

Awareness of Orbital Implants among Dentists - A Questionnaire Study

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Abstract:

Introduction:

Orbital implants are made of synthetic usually placed during enucleation surgery but can be replaced later. Orbital implants fill space previously occupied by the eye. Muscles are usually surgically attached so it can move under the artificial eye. The implant is buried under pink tissue (conjunctiva) lining the socket, and stays there permanently, unless it becomes exposed or infected. Hence, the objective of this study is to assess the awareness of orbital implants among dentists.

Materials and methods:

A questionnaire consists of 15 questions was prepared based on the knowledge and awareness of orbital implants. It was distributed among 100 dentists and results were collected and analysed.

Results:

In this survey, out of 100, 55% were Male and 45% were female. From the survey conducted, it is evident that 52% of the participants have heard and aware of the term orbital implants. It was clear that 44% of the participants were aware of the ideal anophthalmic socket. Only 23% of the participants knew about enucleation and 32% were aware about the placement of orbital implants. Only 34% of the participants were reported to know about types of orbital implants and among them, 30% were aware of each types. Among 100 dentists, only 28% are aware of the complications of orbital implants. Only 37% are aware of the treatment of implant exposure and 38% aware about the secondary orbital surgery.

Conclusion:

It is clear that awareness and knowledge on the orbital implants is low among dentists. Emphasis should be given in orbital implants in universities for better knowledge and awareness.

Keywords: Orbital implants, enucleation, prosthesis, awareness, dentists, anophthalmic socket

Introduction:

Loss of eye, along with contents of the orbit may result from various causes including tumor ablative surgery, trauma, or burns. This may negatively affect social and psychological well being of the patient. Conventional or implant retained orbital prostheses may be indicated, with or without plastic surgical intervention, to restore the appearance of the patient [1]. Various strategies are employed to restore orbital volume. It can occur after enucleation or evisceration, during the management of orbital hypoplasia from congenital anomalies like microphthalmos. Maintaining the proper orbital volume is important both functionally and cosmetically. Orbital volume is important for the proper fitting of ocular prostheses, maintaining proper eyelid tone and position, and also in the prevention of the hollow superior sulcus often seen in severe enophthalmos and anophthalmos. Ocular implantation is the method of inserting implant in the muscle. It is performed during the primary enucleation or evisceration, sometimes during secondary implantations. Orbital implantation refers to placement of implants in the extraconal preperiosteal or subperiosteal space[2]. Frequently an implant is placed in the tissue bed of orbit. It helps to facilitate construction of the ocular prosthesis. If no material is used to help fill the space the orbit will exhibit a sunken appearance as the size of a prosthetic eye is limited by the opening between the superior and inferior palpebra. If no implant is placed to which the ocular muscles can be connected, movement of the overlying prosthetic eye is restricted causing failure. An implant that is attached to the ocular muscles move as the muscles move in their normal course would cause the same movement of implants. Consequently, a prosthetic eye in contact with the tissue that covers a moving implant will move as the muscles move in the eye in contact with the tissue that covers a moving implant will have some degree of movement. The result will be a more realistic prosthesis. The restored muscle function creates tension on the orbital walls and ensures a more normal pattern of orbital growth[3]. Removal of eye for the treatment of ocular disease was first described by Bartisch in 1583. The modern form of this operation was introduced in 1841 by Farrell and Bonnet, and in 1885, Mules placed the first orbital implant after evisceration. Following that year, Frost described the utility of orbital implant placement after enucleation surgery. In 1941, Ruedemann proposed the use of partially exposed, integrated implants which give attachment to the extraocular muscles allowing better prosthetic movement. He also acknowledged the potential risks of extrusion and infections[4]. Use of completely buried integrated implants began in the 1950s, bringing improved cosmesis but relatively poor motility. An ideal orbital implant should offer excellent motility, cosmesis, and few complications[5-7].

In dentistry, the ocular prosthesis have been used since a long time and various treatment modalities have been evolving daily. Inter disciplinary treatment approach is required to correct the ocular defects. The management of an anophthalmic socket and it's successful treatment requires the combined effort of both ophthalmologist and maxillofacial Prosthodontist. The surgeon provides the basis for successful rehabilitation. The maxillofacial Prosthodontist provides prosthetic treatment to his best for the success. A thorough knowledge of the anatomy is necessary for the maxillofacial prosthodontist for the proper treatment. The goal of any prosthetic treatment is to return the patient to society with a normal appearance [8].

Hence the objective of this study is to assess the awareness and knowledge on the orbital implants among dentists.

Materials and methods:

This is a questionnaire based study conducted among 100 registered working in Saveetha dental college in Chennai. A standard questionnaire was prepared and mailed to randomly chosen of about 120 dentists. The positive response came out from only 100 dentists with the response rate of 83.3%. The negative responses are mainly due to the lack of time and unwillingness to participate in the study.

Questionnaire:

A questionnaire consisted of questions regarding the awareness and knowledge on orbital implants. The first part had questions regarding their personal data including age and gender. The second part had questions regarding their awareness orbital implants, risk factors, complications, treatment etc,. The questions were mostly close ended and multiple choices. The responses were collected and the results were analysed.

Results:

This study was conducted among 100 dentists in Chennai. Out of 100, 55 dentists were Male while remaining 45% of the dentists were female(Chart:1).

Chart 1: Distribution of participants on gender



Among them, 52% of the dentists were aware of orbital implants while 48% were not(Chart:2). Among the 48 dentists, only 32 were aware of the ideal anophthalmic socket, 32 had the knowledge on insertion of these orbital implants and only 23 dentists knew about enucleation methods.

Chart 2: Awareness of orbital implants among dentists



Out of 100, only 34% of the dentists were aware of the types of orbital implants while the remaining 66 were not(Chart:3). Among them, 30 dentists had the knowledge on the individual types of orbital implants.

Chart 3: Awareness of types of orbital implants among dentists



Out of 100, only 28% of the dentists aware of the complications on orbital implants while the remaining 72% of the dentists were not. Among them, 25% had the knowledge on each complications.

Chart 4: Awareness of complications of orbital implants among dentists

Out of 100, only 39% of the dentists were aware of the extrusion in orbital implants while the remaining 61 were not aware of this. Among them, only 29% of the the dentists were aware of the predisposing factors for extrusion. In this study, out of 100, only 37% were aware of the treatment for exposures.

Discussion:

Before discussing the results it seems better to discuss about the limitations of this study. This study was only taken across the registered dentists working in Saveetha dental college in Chennai. This study does not include the dentists who are not in practice. The results which is being provided by this study was only applicable to those registered dentists who participated in completing the survey but does not include other non-participating dental practitioners in Chennai.

Ocular prosthesis is an artificial eye used in ophthalmology. It is used in patients who have lost their eye due to various like trauma, surgery, cancer, or in patients with shrunken damaged eyes, congenitally missing or abnormally small sized eyes with no visual potential. These conditions result in cosmetic disfigurement of the face which impacts the patients psychologically and acts as a social stigma[9].

Cosmetic rehabilitation for these patients with affected external appearance can helps in restoring their confidence by the implantation of ocular prosthesis. The Ocular prostheses are fitted behind the eyelids over a shrunken eyeball or an orbital implant placed following surgical removal of the eye[10].

Ocularistry is the term which explains the science of making ocular prosthesis. It has undergone phenomenal growth in recent times. Ocularistry is fast evolving in India. Ocularist is the term applicable to skilled individual involved in fabricating the ocular prosthesis[11].

The goal of any prosthetic treatment is to bring back the patient to society to the normal appearance of them with reasonable movement of the prosthetic eye. The disfigurement resulting from loss of eye can leads to various psychological and social consequences. With the use of advancement in ophthalmic surgery and ocular prosthesis, patient can be rehabilitated very effectively. The maxillofacial Prosthodontist should provide proper prosthetic treatment in the way to the best of his ability considering the psychological aspects. If needed, the help of other specialist should be taken into consideration. Hence, it is important for a dentist to have some common knowledge about treatment modalities. Hence this study is primarily intended to assess the awareness and knowledge on the orbital implants among dentists.

From this study, the awareness and knowledge on the orbital implants among dentists is not very satisfactory.

Participants were asked about their age, as age and experience plays the vital role in the knowledge. But age was not a major factor in this study. Even dentists of higher age and the dentists just entered their clinical practice had almost similar knowledge about orbital implants.

Though majority of the participants reported to be aware of orbital implants(52%), only very few participants had the clear knowledge of orbital implants about its indications and enucleation.

In this study, only very few dentists were aware of the types of orbital implants. The types including buried implants, porous implants, exposed implants and integrated implants were the common types known among these participants.

Only very few dentists were aware of the complications of orbital implants. Exposure to infections, irritants, extrusion, discharge were the common responses given by these participants. Prahalad Hunsigi et.al even reported that dentist's knowledge about ocular complications due to dental infection was poor, and the awareness and practice of taking preventive measures were satisfactory[12].

Extrusion being the major complication, many dentists were unaware of it and it's predisposing factors. Other complications commonly reported by patients with implants includes ptosis, pseudoptosis, Ectropion, sagging lower eyelids[13-16]. Majority of the dentists were unaware of the treatment for exposures and secondary orbital surgery[17-20].

Conclusion:

The advancement in ophthalmology and ocular prosthesis paved the way for effective prosthetic rehabilitation. The maxillofacial Prosthodontist should provide proper prosthetic treatment in the way to the best of his ability considering the psychological aspects. From this study, It is clear that awareness and knowledge on the orbital implants is low among dentists. Emphasis should be given in orbital implants in universities for better knowledge and awareness.

References:

- [1] Pawar RS, Raipure PE, Kulkarni RS. Prosthetic rehabilitation of a patient with orbital defect using silicone prosthesis. *Eur J Prosthodont* 2016;4:56-9.
- [2] Modification of Orbital Volume. *American Academy of ophthalmology*.
- [3] Jordan DR, Klapper SR. Controversies in Enucleation Technique and Implant Selection: Whether to Wrap, Attach Muscles and Peg? In: Guthoff R, Katowitz, JA, eds. *Oculoplastics and Orbit: Aesthetic and Functional Oculofacial Plastic Problem Solving in the 21st Century, Volume 3*. Berlin Heidelberg: Springer, 2010: 195-206.
- [4] Beard C. Remarks on historical and newer approaches to orbital implants. *Adv Ophthal Plast Reconstr Surg*. 1995;11:89-90.
- [5] Anderson RL, Thiese SM, Nerad JA, Jordan DR, Tse D, Allen L. The Universal orbital implant: indications and methods. *Adv Ophthal Plast Reconstr Surg*. 1990; 8:88-99
- [6] JJ. Coralline hydroxyapatite as an ocular implant. *Ophthalmology*. 1991;98:370-377.
- [7] Fan JT, Robertson DM. Long-term follow-up of the Allen implant (1967 to 1991). *Ophthalmology*. 1995;102:510-516.
- [8] Rohit Kulshrestha, Khushali Rathod, Vinay Umale, Versha Sharma, Akshetya Porwal, Shipra Jhawar. Ocular Prosthesis in Dentistry - A Review. *Int J clinical & case*. 2018; 2:6, 55-61.
- [9] Luce CM. A short history of enucleation. *Int Ophthalmol Clin*. 1970;10:681-687.
- [10] Jacob-LaBarre JT, DiLoreto DA. Total integration of an ocular implant/ prosthesis: preliminary in vivo study of a new design. *Ophthal Plast Reconstr Surg*. 1995;11:200-208.
- [11] Kuldeep Raizada, Deepa Rani. Ocular prosthesis. *The journal of British contact lens association*. 2007; 30:3, 152-162.
- [12] Prahalad Hunsigi, Vinod Kumar. Knowledge and Attitude of Dental Surgeons about Ocular Complications Due to Dental Infection. *J Pharm Bioallied Sci*. 2017;Nov; 9, S147–S153
- [13] du Toit N, Motala MI, Richards J, Murray AD, Maitra S. The risk of sympathetic ophthalmia following evisceration for penetrating eye injuries at Groote Schuur Hospital. *Br J Ophthalmol* 2008 Jan; 92(1): 61-3.
- [14] Chan CC, Roberge RG, Whitcup SM, Nussenblatt RB. 32 cases of sympathetic ophthalmia. A retrospective study at the National Eye Institute, Bethesda, Md., from 1982 to 1992. *Arch Ophthalmol* 1995 May; 113(5): 597-600.
- [15] Morton A. Enucleation and Evisceration. In: Thach, AB ed. *Ophthalmic Care of the Combat Casualty (Textbooks of Military Medicine)*. Washington, DC: Office of The Surgeon General at TMM Publications, 2003: 405-420.
- [16] Hui JJ. Outcomes of orbital implants after evisceration and enucleation in patients with endophthalmitis. *Curr Opin Ophthalmol* 2010 Sep; 21(5) 375-9.
- [17] Hornblass A, Biesman BS, Eviatar JA. Current techniques of enucleation: a survey of 5,439 intraorbital implants and a review of the literature. *Ophthal Plast Reconstr Surg*. 1995;11:77-88.
- [18] Leatherbarrow B, Kwartz J, Sunderland S, Brammer R, Nichol E. The "baseball" orbital implant: a prospective study. *Eye*. 1994;8:569-576.
- [19] Buettner H, Bartley GB. Tissue breakdown and exposure associated with orbital hydroxyapatite implants. *Am J Ophthalmol*. 1992;113:669-673.
- [20] Stone W Jr. Symposium: orbital implants after enucleation: causes of complications and their solution. *Trans Am Acad Ophthalmol Otolaryngol*. 1952;56:35-42.