

SHORT IMPLANTS

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Abstract:-For a successful surgical implant placement ,the optimum use of the armamentarium and an in depth knowledge of implant dentistry is vital especially in cases such as resorbed maxillary edentulous area due to the abundance in complicating factors such as sinus space, limited bone availability and consequently bone augmentation procedures to resolve the same¹ .In various clinical scenarios Short implants have been promoted as a treatment option with limited bone volume where long /standard implants² are otherwise not preferred and hence rejecting the idea of placing the implants if not for complex augmentation procedures .This article reviews the efficacy of using short implants with enhanced surface geometry and texture and implant abutment junction considering their placement in all such challenging cases .

Key words: - Short implants, augmentation procedures, resorbed ridges

INTRODUCTION

Human mandibles with sea shells carved into tooth shapes and placed into extraction sockets date back to as far as 600 A.D.² In modern days, dental implants have become a predictable treatment option for the applicable patients. However not all patients with edentulism can be treated with the standard dental implants such as in posterior maxillary region with poor bone quality ,limited visibility and sinus pneumatization due to post extraction resorption .Although the solution to such problems exist with procedures such as bone graft ,bone augmentation ,sinus augmentation and

guided bone regeneration ,all of these comes with a cost of increased post operative morbidity ,higher costs and higher risk of complications during rehabilitation which has direct effect on physical as well as emotional health of the patient³ .

WHAT IS SHORT IMPLANT?

Short implant has been defined varyingly by different authors in the literature .The implant length have been defined as less than 11mm⁴ ,10mm¹,8mm⁵ and 7mm⁶ as short implants. However recently with multiple studies been published short

implants are defined as an implant with less than or equal to 8mm and implants with 10mm intra bony length are considered as long or standard implants.³



WHY SHORT IMPLANTS?

Although Long /standard implants are more stable and long lasting because of its occlusal forces or the ideal crown implant ratio, there have been many clinical scenarios where long implants need an additional amount of complex surgical procedures for its long term success .

For eg: - In maxilla ²

- 1) Posteriorly pneumatized maxilla sinus
- 2) Resorbed posterior alveolar ridge
- 3) Anteriorly nasal floor and nasopalatine canal

In mandible

- 1) Position of Inferior alveolar nerve and canal
- 2) Mental nerve foramen in relation to mandibular crest

In these cases, there is no sufficient bone height to place a long implant without additional surgeries which can be sensitive, challenging, time consuming and has increased surgical morbidity also effecting the patients financially, physically and emotionally.

And hence short implants comes in the picture as an alternative solution which offers a less invasive treatment option which can eliminate complex surgeries such as bone graft ,sinus lift etc. If used with its improved surface geometry, surface texture and strict clinical protocols.

INDICATIONS OF PLACING SHORT IMPLANTS

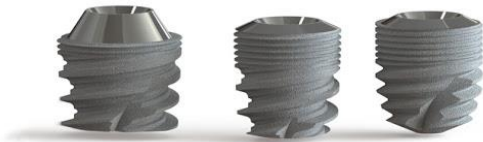
1. Single and multiple fixed prosthesis in posterior jaw.
2. In the treatment of a severely resorbed edentulous mandible with four short-length implants used to support an overdenture or six short implants used to support a fixed prosthesis.
3. In edentulous maxilla, two short-length implants are additionally placed in the distal area, together with longer implants in the premaxilla to support a maxillary overdenture or a fixed prosthesis.

CONTRIBUTING FACTORS AFFECTING SUCCESS OF SHORT IMPLANTS⁷

External Factor :-

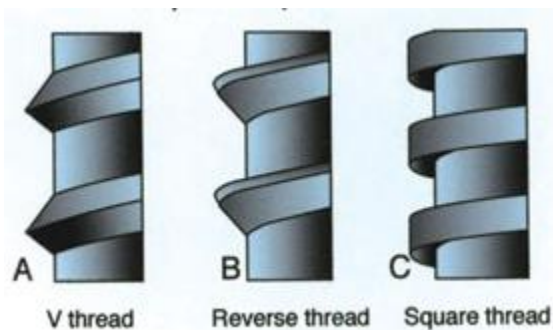
1. **Implant Design Selection** :- The implant surface area can be increased by:

a) **Thread number**: the number of threads per unit length in the same axial plane more is directly proportional to the implant surface area in contact with the bone.



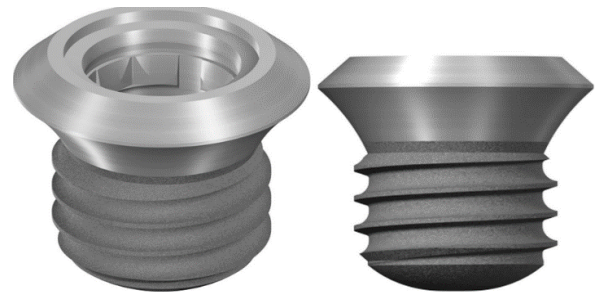
b) **Thread depth**: Deeper threads provide more implant surface area.

c) **Thread shape**: The square thread design has a higher bone implant contact percent as compared to V-shape and reverse buttress thread designs.



d) **Implant surface**: rough micro topography of implant surface is preferred over turned/smooth surface as it increases the bone-implant contact surface area and accelerates Osseo integration. It also compensates for inadequate crown/implant ratio.

2. **Implant Diameter**:- An increased length only improves the primary stability but wider implant would not only increase the primary stability but also the functional surface area at the crestal bone level leading to better distribution of occlusal forces.



4.8 x 6.5 mm SP

3. **No. of Implants**: - Number of implants: Use of multiple implants will increase the functional surface area to resist occlusal forces.

4. **Crown/Implant Ratio**: Increased crown/implant ratio can act as a vertical cantilever leading to crestal bone loss and implant failure. However, improvements of surfaces and implant systems along with proper force orientation and load distribution have allowed high crown/implant ratios to be applied with success.

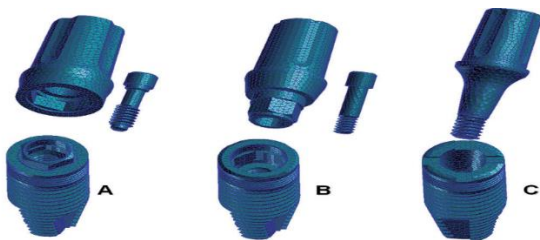
SURGICAL PROTOCOL/FACTORS:-

a) Two step surgical protocol: A two stage surgery is advocated for short implants as it provides good primary stability during healing phase. The time elapsed between the surgical and load stage should be 4-6months for maxilla and 2-4months for mandible⁸

b) Adapted surgical protocol: Soft bone drilling protocol should be followed in poor quality bone whereas, the final bone drilling is done with narrow drills rather than standard size drills.

PROSTHETIC FACTORS :-

a) Implant abutment connection:- Morse taper connection induces less marginal bone loss as compared to external hex abutment connection and also promotes bone growth over the implant shoulder. Fig c⁹ represents Morse taper connection



b) Occlusal table: Small occlusal table reduces the offset loads on the implant.

ADVANTAGES:-

1. Decreased contact possibility with adjacent tooth roots.
2. Lower risk of surgical paresthesia
3. Time and cost reduction and hence less patient discomfort
4. No need of CT scan, since CT scans are usually invested for >10mm long implants or sinus augmentation surgery³
5. No bone graft required
6. Osteotomy procedure is simplified.
7. Easier implant insertion.
8. Angulation of load is improved with short osteotomy site since basal bone below the original alveolar ridge is not always placed in the long axis of missing tooth.
9. Post-operative complications such as bleeding, perforation of Schneiderian membrane, transient or permanent alteration of mandibular sensation ,increased peri implant bone loss or infection can be avoided to a great extent.⁷

LIMITATIONS OF SHORT IMPLANTS

The two most critical factors for failure of short implants is:-

- 1) Poor bone quality
- 2) Machined surface of Implants

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CONCLUSION

With the growing advances in Implant dentistry, short implants can be considered as a good alternative to long/standard implants requiring complex surgical procedures such as bone graft, sinus lift, bone augmentation procedures in case of resorbed ridges of maxilla and mandible making it highly beneficial for indicative patients both physically and financially. However short implants should be placed considering all biomechanical factors and must also be done under strict clinical protocols.

REFERENCES

- 1) Morand M, Irinakis T. The challenge of implant therapy in the posterior maxilla: providing a rationale for the use of short implants. *Journal of Oral Implantology*. 2007 Oct;33(5):257-66.

- 2) Schwartz SR. Short Implants: An Answer to a Challenging Dilemma?. *Dental Clinics*. 2020 Apr 1;64(2):279-90. doi: 10.1016/j.cden.2019.11.001. PMID: 32111268
- 3) Esfahrood ZR, Ahmadi L, Karami E, Asghari S. Short dental implants in the posterior maxilla: a review of the literature. *Journal of the Korean Association of Oral and Maxillofacial Surgeons*. 2017 Apr;43(2):70. doi: 10.5125/jkaoms.2017.43.2.70. Epub 2017 PMID: 28462189
- 4) das Neves FD, Fones D, Bernardes SR, do Prado CJ, Neto AJ. Short implants--an analysis of longitudinal studies. *International Journal of Oral & Maxillofacial Implants*. 2006 Jan 1;21(1). PMID: 16519186
- 5) Renouard F, Nisand D. Impact of implant length and diameter on survival rates. *Clinical oral implants research*. 2006 Oct;17(S2):35-51. doi: 10.1111/j.1600-0501.2006.01349.x. PMID: 16968380

- 6) Friberg B, Jemt T, Lekholm U. Early failures in 4,641 consecutively placed Brånemark dental implants: a study from stage 1 surgery to the connection of completed prostheses. *International Journal of Oral & Maxillofacial Implants*. 1991 Jun 1;6(2). PMID: 1809668
- related research. 2010 Sep;12(3):219-34. doi: 10.1111/j.1708-8208.2009.00155.x. PMID: 19438946
- 7) Jain N, Gulati M, Garg M, Pathak C. Short implants: new horizon in implant dentistry. *Journal of clinical and diagnostic research: JCDR*. 2016 Sep;10(9):ZE14. doi: 10.7860/JCDR/2016/21838.8550. PMID: 27790598
- 8) Galvão FF, Almeida-Júnior AA, Faria-Júnior NB, Caldas SG, Reis JM, Margonar R. Predictability of short dental implants: a literature review. *RSBO (Online)*. 2011 Jan;8(1):81-8.
- 9) Pessoa RS, Muraru L, Júnior EM, Vaz LG, Sloten JV, Duyck J, Jaecques SV. Influence of implant connection type on the biomechanical environment of immediately placed implants—CT-based nonlinear, three-dimensional finite element analysis. *Clinical implant dentistry and*

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Prosthodontic Rehabilitation Of A Patient With Acquired Maxillary Defects Using Different Obturator Prosthesis: A Clinical Case Report.

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Abstract

Maxillary defects can be congenital or acquired. Congenital defects include trauma, infection or surgical treatment of benign or malignant neoplasm. The maxillary defects affect the swallowing, mastication and speech thereby reducing the quality of life. Prosthodontists play an important role in rehabilitating maxillary defects. These defects can be rehabilitated using simple conventional obturator or by surgical reconstruction. This case report describes step by step clinical lab procedure for fabrication of surgical, interim and definitive obturator prostheses for rehabilitation of a patient with maxillary defects.

Keywords: Delayed surgical obturator, interim obturator, definitive obturator, maxillectomy, rehabilitation, closed hollow bulb obturator.

Introduction

Obturator prosthesis plays an important role in the recovery of oral function in post surgical maxillectomy patients.^[1] It also helps in restoring masticatory function and improving speech, swallowing, deglutition and esthetics.^[2-5] The Glossary of Prosthodontic Terms defines an obturator as “A maxillofacial prosthesis used to close a congenital or acquired tissue opening,

primarily of the hard palate and/or contiguous alveolar or soft tissue structures”.^[6] The primary goal of a prosthetic obturator is closure of maxillectomy defect and separation of oral cavity from sinonasal cavities.^[7] Prosthodontic management of patients with acquired surgical defects can be classified into 3 phases based on treatment.^[8,9,10]

- a) Surgical obturator: Immediate Surgical obturator and Delayed Surgical obturator
- b) Transitional obturator or Interim obturator or Post surgical obturator
- c) Definitive obturator

Surgical obturator: This prosthesis allows patient to take nourishment without nasogastric tube, enables patient to speak normally and promote healing of the surgical wound. Delayed surgical obturators are prostheses that are placed 6 to 10 days postsurgically.^[11]

Interim obturator: This obturator is given after initial healing period and is fabricated from the post surgical impression cast. The patient is recalled every 2 weeks for relining or changing of the prosthesis because rapid soft tissue changes occurs within the defect.

Definitive obturator: It has to be fabricated after complete healing of the surgical wound. Fabrication can be carried out at

around 6 months after surgery. Timing will vary dependent on the size of the defect.

This article illustrates a step wise method of rehabilitating a patient with acquired maxillary defect using surgical, interim and definitive single piece closed bulb obturator prosthesis.

Case Report

A 65 year old female patient, who had undergone surgery for a maxillary tumor (squamous cell carcinoma) on the left side of the maxilla reported to the Department of Prosthodontics, postsurgically after 7 days for rehabilitation. Patient had undergone maxillectomy a week ago and was fed through naso gastric tube (Fig1).

Patient complained about



Figure 1: Extra oral pre - treatment

nasal regurgitation of fluids, difficulty in chewing, speaking and compromised esthetics. Extra oral examination revealed the presence of nasogastric tube, depressed philtrum and cheek areas on the left side that restricts mouth opening. On intra oral examination, defect was noticed on the left side of the maxilla involving alveolar ridge, anterior and posterior part of hard palate and some parts of the soft palate (Fig 2).



Figure 2: Intra oral view of the defect

The defect was classified as Aramany class IV defect.^[12] Missing teeth were 11,21,22,23,24,25,26,27 and 28. All the teeth in the right quadrant were intact. Surgical site was inflamed and not healed. OPG was taken (Fig 3).

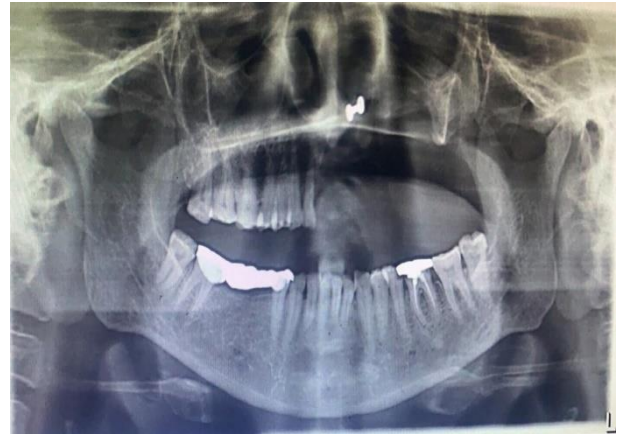


Figure 3: OPG showing the extent of maxillary defect.

A delayed surgical obturator was planned followed by interim and definitive obturator.

Procedure

1) First visit

After thorough clinical examination, Delayed surgical obturator was planned. Surgical defect was closed using gauze piece coated with petroleum jelly and Impression was made using irreversible hydrocolloid. Cast was poured using Type III gypsum product. Undercut areas in the casts were blocked with dental plaster. Circumferential clasp on premolar and Adams clasp on molars were given on

the non resective side for retaining the prosthesis (Fig 4).

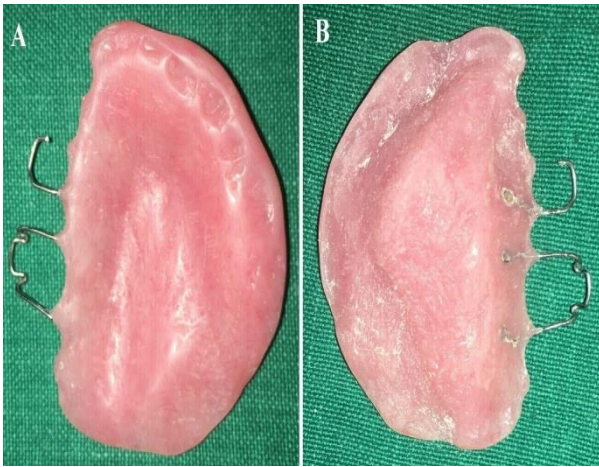


Figure 4: Delayed surgical obturator.

Prosthesis was delivered and post insertion instructions were given to the patient regarding its hygiene and maintenance. Patient referred back to department of Oncology for removal of nasogastric tube and for radiation therapy. Patient was recalled after 10 days.

2) Second visit

Patient reported back after radiation therapy. Surgical defect was examined and healing was satisfactory and was suitable for the fabrication of Interim obturator. Restricted mouth opening was noted (Fig 5).



Figure 5: Restricted mouth opening.

Primary impression of maxillary arch along with defect was made using irreversible hydrocolloid using custom made acrylic tray. A wrap around clasp was adapted on the remaining teeth of the non resective side (Fig 6).



Figure 6: Primary cast with wrap around clasps.

Jaw relation was carried out followed by try in and insertion of interim obturator prosthesis (Fig 7).



Figure 7: Insertion of interim obturator prosthesis.

Patient recalled every 2 weeks for periodic evaluation and relining.

3) **Third visit**

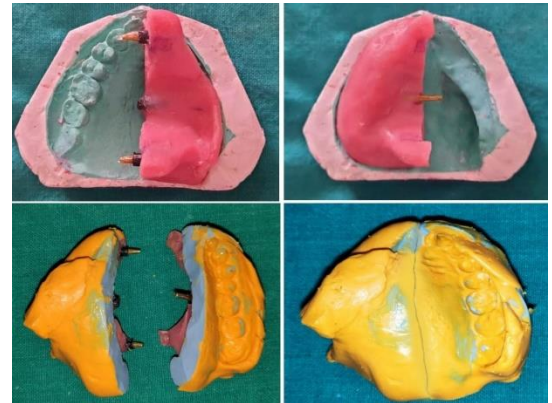
Definitive obturator was planned after 6 months. Surgical site was evaluated for satisfactory healing (Fig 8).



Figure 8: Intra oral view of defect after 6 months.

Since restricted mouth opening (23mm) was observed, sectional

custom impression tray was fabricated using dowel pin and sleeves and impression was taken using elastomeric impression material (Fig 9).



Master cast was poured and cast partial

Figure 9: Sectional custom tray with dowel pins and sleeves and custom tray impression.

denture framework was planned using 3D printing technology. Framework was tried in patient's mouth followed by jaw relation (Fig 10).

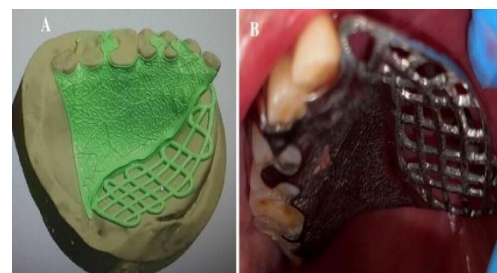


Figure 10: 3D design of framework & cast partial metal framework

Try in was done followed by insertion of definitive obturator prosthesis (Fig 11).

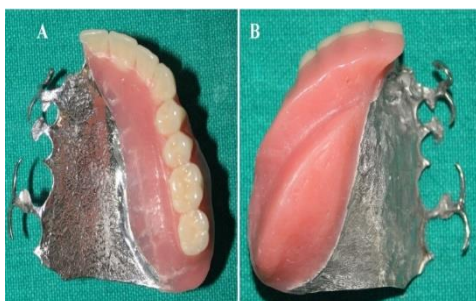


Figure 11: Definitive obturator prosthesis.

Post insertion instruction were given and patient recalled for regular check up (Figure 12).



Figure 12: Pre and Post - operative view.

Discussion

In patients with surgically defective maxilla, the most common prosthesis of choice for rehabilitation is the obturator. The degree of obturator extension in to the

defect varies according to its configuration, characteristics of lining tissue, and functional requirements for stabilization, support and retention of the prosthesis.^[13] Fabrication of prosthesis in case of post surgery of maxillary defect is extremely important for restoring mastication, speech, respiration and esthetic when large amount of oro-facial structures are lost.^[14]

It has been reported that patient has undergone maxillectomy, radiotherapy, trauma, burns etc may present with limited mouth opening^[15,16]. In this present clinical report patient had restricted mouth opening and it was difficult to make impression using metal stock tray. Sectional custom impression tray with dowel pin attachments were used.^[17] Advantage of sectional custom tray is that it can be removed as two separate segments and externally assembled as one. Dowel pins are economical and are easily available.

Mainly two types of obturator prosthesis are available: open and closed hollow bulb. In this present case closed hollow bulb

obturator is used as it prevents water retention and food accumulation, it is also easy to clean and has reduced weight. Open bulb obturator tends to accumulate food, debris and mucous inside the hollow part increasing its heaviness and also difficult to clean and polish.

In this present case, delayed surgical, Interim obturator and cast partial denture framework attached definitive obturator were fabricated. Park and Kwon suggested the use of delayed surgical obturator as an alternative to immediate surgical obturator during the initial healing phase after maxillectomy, with out increasing patients discomfort.^[18] It was fabricated to create a barrier between oral and nasal cavity, and also enable the patient to start with an oral diet. Major limitation of delayed surgical obturator was lack of esthetics during early rehabilitative phase and this was overcome by the second phase of rehabilitation i.e, Interim obturator.^[19] Interim obturator was fabricated 20 days postsurgically. Interim obturator was used to protect post surgical

defect from fluid contamination and resultant infection till complete closure of the defect occurs^[20]

Definitive obturator was fabricated with cast partial metal framework. The advantages of the cast metal framework are the longevity of the prosthesis and thermal conductivity which made it sensitive to temperature changes. ^[21]

Conclusion

The challenges faced in rehabilitating a hemi-maxillectomy patient is to fulfill the basic requirements of adequate retention, stability and support. Prosthodontist play a vital role in complete rehabilitation of the palatal defect. In this present case report deals with oral rehabilitation of palatal defects with delayed surgical, interim and definitive obturator has not only improved the psychological health and esthetic of the patient but also uplifted the quality of life.

References

1. Keyf F. Obturator prostheses for hemimaxillectomy patients. *J Oral Rehab* 2001;28(9):821-29.
2. Taylor TD. Clinical maxillofacial prosthetics. Quintessence publishing, 2000:85-102.
3. Beumer J, Curtis TA, Firtell DN. Maxillofacial rehabilitation. St Louis: Mosby, 1979:188-243.
4. Chalian VA, Drane JB, Standish SM. Maxillofacial prosthetics. Multidisciplinary practice. Baltimore: Williams & Wilkins, 1971:133-48.
5. Singh M, Bhushan A, Kumar N et al. Obturator prosthesis for hemimaxillectomy patients. *Natl J Maxillofac Surg* 2013;4:117-120.
6. Ferro KJ, Morgano SM, Driscoll CF et al. The glossary of prosthodontics terms. *J Prosthet Dent* 2005;94:10-92.
7. Okay DJ, Genden E, Buchbinder D, Urken M. Prosthodontic guidelines for surgical reconstruction of the maxilla: A classification system of defects. *J Prosthet Dent* 2001;86:352-63.
8. Singh AK, Sharma PN, Jalan S. Restoration of a post-surgical maxillectomy defect with an interim obturator - A review with case report. *Indian Journal of Dental Research and Review* 2012;84-86.
9. Bhandari AJ. Maxillary obturator. *J Dent Allied Sci* 2017;6:78-83.
10. Meenakshi A, Shah D. The obturator prostheses for maxillectomy. *SRM Journal of Research in Dental Sciences* 2012;3(3):193-7.
11. Beumer J, Curtis TA, Marunick MT. Maxillofacial rehabilitation: prosthodontics and surgical considerations. St Louis: Elsevier 1996:225-47.
12. Aramany MA. Basic principles of obturator design for partially edentulous patients. Part 1:

- classification. *J Prosthet Dent* 1978;40:554-7.
13. Aramany MA. Basic principles of obturator design for partially edentulous patients. Part 11: design principles. *J Prosthet Dent* 1978;40:656-62.
14. Singhal MK, Ahmad F, Nair C, Bankoti P. A cast partial obturator with hollow occlusal shim and semi-precision attachment. *Indian J Dent Res* 2018;29:123-7.
15. Leubke RJ. Sectional impression tray for patients with constricted oral opening. *J Prosthet Dent* 1984;52:135-37.
16. Conroy B, Reitzik M. Prosthetic restoration in microstomia. *J Prosthet Dent* 1971;26:324-27.
17. Nir S, Fayaz A, Bali SK, Qazi SN. Comparative evaluation of the retention of maxillary denture in microstomia patients fabricated using sectional tray with pin and sleeve attachment with that of a conventional sectional tray design: In vivo study. *Int J Adv Res* 2020;8(8):279-84.
18. Park KT, Kwon HB. The evaluation of the use of a delayed surgical obturator in dentate maxillectomy patients by considering days elapsed prior to commencement of postoperative oral feeding. *J Prosthet Dent* 2006;96:449-53.
19. Daniel AY, Vinod B. Prosthetic rehabilitation of the dentate maxillectomy patient from a delayed surgical to an interim obturator: A clinical case report. *CHRISMED J Health Res* 2015;2:68-71.
20. Mubashir AS, Motwani BK, Sahu SK, Singh S, Dani A, Kulkarni S. Management of post surgical defect in the mandible with an interim obturator: A Case rept. *Int J Oral Health Med Res* 2015;2(1):42-44.

21. Kumar J, Kandarphale MB,
Aanand V, Mohan J, Kalaigan P.
Definitive obturator for a maxillary
defect . Journal of Integrated
Dentistry 2017;2(3):1-4.

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DENTAL IMPLANT COMPLICATIONS AND MANAGEMENT

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INTRODUCTION

The goal of modern dentistry is to restore the patient to normal contour, function, comfort, esthetics, speech and health regardless of the atrophy, disease or injury to the stomatognathic system. As a result of continued research in treatment planning, implant designs, materials and techniques, predictable success is now a reality for many challenging clinical situations. However Implant dentistry involves risks and complications that can occur with reasonable care. All available implants are subject to failure on occasion. Failures may be difficult to predict and after failure the cause of it may be difficult to identify. It is well established that failure can occur even under best care. Therefore before deciding to proceed on implant therapy the patient should be informed with the risk of complications involved in the treatment^{10,11}.

Knowledge regarding the types of complications that can occur with dental procedures is an important aspect of treatment planning, dentist patient communication and post treatment care. Because the design of clinical implant studies has not been standardized, the reporting of clinical complications tends to vary^{10,11}.

While dental implants are increasingly becoming the choice of replacement for missing teeth, the impediments associated with them are progressively emerging too. The aim of the current review is to discuss specific complications associated with dental implants. Management protocols and possible means of avoiding certain complications are also briefly discussed under following headings¹⁵.

1. SURGICAL COMPLICATIONS

2. POST-SURGICAL COMPLICATIONS AND MANAGEMENT

3. PROSTHETIC COMPLICATIONS AND MANAGEMEN

SURGICAL COMPLICATIONS:

1. Oversized osteotomy
2. Perforation of cortical plates
3. Fracture of buccal and cortical plates.
4. Antral Perforations
5. Inadequate soft flap for implant coverage.
6. Poor angulation
7. Injuries to the mandibular neurovascular bundle.

1. OVERSIZED OSTEOTOM

The best way to manage problems is to practice avoidance. Usage of the larger size implants in case of failure to gain functional grip of small diameter implants. Most systems including Nobel Biocare, 3i, Calcitek, Steri-Oss offers implants of several diameters. E.g. the noble Biocare design offers a 4 mm implant to serve as replacement if the surgeon strips the bone while seating the standard 3.75mm size. The Steri-Oss series is available in 3.25mm, 3.8mm, and in larger diameters⁴.

This problem can be managed by:

1. Using a mark on the rotary instrument to dictate the exact moment to reverse the motor direction.
2. Stopping the motor four to five rotations from the final seating and complete the procedure with the hand held ratchet wrench holding near its working end to neutralize the greatest leverage caused by its long handle.
3. After all these precautions if the implant does not come to a firm stop it is better to remove the implant and place the next larger diameter implant, without bone tapping or threading devices.

2.PERFORATIONS OF CORTICAL PLATES AND MANAGEMENT :

When performing osteotomy for the seating of implants, it is possible that even if the host site is capacious, misdirection of a drill in the presence of an unexpected anatomic irregularity may cause a perforation. When ridge width is lacking while instituting expansion techniques, fracture may occur with displacement or even loss of the cortical segment. If periosteum is attached to endangered cortical plate, replacing it after implant insertion and suturing presents a good prognosis for healing. If the fragment becomes detached, it can be wedged back into position, but the prognosis is guarded. If the implant diameter prevents replacement, particulate bone segment and with DFDB serving as an expander, apply it to the external surface of the defect. The patient's blood serves as a fibrous grouting medium. The closure is made after placing a resorbable membrane over the entire graft complex. Although the plate fracture is very difficult or impossible to avoid, it can be left untreated if there is no displacement. On the other hand perforations should not go unacknowledged.

Testing for perforations is simple:

1. After completing each osteotomy its integrity is tested with a long thin blunt probe. If the tip falls through an inaccessible fault or perforation, then it would be wise to use a membrane, and tease a Colla Plug over it, or gently tap some synthetic or autogenous bone at the base of the defect.
2. If the mandibular canal is involved, a Colla Plug is placed gently into the base of the defect to avoid forcing graft particles into the neurovascular bundle.
3. Air bubbles emanating from the osteotomy denote perforation into the maxillary sinus. In such instance, placement of a shorter implant after deep repair with Colla Plug and graft material is an acceptable remedy.
4. Significant bleeding characterizes perforations of the mandibular canal, which may be confirmed by periapical radiograph with a probe and gutta percha point in place.

3. ANTRAL PERFORATION AND MANAGEMENT

While reflecting the mucoperiosteum in preparation for a maxillary subperiosteal implant impression, some eggshell thin maxillary cortical bone overlying the sinus might lift

away attached to the flap. The intact Antral membrane often noted. It is bluish gray in color and expands with every expiration of the patient. If it is torn the margins are brought together and cover with Colla Cote (collagen sheet) or a resorbable membrane to permit the bone to remain attached to periosteum. If this design characteristic is to be avoided, a need for sinus floor elevation and graft procedure is to be performed^{10,11,13}.

4. BROKEN BURS:

These may occur during pilot osteotomy stage in preparing for placement of any type of endosteal implant. This occurs most frequently as a result of bur binding to the bone.

- A way to prevent bur fracture, when binding occurs is to grasp the hand piece beneath its head at the point of bur emission with the thumb and fore finger and press the fingers together. Pinch the bur between its head and the bone, forcing it vertically upward and out of the bone in a non-torque influenced movement.
- A second technique is to release the bur from the hand piece facilitating a trauma free bur removal by rotating it in the counterclockwise direction with fingers or Howe pliers.

5. IMPLANT ANGULATION AND MANAGEMENT:

This is rarely a problem. A number of trial seating with different abutments, at the time of surgery, is necessary until achieving the proper angulations. Straight screw in abutments present problems when making angulations corrections. Gentle bending can be attempted after the abutment has been placed into the implant but before implantation. If the angulations cannot be improved by bending, then an opportunity for correcting is available after integration by making cast, telescopic, cementable coping in proper alignment.

The guidelines used for blades may be applied in making angulations corrections for most root forms that have been placed in anatomically accepted

positions. If a press- fit implant is used with internal threading and without anti-rotational devices (E.g. Integral), and with angled one-piece abutments, inserts the abutment into the implant before seating. The implant is rotated to position that makes the abutment parallel to the adjacent teeth, and tap it into its osteotomy.

The abutment is unscrewed and replaced with a healing screw and is maintained until integration. Another alternative for use after integration is making a direct impression for casting an angled, frictional fit abutment that would require cementation.

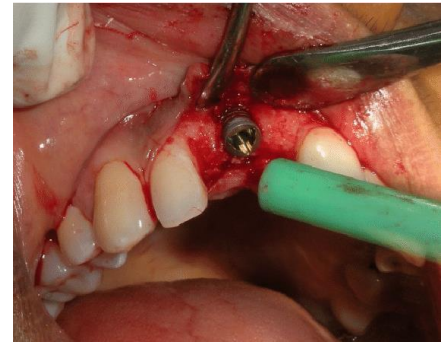
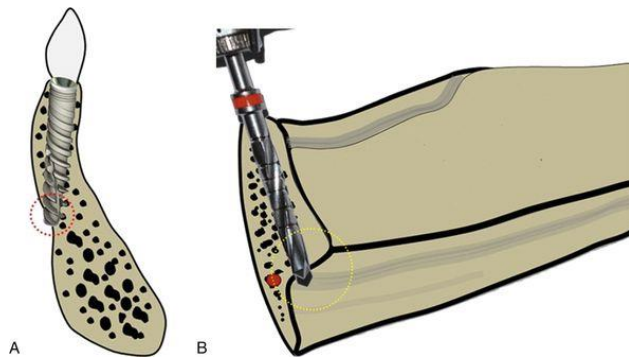
In addition, angled abutments are available that may be rotated on implants cervical platform and appropriately positioned and fastened by its fixation screw into the implants internal threading receptacle.

Selecting blades or root forms that permit the use of significantly angled abutments, abutments with adjustable necks, angular corrections made with the use of bone grafting materials or using subperiosteal implants are alternatives that assist in governing operative decisions

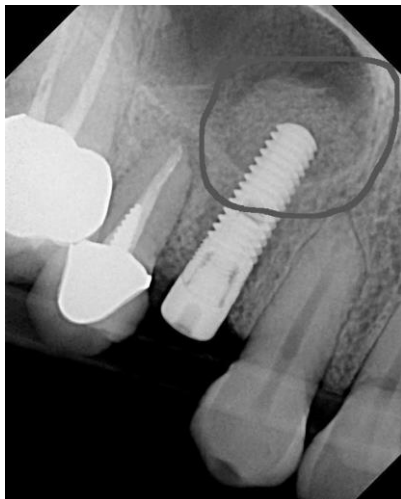
6. INJURIES TO THE MANDIBULAR NEUROVASCULAR BUNDLE AND MANAGEMENT:

In instances when an implant or instruments unintentionally penetrate the mandibular canal, the implant must be removed and the patient must be informed of the possibilities of dysesthesia. This is an event less frequently experienced.

If the nerve has been injured or cut and it is within the bony canal, time may permit healing. Less chance for healing exists if injury occurs to a neurovascular bundle in the soft tissues such as the mental branch. If after 6 weeks, the dysesthesia has not diminished or changed in depth, nature, or character the exploration and possible repair must be considered.



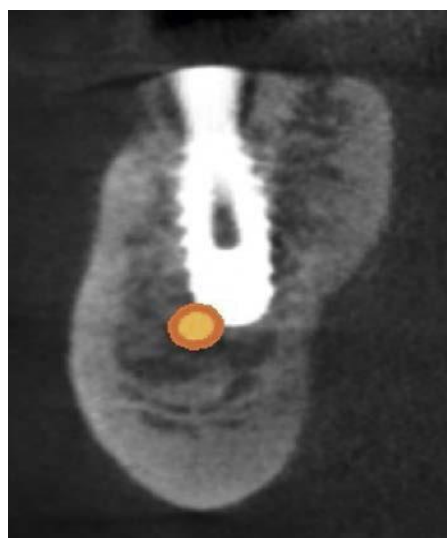
PERFORATIONS OF CORTICAL PLATES



ANTAL PERFORATION



IMPROPER ANGULATION



IMPLANT IN MANDIBULAR CANAL

A

POST-SURGICAL COMPLICATIONS AND MANAGEMENT:

They can be classified as:

1. Short-term complications.
2. Long term complications

SHORT TERM COMPLICATIONS (FIRST SIX MONTHS, POSTOPERATIVE MONTHS):

POSTOPERATIVE INFECTION:

Infection may manifest itself by drainage, swollen tissues, or pain. If there is an abscess it is incised and drained under antibiotic coverage. Early infections do not mean that the implant fails, but prompt and aggressive therapy is mandatory^{1,8}.

- **DYSESTHESIA:**

The onset of dysesthesia during the post operative period is most often a result of patient failing to notice or report immediately after surgery because he or she was unable to sort out this symptom out among others such as pain and swelling. If it is an accurate complaint after the abatement of edema, it is suggested that the implant may be removed. If the symptoms do not seem to be abating in 6 weeks after implant retrieval, exploration and repair is indicated.

- **DEHISCENT WOUNDS**

In the immediate 10-day postoperative period, a wound sometimes breaks down and the underlying implant gets exposed.

At this point, it is impossible to regain primary closure, and if it is attempted, the tissues investing the implant recede even further. The wound is left surgically untouched and is irrigated frequently. Gentamicin is diluted in 50 ml of saline and is used to clean the exposed metal or membrane with a cotton applicator tip. Usually

the wound fills in by secondary intention, either completely or adequately so that bone becomes covered. With strict hygienic regimen, such implants most often proceed to integration and even demonstrate reasonable epithelial recovery.

- **DEHISCENT IMPLANTS:**

From time to time, a two-stage blade or root form implant does not remain buried beneath the gingival tissues. There may not be signs of distress or infection, but a distinct implant component, usually the healing cap or screw is seen. This does not indicate failure. Instead the hygiene is improved and this is followed with application of Peridex. A good chance of Osseo integration remains despite this complication. The implant site is evaluated periodically both clinically and with radiographs^{1,8}.

- **RADIOLUCENCIES:**

If at the 4 or 8 week postoperative examination the implant shows peri-implant radiolucency then it is assumed that Osseo integration will not occur. In case of root form it is appropriate to inform the patient that the implant will have to be removed. If the radiolucency appears at the apex of the implant only then it often represents a perforation of the cortical plate and introduction of epithelial cells, probably at the time of surgery. An apicotomy like repair, using bone replacement materials to fill the defect is often effective in managing this finding.

- **IMPLANT MOBILITY**

One-piece endosteal implants such as blades, the ramus group, or screws may be mobile before the initial healing phase and may come to an end (3 to 6 months). If this finding is noted the possibilities for reestablishing the firmness is virtually nonexistent. The patient is informed about the failure and the implant is removed.

2.LONG TERM COMPLICATIONS

- **PERI-IMPLANTITIS:**

A Periodontitis like process, peri-implantitis can affect dental implants and because untreated periodontitis may ultimately lead to loss of natural teeth, peri-implantitis can result in loss of dental implants. Clinical findings around failing implants include masked gingival inflammation, deep pocket formation, and progressive bone loss⁶

Implants in partially edentulous cases appear to be at greater risk for peri-implantitis than in implants in completely or fully edentulous cases. It is possible that natural teeth may act as a reservoir for periodontal pathogens from which they may colonize implants in the same mouth. Plaque accumulation during the postoperative period following implant placement may result in compromised epithelial attachment to the implant surfaces

- **RETROGRADE PERI-IMPLANTITIS:**

Retrograde implant failure may be due to bone micro fractures caused by premature implant loading or overloading other trauma or occlusal factors. Implant failures from retrograde peri-implantitis are characterized by peri apical radiographic loss without, at least initially, gingival inflammation⁶.

Rosenberg et al demonstrated that in failing implants with a primarily infectious etiology 42% of the sub gingival flora consists of Pepto streptococcus, Fusobacterium and enteric gram-negative rods. Failing implants with traumatic etiology have a micro flora containing primarily streptococci^{1,8}.

- **AILING, FAILING OR FAILED IMPLANTS:**

Bone loss around implants often begins with gingival inflammation. The phenomenon of hyperemic decalcification is one of the contributing factors leading to demineralization of bone that lies beneath the skin or inflamed mucosal. Other factors can be nutrition and age related, secondary to systemic diseases or caused by bruxism, traumatic occlusion, improperly designed superstructures, unacceptable oral hygiene, or physiologically incompetent implant design. Most of the possible cause can be managed by innovative practitioners by adding implants correcting occlusion, revising superstructures, performing definitive periodontal therapy^{2,4}.

THE FAILED IMPLANT:

In the event of mobility of either root form or blade implant, the only acceptable treatment is removal. A major cause of loosening of a successful implant is cement failure on an adjacent natural implant tooth.

Castings should fit well, be cemented carefully, and checked with frequency for evidence of mobility or tell tale signs of fluid that appear at the margins when depressing them. An alternative that discourages cement loosening is the generous uses of inter locks between the super structural elements of the natural and the implant abutments. If there are deep bony protrusions locking the implant to the host site, extra long surgical fissure burs may have to be used in a light brushing movement running directly against the implant.

THE FAILING IMPLANT:

If routine radiography demonstrates progressive bone loss around cervical area of the implant the cause must be analyzed and rectified (Fig: A) Corrective surgery dictates creation of full thickness facial, palatal and lingual flaps as for periodontal operations. The cervical granulomas are curetted down to the bone but care should be taken not to scratch or injure the implant surfaces. In cases of HA coated implants the particulate material is removed. (Fig: C) Thin water cooled fine diamond stones are effective. If there are no signs of purulence the area are primed with the application of saturated citric acid for 5 minutes till fresh bleeding is evident. Screw placement or removal. The material peels of like rubber and must be reapplied with every time the superstructure is seated².

THE AILING IMPLANT:

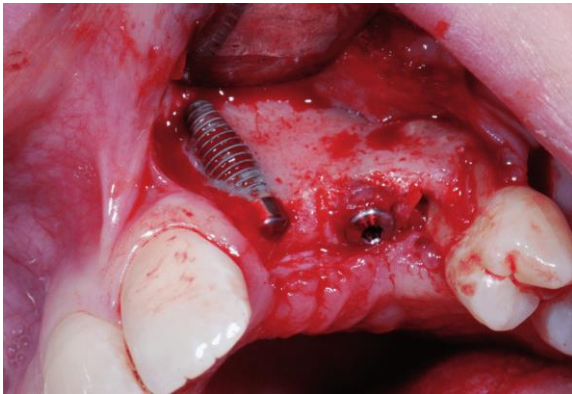
This is the least seriously affected of the three pathologically-states. Nothing more than radiographic evidence of bone loss may direct the implantologist to be suspicious. If local conservative measures maintain the status, continued observation

and pocket watch system is all that may be required.

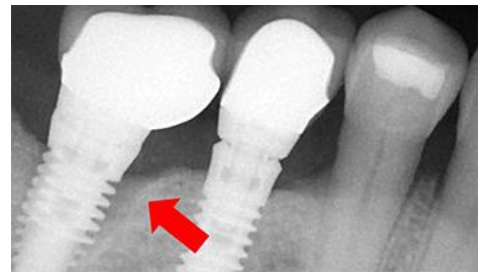
On the other hand if slow but consistent bone loss with deepening of pocket is evident, a complete soft tissue correction is done without removing the surface coating. Instead the local environment is exposed to citric acid for 5 minutes followed by irrigation grafting and closure³.

ACTISITE:

In cases of shallow pocketing, plastic or gold plated curettes are used for debridement. A tetracycline impregnated co polymeric filament called actisite is quite effective. This form of antibiotic therapy placed within the peri-implant pocket for an 10-day period can lead to significant reversal of symptoms. Reapplication every 3-9 months and maintenance of state of oral health often solves problems of chronic infection.



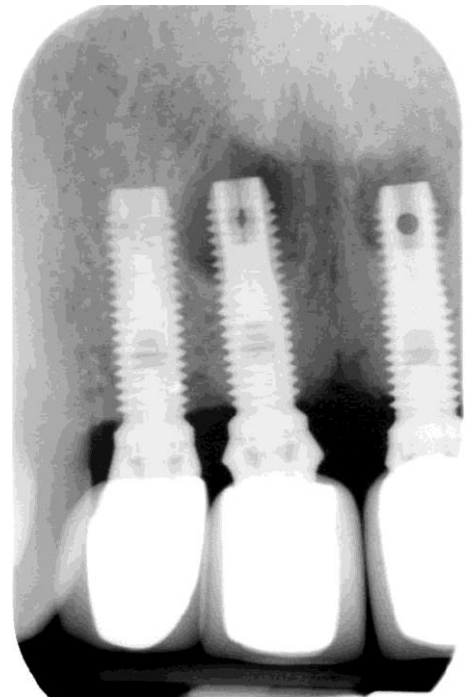
DEHISCENT IMPLANT



LOOSNING OF IMPLANT DUE TO BONE LOSS



PERI IMPLANTITIS



RETROGRADE PERI-IMPLANTITIS

PROSTHETIC COMPLICATIONS AND MANAGEMENT

Losing one or several implants mandates a change in prosthetic strategy. The status of the newly acquired support mechanism is assessed. The options are to shorten bars, eliminate cantilevers, and change location of ERA's, O-rings, or other retentive devices from terminal bar positions to pier or intra-implant locations. If bars are retrievable, these changes can be done in the laboratory with the assistance of pick up impressions. Cemented bars may require the use of pneumatic, reverse hammer, crown remover.

A viable alternative is to retrofit implants into existing coping or crowns. This may be a departure from the impeccable Prosthodontics practices demanded by implantology, but experience has shown it to be an effective technique. The coping bar, hybrid prosthesis, or fixed bridge is removed and the failed implant is lifted from its crypt, and the surrounding granulomata are completely resected. If the residual site reveals healthy bleeding, bone and sufficient dimensions in width and length an immediate replacement implant is inserted graft material is placed and closed. Such replacements should be threaded and of maximum height and length permitted by the host site. After allowing 3-6 month hiatus to elapse in order to permit Osseo integration, stage two surgery permits the fixation of an angled abutment of a three-piece variety. Collared abutments (e.g. Pragon) allows 18 different angulations, one of which would permit retrofitting into an existing crown or coping. Some diamond point alterations of the abutment may be required to bring it to conformation. Also a fixed detachable unit made for it can be torqued into place after removing the old unit from the prosthesis and performing a classical dental floss of GC pattern type verification assembly, leading to soldering of a new super structural component.

FRACTURED ROOT FORM IMPLANTS:**BROKEN PROSTHETIC INSERTS:**

In root form and submergible blade implants there are three types of abutments; threaded, cementable, and frictional. If because of abuse (bending more than 20 degrees, over bending, and straightening, or moving the pliers sharply) an internal flaw in cervix occurs, or because of metal fatigue an abutment fractures at the implant body level, it may be necessary to retrieve the fractured insert so that another may be placed. In the case of fracture of the thread variety, which is by far less frequent, a half round bur is used to cut a groove into the superior surface for the use of a screwdriver⁷.

The cemented or fictional cold weld presents far greater problems. The residual fragment is drilled out bit by bit. The problem of lateral wall perforation is a major one, and if this should occur, a subsequent parietal abscess of fistula may result. A flap with HA- GTRM repair becomes necessary^{7,9}.

IMPLANTS OF IMPROPER ANGULATION:**THE DOUBLE BAR TECHNIQUE:**

Although the problem of angulation may have been anticipated at the time of surgery, it is usually not until the try in stage if prosthetic reconstruction that it manifests. This problem may be solved may the use of the double bar technique. The laboratory is instructed to obtain three screw attachments from the European companies. Each attachment is made in three parts:

1. An internally threaded cylinder or tube.
2. Smooth cylindrical collar.
3. A fixation screw.

The three internally threaded cylinders are fixed to the original malposed

superstructure bar in positions that are angled lingually to permit esthetic placement of fixation screws. They are placed as far apart as possible and not in a straight line so that optimal support and stress distribution is encouraged. When the positions appear to be acceptable these three threaded tubes are soldered to the bar.

The next step is to have a laboratory transfer the location of these threaded tubes to the underside of an acrylic resin or cast metal second superstructure that is fitted onto the original bar, which now bears the threaded tubes. Holes are made that pass through the second superstructure, each one directly over one of the threaded tubes. Into these holes the smooth cylindrical collars are processed with acrylic or soldered depending on whether the material chosen for the second bar is a polymer or a metal. At this point the original cast bar is seated onto the implant abutments in the normal manner, and screwed into place being sure that the screw heads are flushed with the bar.

Next the second superstructure bar is placed over the first one and using new fixation screw it is attached through the three attached collars into the internally threaded cylinders.

SCREW PROBLEMS:

One of the most frequent problems in the postoperative period is fracture or stripping of screws or screw housings. This can occur during manipulation or simply when the prosthesis is in function.

BREAKAGE OF RETENTION SCREWS IN FIXED DETACHABLE BRIDGES:

This is a common problem that may occur when they have addition of distal cantilever segments. The maximum extension of the cantilever should be 15mm in the mandible and none in the maxillae. If posterior extensions are too long the retention screws may loosen or break. This happens because posterior biting forces cause non-vertical loading, which affects the anterior segment. This also places shearing forces on the retention screws, leading to loosening and finally to fracture. If the superstructure loosens repeatedly a properly balanced centric occlusion must be established. The retention screws can be changed to new ones^{12,13,14}

Implant seal a product available from Life core is used to coat fixation screws. It serves as an antibacterial sealant but does not interfere with the within the interior of the implant, the superstructure is removed without creating damage to the threads, and a groove is cut on top of the residual screw fragment. To retrieve the fragment a half- inch round high speed, water-cooled bur in the Impactair to scribe the horizontal groove into the top of the residual shaft. Then a small compatible screwdriver is used to back off the segment.

STRIPPED IMPLANT THREADS:

An excessive manual effort sometimes causes stripping of the thread interface. If this occurs a new screw introduction is attempted. If this is successful it indicates that the screw threads have failed. If the replacement screw fails to bite then the fault lies in the implant core. Each company manufactures screw threader for purposes of recutting the internal threads within the implant core. These tapping tools, made of hard iron steel, are used manually and they work efficiently and predictable. Screws of the same diameter as the tap are supplied to return the retention mechanism to its pre incident condition.

When all these fail the final alternative is to treat implant as if it were a natural tooth. It is prepared for post and core and fabricated in one of the precious metals. Casting cannot be done until the abutment is retrofitted into the lubricated original crown using GC Pattern. In the end the new abutment is cemented into the implant and the prosthesis resting over it is also cements.

FABRICATION OF IMPLANT-BORNE TEMPORARY PROSTHESIS:

Occasionally it may be necessary to send a fixed detachable prosthesis to the laboratory for repair after it has been in use. A composite facing may have fracture, an occlusal wear may have occurred, or a metal junction may need to be soldered. The temporary prosthesis that the patient wore should have been retained or a new one must be made.

FRACTURED MESOSTRUCTURE BAR:

Pre insertion bending, poor structural integrity, overly long spans, insufficient implant support, loss of integration of an abutting implant, or excessive occlusal trauma may cause a meso structure to fracture. If it is of the fixed detachable type that it can be removed and an index is made and the bar is repaired and reinforced. In case of cemented coping bar fractures or partial loss of cementation intraoral welding is used. This produces virtually no heat and creates firm reliable unions on titanium and its alloys.

PARTIAL LOOSENING OF CEMENTED BARS OR PROSTHESES:

Although benefits of cementation are many, its major disadvantage is the difficulty of retrieval. If the porcelain or composite material fractures, or if a solder joint breaks, or if there is a substructure problem such as infection or bone loss, bar removal must be possible.

The loosened segment is removed by sectioning with ultra thin carborundum disks, and the crown is prepared on either side of the removed segment with diamonds to receive a new crown. The newly constructed telescopic abutments may be cemented. Before this the etiology of the cement failure is determined and eliminated.

An effective pneumatic reverse hammer attached to hand piece coupling has been shown to remove even the most recalcitrant cemented prostheses⁹.

FRACTURED BLADE ABUTMENTS:

One-piece blade implants are usually made of pure titanium are designed to be bent. But overstressing coupled with chewing forces and galvanism caused by dissimilar metals of the fixed prosthesis, may cause cervical fractures. Another common cause of fracture is related to cement loss beneath the abutment or a natural tooth in a bridge that shares natural and implant abutments. Attempts to tap the bridge from the still firmly cemented implant abutment often cause this^{2,3}.

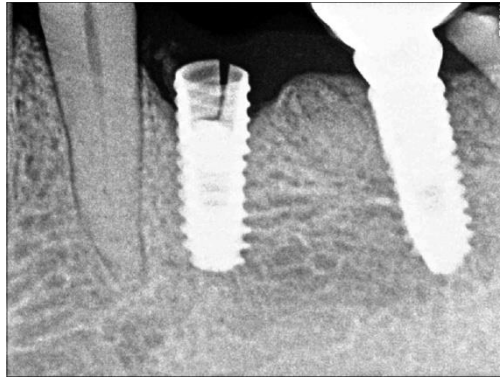
A safe alternative is to cut a slot in the cemented crown, permitting the bridge to be sprung free easily with the use of a small operator chisel.

If, despite the most cautious approach, cervical fracture of a blade implant should occur but the infrastructure is firm and well embedded in healthy bone it is possible to reconstruct and use the residual portion.

BROKEN ABUTMENTS:

Subperiosteal implants rarely fracture. Taking metallurgic x-rays of all castings before surgical placement can prevent this. Bubbles and casting defects show up easily with such views and indicate rejection of casting. If an abutment should break, and enough cervix is left, a casting can be made over to a telescope over it. If this is not possible the protruding cervix is shaved down as much as possible, some bleeding is created by abrasion with a diamond drill and the epithelium covers the altered stump by secondary intention. This is particularly applicable if the affected^{2,3}.

site is a posterior one. In such cases super structural sectioning the saddle just distal to the anterior abutment and building in a DE makes alterations hinge as a connector. This allows the posterior saddle to function on a stress broken basis.



IMPLANT FRACTURE



BROKEN PROSTHETIC INSERTS



STRIPPED SCREW THREADS



BROKEN ABUTMENTS

REFERENCES

1. Nancy. R. Chaffee; Periapical abscess formation and resolution adjacent to dental implants: A clinical report; J Prosthet Dent; 2001; 85: 109-112.
2. Richard Skalak; Biomechanical considerations in osseointegrated prostheses; J Prosthet Dent; 1983; 49:843-48.
3. Liran LEVIN; Dealing with dental implant failures ; J Appl Oral Sci. 2008;16(3):171-5
4. Satyanarayana Raju et al; Implant failures and Diagnosis And Management ; Jpd ;2015
5. Yener Oguz et al ;Removal of Fractured Implants and Replacement With New Ones ; Journal of Oral Implantology; Vol. XLI/No. One/2015
6. Kelly Misch, and Hom-Lay Wan; Implant Surgery Complications: Etiology and Treatment ; IMPLANT DENTISTRY / VOLUME 17, NUMBER 2 2008
7. Marcelo CG, Filié Haddad M, Gennari Filho H, et al :Dental implant fractures— aetiology, treatment and case report. J Clin Diagn Res 8(3):300-304, 2014
8. Tanner A, Maiden MF, Lee K, et al: Dental implant infections. Clin Infect Dis 25(suppl2):S213-S217, 1997
9. Pauletto N1, Lahiffe BJ, Walton JN: Complications associated with excess cement around crowns on osseointegrated implants : A clinical report. Int Oral Maxillofac Implants 14(6):865-868, 1999
10. Malathi G, Chandra R. Mechanical complications with implants. IJDA 2011;3:555-
11. Gupta S, Gupta H, Tandan A. Technical complications of implant-causes and management: A comprehensive review. Natl J Maxillofac Surg 2015;6:3-8.
12. Kreissl ME, Gerds T, Muche R, Heydecke G, Strub JR. Technical complication of implant-supported fixed partial dentures in partially edentulous cases after an average observation period of 5 years. Clin Oral Implants Res 2007;18:
13. Charles. J. Goodacre et al; Clinical complications with implant and implant prostheses; J Prosthet Dent; 2003; 90:121-32
14. Ayesha Hanif¹ et al. ;Complications in implant dentistry,; 2017 European Journal of Dentistry

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SURVEY OF DEPRESSION SATATUS IN DENTAL SCHOOL

STUDENTS OF RRDC

Prafulla Thumati*, **Shwetha Poovani****, **Bhavya Bharathi*****

Aims and objectives:

To describe the psychological health of the dental students in an institution in India.

Materials and Methods: A cross-sectional, questionnaire-based study was conducted among the dental students of a dental college in May 2018. A total of 180 students participated in the research. The participants were surveyed through a Beck's depression index questionnaire. Beck's Depression Inventory was compiled on SPSS version 21. Group comparisons were done and *P* values were obtained.

Results:

The prevalence of depression was: 63.3% of the students were considered normal, mild mood disturbance was 21.1%, borderline 5.6%, Moderate depression was 7.2%, and severe depression was 2.8%, according to Beck's depression inventory data.

Conclusion:

Stress and depression scores in younger generation are higher. Undergraduate students among all showed the highest scores. Different approaches to reduce them should be further investigated and utilized at the earliest.

Keywords: Dental, mental health, depression, students

Introduction

Depression is categorized by anhedonia, low energy level, worthlessness, insomnia, disturbed appetite, and cognitive problems. It could be chronic or recurrent as it effects and impairs individuals' function at work by weakening the individual abilities to understand and respond to difficult situations¹.

Mental health has a profound effect on individual, interpersonal and institutional aspects of a student's life. It also affects their academic performance, use of effective learning strategies and completion of education.^{1, 2}Behavioural problems in students have a huge impact on peers, faculty, and staff in an institution. These problems also affect the institutional management system in terms of legal challenge that they pose.¹

Mental health problems are known to be highly prevalent among college students. Stress, anxiety, and depression were the three important factors affecting academic performance of the students.³

An increasing trend is observed in the prevalence of severe psychological problems in students over past few years. The depressed students may show symptoms such as reduced concentration, loss of interest, loss of energy and disorder in sleep pattern, which could negatively affect students' school performance [4-10]. It is very important to identify the depressed individuals before the depression worsens, so that they may be effectively managed. This also has important ramifications for meeting the professional requirements of their course.

Materials and Methods:

A cross-sectional study was conducted among the dental undergraduates of Rajarajeswari Dental College in Bangalore during May 2018 to October 2018. All undergraduate students who were present on the day of the survey, were considered eligible to participate.

The Institutional Ethical Committee approved the study. The participating students filled out the questionnaire which was anonymous, and only collected the following socio-demographic data: age, gender and year of study.

Data collection:

The forms were filled in a class room, and collected at the end of the lesson. The Beck Depression Inventory (BDI-II) consisting of 21 items estimates a subject's level of depression scored on a 4-point scale, where for each question the subject circles their current feeling.

The BDI-II is scored as the sum of all the answers to each question. 63 is the highest possible total, with zero being the lowest total. Total scores are compared to the BDI-II Index to determine a subject's "Level of Depression." the levels of depression were classified as;

1-10 these ups and downs are considered normal.

11-16 Mild mood disturbance.

17-20 Borderline clinical depression.

21-30 Moderate depression

31-40 severe depression

Over 40 extreme depression

Results of the study:

A total of 180 students participated and completed the research questionnaire. Of these, 70.68% were females, conforming with the recent trends in dental college demographics in India. Depression levels were normal in 63.3%, mild mood disturbance in 21.1%, borderline clinical depression in 5.6%, moderate depression in 7.2% and severe depression in 2.8% of the study population.

Table 1

| Distribution of depression levels among study participants [N=180] | | |
|--|-----|-------|
| Depression levels | n | % |
| Normal | 114 | 63.3% |
| Mild mood disturbance | 38 | 21.1% |
| Borderline clinical depression | 10 | 5.6% |
| Moderate depression | 13 | 7.2% |
| Severe depression | 5 | 2.8% |
| Extreme depression | 0 | 0.0% |

TABLE II

| Gender wise comparison of distribution of Depression levels among the Study Participants using Chi Square Test | | | | | | |
|--|-----------------|-------|--------------------|-------|----------------|---------|
| Depression Levels | Males [n=48] | | Females [n=132] | | χ^2 Value | P-Value |
| | n | % | n | % | | |
| Normal | 33 | 68.8% | 81 | 61.4% | 4.424 | 0.35 |
| Mild Mood Disturbance | 7 | 14.6% | 31 | 23.5% | | |
| Borderline Clinical Depression | 1 | 2.1% | 9 | 6.8% | | |
| Moderate Depression | 5 | 10.4% | 8 | 6.1% | | |
| Severe Depression | 2 | 4.2% | 3 | 2.3% | | |

Table 3

| Frequency Distribution of Beck's Depression Inventory Symptoms among the study Participants | | | | | | | | |
|---|---------|-------|---------|-------|---------|-------|---------|------|
| Beck's Depression Inventory Symptoms | Score 0 | | Score 1 | | Score 2 | | Score 3 | |
| | n | % | n | % | n | % | n | % |
| Sadness | 91 | 50.6% | 73 | 40.6% | 10 | 5.6% | 6 | 3.3% |
| Discouraged | 139 | 77.2% | 28 | 15.6% | 7 | 3.9% | 6 | 3.3% |
| Failure | 147 | 81.7% | 25 | 13.9% | 7 | 3.9% | 1 | 0.6% |
| Satisfaction | 120 | 66.7% | 39 | 21.7% | 13 | 7.2% | 8 | 4.4% |
| Guiltiness | 93 | 51.7% | 76 | 42.2% | 10 | 5.6% | 1 | 0.6% |
| Punishment | 131 | 72.8% | 37 | 20.6% | 6 | 3.3% | 6 | 3.3% |
| Disappointment | 120 | 66.7% | 52 | 28.9% | 4 | 2.2% | 4 | 2.2% |
| Blame | 107 | 59.4% | 37 | 20.6% | 27 | 15.0% | 9 | 5.0% |
| Suicidal Thoughts | 161 | 89.4% | 13 | 7.2% | 3 | 1.7% | 3 | 1.7% |
| Crying frequency | 130 | 72.2% | 35 | 19.4% | 1 | 0.6% | 14 | 7.8% |
| Irritation | 94 | 52.2% | 67 | 37.2% | 13 | 7.2% | 6 | 3.3% |
| Level of Interest | 89 | 49.4% | 66 | 36.7% | 17 | 9.4% | 8 | 4.4% |
| Decision making | 130 | 72.2% | 25 | 13.9% | 17 | 9.4% | 8 | 4.4% |
| Attractiveness | 144 | 80.0% | 23 | 12.8% | 10 | 5.6% | 3 | 1.7% |
| Ability to work | 108 | 60.0% | 53 | 29.4% | 13 | 7.2% | 6 | 3.3% |
| Quality of sleep | 134 | 74.4% | 38 | 21.1% | 6 | 3.3% | 2 | 1.1% |
| Tiredness | 92 | 51.1% | 68 | 37.8% | 15 | 8.3% | 5 | 2.8% |
| Appetite | 124 | 68.9% | 41 | 22.8% | 11 | 6.1% | 4 | 2.2% |
| Loss of weight | 139 | 77.2% | 31 | 17.2% | 6 | 3.3% | 4 | 2.2% |
| Worried about health | 127 | 70.6% | 37 | 20.6% | 15 | 8.3% | 1 | 0.6% |

| | | | | | | | | |
|-----------------|-----|-------|---|------|---|------|---|------|
| Interest in sex | 172 | 95.6% | 2 | 1.1% | 5 | 2.8% | 1 | 0.6% |
|-----------------|-----|-------|---|------|---|------|---|------|

Figure 1:

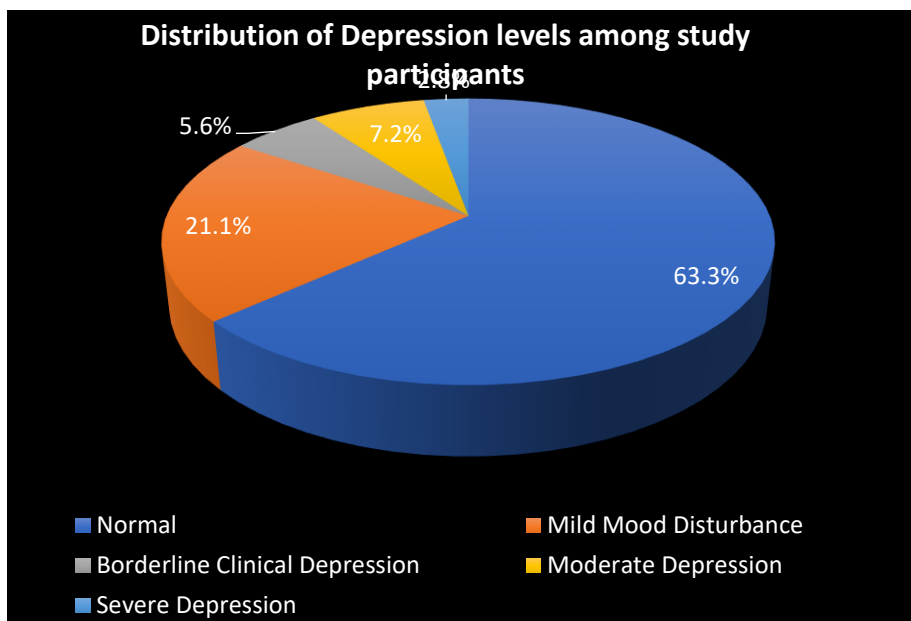


Figure 2:

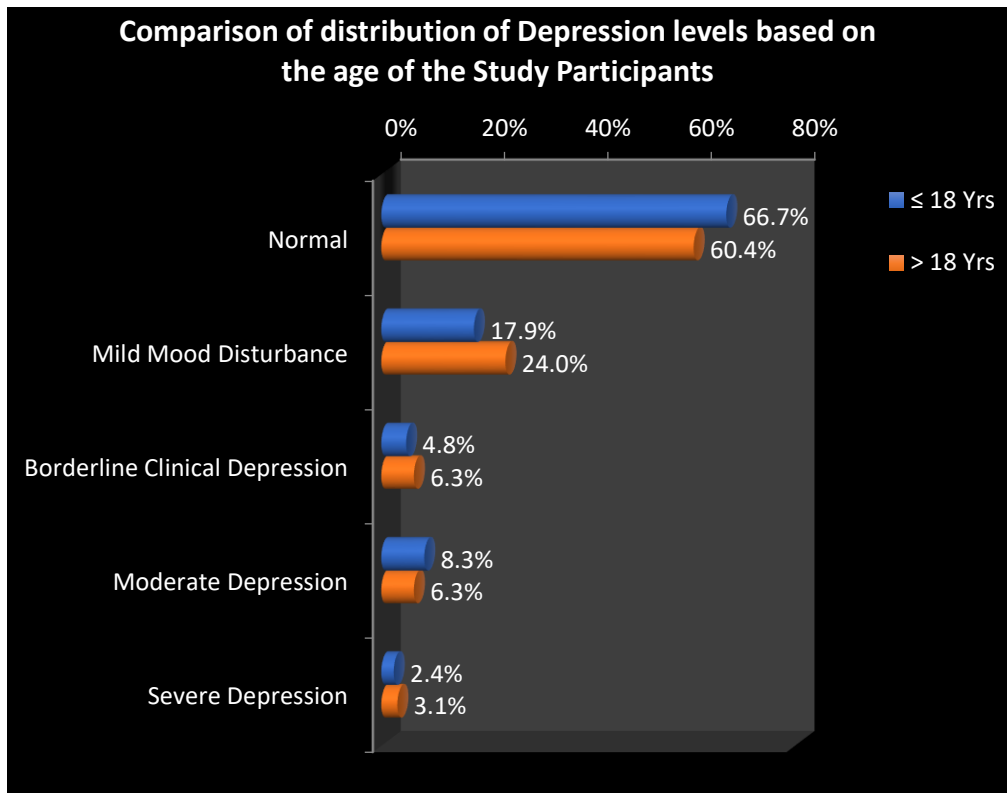
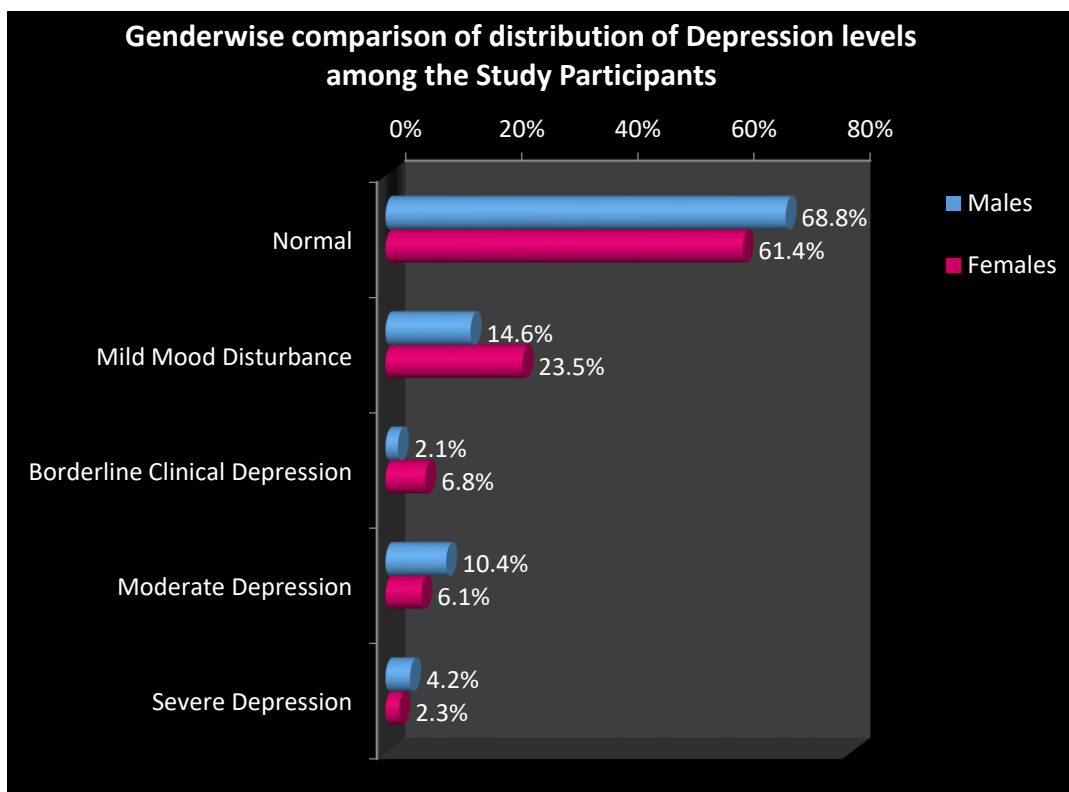


Figure 3:



Discussion:

Depression can be taken as reliable indicator for assessment of mental illness in a community. The emotional status of students during medical school training has been a concern, reported as early as 1956, as it may affect the overall performance of students and lead to cascade of consequence at both personal and professional levels.

Stress levels and perceived sources of stress among dental students were investigated by using various scales such as, MBI, PSSSI, BSI and PGWB index.⁷ in this study BDI-11 was used to score the degrees of depression.

The results of this study indicate that 37% of dental students had varying levels of depression. The present findings seem to be in agreement with research among dental students from other countries. Also, a higher percentage of older students rated positive for any mood disturbance, though the differences are not statistically significant. [6,7,8,9]

Table 1 explains the distribution levels among study participants, out of 180 participants: nearly one in 10 dental students had moderate or severe depression. After completion of the study, according to the survey results the symptomatic students were given psychological counselling and few students underwent the ICAGD computer guided coronoplasty.

Table II explains the gender wise comparison of distribution of depression levels among male and female students. Depression levels in female students were more when compared with male students even between the different levels of depression.

Table III explains about 3 to 8% of the student population had crying tendencies, blaming tendency, level of interest and decision-making deficiencies at severe level. Female students had more issues than male students.

The results of this study cannot be generalized to all dental students because the study only investigated dental students in one of the dental colleges. Thus, this is the limitation of this study.

Conclusion:

The findings of the present study suggest that the awareness of students and academic staffs about depression and its negative effects should be increased. The dental school administrators should enable counselling service, offering mental health assistance and increased social activities.

Clinical trials are a great way to help further research regarding depression symptoms and also to get access to care from experts in the field.

References:

1. Ikram k, Leghari MA, Khalil S, Khalil S, Kainat R. 2015. Prevalence of symptoms of depression among the dental undergraduates, Karachi, Pakistan. *Int Dent Med J Adv Res* 2018;4:175-178
2. Thumati P1, Sutter B, Kerstein RB, Yiannios, N and Radke, J. Changes in the Beck Depression Inventory - II Scores of TMD Subjects after Measured Occlusal Treatment. *J Adv Dent Tech* 2018;1;1.
3. Ozkurt-Kayahan Z, Cabbar F, Ozcakir-Tomruk C, Dolekoglu S. Evaluation of depression levels of dental students. *Biomed Res* 2017;28;7

4. Inam BN, Saqib A, Alam E. Prevalence of anxiety and depression among medical students of private university. *J Pak Med Assoc* 2003; 53: 44-47.
5. Newbury BD, Lowry RJ, Kamali F. The changing patterns of drinking, illicit drug use, stress, anxiety, and depression in dental students in a UK dental school: a longitudinal study. *British Dent J* 2002; 192: 646-649.
6. Atalayin C, Balkis M, Tezel H, Onal B, Kayrak G. The prevalence and consequences of burnout on a group of preclinical dental students. *Eur J Dent* 2015; 9: 356-363
7. Peker I, Alkurt MT, Usta MG, Turkbay T. The evaluation of perceived sources of stress and stress levels among Turkish dental students. *Int Dent J* 2009; 59: 103-111
8. Uraz A, Tocak YS, Yozgatligil C, Cetiner S, Bal B. Psychological well-being, health, and stress sources in Turkish dental students. *J Dent Educ* 2013; 77: 1345-1355.
9. Takayama Y, Miura E, Miura K, Ono S, Ohkubo C. Condition of depressive symptoms among Japanese dental students. *Odontology* 2011; 99: 179-187.
10. . Bostanci M, Ozdel O, Oguzhanoglu NK, Ozdel L, Ergin A, Ergin N, Atesci F, Karadag F. Depressive symptomatology among university students in Denizli, Turkey: prevalence and sociodemographic correlates. *Croat Med J* 2005; 46: 96-100

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