 기타 출판물의 발간에 관한 사항을 담당한다.
· 대외협력위원회 : 본회와 유관 관계 기관과의 업무 협조를 담당한다.
· 문 화 위 원 회 : 본회의 각종 문화 관련 활동 및 행사를 주관한다.
· 기 획 위 원 회 : 본회 관련 행사의 기획 및 진행에 관한 업무를 담당한다.
· 전 시 위 원 회 : 전시에 관련된 제반 업무를 담당한다.
· 홍 보 위 원 회 : 학회홍보 관한 사항을 담당한다.
· 감 사 : 본회의 회무 및 회계를 감사하고 총회에 보고한다.

제 13조 [임원의 선출]

본 회의 임원은 다음에 의하여 선출된다.

1. 회장과 감사는 인사위원회에서 과반수 출석에 출석위원 과반수 찬성으로 선출한다. 회장은 서울(경기)과 지방을 교대로 선출함을 원칙으로 하되 부득이한 사정이 있을 경우 인사위원회에 위임한다.
2. 부회장은 회장의 추천을 받아 인사위원회에서 인준한다.

3. 학술대회장, 간사는 임원회에서 선출하여 총회에 보고한다.
4. 각 위원회 위원장은 회장이 임명하여 임원회의 승인을 받는다.

제 14조 [임원의 임기]

본 회 임원의 임기는 1년으로 하며 연임할 수 있다. 단 보선위원의 임기는 전임자의 잔여기간으로 하고 임원의 임기가 완료된 후라도 후임자가 선임될 때까지 그 권한을 행사한다.

제 15조 [임원의 보선]

회장 유고시에는 인사위원회에서 후임자를 선출하며, 부회장과 학술대회장, 간사, 이사의 유고시에는 회장이 추천하여 인사위원회 및 임원회의 인준을 받으며, 임기는 잔여기간으로 한다.

제 4 장. 총 회

제 16조 [총회의 개최]

본 회는 매년 초도이사회를 정기총회로 갈음하고, 필요시 회장 및 이사 1/3 이상의 요구가 있을 때에 임시총회를 소집한다.

제 17조 [총회의 업무]

총회에서는 임원선임과 사업보고 및 감사보고를 받고 회칙개정을 승인한다.

제 5 장. 이사회

제 18조 [임원회 구성]

임원회는 회장, 부회장, 위원회 위원장, 전임회장으로 구성하고 회장이 소집하여 의장이 된다.

제 19조 [임원회의 종류]

임원회는 정기 및 임시 임원회로 하고 정기 임원회는 3개월에 1회, 임시 임원회는 회장 또는 임원 3분의 1 이상의 요청에 의하여 수시로 소집한다.

제 20조 [임원회의 성립]

임원회는 재적 임원 과반수의 출석으로 성립한다.

제 21조 [임원회의 사업보고]

각 위원장은 정기 임원회 회의 시 사업보고를 하여야 한다.

제 22조 [임원회의 의결]

임원회의 의결은 출석임원 과반수의 찬성으로 한다.

제 23조 [임원회의 업무]

1. 회칙 제정 및 개정에 관한 사항
2. 총회 의안 제출에 관한 사항
3. 총회에서 위임받은 사항
4. 사업 계획 및 심사에 관한 사항
5. 학술대회 준비에 관한 사항
6. 회원 자격의 심사 및 승인에 관한 사항
7. 특별 위원회 구성에 관한 사항
8. 회원 상벌에 관한 사항
9. 대한치과의사협회에서 수임된 업무에 관한 사항
10. 본회 운영에 관계되는 일체의 사항

제 6 장. 재 정

제 24조 [수입]

본 회의 재정수입은 입회비, 년 회비, 임원분담금 및 기부금, 협회 등 유관단체로부터의 지원금, 사업잉여금으로 하고, 각 회비는 이사회에서 정한다.

제 25조 [사업잉여금]

학술대회 및 가타 사업잉여금은 임원 또는 회원에 배달할 수 없고, 회칙이 정하는 바에 따라 회에 귀속한다.

제 26조 [회계연도]

본 회의 회계연도는 매년 정기총회 다음일 부터 익년 정기총회일까지로 한다.

제 7 장. 학술대회와 학술집담회

제 27조 [학술대회와 학술집담회]

1. 본 회는 매 년 1회 종합학술대회를 개최하며, 격년으로 지방과 서울을 순회하여 개최함을 원칙으로 한다. 종합학술대회 강연의 일부는 당해 Fellow (10분)나 Diplomate (20분) 취득자를 우선적으로 선정한다.
2. 임원회는 서울 및 지방에서 년 1회 이상 당해 ICOI World 회원자격 유지자를 위한 학술 집담회를 개최한다.

제 28조 [학술대회와 학술집담회의 주관]

1. 정기학술대회는 행사의 일체를 학술대회장이 주관하고, 학술 집담회는 학술위원회 위원장이 주관한다.
2. 학술대회장은 당해 년 학술대회 개최의 제반 기획과 준비상황에 관하여, 행사 6개월 전 까지 임원회에 보고하고 승인을 받아야 한다.
3. 학술대회장은 학술대회 결과를 소정의 양식으로 임원회에 보고하여야 한다.

제 8 장. 보 칙

제 29조

본 회 회칙에 규정되지 않은 사항은 통상 관례에 준한다.

제 30조

본 회칙은 임원회의 과반수 이상의 출석에 출석위원 과반수 이상의 찬성 의결로 개정할 수 있으며, 총회의 승인을 받아 효력을 발생한다.

제 31조

본 회칙은 2014년 2월 22일부터 시행한다.

대한국제임플란트학회 논문상 및 우수포스터상 규정

제정 2011. 03. 12
1차 2014. 02. 22

제 1조 [목적]

대한국제임플란트학회 회칙 제1장 제4조(사업) 2항 “치과임플란트학에 관한 학술연구”에 의거하여 대한국제임플란트학회 논문상(이하 “논문상”) 및 대한국제임플란트학회 우수포스터상(이하 “포스터상”)을 제정한다.

제 2조 [명칭]

이 상의 명칭은 대한국제임플란트학회 논문상 및 대한국제임플란트학회 우수포스터상이라고 한다.

제 3조 [후보작의 자격]

1) 논문상의 후보작은 해당년도 회원 본인에 의해 저술되어 대한국제임플란트학회 학회지에 투고된 논문에 한한다.
2) 포스터상의 후보작은 대한국제임플란트학회 학술대회에 발표된 포스터에 한한다.

제 4조 [수상자 선정]

1) 논문상의 수상자는 대한국제임플란트학회 이사회에서 의결하며, 우수포스터상의 수상자는 대한국제임플란트학회 학술대회 중 학술대회장이 위촉한 심사위원이 정한다.
2) 이사회는 최우수 논문상 1편과 우수 논문상 2편을 선정한다.
3) 포스터상은 위촉된 심사위원의 재량에 따라 심사하여, 최우수 포스터상과 우수 포스터상을 선정한다.

제 5조 [시상의 방법과 내용]

대한국제임플란트학회 학술대회에서 회장이 각 논문상과 포스터상의 수상자를 시상한다. 시상은 상장 및 소정의 상금으로 하며, 상금은 이사회가 별도로 정한다.

제 6조 [부칙]

1) 이 규정은 대한국제임플란트학회 이사회의 과반수 찬성에 의하여 내용을 변경할 수 있다.
2) 이 규정에 규정되지 않은 세부사항은 일반 관례에 따르며, 이사회의 의결에 따른다.
3) 이 규정은2014년 2월 22일부터 시행한다.

대한국제임플란트학회 학술상 규정

제정 2011. 03. 12
1차 2014. 02. 22

제 1조 [목적]

이 규정은 대한국제임플란트학회 학술상에 관한 제반사항을 규정함을 목적으로 한다.

제 2조 [명칭]

본 학술상의 명칭은 대한국제임플란트학회 학술상이라고 한다.

제 3조 [수상후보자의 추천 및 자격]

1) 원칙적으로 1년에 1인으로 정한다.
2) 정기 총회 2개월 전까지 회원들로부터 수상후보자의 추천을 받아야 한다.
3) 대한국제임플란트학회 회원 중 연구업적이 우수하거나 임플란트 치의학의 발전에 기여한 자를 추천할 수 있다.

제 4조 [수상후보자의 심사 및 수상자 선정]

1) 회장은 수상자 선정을 위해 정기총회 10일전까지 회장, 부회장, 차기회장, 실무이사진으로 심사위원회를 구성한다.
2) 수상자는 추천된 수상후보자 중에서 심사위원회에서 선정하고 의결한다.
3) 학술상 수상자는 5년이 경과하여야 재수상할 수 있다.

제 5조 [수상자의 의무]

1) 학술상 수상자는 의무적으로 연구의 결과를 대한국제임플란트학회 학회지에 게재하여야 한다.
2) 학술지 게재시 “본 논문은 OOOO년도 대한국제임플란트학회의 지원을 받아 연구되었음” 이라고 명기한다.

제 6조 [학회의 의무]

대한국제임플란트학회는 학술상 수상자에게 상장과 상금 500만원 이하를 지급하여야 한다.

제 7조 [부칙]

1) 본 규정은 대한국제임플란트학회 이사회의 과반수 찬성에 의하여 내용을 변경할 수 있다.
2) 본 규정에 규정되지 않은 세부사항은 일반관례에 따른다.
3) 본 규정은 2014년 2월 22일부터 시행한다.

대한국제임플란트학회 논문 및 임상증례 투고 규정

원고는 대한국제임플란트학회의 투고규정에 맞게 작성되어야 하며 그 내용은 다음과 같다.

I. 일반적인 지침사항

1. 투고된 원고는 다른 학술지에 게재되었거나 게재될 예정이 아니어야 한다.
2. 원고의 종류는 종설, 실험연구, 임상연구, 증례보고, 편집위원회에 보내는 글, 학회 소식과 각종 소개 등으로 한다.
3. 원고의 채택여부 및 게재순서는 학회편집위원회에서 결정한다. 편집위원회는 논문을 채택함에 있어서 논문의 윤리성, 정당성, 독창성과 학술적 의의 등을 심사하며, 내용의 정정, 보완, 삭제를 요구할 수 있다.
4. 원고는 한글(또는 한자와 혼용)로 작성하거나 영문으로 작성할 수 있다. 한글 원고인 경우 고유명사, 약품명, 단위 등과 적절한 번역어가 없는 의학 용어는 영자로 표기한다. 번역어는 있으나 이해가 쉽지 않은 경우에는 그 용어가 최초로 선택 될 때 번역어 다음 괄호 속에 원어로 표기하고 그 다음부터는 번역어만 사용한다. 학술용어는 대한의학학술지 편집인위원회에서 발행한 의학용어집 최신판(http://kamje.or.kr/term) 및 대한치과의사협회 용어집에 준하는 한글로 표시한다.
5. 원고의 총 분량은 실험연구나 임상연구의 경우 총 10쪽 이내를 권장한다. 편집위원회의 허가가 있는 종설의 경우에는 예외로 한다. 증례보고는 본문을 4쪽 이내로 권장한다(학회지 1쪽은 글자만 포함될 경우 대략 한글 2,500자 정도가 된다).
6. 원고는 원본 1부, 복사본 2부를 저자의 발간요청편지 1부와 원고내용이 저장된 컴퓨터 디스켓(아래한글 또는 워드 파일)과 같이 편집위원회에 우편으로 송부한다. 논문이 게재되기로 수락되면 저자는 수정, 보완되어 완성된 원고 1부와 원고내용이 수정되어 저장된 컴퓨터 디스켓을 제출한다. 디스켓에는 파일이름, 제1 저자명, 사용된 프로그램을 표시한다.
7. 실험연구, 임상연구 및 증례보고는 소정의 게재료를 납입하며 도안료 및 제판비와 특수인쇄가 필요할 때에는 그 실비를 저자가 부담한다. 추가로 필요한 별책의 비용은 저자가 부담한다. 학회에서 의뢰한 종설은 저자에게 학회에서 소정의 원고료를 지불한다.

II. 원고 작성 요령

1. 실험연구 및 임상연구

⑴ 표제
- ① 표제 페이지에 제목, 소속, 저자명을 기록한다.
- ② 제목 : 논문 제목은 연구목적에 연계하며 간결하고 명확하게 나타내며, 한글 또는 영문으로 표기한다.
- ③ 저자 인적사항 : 모든 저자의 저자명, 학위, 소속, 직위 등을 기록하고 교신저자(corresponding author)의 성명, 주소, 전화, FAX 번호 및 E-mail 주소를 구분하여 기록한다(한글 또는 영문으로 표기).
- ④ 저자가 서로 다른 대학 또는 병원일 경우 소속은 제 1저자, 공저자, 교신저자의 순으로 기록하고 번호로서 각각을 구분한다.
- ⑤ 연구비 지원 또는 수혜에 대한 내용은 표제 페이지 하단에 기록한다.

⑵ 초록
- ①한글 또는 영문으로 작성하며, 초록에도 저자명, 학위, 소속, 직위 등을 기록한다.
- ② 분량은 한글 600자 이내, 영문은 250단어 이내로 작성한다. 초록에는 참고 문헌을 인용하지 않는다.
- ③ 핵심용어(key words)는 초록 하단에 논문의 색인에 필요한 중요단어 6개 이내를 선택하여 알파벳(가나다) 순으로 나열하고 각 핵심용어 간에는 comma를 사용하여 구분한다(세부지침사항 참고). 영문 핵심용어는 미국국립도서관의 Medical Subject Heading (MeSH)에 기재되어 있는 용어를 추천한다.

⑶ 서론 : 연구의 배경 및 목적을 간결하고 뚜렷하게 기술하며, 직접 연관이 있는 필요한 내용만을 기술한다.

⑷ 연구방법 및 대상 : 연구의 계획, 방법 및 대상을 기술한다. 연구방법은 가능한 구체적이고 자세하게 기술하여 독자가 이를 재현할 수 있도록 하여야 한다. 사용된 통계방법을 여기에 기술하여야 한다.

⑸ 결과 : 연구결과를 명료하고 논리적으로 기술하고 연구목적에 부합하는 결과만을 기술한다. 결과에 대한 통계적 의의를 기술한다. Table이나 Figure로 결과를 나타날 때는 Table이나 Figure의 내용을 중복하여 기술하지 않으나 중요한 경향 및 요점은 설명할 수 있다.

⑹ 고찰 : 연구결과에 대한 고찰 및 이에 연관된 다른 자료와 관련시켜 해석한다. 새롭고 중요한 관찰을 강조하며 결과의 내용을 중복 기술하지는 않는다. 연구결과의 내용이 허용하는 범위 내에서 결론과 연구의 목적을 연관시켜 기술한다. 결론 항목을 별도로 설정하지 않은 경우 독립된 단락으로 논문의 결론을 간단명료하게 기술한다.

⑺ 결론 : 연구결과를 중복하지 말고 결과를 토대로 연구목적에 부합되는 결론을 간단명료하게 기술한다.

⑻ 참고문헌 : 참고문헌은 현저하게 의의가 있는 것으로 제한하되 논문에 인용된 순서대로 기재하고 본문에는 어깨번호를 기입한다. 다른 논문에서 간접적으로 소개되는 문헌은 참고문헌으로 사용할 수 없다. 국제임플란트학회지에 게재된 관련 논문은 우선적으로 인용함을 권장한다.

2. 종설

종설은 특정 제목과 내용에 관한 고찰로서 편집위원회에서 위촉하여 게재한다.

3. 증례보고

⑴ 표제 : 실험연구 및 임상연구에 준한다.
⑵ 초록 : 실험 연구 및 임상 연구에 준하되 영문초록은 150단어 이내 한글초록은 400자 이내로 한다.
⑶ 서론 : 증례와 연관된 일반적 배경 및 의의를 간략하게 기술한다.
⑷ 증례 : 임상소견은 진단 및 임상소견에 직접 관계가 있는 사항만 국한하여 기술한다.
⑸ 고찰 : 증례가 강조하고 있는 내용에 초점이 맞추어져야 하며 장황한 문헌고찰은 피한다. 결론항목을 별도로 설정하지 말고 끝부분에 결론을 요약하여 기술한다.
⑹ 참고문헌 : 실험연구 및 임상연구에 준한다.

4. 편집위원회에 보내는 글

학회지에 게재된 특정 논문에 대한 건설적인 비평, 토론, 의견을 기술하여 국제임플란트학회 회원의 일반적 관심사항이나 학술분야의 특정 주제에 대한 개인적 의견을 기술한다.

5. 학회 소식과 각종 소개

편집위원회에서 그 게제 여부를 결정할 수 있다.

III. 세부지침사항

1. 원고는 A4 또는 letter 용지 크기에 작성하며 행간 1행의 간격(double space)을 둔다. 좌우단은 2 cm, 상하는 3 cm의 여백을 두고 타자로 작성하거나 프린트로 선명하게 인쇄한다. (대략 한 쪽에 한글 800-900자 정도).
2. 원고순서는 실험 및 임상연구는 표제, 초록, 서론, 대상 및 방법, 결과, 고찰, 참고문헌, Table, Figure 또는 사진 순으로 하고 증례보고, 종설 및 편집자에게 보내는 글은 일반적인 지침 사항을 따른다. 각 부분은 새로 시작하되 초록은 1쪽으로 하여 하단에 쪽수를 연결하여 표시한다.
3. 영문약어는 최소화하여 이를 사용 시에는 본문 내 최초사용 시 괄호 속에 풀어 쓴다.
   예) 근육이완교정장치 (muscle relaxation appliance, MRA)
4. 측정의 단위는 International System of Units (SI)에 준한다. 길이, 무게, 용적은 각기 meter, kilogram, liter로 표준화하며 공인된 약어를 사용할 수 있다. 압력 단위는 mmHg로 한다.
5. 기계 및 장비의 경우 괄호 안에 모델명, 제조회사, 국적을 기입한다. 약품의 경우 일반명을 쓰고 상품명은 괄호 안에 쓰며, 일반적으로 사용되지 않는 특수한 역품일 경우에는 제조회사, 국적을 괄호 안에 기입한다.
6. 본문에 인용되는 참고문헌의 어깨번호는 다음과 같이 표시한다. [1) 1,3,5) 1-5)]

1. 참고문헌

⑴ 본문에는 인용된 순서대로 아라비아 숫자 번호와 함께 기입한다.
⑵ 참고문헌에 기술된 논문은 본문에서 반드시 인용되어야 한다.
⑶ 학술지의 표기에는 Index Medicus의 공인된 약어를 사용한다. 인용이 드문 희귀한 잡지명은 약어를 사용하지 않고 전체 이름을 적는다.
⑷ 저자명은 6명까지 기록하여 7명 이상의 경우에는 앞의 3명만 기술하고 등 또는 et al.을 쓴다.
⑸ 인용문헌의 쪽수는 시작과 끝을 기록한다.
⑹ 참고문헌의 숫자는 원저는 50개 이내, 임상연구 30개 이내, 증례보고 20개 이내, 질의/답변 5개 이내를 원칙으로 한다.
⑺ 기술 양식은 다음의 예와 같이 한다.
① 정기 학술지: 저자명(.), 논문제목(.), 학술지명, 발행년도(:), 권수(:), 첵쪽-끝쪽
예) Kim KS, Kim KS, Lee PY, et al. Effect of low incident energy levels of infrared laser irradiation on the proliferation of C. albicans Part II: A short term study during cell growth. Laser Theraphy 1995:7:61-66.
예) Meretoja OA, Olkkola KT. Pharmacodynamics of mivacurium in children using a cimputer-controlled infusion. Br J Anaesth 1993:71:232-237
예) Lee JY, Kho HS, Kim YK, Chung SC, Lee SW. Factors related to patients' satisfaction level of treatment outcome of oral malodor. Korean J Oral Med 2011:26:27-38.

2. Table

(1) 한 쪽에 한 개씩의 Table을 작성한다.
(2) Table은 설명과 본문을 영문 및 아라비아 숫자로 기록한다. 간단하고 명료한 제목을 구(Phrase)나 문장(sentence)의 형태로 표기한다.
(3) Table은 본문에서 인용되는 숭으로 번호를 붙인다.
(4) 약어 사용 시 국제적으로 공인된 약어 외에는 Table 하단에 풀어서 설명한다.
(5) Table의 내용은 이해하기 쉬워야 하며 독자적 기능을 할 수 있어야 한다.

3. Figure 또는 Fig. 또는 사진

(1) Figure (line drawing)는 흰 바탕에 검은 선을 사용하며 인쇄되어야 한다.
(2) 사진의 크기는 5×7 inch (13×18 cm)로 통일하며 광택인화지를 사용한다. 사진이나 방사선 소견 등에 환자의 인적사항은 알 수 없도록 기술한다. 병리표본은 반드시 자(尺)를 놓고 촬영한다.
(3) 사진 뒷면에는 사진의 번호와 상하표시를 연필로 기입한다. 지나치게 눌러 써서 전면에 표시가 나지 않도록 하며 잉크나 볼펜 사용을 금한다.
(4) 동일번호에 2개 이상의 사진이 있는 경우 아라비아 숫자 이후에 알파벳 글자를 기입하여 구분한다. (예: Fig. 1A, Fig. 1B).
(5) 본문에서 인용된 순으로 아라비아 숫자로 번호를 붙인다.
(6) 별지에 영문으로 절(Phrase)이나 문장(sentence)의 형태로 기술한다.
(7) 현미경 사진의 경우 염색방법과 배율을 기록한다.

4. 논문투고방법안내

논문투고에는 기존의 우편물 접수 방법과 온라인 논문투고 신청 두 가지의 방법이 있다.

(1) 온라인 논문투고
학회 홈페이지나 학술안사위원회에 논문투고를 이용한다.

(2) 우편물 논문 접수
① 원고는 원본 1부, 복사본 2부를 저자의 발간요청편지 1부와 원고내용이 저장된 컴퓨터 디스켓(아래한글 또는 워드 파일)과 같이 학회사무국에 우편으로 송부한다.
② 논문이 게재되기로 수락되면 저자는 수정, 보완되어 완성된 원고 1부와 원고내용이 수정되어 저장된 컴퓨터 디스켓을 제출한다. 디스켓에는 파일이름, 제 1저자명, 사용된 프로그램을 표시한다.

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