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Success and Failure of Implant in Bounded and Free End Saddle Area

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الخلاصة

الأهداف: تهدف الدراسةِ الى تَحرّي عُمرَ وتُحديدُ التوزيع و الموقع (للاسنان المفقودة في المناطق المحاطة و منطقةَ سرجِ امتداد نهايةِ)، والعرض الأكثر شيوعاً مِنْ الزرعِ يمكن أن يُستَعملَ لإعطاء نتائج ناجحة. تحديد النسبة المئويةَ وأسبابَ فشلِ الزرعِ . **المواد والطرق:** 117 مريضا إختاروا الخُضُوع لعمليةِ الزرعِ في مركزِ زرعِ مستشفى السلامِ تتراوح اعمارهم مابين (17 سنة و اكثر من 60 سنة). نظام زرعِ Frialit–2 مستعملُ بطولِه المختلفِ وعرضِه. تمت متابعة المرضى بعد العملية الجراحية ليومين، إسبوع واحد، إسبوعان ، وكُلّ شهر بشكل دوري ولستة شهورِ. تفتيش وتحسس للمنطقة بلا أسنانِ لكي يُدقّق في حالة وجود ألمَ ،تَمل ، عملية تحريضية، تلوث. تمت متابعة المرضى بعد عملية التعويض الصناعي للزرعات لفترة تَراوحت مابين (6 شهرِ إلى 7 سَنَواتِ)، طبقاً للفحصِ السريري و الشعاعي للمريضِ. **النتائج:** التحليل السريري ل(117) مريضِ كَانَ ثانيةً وثالثاً عقودَ مِنْ الحياةِ تَراوحَ مِنْ 17– 40 سنة (77.77 %) مع 142 زرعه (59.91 %). مائة وأربع وأربعون زرعه أُجلسَ في مناطقِ الفك الأعلى المختلفةَ بينما ثلاثة وتسعون زرعه جالسةً في الفَكِّ (الأسنان المفقودة في المناطقِ المحاطة و منطقةَ سرجِ امتداد نهاية). ثلاثة أعراضِ مختلفةِ (3.8، 4.5، و 5.5 ملميتر) استعملت طبقاً لمعاييرِ المرضى، و نظام Frialit–2. **استنتاجات:** يَحتاجُ المدى الأعلى للعُمرِ زرعاً (3.8 ملميتر) كَانَ بين 17– 40 سَنَوات. نسبة النجاحَ في الفك الأعلى كانتْ أقل مِنْ الفَكِّ الأسفل. الاختلاف الطفيف كَانَ في النسبة المئويةِ مِنْ نجاحِ بين إمتدادِ النهايةِ المحدودِ والمحاط للأسنانِ المفقودةِ جزئياً. أسباب حالاتِ الفشل تُعلّقتْ بكمية عظميةِ سيّئةِ خصوصاً في قوسِ الفك العلوي، خطأ جراحي في موقعِ الزرعِ، موقف سيّئ مِنْ المريضِ لإستِعْمال طقمِ الأسنان قبل تقليل الضغط في قاعدة الطقم في منطقةِ الزرعه، وضعف متابعة المريضِ بعد وضع جزء المُشكِّلِ اللثّي.

ABSTRACT

Aims: To investigate age and site distribution (bounded and free end extension saddle area), and the most common width of implant can be used to give a successful results. Determine the percentage and the causes of implant failure. **Materials and Methods:** One hundred seventeen patients were chosen to undergo implant surgery in Al–Salam Hospital Implant Center with age group (17 y–above 60y). Frialit–2 Implant system is used with its different length and width. Post surgical follow up of patients were for 2 days, 1 week, 2 weeks after operation, and each month periodically for 6 months. History, inspection and palpation of the edentulous area considered in order to check pain, paraesthesia, inflammatory process, infection. Post prosthetic follow up of the patients were for a period ranged from 6 month to 7 years, according to clinical and radio graphical examination of the patient**. Results**: clinical analysis of 117 patients was second and third decades of life ranged from 17– 40 Ys (77.77 %) with 142 implants (59.91%). One hundred forty four implants were seated in the maxilla different regions while ninety three implants seated in the mandible (Bounded and free end). Three different widths (3.8, 4.5, and 5.5 mm) were used according to the criteria of patients , and Ferialit II System. **Conclusion:** Higher range of age needs implant (3.8mm) was between 17– 40 years. The success rate in the maxilla was less than mandible. Slight difference was in percentage of success between bounded and free end extension partially missing teeth. The causes of failures were related to poor bone quantity specially in the maxillary arch, Surgical error in implant positioning, poor attitude of the patient to use denture before reliving the area , and Poor fellow up of the patient after gingival former.

Key words: Implant, Rate of failure, length and width of implant.

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INTRODUCTION

Oral implant has revolutionized the practice of dentistry. Over the years, a large number of different implant systems have been introduced. [1]

Long term success can only be

achieved with complete co–operation of the patient accompanied by regular supervision and care on the part of the dental surgeon and his assistant, correct indication and favorable anatomic conditions (bone and mucosa) and good operative technique[2].

An analysis of the possible cause and their relative importance for implant failure is desirable for many causes. Such information will draw attention to the area where diagnostic, preventive. and therapeutic tools are needed[3].

The loss of teeth result in resorption of the surrounding alveolar bone and leads to atrophic edentulous ridges .This condition associated with clinical anatomical problems, which often impair the predictable result of traditional therapy[4].

Success means the gaining what is aimed at. Therefore, to be considered successful, an Osseo integrated oral implant has to meet certain criteria in terms of function with user satisfaction (aesthetic and absence of discomfort)[5, 6, 7]. While failure may be defined as the first instance at which the performance of the implant, measured in some quantitative way falls below a specified, acceptable level[8].

Aims of study were to investigate age and site distribution (bounded and free end extension saddle area), and the most common width of implant can be used to give a successful results. Determine the percentage and the causes of implant failure. .

MATERIALS AND METHODS

1. Patients:

One hundred seventeen patients were chosen to undergo implant surgery in Al–Salam Hospital Implant Center with age group (17 y–above 60y) since the period February / 2002 to February 2008 according to special criteria[9] . These patients were followed for about 1 to 6 years. Operations were done by the same surgeon and staff.

Two hundred and thirty seven implants of Frialit–2 Implant system were used with its different length and width (color–coded). Length was selected depending on radio graphical examination. Width selected by examining the edentulous area by digital caliper and reamer.

Before surgical treatment a temporary prosthesis was constructed for each patient with relief at the site of implant. Immediate placement of prosthesis after implantation was done with instructions for good oral hygiene.

The patients were followed 2 days, 7days, and 14 days after operation, and each month periodically. Fixed prosthesis was constructed with bucco–lingual dimension 1mm. less than natural dimension of the natural tooth of the other side of the arch. History, inspection and palpation of the edentulous area considered in order to check pain, parasthesia, inflammatory process, and infection. The patients were followed for a period ranged from 6month to 6 years, according to the following:

2. Clinical examination of the patient: History, inspection and palpation of the implanted area considered in order to check pain, rigid fixation, percussion, and bone loss by measuring probing depth[4, 10, 11].

3. Radio graphical Examination: By use of extra–oral Orthopan–tomography (OPG), bone loss can be checked. The level of the crestal bone around an endosteal implant should be compared to the initial placement position of the implant [4,12,13].

RESULTS

Distribution of patients and implants on each age group: Clinical analysis of 117 patients attempts to Al – Salam Hospital / implant center, most of these patients (91) were second and third decades of life ranged from 17– 40 years (77.77 %) with 142 implants (59.91%) was shown in Table (1).

Table (1): Distribution of patients and implants on each age group

Age group	No. of patient	%	No. of implant	%
17–30ys	44	37.60	78	32.91
31–40ys	47	40.17	64	27.00
41–50ys	31	26.49	73	30.80
51–60ys	6	5.12	9	3.79
> 61	4	3.41	13	5.48
Total	117		237	

Site distribution Of Implant Cases: One hundred forty four implants were seated in the maxilla at different regions; 67 implants were seated in the anterior region whether right or left, while ninety three implants seated in the mandible with the left posterior region showed the highest percentage (40.86 %), Tables (2–4).

Table (2): Site distribution of implant on each age group.

Age group	Maxilla		Mandible		Total	
	Imp. No.	%	Imp. No.	%	Imp. No.	%
17–30ys	44	18.57	34	14.35	78	32.92
31–40ys	47	19.84	17	7.18	64	27.02
41–50ys	46	19.40	27	11.39	73	30.79
51–60ys	5	2.10	4	1.69	9	3.79
> 61ys	2	0.84	11	4.64	13	5.48
Total	144		93		237	

No. of Imp.: Number of implants.

Table (3): Region distribution of implant in maxillary arch.

Age group	Right Posterior		Anterior		Left Posterior		Total	
	Imp. No.	%	Imp. No.	%	Imp. No.	%	Imp. No.	%
17–30ys	4	2.78	36	25	4	2.78	44	30.58
31–40ys	15	10.42	16	11.11	16	11.11	47	32.64
41–50ys	15	10.42	15	10.42	16	11.11	46	31.95
51–60ys	1	0.69			4	2.78	5	3.47
> 61	2	1.38					2	1.38
Total	37		67		40		144	

Imp. No.: Implant number.

Table (4): Region distribution in mandibular arch.

Age group	Right Posterior		Anterior		Left Posterior		Total	
	Imp. No.	%	Imp. No.	%	Imp. No.	%	Imp. No.	%
17–30ys	11	11.82	10	10.75	13	13.98	34	36.55
31–40ys	5	5.38	1	1.07	11	11.82	17	18.27
41–50ys	12	12.90	5	5.38	10	10.75	27	29.03
51–60ys	2	2.16			2	2.16	4	4.32
> 61	4	4.30	5	5.37	2	2.16	11	11.83
Total	34		21		38		93	

Imp. No.: Implant number.

Relation between site and width: Three different widths (3.8, 4.5, 5.5 mm) were used according to Ferialit II System, 129 implants used with width 3.8 mm in both maxillary and mandibular jaws, more than 70% seated in the maxillary bone, while for 4.5 mm width no large difference in the distribution of implants 44 implants in the maxilla, and 49 implants in the mandible from total 93 implants, and just fifteen cases with 5.5 mm. (Figure 1).

Distribution of implants on the maxillary and mandibular arches: Figure (2) showed that the maximum number of implants was 93 for the anterior region (Bounded saddle area). But the number of implants in the free end extension saddle area in the mandibular arch was higher than maxillary arch.

Success and Failure : In this study from a total 237 implants followed 9 implants just were failed (3.797%), the most appropriate cause for failures were attributed to failure occur because of poor bone quantity(3 maxillary free end and one bounded mandibular implants) , surgical error in implant positioning(2 mandibular free end implant), poor attitude of the patient to use of denture before reliving the area of implant(1free end maxillary implant), poor follow up of the patient after gingival former(1free end maxillary implant) (Figures 3–7).

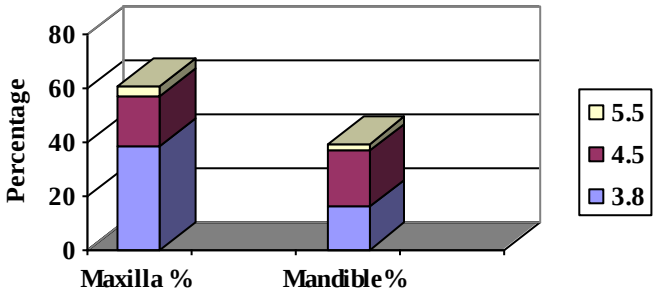

Figure (1): Percentage of implant width distribution in the maxilla and mandible arches.

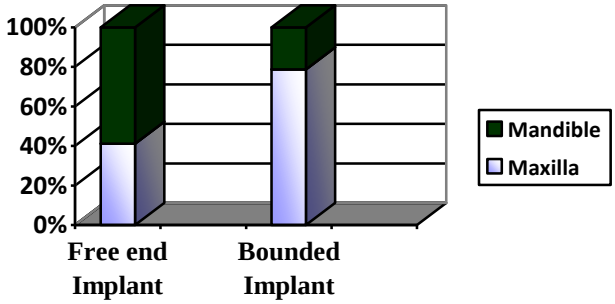

Figure (2): Distribution of Inplant in free end and bounded saddle areas.

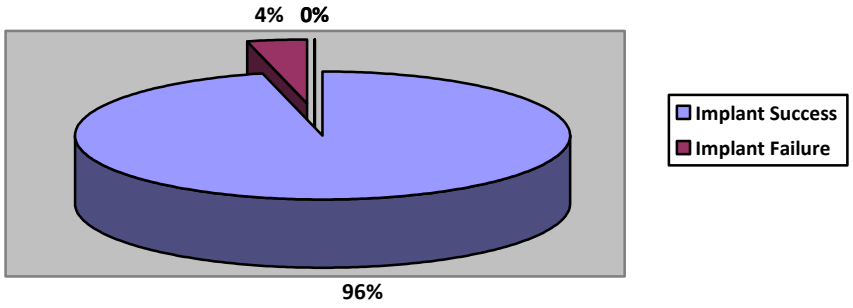

Figure (3): Percentage of implant faiure and seccess in bounded and free end saddle areas.

Figure (4): Failure occurs because of poor bone quantity.

Figure (5): Surgical error in implant positioning.

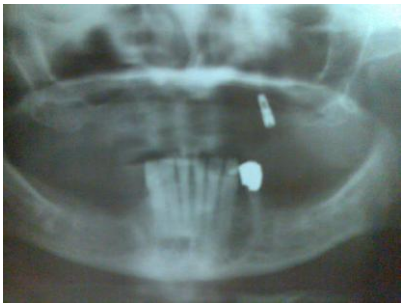

Figure (6): Failure occur because of poor attitude of the patient to use denture before reliving the area of implant.

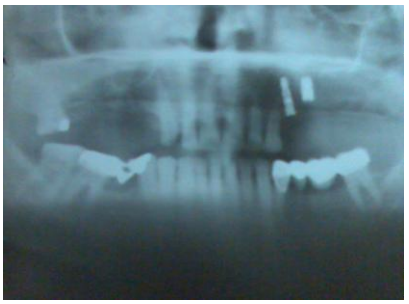

Figure (7): Poor follow up of the patient after gingival former

DISCUSSION

The results of this study showed that the high ranged age group were from 17–40 years (77.77 %) with 142 implants (59.91%), this findings disagreed with Watson and Marinello[14], and agreed with Dewijs[15]. The need to replace missing teeth is dependent on many factors and the need to replace all missing posterior teeth is debatable. Assessment of replacement need may be based on aesthetics, particularly in relation to the replacement of missing premolars, function and the prevention of undesirable tooth movement. [16]

Many studies were supported the results of this study to find that (144) implants were seated in the maxilla from 237 implants calculated in this study the rest were in the mandible. Authors [17, 18] claimed that percentage of maxillary arch treatment higher than mandibular arch but the success rate in the maxilla was less than mandible due to the type of bone.

Ninety six percent was the rate of success of implants in the maxilla and mandibular arch of bounded and free end saddle. This results agreed with OHKUBO *et al* ,[19] indicated that implant placement at the distal edentulous ridge can prevent the denture displacement of the distal extension bases., and aid to shift the pressure distribution to the soft tissues, and change from Classes I and II situations to that of Class III Kennedy classification.

Nine of total number of implant failures early losses of implants accounted for 4 % which was due to poor primary stability and surgical error in implant positioning [20,21]. TURKYILMAZ and TUMER [22] stated that Primary stability is a function of local bone quality and quantity, the geometry of an implant, and the placement technique used. Or the causes of failure occur due to infection. Although comparison with other implant systems are beyond the scope of this study but with ITI system as example seems to be the most common cause of failure were soft tissue problem and end with infection, and leading to failure. [23, 24]

Premature loading and infection are likely to be the most common causes of early implant losses. Authors [25, 26] suggested that premature loading of dental implants will adversely affect the survival rate for integration.

Frialit–2 system gave rise to very little microbial leakage between components of the implant–abutment complex, and results with close fit in relation to other systems [27].

CONCLUSIONS

Higher range of age needs implant (3.8mm) was between 17– 40 years. The success rate in the maxilla was less than mandible. Slight difference was in percentage of success between bounded and free end extension partially missing teeth. The causes of failures were related to poor bone quantity specially in the maxillary arch, Surgical error in implant positioning, poor attitude of the patient to use denture before reliving the area , and Poor fellow up of the patient after gingival former.

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