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REVIEW

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STEREOLITHOGRAPHIC DIGITIZATION AND IT'S FUTURISTIC APPROACH IN IMPLANT DENTISTRY

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The word rapid prototyping was first used in mechanical engineering field in the early 1980s to describe the act of producing a prototype, a unique product, the first product, or a reference model. In the past, prototypes were handmade by sculpting or casting and their fabrication demanded a long time. The use of stereolithographic models has progressively replaced traditional milled models and x-rays in the management of craniofacial anomalies and in implant rehabilitation. Diverse advantages can be mentioned, including better visualization of complex anatomical structures and more precise and sophisticated pre-surgical planning, through a simulated insight of the procedures of interest. Rapid prototyping has the highest fabrication accuracy and an increasing number of materials, which can be processed, are becoming available. Making of the stereolithographic objects by CAD file data provides solid evidence that computer-aided design and manufacturing technologies may become a new avenue for maxillofacial reconstructive surgeries, implant placement, fabrication of surgical stents, analysis, and production in the 21st century. There is endless scope of digitisation and technology in prosthodontics- let it be in the clinical and lab procedures like use of CAD-CAM technology, Stereolithography or rapid prototyping. The day is not far when remote sensing robotic devices would be performing the restorations under the command and surveillance of the master—the dentist without his immediate presence. Keywords—Rapid Prototyping (RP), Stereolithography, Computer aided design-Computer aided milling, Dental Implant, Maxillofacial surgery.

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TEETH IN A DAY

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The loss of tooth in the esthetic area is often traumatic experience for the patient. Patients may suffer real or perceived effects following the loss of one or more teeth. Dental implant offers the most cost-effective and long-term solution for replacement of missing teeth, providing the patient with the sense of security and well-being. Recently, immediate implant placement after extraction of tooth with early loading has become more common. The advantages of this procedure include fewer surgical interventions, reduction in overall treatment time, reduced soft and hard tissue loss, and psychological satisfaction to the patient.. .

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DIGITISATION IN PROSTHODONTICS

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Digitisation has become a part and parcel of contemporary prosthodontics with the probability of most of the procedures being based on the digital techniques in near future. There is endless scope of digitisation and technology in prosthodontics, both in clinical and laboratory procedures, like use of CAD – CAM technology, stereolithography, rapid prototyping, optical impressions use of virtual articulators and digital facebows, digital radiographs and in the field of patient training, education and research using virtual patient programs and dental softwares.. These technical tools help us in precise data acquisition and reconstruction of the intraoral conditions in a virtual environment to diagnose, plan and facilitate treatment. The incorporation of digital dentistry into our restorative toolbox helps in accurate fabrication of crowns, bridges, dentures and precise placement of implants with minimal errors.. In the decade to come digitisation will reinvent prosthodontics and assume a role that is as important as it was at the inception of modern dentistry..

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CRESTAL BONE LOSS- A LITERATURE REVIEW

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Crestal bone level is an important parameter in determining the success of implants. Crestal bone loss (CBL) can lead to increase in bacterial accumulation resulting in secondary peri-implantitis, occlusal overload, marginal bone resorption affecting the marginal soft tissues and finally leading to implant failure.. . A loss of 2mm was considered normal in the first year of placement followed by 0.2mm annually. Factors like implant design, diameter, abutment height, implant–abutment connection smoking etc are responsible for pathological CBL. . . Several attempts have been made to reduce the CBL. Many studies have concluded that design modifications such as platform switching, scalloped implants, square threaded implants, use of wide diameter implants have significantly reduced the CBL. Also, immediate placement and progressive loading have shown better results in crestal bone preservation.. Recent studies reported that the gingival biotype also plays an eminent role in implant success. A thin mucosa at the time of implant installation resulted in establishment of a “biologic width”, which is responsible for the protection of peri-implant hard tissues. Choice of design and time of placement depends upon clinical situation.. . The aim of this systematic review is to compare each of these techniques to know which one is more effective in the preservation of the crestal bone around implants.

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PEEP INTO PEEK - A SYSTEMATIC REVIEW

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AIMS AND OBJECTIVE:. The search for an absolute and all purpose dental restorative material is always an enigma. This meta analytical study aims at one such proposed material by name " POLY ETHER ETHER KETONE (PEEK)", its characteristics, its implications and application in prosthodontics.. MATERIALS AND METHODOLOGY:. The article search for this study was conducted using medline, PUBMED, Research gate, google scholar using the key words " PEEK", "Prosthodontics", " Dental restorative material". The time period was arbitrarily chosen from January 2010 till September 2018. The variables analysed were divided according to the mechanical, chemical, physical and biological properties in vitro, in vivo or both. . RESULTS:. Data was analysed using standard statistical guidelines. The physical, chemical, and biological properties of the dental restorative materials were critically analysed and those with P value of less than 0.05 were taken to be statistically significant. Sub group analysis was done for the precision and reproducibility of PEEK using commonly available manufacturing techniques and the results were tabulated regarding the safety, efficacy, reproducibility, cost effectiveness, ease of manufacturing of the various procedures.. CONCLUSION: . Long term prospective randomized control trail with long term follow up is definitely warranted for arriving at a conclusive and definitive results regarding the use of PEEK. As of now, PEEK seems to be a reasonable alternative in the long armament of multiple dental restorative material and when judiciously used, seems to pave a long way in the future years to come..

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COMPARATIVE EVALUATION OF IMPLANT STABILITY IN OSSEODENSIFICATION AND NORMAL OSTEOTOMY PROCEDURE: A SYSTEMATIC REVIEW

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Dental implants have been a popular alternative in the oral rehabilitation after the introduction of osseointegration (Branemark 1985). Successful osseointegration is prerequisite for functional dental implants. Primary stability has been acknowledged as essential criteria for achievement of osseointegration. It is essential to have sufficient bone bulk and density at the implant site in order to achieve good bone-to-implant contact and primary stability. A new osteotomy preparation technique osseodensification was recently introduced that uses a bone preservation method that creates a layer of compacted bone along the surface of the osteotomy. This favors an increase in initial implant stability.. This paper is a systematic review describing the ossedensification technique; associated changes in bone density and implant stability and its comparison to normal osteotomy procedure.

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CLARIFY YOUR VISION WITH PRECSION-3D PRINTING

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3D printing has been hailed as a disruptive technology which will change manufacturing. Used in aerospace, defence, art and design, 3D printing is becoming a subject of great interest in surgery. The technology has a particular resonance with dentistry, and with advances in 3D imaging and modelling technologies such as cone beam computed tomogra¬phy and intraoral scanning, and with the relatively long history of the use of CAD CAM technologies in dentistry, it will become of increasing importance. Uses of 3D printing include the production of drill guides for dental implants, the production of physical models for Prosthodontics, Orthodontics and Surgery, the manufacture of dental, Craniomaxil¬lofacial and orthopaedic implants, and the fabrication of copings and frameworks for implant and dental restorations. In prosthetic treatments, computerized scanning systems and 3D printing systems have come largely to replace traditional techniques for producing prosthetic works. 3D imaging and modelling, and CAD tech¬nologies are hugely impacting on all aspects of dentistry. 3D printing makes it possible to accurately make one-off, complex geometri¬cal forms from this digital data, in a variety of materials, locally or in industrial centres.. This paper reviews the types of 3D printing technologies available and their various applications in dentistry and in Prosthodontics.

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PRECISION ATTACHMENTS- THE MULTI TASKERS

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The term precision denotes “the quality or state of being precise”.. Precision attachments are small interlocking devices to connect prosthesis and abutments that offer a variety of solutions to the challenge of balance between functional stability and cosmetic appeal.. Precision attachments have wide applications, used in fixed removable bridge, removable partial dentures, overdentures, implant retained overdentures, and maxillofacial prosthesis.. Nevertheless in past they have been largely ignored by most dental professionals for understandable reasons,notably due to cost and inadequate grasp of their application (Gareth Jenkins, 1999).. Misconceptions about the use of intracoronally retained prosthesis have discouraged many practitioners to use them in their dental practices.. However the prosthodontist who employs this form of treatment quickly learns of its benefits in providing patients with a prosthesis with improved esthetics, better retention and stability, better fracture resistance as compared to clasp and reduced bulk.. Elevated psychological acceptance, elimination of lateral forces on the abutment during insertion and removal of the prosthesis and more axial force during functions are some of the advantages of precision attachments. They also act as mechanical stress breaking devices.. This paper is intended to compare the results gathered by multiple authors on different precision attachments available to help clinicians in their daily practice to make the right decision while planning a prosthesis..

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MORSE TAPER DENTAL IMPLANTS AND PLATFORM SWITCHING: THE NEW PARADIGM IN ORAL IMPLANTOLOGY

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Dental implants have achieved long-term success due to the osseointegration of highly biocompatible titanium integrating to the surrounding bone. Following the establishment of osseointegration, the implant system depends on the mechanical and chemical stability of the contacting metal joints, which must sustain proper torque originated from the friction between contacting surfaces. In regards to implant dentistry, criteria for a sustainable, healthy soft tissue outline are a prosthesis that provides mechanical strength and remains esthetically pleasing. This aesthetic outcome with dental implants is similar to conventional dental prosthetic restorations. Due to limitations in bone augmentation procedures and implant screw-retained prostheses associated with dental implants, often the ideal esthetic position is not a viable option. Currently, common examples of internal implant-abutment connection designs are the internal hexagonal and the Morse taper connection. A unique design feature of the Morse taper implant-abutment connection is an internal joint design between two conical structures. The advantage of Morse taper connections involving platform switching is that it would increase the maintenance of peri-implant bone and soft tissues. Thus, likely maintaining the soft tissue profile, reducing the incidence of bone-loss, and ultimately the onset and rate of marginal peri-implantitis associated with the implant-abutment platform. Thus, the main purpose of this paper is to review current evidence on the benefits of Morse taper dental implant joints associated with platform switching.

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DIRECT INKJET PRINTING IN PROSTHODONTICS: A REVIEW

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Digital dentistry is rapidly transforming dental field, 3D printing technologies are paving the way. CAD/CAM milling systems provide a rapid and individual method for the manufacturing of dental restorations. However the disadvantages of these systems include limited accuracy, introduction of microscopic cracks and waste of material due to the principle of subtractive process. Additive manufacturing techniques exhibit the potential to overcome these limitations. With these techniques, a 3D component can be built up layer by layer. . Direct inkjet printing is an additive manufacturing technique which provides the possibility of generating dense bodies at a high resolution and complex shape. It creates the model one layer at a time by spreading a layer of powder and ink jet printing binder in the cross section of the part. It is the most widely used 3 -D Printing technology these days.. This review highlights the role of Direct Inkjet Printing in the field of Prosthodontics.

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ARE BASAL IMPLANTS A MAGICAL FORMULA FOR REHABILITATION OF SEVERELY RESORBED RIDGES?

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"Good design is a sustainable design". In today's scenario, dental implants are considered as an electable treatment plan for restoring missing teeth. The conventional crestal implants, no doubt classically offers therapeutic solutions for rehabilitation of missing teeth. But implant placement in severely atrophic jaws is especially challenging because of poor quality of future implant bed. In such cases, additional bone augmentation procedures are demanded but they usually increase the overall treatment risk and cost of the treatment notably.. Basal implants are an alternative treatment as they anchor in a "sustainable implant site" i.e. in a stable and resorption free bone areas (cortical bone) and can be immediately loaded and avoid chances of peri-implantitis. Basal implant concept can be thought as a masterful balance of meeting the present need of primary stability without jeopardising the ability of the bone-implant-restoration-complex to co-exist in a stable manner under long-term loading and functional patterns. `In this article an overview of basal implants and the differences that exist between basal implants and crestal implants are discussed.. .

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IS T-SCAN RELIABLE AND ACCURATE? - A BRIEF REVIEW

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Occlusion is an important consideration in the restorative care of a patient. An understanding of the movements of the mandible and how restorative dentistry may influence them should be considered in any treatment plan. To establish a diagnosis of occlusal pathology, it is essential to have an objective knowledge of the patient's mandibular dynamics to develop a method that enables the dentist to analyze. With the evolution of time, methods like measuring occlusal features with a millimeter rulers, testing occlusal contacts with articulating ribbon/paper or occlusal wax, registering occlusion with silicones, mapping occlusion with occlusal sketch, photographs and the use of occlusal sonography have finally reached to a stage of computer aided determination of occlusal contact points and the use of T-scan pressure sensitive films.. T-Scan allows prosthodontists to map patients' individual occlusal contacts using pressure sensor technology, a must-have for those who want to measure occlusion throughout the treatment process to improve patient outcomes and reduce repeat visits. When used in conjunction with articulating paper, T-Scan's precise, actionable data gives you the ability to diagnose and treat occlusion accurately.. Even though T-Scan system precisely and dynamically records the time, force and area of occlusal contacts, views on the reliability of the T-Scan system as a method for occlusal contact registration has always been questioned, especially regarding its repeatability and accuracy. This paper broadly reviews the mechanism, methodology, accuracy, reliability, characteristics and clinical application in the field of prosthodontics.. . .

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OSSEODENSIFICATION - A NEW FRONTIER IN ACHIEVING OPTIMAL PRIMARY IMPLANT STABILITY

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Increasing awareness has lead to a paradigm shift from removable to fixed restorations, making implant restorations a treatment of choice for missing teeth. For any type of successful implant treatment, osseointegration is considered the mainstay. It was first defined by Brånemark, as a direct contact of living bone with the surface of an implant at the light microscopic level of magnification. Albrektsson et al exhibited six major parameters for osseointegration, which all point towards achieving optimal primary stability. In this fast paced world, we as clinicians should provide fastest and best treatment possible to our patients. This led to immediate loading implant technique. It has been well established that primary stability is of paramount importance, especially in successful immediate loading, implant treatment as it is connected very intimately to all the parameters required for osseointegration. Many surgical techniques have been developed for this objective. Osseodensification is one of the recent technique which was developed for this purpose. Osseodensification improves bone density and thus increasing the primary stability. So the aim of the presentation would be to highlight the advantages provided by this novel method and its contribution towards primary stability of implants, preservation of native bone of patient and ultimately the success of the whole procedure.

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THE 'SAVIOUR' IN FAILURE OF DENTAL IMPLANTS- SILVER NANOPARTICLES: A REVIEW

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Silver has been used in the medical field for centuries because of its antimicrobial properties and ever since the invent of antibiotics, the use of silver has been reduced. More recently, silver nanoparticles have been synthesised and have been incorporated into several bio-materials, since their small size provides great antimicrobial effect, at low filler level. Hence, these nanoparticles have been applied in dentistry in order to prevent or reduce biofilm formation over dental implant surfaces. . This paper presentation provide a review regarding AgNP incorporation, such as antimicrobial potential, cytotoxicity and long term effectiveness. .

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CONVENTIONAL VS CBCT IMAGING TECHNIQUES IN IMPLANT DENTISTRY: AN OVERVIEW

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IMPLANT DENTISTRY PRACTICE IS RAPIDLY GROWING EVERYDAY, AS THE PATIENT IS WELL AWARE OF THE SAME AND WANTS PERMANENT TREATMENT. BUT FOR THE SUCCESSFUL OUTCOME OF THE TREATMENT AND ITS PRECISION, PROPER DIAGNOSIS AND TREATMENT PLAN IS REQUIRED. X-RAYS PLAY A MAJOR ROLE FOR THE SUCCESS OF THE TREATMENT.CONVENTIONAL IMAGING TECHNIQUES SUCH AS OPG, IOPAR ,RVG ETC GIVES ENOUGH RELEVANT READINGS,BUT THE DENTIST HAVE TO FORMULATE THE EXACT CALCULATIONS FOR THE DESIRED IMPLANT. ANY MISCALCULATION CAN LEAD TO FAILURE OF THE TREATMENT. RECENT IMAGING TECHNIQUES SUCH AS CONE BEAM COMPUTED TOMOGRAPHY MAKES IT EASIER AS THEY INCREASE PRECISION AND PROVIDE 3D IMAGING, SO THAT WE CAN FORMULATE THE ENTIRE TREATMENT PLAN ON THE COMPUTER. IT REDUCES TREATMENT FAILURE. ON THIS PAPER I WILL BE PRESENTING AN OVERVIEW ABOUT CONVENTIONAL VS CBCT IMAGING TECHNIQUES IN IMPLANT DENTISTRY.

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EFFECTIVENESS OF SHADE AND THICKNESS OF RESIN CEMENT ON THE FINAL COLOR OF THE PORCELAIN LAMINATE VENEER: A SCOPING REVIEW

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BACKGROUND: Porcelain laminate veneer has evolved as a dependable treatment option due to their superior optical properties similar to natural tooth and exceptional aesthetic outcome. Among the factors which influence the final shade of laminate veneers, shade and thickness of resin cement used for luting contributes to the ultimate result. This systematic review helps to analyse whether the shade and thickness of resin cement will affect the final color of the veneer restoration. MATERIALS AND METHODOLOGY: Electronic databases were searched based on set inclusion criteria. The initial search of literature included 22 studies, of which 5 articles were excluded, a total of 17 articles for full text reading was included, 3 articles which satisfied the inclusion criteria were accepted as eligible.. RESULTS: The search resulted in three studies reporting the effect of resin cement shade on porcelain. The mean color difference was assessed in terms of clinical acceptability and perceptibility threshold. Various resin cement systems with similar shade showed different color parameters and changes in final translucency. None of the studies compared the thickness parameter of resin cement on the final color of restoration.. CONCLUSION: The aesthetic outcome of veneer restorations are reflected by the shade of resin luting cements considering the mean color difference within various cement systems. There is a definite need for further research to evaluate the effect of cement thickness on final color of veneers and a standardized resin cement shade classification.. Key words:Resin cements, Cement thickness, Dental cement shade, porcelain laminate veneer, translucency color

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ROLE OF INTRA ORAL SCANNERS AND QUANTITATIVE OCCLUSAL INDICATORS IN PROSTHODONTICS

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There is a constant increase in the possibilities and potential of DIGITAL IMPRESSION taking with the aid of INTRAORAL OPTICAL IMPRESSION systems in the recent years, with respect to the range of OPTICAL INTRAORAL SCANNERS in the market. These INTRAORAL SCANNERS have already surpassed and proved clinically to be clearly superior to conventional impression methods. The INTRAORAL SCANNER utilises CONFOCAL technology with a significant reduction in the volume of hardware which allows increase in the software-based technologies. In addition, INTRAORAL SCANNER is also used in quantitative occlusal indicators such as T-SCAN (Tek Scan) OCCLUSALANALYSIS system, VIRTUAL DENTAL PATIENT. The T – Scan consists of PIEZOELECTRIC FOIL SENSOR, sensor handle, hardware and software to record, analyse and view the accurate data. It identifies the time magnitude and distribution of bilateral simultaneous occlusal contacts. Virtual Dental Patient is a Three-Dimensional dental model assembled from scanned data from the cast of a patient dentition. This technology helps in assessment of chewing efficiency and identify the occlusal interferences. .

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PROSTHODONTIC REHABILITATION OF HEMIMANDIBULECTOMY PATIENTS

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Rehabilitation is difficult in an edentulous patient. Management of patients with acquired defect of mandible is a challenge related to both control of primary disease and rehabilitation which often requires resection of large portions of mandible.If mandibular continuity is not restored during surgical closure of wound,remaining mandibular segment will retrude and deviate towards the surgical side at the vertical dimension of rest.Disabilities resulting from such resections include impaired speech,difficulty in swallowing and severe cosmetic disfigurement.Greater the loss of tissue,greater will be the deviation of mandible,thus comprising the prognosis of the treatment.The success in rehabilitating these cases will depend on nature and extent of surgical defect,treatment plan,type of prosthesis and patients cooperation.This review article describes the prosthodontic rehabilitation of hemimandibulectomy cases with different treatment options like using a provisional guide flange prosthesis,a palatal ramp training appliance followed by a cast partial denture with a mandibular guiding flange,construction of a modified occlusal table in to conventional complete denture,implant supported fixed prosthesis and bar retained implant supported overdenture.Thus rehabilitation of hemimandibulectomy cases can bring functional and psychological benefits on the wellbeing of patients.

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ARTICULATING PAPER VS T SCAN

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The size of the largest articulating paper mark cannot be taken the only criteria while performing the. occlusal adjustments . a computerized occlusal analysis is very much essential when performing . the occlusal adjustments. It provides accurate information when performing selective occlusal grinding . of the cusps because the scanning not only analyses the tooth with the premature contacts but also. specifically indicates the slopes of the cusps that have to be subjected for grinding. Computerized . occlusal analysis is not very technique sensitive and the procedure can be performed easily to obtain . accurate results as compared to the articulating paper because thickness of the sensor is standardized . whereas the articulating paper thickness varies from one company to other . articulating paper marking . can be contaminated by the saliva and hence can cause misinterpretation of reading where as in T scan . the sensors are synthetic and resistant to salivary wetting of the sensors thus maintaining the accuracy . of recordings . T scan analyses the first contact on the computer thus providing accurate information of . the type of occlusion and jaw movements for the patient. the ultimate advantage of computerized . occlusal analysis is that it can detected the amount of force as well as location of the highest intensity . contacts of a single tooth which is very specific ..

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GUIDED BONE REGENERATION IN IMPLANT DENTISTRY

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Post extraction crestal bone resorption is common and unavoidable which can lead to significant dimensional changes. For successful implant placement and for the regeneration of bone, Guided Bone Regeneration (GBR) has often been advocated.. GBR is a surgical procedure that uses barrier membranes with or without particulate bone grafts and or bone substitutes.. GBR is commonly used in combination with the installment of titanium implants. The application of a membrane to exclude non osteogenic tissues from interfering with bone regeneration is the key principle of GBR.. GBR is a successful, well documented and widely used procedure for treatment of alveolar bone defects in conjunction with implant treatment. There is 95% implant survival after a horizontal or vertical GBR procedure.. Research on GBR and the search for an ideal membrane is still going on. Every membrane type presents both advantages and disadvantages. Titanium mesh membranes offer superb mechanical properties for GBR treatment. . GBR can be a successful treatment modality for fenestration and dehiscence type defects around dental implants..

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IMPLANT SCAN BODY

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Today, digital technology controls almost every aspect of our life and dentistry is no exception to it. Technological advances are making it easier than ever to practice dentistry in almost every dental procedure.. The foundation of good fitting, functionally integrated prosthesis is established at the impression stage. This is particularly important for implant restoration, where greater precision is required. An inaccurate impression may result in the misfit of the prosthesis leading to mechanical complications such as screw loosening and fracture of the prosthesis or implant components and later it may lead to bio-mechanical complications also.. Conventional techniques using trays and impression materials encounter problems with expansion, shrinkage or distortion of impression materials. With the help of scannable abutments called “Scan Body”, the precision of impression is obtained by digital workflow thereby enhancing the fit of the prosthesis.. This paper presentation highlights the role of scan bodies in implant dentistry and their advantages over conventional impression, misfit or displacement of the transfer copings, mode of transfer to the lab technician. Implant scan body has its own disadvantages such as being relatively expensive; need specialized equipment's, well equipped lab which can accept these data for fabrication of the prosthesis..

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SOCKET PRESERVATION: AN OVERVIEW

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Healing of the extraction socket after tooth removal involves retention of the blood clot followed by a sequence of events that lead to changes in the alveolar process in a three dimensional fashion. This normal healing event results in a minimal loss of vertical height (around 1 mm), but a substantial loss of bucco-lingual width. During the first three months following extraction, that loss has been shown to be significant and may result in both a hard tissue and soft tissue deformity, affecting the ability to restore the site with acceptable esthetics. Procedures that reduce the resorptive process have been shown to be predictable and potentially capable of eliminating secondary surgery for site preparation when implant therapy is planned. The key element is prior planning to prevent the collapse of the bucco-lingual width.. Several techniques have been employed as ridge preservation procedures involving the use of bone grafts, barrier membranes and biologics to provide a better restorative outcome. This paper will explore the evidence behind each technique and their efficacy in accomplishing site preparation.. .

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ACHIEVING ACCURACY IN CAST ARTICULATION

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SUCCESSFUL DIAGNOSIS AND SATISFACTORY TREATMENT OF DENTAL PATIENTS REQUIRE PRECISE DUPLICATION OF MAXILLO-MANDIBULAR RELATIONSHIPS ON AN ARTICULATOR. THE ARTICULATION PROCESS USUALLY INVOLVES RIGIDLY ATTACHING THE MAXILLARY AND MANDIBULAR CASTS TOGETHER. MANY RESEARCHERS BELIEVE THAT ACCURATE CAST ARTICULATION IS A NECCESITY AND THE FINAL DENTAL PROSTHESIS WOULD NOT BE ACCEPTABLE IF, INACCURACY IS INTRODUCED IN ANY STAGE OF DENTAL CAST ARTICULATION PROCEDURE. LITERATURE SHOWS THAT ERRORS ARE EXPECTED TO OCCUR IN ANY STAGE OF CAST ARTICULATION PROCEDURE. THE ERRORS ASSOCIATED WITH THE MATERIALS USED, LIMITATIONS OF THE ARTICULATORS, RESTRICTIONS OF SOFT TISSUES AND ROLE OF MASTICATORY MUSCLES ARE SOME FACTORS THAT AFFECT EITHER DIRECTLY OR INDIRECTLY THE ACCURACY AND OF CAST ARTICULATION PROCEDURE. HOWEVER, MANY OF THESE CAST ARTICULATION ERRORS CAN BE AVIODED THROUGH UNDERSTANDING THE MAXILLO-MANDIBULAR RELATIONSHIP, PROPER SELECTION OF MATERIALS AND PROPER MANIPULATION OF THE DEVICES.

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VIRTUAL REALITY -TWINITY IN PROSTHODONTICS

G SANDHYA

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Computer assisted navigation has proved to be a compliment in various surgical disciplines.The implant dentistry have expanded this virtual reality technology for the perfection and 3-dimentional planning of implant placement and also describes the various techniques involved,its merits and demerits applications and future perspectives in prosthodontic rehabilitation.

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DOES NBW3 DESERVE TO BE ADJUNCT IN TREATMENT OF PERI IMPLANTITIS? A REVIEW

G. B. AJAY BALAJI, KATHERINE NAOREM

SRI SIDHARTHA DENTAL COLLEGE, TUMAKURU, KARNATAKA

Peri implantitis is a chronic inflammatory disease caused by microorganism residing in sub gingival biofilm. For treatment of peri implantitis several therapies have been reported . non surgical treatment usually includes debridement with curettes or air abrasion and these can be with antibiotic therapy. Surgical treatment involve access to lesion followed by debridement .in some cases, regenerative therapy such as bone graft or barrier membrane still being few long term prospective randomized studies so ideal peri implantitis therapies have not been elucidated. In recent day advances , Ozone (O3) is attracting attention as a possible alternative antiseptic in the dental field. The high stability of ozone nano bubble water allows for bottling and use as a disinfectant solution. there is no cytotoxicity against oral epithelium and mucosal cells such as fibroblast, cementoblast and epithelial cell that suggest aquous ozone would be suitable for treating oral infectious diseases. NBW3 retains ozone gas in form of nano bubble and can exert anti microbial activity for more than 6 months if it is protected against the UV rays. NBW3 has been used for peri implant patients, and the results suggested that the irrigation with NBW3 might be a promising adjunctive therapy for peri implantitis.

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REDEFINING PRECISION: THE DIGITAL WAY

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REDEFINING PRECISION- THE DIGITAL WAY!. . Mid 1800's marked the beginning of concept of impression making. To accomplish the best prosthetic results, it was important to understand the properties of materials, their accuracies, and ability to reproduce fine details along with replication properties of the gypsum products. First impression material to hit the dental practice was Beeswax, being the important benchmark in evolution of impression materials. This evolution was further followed by Gutta-Percha, thermoelastic resins and Plaster Of Paris. Progressing to the next era, use of hydrocolloids were most preferred impression materials. Polysulfides, condensation silicones, addition silicones {polyvinyl silicones[PVS]}, polyether were introduced. These materials were a success in prosthodontics as they offered advantages of accuracy, dimensional stability and best elastic recovery, hence providing high quality impressions and prostheses. During 20th century, the evolution of materials slowed down, as the elastomeric materials satisfied almost all the aspects required for fabrication of prostheses. But now the latest development in dentistry unfolds the new era of digital/optical impression.. In this paper I will take you the journey of impression materials since 1800's with emphasis on the latest techniques so that we can truly redefine precision.

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WHICH IS BETTER? LUMINEERS OR VENEERS?

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Aesthetic dentistry is fast emerging as an increasingly popular branch of dental sciences. Every patient coming for dental treatment wants a smile as beautiful and luminous as the stars. In this upcoming trend, the most common and consistently successful treatment approach has been that of ceramic veneers. They serve as a brilliantly aesthetic, minimally invasive and durable aesthetic pathway to a beautiful smile. In recent times, another successful advancement in this treatment alternative has been introduced- the Lumineers. These are digitally fabricated ultrathin and highly translucent advanced veneers that better allow the replication of the natural depth and aesthetic appearance of enamel. Lumineers are as thin as contact lenses, making the preparation required for this restoration even lesser invasive than that for veneers. But, has this advancement beaten its predecessor in all aspects? Are lumineers genuinely stronger, better and more aesthetic than veneers? The present study aims at shedding light on this comparison in a hope to arrive at a comparative superior alternative amongst these two aesthetic treatment modalities..

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PULP-DND (DO NOT DISTURB)!

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Pulpal injuries caused by tooth preparations are a major concern in Prosthodontics and a high number of vital abutment teeth end up in endodontic therapy following prosthesis cementation.. The key to successful prosthetic treatment of vital teeth is the integral knowledge of the properties, structure, and function of the dentin-pulp complex. During tooth preparation the clinician is often unsure of the preparation proximity to the pulp chamber,. As we know that no material can provide better protection for the pulp than the dentin for that an accurate determination of the remaining dentin thickness (RDT) is required. So far, the decision about the preparation depth has been based on X-ray photography where the tiny pulp horns have been seen as shorter than they actually are and involve stoppage of procedure and x ray exposure, but with recent advances it has become possible to measure RDT during ongoing procedure see the 3D tooth structure as well.. RDT serves as excellent barrier to both pathological and iatrogenic insults, during tooth preparation. So in this presentation we will be discussing about various RDT measuring devices and techniques like prepometer, optical coherent tomograph (OCT), Endoest 3D, customized laser device, ultrasonic micrometer etc. These will help us precisely to diagnose how much of the dentin can be removed without any risk of damage to pulp vitality.. .

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IMPLANT ABUTMENT: BRIDGING LINK BETWEEN IMPLANT '' OCCLUSION AND INTEGRITY. ''

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Implant design features are one of the fundamental elements that have an effect on implant primary stability and implant ability to sustain loading during or after osseointegration. Implant dentistry has travelled a long way from the 18th century. With an increase in the availability of implant restorative components, the selection of an appropriate implant abutment for a given clinical situation has become more challenging.. Advancements in research has overcome these problems .In regards to design of the abutment, implant abutment interface is sensitive to mechanical loading and bacterial contamination. There has been an improvement in the design of implant abutment in accordance to implant biomechanics and occlusion so as to create harmony with the joint and musculature. . So, this paper aims at discussing various aspects of implant abutment designs from basics to advancements for their application in different clinical situations..

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EFFECT OF CANTILEVER ON THE LENGTH OF THE EDENTULOUS SPAN: A META-ANALYSIS

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ITS-CDSR

Cantilevers were used to extend implant supported full arch Fixed Partial Dentures with promising long-term results. Since then, the use of cantilevers in full arch, multiple unit or even single unit FPDs has been relatively common in implant reconstructions. The use of cantilevers, however, has not been without controversy. Some authors have suggested that occlusal forces on cantilevers are amplified by leverage action which might result in damaging strain.. Because many mechanical variables are present in the oral cavity, the proper load transfer between the prosthesis and the bone is important for treatment planning and for the longevity of the implant-supported fixed partial denture. The aim of this study was to further explore the impact of cantilevers on long-term technical and biological success outcomes of implant supported FPDs.

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RECENT ADVANCES IN PROSTHODONTICS MATERIALS

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A science of dental materials covers a broad range of terminology, composition & properties used to describe or predict the performance of biomaterials.Prosthodontist should be well versed with the knowledge of science of materials, which include various impression materials, restorative materials, casting & die materials as well as cementation materials.. . Advancements in the dental materials are aimed at improving the existing materials and to bring in new materials so as to improve the quality of final restoration.Over the past 30 years, technology has advanced high and has benefited dental materials science in a variety of ways including automixing impression materials, laser applications, imaging technologies, composite technology, “smarter” & stronger ceramics and minimally invasive dental procedures.. It is important to keep in track of recent trends and advancements so that the prosthodontist and the patient be benefited.This paper presentation highlights the recent advances in impression materials, restorative and cementation materials used in prosthodontics with advantages and disadvantages of these which will help to choose the material accordingly..

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GUIDANCE - PATHWAY TO PRECISION

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During the past decade, concept of prosthetically driven implant placement is suggested to optimize the aesthetic outcome and success of the final restoration. Each implantologist plans different protocol for implant prosthesis with the available resources. Guided implant surgery is one such protocol that is increasing in popularity, particularly due to the availability, precision and simplicity. An osteotomy is performed through a digitally designed/ printed surgical guide with the help of CBCT and dental implant planning software. This modern approach facilitates implant placement at optimal positions which enables fabrication of an aesthetic prosthesis and it also has the potential to provide the highest level of precision and control. However, there are few drawbacks with this technique. . This scientific paper presentation provides an overview of guided implant surgery and highlights the literature with regard to the effectiveness of this surgical technique..

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SELECTION AND DESIGNING OF ABUTMENTS FOR IMPLANTS- AN UNFORGOTTEN BASIC FOR PRECISION

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The ultimate success of implant has become a restorative driven field and it is therefore important to know the designing principles of abutments and its connection to the implants along with its rationale for use in clinical practice. During the past several decades, there has been a significant increase in the number of dental implant manufacturers and implant restorative components thus making it easily available for clinicians. With the ever-increasing number of implant choices and transepithelial abutments available selecting the appropriate abutment can be both complex and confusing. Use of CAD/CAM abutments have brought about a revolution in the field of implant dentistry, thus making it a viable option for replacement of the traditional conventional techniques. This paper highlights various methods and rationale behind selection, designing of various abutments, its influence on emergence profile, and the newer advances and trends that have emerged in the field of implant dentistry. . KEYWORDS: Cement retained abutment, custom abutment, implant abutment, screw retained abutment.

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IMMEDIATE VERSUS EARLY LOADING OF SINGLE DENTAL IMPLANTS

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The field of science and research is ever changing and the scientific discipline of prosthodontics is no exception. The practice of prosthodontics and the supporting technology involved has evolved tremendously from the traditional to contemporary. As a result of continuous development in technology, new methods of production and new treatment concepts are becoming popular day by day.. Since 1990, implants placed in completely edentulous arches have been loaded immediately or early in selected patients. For single implant supported crown, similar success rates have been reported for both protocols and for conventional loadingprotocol, especially when implants are placed with adequate length and with insertion torques greater than 32 N cm. These protocols have also become widely accepted after the introduction of chemically modified titanium surface topography. Despite this little is known about the differences between survival rates and marginal bone loss in these 2 loading protocols in single implant crowns.. As a chemically modified titanium surface has a substantial effect on the qualitative and quantitative aspects of bone healing, both loading protocols have become widely documented and accepted for situations ranging from complete arch restorations to single implant supported crowns..

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PROSPECTIVE ADVANCES IN IMPLANT BIO-MATERIALS

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The science of implantology is highly dynamic. Since the discovery of osseointegration, dental implantology has been consistently evolving and careful execution of implant treatments deliver very high to medium-term success and survival rates.. Appropriate selection of the implant biomaterial is a key factor for success of implants. To optimize biologic performance, implants should be selected to reduce the negative biologic response thereby increasing the biocompatibility and provide favourable biomechanics to enable adequate function. . Various advancements in surface modifications aimed at improving speed and degree of osseointegration to enhance clinical treatment options and outcomes. Increasing demand for metal-free dental restorations, due to concern about metal corrosion, has also led to the development of ceramic-based dental implants such as Zirconia, PEEK, PEKK, Fiber reinforced composite and anatomic root form implants.. A new material has been introduced into the field of implant dentistry, called Silicon nitride, has shown satisfactory performance for all pre-requisites as a dental implant material and also because of its antibacterial properties. It is basically a ceramic which showed high mechanical/high resistance performance which led to its use as a dental prosthetic bio- material.. This paper aims at the evolution of dental bio-materials with emphasis on the newer materials available, addressing basic specifications required for any dental implant material.. .

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CURRENT CONCEPTS IN SHORT DENTAL IMPLANTS

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Dental implants have been an established treatment option over several decades. In patients with limited vertical bone height, the process of treatment is extensive. Many a times, prior to implant placement, augmentation procedures are required.. . . Short dental implants have evolved into a promising and reliable treatment option in the oro-facial rehabilitation of atrophic mandibles and maxillae, as an alternative to vertical ridge augmentation. Dental implants are referred to as “short” if their intra-bony length measures = 8 mm and considered as “ultra-short” with lengths < 6 mm.. . It is known that achievement of primary stability is one of the prerequisites for osseointegration and treatment success. There are reports suggesting successful osseointegration with shorter implants. However, under-drilling of the crestal aspect may lead to decreased bone-to-implant contact in case of shorter implants. . . This scientific presentation will clinically analyze the feasibility and safety of a new short dental implant system with an expandable compressive design in the apical region. .

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REDEFINING ALL ON FOUR CONCEPT

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The ''All on 4 concept'' is founded on the principle that4 implants, a combination of 2 straight anterior. and 2 tilted posterior, placed within the premaxilla or anterior mandible, would provide enough support. to maintain a full arch prosthesis.. Posterior bone grafting, sinus or ridge augmentation for atrophic jaws, before implant placement can be. an alternative; however, additional surgeries, cost, extended length of treatment, and comorbidities . precluded others to become innovative to circumvent these procedures and problems. Inferior alveolar. nerve lateralization has been tried with an extremely high rate of paraesthesia, and so many have. abandoned this surgery. In an effort to improve implant position and decrease the cantilever length, . theconcept of angled implants was studied.. Angulation of distal implants provides numerous biomechanical and clinical advantages for fixed. Implants.. Simply by increasing the A-P spread, shortening the cantilever, coupled with cross arch stabilization, the. implant/prosthetic outcome would be similar to traditional axial loaded cases.. The angulation also provides the opportunity for longer implants to be placed while moving the implant. support posteriorly and enhancing load distribution helps minimize any significant movement and. negates coronal stress at the margin bone level.. Multiple studies by various independent authors have shown the'' All on the 4 '' technique has similar. success rates as compared with the well- studied traditional vertical implants owing to the. biomechanics..

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GENETICS

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Osseointegration means bone deposition and bone creeping around the implant over a period of time during healing. Titanium being biocompatible material allows bone growth over it whenever a titanium fixture is inserted in the bone. Bone formation around the implant is a physiological process. However in some demograhic species it is fast and in others it shows delay in formation of bone. It also differs from maxilla to mandible and also depend on the biological make up of the tissue. Now the question arises about any genetic make up difference from one individual to other and a need to discuss bone growing capability, pattern of bone formation and bone response to loads , which are different from individual to individual. . Is the genetic makeup of an individual responsible for osseointegration?. This presentation discusses relationship between genetics and Osseointegration..

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ALVEOLAR RIDGE RESERVATION

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Several techniques and materials have been suggested for alveolar ridge preservation. An atraumatic extraction technique, together with ridge and site preservation, is important for function and esthetics following tooth replacement. Loss of alveolar bone volume after tooth extraction often complicates prosthetic reconstruction after implant placement. Current techniques used for ridge and site preservation include the use of bone graft materials and/or resorbable membranes. Use of an appropriate technique preserves alveolar ridge anatomy, facilitates prosthetic management, optimizes function and esthetics, and enables the patient to be treated in a shorter time and with fewer surgical procedures.

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ROLE OF PROSTHODONTICS IN FORENSIC DENTISTRY

MYLA RAMA KRISHNA

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In Forensic odontology, dentistry plays a significant role in the. identification of deceased individuals. Dental identifications have always. played a key role in natural and manmade disaster situations, and in. particular, the mass casualties normally associated with aviation disasters. Because of the lack of a comprehensive fingerprint database, dental. identification continues to be crucial in the world. It has been noted by. several authors that in many cases of air disaster where the limbs are. completely burnt off, some denture materials survive, especially the. posterior part of acrylic dentures and metal-based dentures. Thus forensic. identification by using prosthodontic appliances such as labeling of dentures. and other appliances is gaining popularity as it could provide important. identification clues. This paper presents a review of available literature. emphasizing the fact that how a prosthodontist can play a vital role in. identification of a deceased individual.

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JUST LEAVE THE ROOT BEHIND – SOCKET SHIELDING

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An emerging concept of socket shielding has proved to be an effective method to prevent crestal bone loss. In this technique, a fraction of root is intentionally retained in the socket at the time of immediate implant placement to preserve bundle bone and periodontal ligaments. New bone formation has been seen to occur in case of space between implant and the radicular fragment. This technique ensures that the thickness of the peri implant bone and the retained radicular fragment together is more than 2mm which will help in maintaining the bone volume and aid in the success of implant.

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SOCKET SHEILD- A TECHNIQUE TO PROTECT THE BONE

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Loss of teeth may lead to functional, structural, aesthetic and psychological problems. Though, these problems can be corrected by replacing the missing teeth with appropriate material, but irreversible bone loss in the missing teeth region is of major concern till date. The popularity of implant dentistry is widely increasing over fixed and removable prosthesis and is of greater significance. To achieve proper contour and counter the bone loss especially in anterior region to maintain aesthetics, several methods and techniques were introduced like bone augmentation techniques, bone grafting procedures, guided bone regeneration, immediate implant placement etc. These complicated procedures and their deep intervention in to the tissues restricted their use.. Clinical studies have tested the hypothesis that root retention, either of vital or pulp less teeth, may be able to avoid tissue alterations after tooth extraction. Filippi in 2001 showed in a case report that de-coronation of an ankylosed tooth preserved the alveolar bone before implant placement. Other studies have demonstrated that the preservation of de-coronated roots in the alveolar process maintains existing bone volume and also enables vertical bone growth, which has been observed coronal to the de-coronated root.. Hurzeler in 2010 proposed a new technique by preserving a part of root in the socket to retain the contour of bone and to avoid unnecessary bone resorption. Evidence by the available literature, this paper reviews various aspects of socket shield techniques. .

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NAVIGATION IN ORAL IMPLANTOLOGY - A TECHNIQUE THAT REDEFINES PRECISION

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With furtherance in science and technology, the earlier exhaustive and voluminous systems are replaced with quick and simple systems. One of such discovery is navigation in surgery especially in implantology. Traditionally, implant size, number, direction and placement depends on presurgical diagnostic images which are two dimensional and less expensive but lead to errors that in turn causes implant failure. To overcome this, three-dimensional imaging modalities gradually crawled into implants among that navigation in implantology is a very useful system. This paper aims to uncover the depth of precision of navigation technology in oral implantology.

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DUAL PURPOSE IMPLANT ABUTMENT- THE MULTI-UNITS

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When restoring a full arch, screw-retained implant prosthesis, even a minimal disparity in the draw of the implant interface access causes restorative challenges. The use of multi-unit abutments can overcome restorative challenges and is highly recommended when creating a full arch screw retained implant restorations. Multi-unit abutments provide a passive draw and positive uniform seat at all abutment sites.. Multi-unit abutments are intended to be connectors between the dental implants and multiple implant screw retained restorations. There are usually 3-4 angle correction options to choose from, ranging from straight, 0 to 45 degree. Selection for the abutment should be done at conversion appointment or at the initial prosthetic impression appointment and might need to consider changing one or more angulations in order to best support the final prosthesis before final restoration process.. Multi-unit abutments can also correct implant height disparities. Multi-unit abutments can accommodate height differences because they come in a selection of height profiles. The low profile multi-unit abutments are used when implants are placed higher, relative to the occlusal plane of the tissue, and taller profile multi-unit abutments are used when the implants are placed deeper into the bone. The goal is to seat the multi-unit abutments at about tissue level, and relatively even with each other.. This review paper highlights the uses, indication, contraindications, advantages and disadvantages of the multi –unit implant abutment.. . Key words: Screw retained implant, multi-unit abutment.
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FIRST IMPRESSION MATTERS

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Preservation of remaining structure is a primary goal of maxillofacial prosthetic rehabilitation. Maxillofacial defect may be congenital or acquired. Patients with acquired maxillary defects suffer from disturbances in mastication, speech and social activities. Obturator prostheses eliminate these problems and allow the patients to function normally in the society. Paper will include various impression techniques for obturator fabrication from conventional to advancements in impression making to the use of digital impression techniques leading to reduction of necessary appointments and more comfort to the patient.

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EFFECT OF IMPLANT SIZE AND DESIGN ON IMPLANT SUCCESS RATES: A REVIEW

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Early implants with documented success were fabricated from noble or base metals shaped in either basic or pin designs that attempted to create natural roots, which could then be connected to transmucosal fixed prosthesis. Failures were believed to be caused, in part, by poor biomechanics, especially poor stabilization. These implants had limited success, and mechanical and biological failures prompted dentists to create new designs that, in many instances, had no resemblance to tooth morphology. The most successful designs of this type are the staple, subperiosteal, and blade form implants. . . On selection of a particular system, dentists should consider several clinical factors, which include, but are not limited to, the site and surrounding anatomy, requirements for grafting, osseous quality, and prosthodontic design. Although implants have been used for close to a half century with great success, there are few guidelines that describe when or where to use the different types of implants available. . The increased availability of implants in varying sizes and shapes often makes selection of the most appropriate implant design confusing. This review presents the current status of literature related to implant diameter, length, and shape. The understanding of how these variables may affect implant success in varying qualities and quantities of bone allows the clinician to more accurately assess the potential success of an implant in a particular situation.

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BEADING AND BOXING; A REVIEW

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The boxing procedure is a crucial step to preserve the detail of the impression specially of the vestibular area. The aim of beading and boxing are to obtain an accurate cast with proper border and base thickness. Beading is the protection of the formed border thickness of the impression and boxing of an impression is building up vertical walls around impression. This paper describe an alternative beading and boxing technique that is compatible with all impression materials, is efficient, simple, inexpensive and practicable. This paper presentation describes new technique for beading and boxing by using a commercially available instant adhesive around the border of impression, which act as a joining agent between beading and boxing made up of modelling wax.

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OSSEODENSIFICATION – TO GET MORE OUT OF WHAT IS AVAILABLE

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The goal in implant placement is to achieve primary implant stability. It is well established that implant stability is critical for osseointegration. This is more important in recent days due to popular immediate/ early loading protocols being implemented into treatment. . . Removing bone bulk is contrary to achieving the primary stability desired, Unlike the standard traditional dental drilling techniques, a new technique is introduced which does not excavate bone tissue. Rather, bone tissue is simultaneously compacted and auto-grafted in outwardly expanding directions from the osteotomy. This novel approach to hardware implantation, termed Osseodensification, has been developed aided by specially designed burs rotating in a clockwise and anti-clockwise direction. This concept with universally compatible drills has been proposed to help in better osteotomy preparation, bone densification, and indirect sinus lift and also achieve bone expansion at different sites of varying bone densities. The purpose of this review paper is to discuss in detail on OSSEODENSIFICATION technique, procedure & its application.

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DIGITAL IMPRESSIONS IN IMPLANT DENTISTRY: A PROGRESS TOWARDS PRECISENESS

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With the predictable integration of implants, the emphasis is shifted towards precise prosthesis. Reproducing the intraoral relationship of implants through impression procedures is the first step in achieving an accurate, passively fitting prosthesis. To create an accurate definitive cast, it is critically important to obtain an intraoral impression that accurately captures the 3-dimensional (3-D) spatial orientation of a patient's implants, Since the accuracy of the impression affects the accuracy of definitive cast, an accurate impression is essential to fabricate a prosthesis with good fit. In the field of Prosthodontics, the concept of digital impressions using CAD/CAM is growing quickly for impression making procedures over conventional methods. The new technology is easier and precise for the clinician and more comfortable to the patient. This paper presentation reveals various impression techniques for dental implants.

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ANTERIOR REFERENCE POINT – IS IT NECESSARY

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It has been accepted for the past many decades that an anatomically related anterior reference point is required during a face-bow transfer. Many anterior reference points have been advocated by different researchers. This paper explores the evolution of the concept of the anterior reference point and came to the conclusion that the literature search failed to draw up evidence from controlled trials that there is any benefit from locating an anatomically related anterior reference point during face bow transfer.

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DIGITALLY DESIGNING AN OBTURATOR –A PATH TO PRECISION

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With the evolution of digital technology, maxillofacial prostheses are also evolving each day. Of the maxillofacial prostheses that are designed very commonly is an OBTURATOR. They are essential for restoration of oral functions such as speech, swallowing, mastication, and aesthetics after any surgery for which such defects in the maxillofacial region arises. Conventional fabrication of an obturator is complex and needs multiple scheduled visits, and an alternative process is needed for rapid fabrication in emergency cases, such as disaster-related damage or loss. Digital technology is creating exciting opportunities for improving the delivery of maxillofacial prostheses.. The development of 3D scanning and printing technologies has allowed for the accurate printing of the complex shapes of maxillofacial prostheses with details including the precise simulation of the undercut areas. Stereolithography which is a recent extension of this technology utilizes an additive process of building object geometry in layers from a virtually sectioned 3D model.. In this paper, we aim to discuss and evaluate the advanced technological aspects of fabricating an obturator compared to the conventional ones and their advantages and disadvantages which will definitely be a boon to manufacture more precise maxillofacial prostheses..

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SELF ASSEMBLED MONOLAYERS(SAMs)-A NANO SURFACE MODIFICATION

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Dental implant is made from one or more biomaterials, titanium and its alloys being most commonly used biomaterial as it exhibits good biocompatibility, mechanical properties and machinability. Osseointegration as described by Branemark and soft tissue closure are the foundation for the success of dental implants. The improvement of the success rate of dental implants, shorten the treatment time, helps in rapid loading and reduce the occurrence of peri-implantitis and peri-implant mucositis remains an important area of research with regards to oral implantology. An increasing number of studies have been devoted to modifying the surface of titanium and titanium alloy to increase their biological activity and promote osseointegration and soft tissue healing. To achieve these objectives researchers have developed a variety of methods including sandblasting, acid etching etc. In addition to these, many substances are coated on to the titanium surface to achieve early osseointegration. The Layer-by-Layer(LbL) is an electrostatic self-assembly technique proposed by Decher (1997), LBL assembly is a nano-scale process, where multi-layer film is deposited based on complementary interactions between differently charged poly electrolyte and has attracted many because of its easy, accurate, and precise approach to modify surface properties. Therefore, in this paper we have reviewed the progress of the application of the LbL technique for the surface modification of titanium and its alloys.. .

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JOURNEY TOWARDS ADVANCEMENTS

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CAD/CAM was first introduced in dentistry in the mid 1980's. Recently CAD/CAM fabrication of restorations involves less chair-side time compared to the traditional technique. In office CAD/CAM doesn't require any communication with laboratory and chair-side digital impressions enable seamless communication between the clinician and the lab technician. CAD/CAM dentistry is changing the way in which clinicians provide indirect restorations to patients making the process more patient and user friendly, reliable and accurate. Hence the purpose of my presentation is to emphasize the changing perception in fabrication of complete denture, fixed prosthesis, Removable prosthesis and Implant dentistry by using chair-side CAD/CAM modern era.

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"PEEK"ING FOR PRECISION : PARTIAL DENTURES REVISITED

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Poly Ether Ether Ketone (PEEK), a high-performance polymer has been used in industry for many years and has also proven successful in many areas of medicine. It is now also finding increased uses in dentistry as a direct result of CAD/CAM technology. PEEK is characterized by excellent mechanical and chemical properties. Due to its combination of superior biocompatibility and ideal mechanical properties, the metal-free denture frame-work is a taste- neutral (no metal taste) the material is particularly attractive for dental restorations and it is ideal for CAD/CAM framework fabrication in prosthetic dentistry. Uses of PEEK are found in fixed prosthodontic frameworks and removable partial denture frameworks including precision attachments. This review paper on Peek material highlights the advantages and disadvantages, procedure of fabrication, indication and contraindication of the material..

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THE SMILING SCAN TECHNIQUE

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The growing interest in minimally invasive implant placement and the option of delivering prefabricated provisional prosthesis immediately, have lead to development of numerous 3 dimensional planning software programs. The smiling scan technique is a new integrated workflow to optimize functional and esthetic outcome. It streamlines treatment planning by means of digitally assisted 3 dimensional prosthetically driven low cost technique. It allows successful creation of a virtual patient showing a broad smile under static conditions through superimposition of only two different digital data sets that repesents conventionally used digital integrated workflow. It allows the clinician to impart all information related to patient's 3D facial anatomy while patient is smiling. Once planning is completed and approved by the clinician, Computer aided manufacturing, Rapid protyping (3D printing), Implant planning for interim and/or definitive restoration is facilitated through the digital workflow.. The aim of this paper is to emphasize the role of digital workflow in prosthetically driven diagnosis and treatment plan.

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VIRTUALIZING TRANSOGRAPHICS

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Articulators and facebows are the integral part of any branch of prosthodontics. We have seen, that there has been a constant innovation, expansion and evolution of these two important instruments through the years. Many concepts like superiority of arcon articulator over non-arcon articulators, evolution of various techniques to record jaw movements like transographs, stereographs, axiographs, the importance of their use in dental school/ colleges and importance of terminal hinge axis has been introduced till date. Efforts are still being made and still going on to record the accurate jaw movements in order to make a prosthesis which can function harmoniously and also preserve the remaining tissues. The occlusion is developed and based on recording mandibular jaw movements and there simulation on articulators. Without a full understanding of the instrument and the theory, any attempt to use 'the instrument is doomed to failure. Critical patient demands followed by complex prosthodontic treatments to rehabilitate full mouth cases in conjunction with concepts in modern prosthodontics advocate the theory of giving precisely fitting and precisely functional prosthesis. Transographics i.e. recording of jaw movements by digital means is one such evolution. . This paper presentation will focus on recording mandibular jaw movements and centric relation digitally by means of an improvised articulator- facebow based on the concept of transographics.

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CHANGING TRENDS IN ZIRCONIUM IMPLANTS

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Zirconia is emerging as a promising alternative to conventional Titanium based implant system for oral rehabilitation with superior biological, aesthetic, mechanical and optical properties. It is important to understand the similarities and differences between zirconia and titanium implant system so as to enable the clinician to provide the best treatment outcomes for their patients. This review aims to analyze the credibility of Zirconia as an alternative to replace Titanium based implant system.

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CONVENTIONAL IMPRESSION VS DIGITAL IMPRESSION: -A STEP TOWARDS MORE PRECISION

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The most important step in prosthetic restoration is the impression. For centuries,the conventional impression has been used in dentistry but now the introduction of digital impression has revolutionized our prosthetic approach. Precision and accuracy of master impressions are critical to the overall excellence and marginal fit of definitive fixed restorations. The desirable properties for an ideal impression should include short chairside time, biocompatibility, a material that is safe for the purpose intended, and a user- and patient-friendly material/technique. Currently, the most popular impression materials for fixed restorations utilizes polyvinylsiloxane or polyether materials. Along with these above requirements, an appropriate working and setting time for the given procedure; strong tear strength; adequate. Flowability , hydrophilicity and wettability; ease of removal and elastic recovery, so that any deformation during removal of the impression is rapidly reversed; a smell, taste and texture. acceptable to patients; and ease of storage are needed. There are some difficulties in conventional impression making because of messy materials,tedious work and more time needed for impression making. In the new era digital impression was introduced in dentistry .Digital impression overcomes many imprecision in the prosthetic chain due to the materials and or human errors.It allows dentists to create a virtual, computer-generated replica of the hard and soft tissues in the mouth using lasers and other optical scanning devices. As a result less Imprecisions , more efficiency and accuracy with more productivity in prosthetic work.. .

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CONSTRAINTS IN GERIATRIC ORAL HEALTH CARE

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CONSTRAINTS IN GERIATRIC ORAL HEALTH CARE. The aim of the study is to identify the constraints in the oral health care of geriatric population.. We used a framed questionnaire to understand the current scenario which includes general details , socio-economic status, period of edentulism, access to dental facilities, reason for not pursuing treatment etc.. The barrier identified were financial insufficiency, transportation barrier, lack of awareness, lack of family and social support, psychological factors, shortage of dentists trained in geriatric care.. A classification system is necessary to identify and analyse the constraint first so that it can be acted upon.

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SCULPTING MADE EASY WITH 3-D PRINTING: A REVIEW

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The accurate reproduction of the form and surface details of missing body structures is an essential part of any successful prosthetic rehabilitation. A prosthodontist should aim to rehabilitate these defects by fabricating a prosthesis which has anatural and life- like appearance and also restore the function in order to improve the patient's quality of life. When attempting to restore the defect prosthetically,one should be able to restore the anatomy as closely as possible. This process is difficult and time consuming which requires a high level of artistic skill to form a mirror image and achieve a good aesthetic match.With the advent of digital technology, this can now be achieved easily by capturing images of the soft tissues and replicating them.In the last decade , additive manufacturing has been widely used.Additive Manufacturing (AM) or 3D printing is a process by which a 3D data is turned into a physical object by adding layer-upon-layer of material.3D printing offers great efficiency, affordability, accessibility, reproducibility, speed and accuracyas compared to the conventional methods of fabrication.The ultimate goal of 3D printing is to fabricate a moreaccurate prosthesis in less time.In this paper, we aim to discuss and evaluate the advanced technological aspects of fabricating a maxillofacial prosthesis over the conventional techniques, which will definitely be a boon to manufacturing a more precise prosthesis.

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SYNCRYSTALLIZATION -BECAUSE UNITED THEY STAND

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INTRODUCTION: . SYNCRYSTALLIZATION is a major boon to modern implant dentistry due to its versatility of use in many of the complications arising in day to day implant practice.. SYNCRYSTALLIZATION is a combined science of dental art and mechanics for welding of the implant abutments for the purpose of early prosthetic rehabilitation.. It provides rigidity and immobility due to the fixation achieved by a prefabricated titanium bar.. . PURPOSE:. Immediate loading of implants. Early prosthetic rehabilitation. Reduced number of implant placement. Can be used with both conventional or basal implants. In cases with titled implants. For implants with low insertion torque values. For cases with severe ridge resorption. Simplified impression procedure. For both provisional or permanent prosthetic rehabilitation. If needed can be used along with anchorage from zygomatic implants. . CONCLUSION: The use of syncrystallization in implant dentistry should thus be encouraged for better surgical and prosthetic outcome.

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OSSEODENSIFICATION: A NOVEL TECHNIQUE IN IMPLANT DENTISTRY

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Factors like the bucco-lingual width of the edentulous ridge, the quality of bone and height of the ridge influence implant placement and its prognosis. The atrophied ridge is an added challenge. To correct this, various techniques have been described for widening including osteoinduction using appropriate growth factors, osteoconduction, revascularised bone grafts, alveolar distraction osteogenesis, guided bone regeneration, and splitting to expand the ridge. However, these methods have limitations, including the need to harvest bone from intraoral or extra-oral sites, which may lead to increased morbidity, the risk of exposure of the bone graft or membrane followed by infection, and an unpredictable rate of bone resorption after the reconstructive or regenerative procedure(s) and placement of implants. Furthermore, the conventional method for placing an implant relies on the excavation of bone, which further reduces the amount of bone in an already narrow ridge.. . A bone drilling concept, namely osseodensification, has been introduced for placement of endosteal implants to increase primary stability through densification of the osteotomy walls in both low and high density bones. Special kinds of densifying burs are used to expand the ridge laterally.. . The following presentation will help us in knowing the current challenges faced in implant therapy, and a new procedure called osseodensification which is relatively time saving and simple to execute..

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SHORTENED DENTAL ARCH CONCEPT

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Retention of a healthy, natural, functioning dentition comprising not less than 20 teeth and not requiring a prosthesis has been described as a goal for oral health by the WHO in 1922.. This indicates a shift away from the traditional treatment philosophy of restoring a complete dentition in all cases.. . . The Shortened Dental Arch (SDA) concept is defined as a specific type of dentition with an intact anterior region and a reduction in the occluding pairs of posterior teeth, starting posteriorly. This concept was proposed as a treatment strategy in the management of reduced dentitions in middle aged and elderly patients.. . There was sufficient adaptive capacity in subjects with SDA when at least four occlusal units are left (one unit corresponds to a pair of occluding premolars). . The SDA concept is based on: (i) The treatment goals are changing from the preservation of complete dental arches; (ii) anterior and premolar regions are functionally and esthetically strategic parts of the dentition, and are considered a priority in rehabilitation; (iii) it meets the requirements of the normal oral function; and (iv) it reduce the need for complex restorative treatment in the posterior region.(v) it is based on circumstantial evidence; (vi) it does not contradict current theories of occlusion..

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AN INTRAORAL RADIATION SHIELDING STENT

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Malignancies are devastating but radiotherapy used in the treatment of malignancy can leave the patient considerably compromised, though the tumor itself may resolve. Radiation of head and neck cancers can affect neighboring areas, resulting in acute mucositis, xerostomia and dental disease secondary to radiation. The uneasiness resulting from this can lead to inability to masticate and swallow, resulting in nutritional deficiencies. This causes a vicious cycle to set in, of poor healing from the primary tumors and its treatment due to inadequate nutrition. Reduction in quality of life of irradiated patient, post cancer diagnosis can also be linked to inability to eat adequately, a basic survival requirement of mankind. A shielding stent can prevent unnecessary irradiation of the surrounding normal tissues, therefore reducing the severity of reactions and limiting the radiation to necessary areas only. Since the use of these stents is personalized, close association between the radiotherapist and prosthodontist is essential. This paper presents a review of possible area of involvement by the prosthodontist to reduce radiation induced trauma to the patient.

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IMPLANT MATERIAL AND ITS SURFACE TOPOGRAPHY: WHATS NEW AND NEXT

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Osseo-integrated dental implants have been used as successful treatment modalities for early and/or immediate functional loading is not possible with the conventional implant material and surface topography. .. Titanium and its alloys have been widely used as biomaterials, especially for orthopaedic prostheses and dental implants due to its excellent mechanical properties, and biocompatibility. In some situations, they are insufficient because of their reduced mechanical strength or their toxic potential and especially late Osseo-integration. Thus, an ideal material must offer high levels of mechanical stability without releasing metal ions into the human body and early Osseo-integration. In this context, the binary Ti-Zr alloy has gained much attention, since this system guarantees increased mechanical strength with remarkable decrease in ion release, as well as early Osseo-integration due to its different surface topography. Though Ti-Zr alloy shows promising result in many adverse conditions, but it can't mimic physiological function like natural teeth. Therefore, in search of a new surface and biomaterial that can mimic natural teeth is being introduced bio-engineering the new generation- bio-hybrid implant.. . The purpose of this paper presentation is to enlighten about active surfaces of Ti-Zr alloy comparing with cpTi and also about the next generation implant, the bio-hybrid implant.

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EFFECT OF DIFFERENT IMPLANT COLLAR SURFACE MODIFICATIONS ON THE MARGINAL BONE LOSS

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Osseointegration is an essential requirement for allowing the survival of dental implants in the jaw bone. Factors such as unfavorable stress distribution, surgical trauma, implant-abutment microgap, and bacterial infiltration can detrimentally affect osseointegration and accelerate bone loss. Several factors such as implant surface quality, implant neck macro and micro design and crestal implant position play particularly crucial roles in osseointegration. The long-term clinical and aesthetic outcome of implant-supported restoration depends on preservation of both soft and hard tissues around implant, thus the overall amount of crestal bone loss may influence the clinical success. Initial breakdown of peri-implant bone takes place in the most coronal portion of the bone-implant interface. Bone resorption of 1.5 to 2?mm is observed during the first year of function and is generally considered a normal physiologic process. Successive annual bone loss of 0.2?mm occurs in subsequent years . Implant neck design and surface characterization have been associated with reduced marginal bone loss which has led to the development of implants with new collar configuration and topographic modification in order to improve the soft and hard tissue osseointegration. This review of literature compares the alteration in marginal bone level in implants with various surface modifications of implant collar i.e. machined(smooth and polished) surface and rough surface..

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RADIOPROTECTIVE STENTS-AN OVERVIEW

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Radiotherapy is the standard and widely used procedure for treatment of patients with head and neck cancer with successful results. Statics says of all the concern found in india 40% are oral cancers.in spite of the advancement of radiation techniques, this procedure is frequently associated with a wide range of complications such as radiation caries, loss of taste, xerostomia, erythema, mucosities, trismus and osteoradionecrosis with significant impairment of patients quality of life. Hypersensitivity of the teeth, taste loss, oral bacterial shift and periodontal breakdown are other problems of concern while treating patients rendering radiotherapy. The actual success of any treatment is being free of post-operative complication hamper the prognosis of treatment. Therefore it is inevitable to protect the surrounding tissues from radiation exposure. Various physical methods are also commonly used to reduce damage which include shielding and proper positioning and use of multiple fields. As a preventive measures, radiotherapy protective devices/stents can be fabricated and used during treatment. The devices are used to displace the position or to shield tissues or to assist in efficient administration of radiotherapy to the affected areas, thus limiting the post therapy morbidity.

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REDEFINING PRECISION THROUGH DIGITILISATION

S CHOWDARY KUNDULA, DR S JHANSI

DRS SUDHA AND NAGESWARARAO SIDDHARTHA INSTITUTE OF DENTAL SCIENCES, ANDHRA PRADESH

ATTAINING PRECISION IN PROSTHODONTICS HAS BEEN A HERCULEAN TASK. THANKS TO THE ADVENT OF DIGITAL DENTISTRY THINGS WHICH WERE IMPOSSIBLE ARE MADE VERY MUCH POSSIBLE WITH HIGHER PRECISION. IN THIS PAPER, WE BRING TO LIGHT THE VARIOUS WAYS IN WHICH THE DIGITALISATION HAS BEEN REDEFINING PRECISION.

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INTERACTION BETWEEN MAGNETIC RESONANCE IMAGING AND DENTAL MATERIALS

S PREETHI SUGANYA

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Magnetic resonance imaging has become a common and important lifesaving diagnostic tool in recent times, for diseases of the head and neck region. Dentists should be aware of the interactions of various restorative dental materials and different technical factors by MRI. Specific knowledge about these impacts, at the dentist level and at the level of personnel at the MRI centres can save valuable time for the patient and prevent errors in MRI images. Artifacts from metal restorations are major hindrance at such times, as they result in disappearnce or distortion. This presentation enlightens on interaction between MRI and the dental materials widely used in dentistry

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TREFOIL- A REVOLUTIONARY INNOVATION

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The trefoil system is a breakthrough in the efficient treatment of the edentulous mandible. Prior to this, pre-manufactured bars might have been cost efficient, but passive fit always posed a challenge. Now, trefoil has overcome this drawback with a unique fixation mechanism, which allows screws to self-adjust in compensation for inherent deviations from ideal implant positions. This feat of engineering lies at the heart of a new fixed solution that makes it possible for clinicians to offer patients fixed and definitive teeth in a single day. This paper presentation is about the trefoil system – its surface configuration, advantages, disadvantages with indications and contraindications.

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LASER IN PROSTHODONTICS

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The introduction of lasers in the field of prosthodontics has replaced many conventional surgical and technical procedures and is beginning to replace the dental handpiece. Since the development of the ruby laser by Maiman in 1960, a variety of studies on the potential applications of lasers in dentistry have been conducted. Many applications like computer aided design and rapid prototyping technology, and study of occlusion in complete dentures using three-dimensional laser scanner have been developed. Its applications range from fixed Prosthodontics to treatment of dentinal hypersensitivity to surface treatment of base metal alloys. Today it even extends to the fields of dental implantology and maxillofacial Prosthodontics.

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PROSTHETIC FAILURES IN IMPLANTS: REVIEW

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Once a tooth is lost, an individual may seek its replacement so that his/her function and esthetics could be restored. Clinical prosthodontics, during the past decade, has significantly improved and developed according to the advancements in the science and patient's demands and needs. Conventional options in prosthodontics for substituting a missing single tooth include the removable partial denture, partial and full coverage bridgework, and resin-bonded bridgework. While dental implants are increasingly becoming the choice of replacement for missing teeth, the impediments associated with them are progressively emerging too. . This paper presentation provides data regarding prosthetic complications as they related to the following four types of implant prostheses: 1) implant fixed complete dentures; 2) implant overdentures; 3) implant fixed partial dentures; and 4) implant single crowns. The aim of this review is to discuss prosthetic complications associated with dental implants. Management protocols and possible means of avoiding certain complications are also briefly discussed.

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REVOLTS IN GUIDES FOR IMPLANT PLACEMENT

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Prosthetically driven implant dentistry with high accuracy in planning & execution of surgical procedures assures an esthetically pleasing and biologically acceptable treatment outcome with long term success rates. Implant complications are often inadvertent sequlae of improper diagnosis, treatment planning, surgical method & implant placement.. In order to achieve a successful treatment result, an accurate placement of implant is necessary. Even a minor variation in comparison to ideal placement causes difficulties in fabrication of final prosthesis. Therefore, various guides have been put forward over years for precise surgical placement of implants. Changing trends of placing the implants have emerged from ambiguous placement of implants to a more meticulous approach such as computer navigated implant surgeries. Guided surgery has not only reduced the chances of iatrogenic damage to vital structures, but also increased the esthetic and functional advantages of prosthodontically driven implant placement. Thus, this paper illustrates the various surgical guides for transferring the pre-mapped plan to placing the implants at their designated positions. Key words: Implant placement, guided surgery, surgical guide.

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ROOT MEMBRANE- AGENT OF SHIELD

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Tooth extractions are followed by multiple dimensional changes in the remnant alveolar bone. This physiologic phenomemon is due to loss of the periodontal ligament and the vascular vessels associated with it. They can cause esthetic problems for clinician because it is difficult to fabricate restoration that mimics soft tissue architecture of the natural contra lateral tooth. Over the years, various surgical techniques have been proposed to reduce or compensate for the effects of bone resorption triggered by the tooth extraction. Among these techniques, there are several variants of alveolar socket preservation like Root Submergence Technique, guided bone regeneration (GBR) with membranes and/or augmentation procedures with different grafting materials like connective tissue graft,as well as gingival grafts. A possible alternative to these traditional techniques is offered by the so-called “socket shield” technique, introduced for the first time by Hurzeler and colleagues in 2010. The root fragment functions like a shield which preserved the buccal bone from resorption, the palatal portion of the root is then extracted, leaving in situ the buccal portion, thereafter an immediate implant can be placed palatal to the root fragment. In this paper we will understand the effectiveness of this new surgical approach in preserving the buccal bone plate and therefore there aesthetic outcomes.

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CONTEMPORARY METHODS TO MEASURE PRIMARY STABILITY IN IMMEDIATE LOADING OF DENTAL IMPLANTS

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The introduction of osseointegrated implants in dentistry symbolizes a turning point in clinical dental practice. Immediate loading of dental implants has recently gained popularity due to several factors including reduction in treatment time and trauma as well as esthetics and physiological benefits to the patient. A fundamental prerequisite for implant success is substantial primary stability at the time of insertion and following loading of implant. There are numerous other factors that may contribute in providing an initial retention to the implant. Continuous monitoring in an objective and qualitative manner is important to determine the status of implant stability. Implant stability is measured at two different stages: Primary and secondary. Primary stability comes from mechanical engagement with cortical bone. Secondary stability is developed from regeneration and remodeling of the bone and tissue around the implant after insertion and affected by the primary stability, bone formation and remodelling. Historically the gold standard method to evaluate stability were microscopic or histologic analysis, radiographs, however due to invasiveness of these methods and related ethical issues various other methods have been proposed like cutting torque resistance, reverse torque analysis, model analysis etc. It is, therefore, of an utmost importance to be able to access implant stability at various time points and to project a long term prognosis for successful therapy. Therefore this review focuses on the currently available methods for evaluation of implant stability.

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PARTIAL EXTRACTION THERAPIES- A NOVEL METHOD FOR PDL MEDIATED RIDGE PRESERVATION

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The health, stability, and volume of bone has been the focus of the implant-restorative treatment dilemma. A successful implant therapy is not merely a pursuit of osseointegration, but a full integration of healthy and esthetic peri-implant tissues framing the prosthesis. Hence achieving a perfect long term outcome in implant dentistry requires not only the maintenance of height and width of the facial or buccal alveolar bone wall but also the peri implant tissues.. The partial extraction therapies are a highly promising set of techniques that may significantly alter future management of the failing dentition and post extraction ridge. They collectively encompass the root and ridge-preservation techniques as applied in implant and restorative dentistry. . This technique preserves the tooth-PDL-bundle bone complex, and thus challenge the conventional extract and augment approach. Partial extraction therapies provide a viable treatment modality option and a highly conservative strategy to manage resorption of bone resulting from tooth loss; minimize the need for further hard and soft tissue augmentation and reduce the risk of peri implant tissue recession, thus maximizing functional and esthetic success.. An attempt is made through this paper to review the clinical and technical aspects of Partial extraction therapies..

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SPARK EROSION: STRATEGIES TO ACHIEVE FITNESS IN PROSTHODONTICS

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GNIDSR, WEST BENGAL

Modern precision laboratory procedures have a profound edge over traditional laboratory procedures in fabricating more precise restorations. Spark erosion, also known as electric discharge machining (EDM) is a process by which metal is precisely contoured into a desired shape using short-circuit impulses created within a dielectric medium similar to light oil. This process became popular in early 1940s in tool and die industry. Since then, the dental profession has adapted its uses for fabricating precision-removable partial dentures, titanium crowns, and implant-retained over dentures.. In this spark erosion machining unit, the electrode (positive potential or anode) and the work piece (negative potential or cathode) are outlined into a desired form by CAD/CAM or milling. Cutting gap or a space is maintained between the electrode and work piece through which the electrode moves towards and away from the work piece assisted by a hydraulic ram. The power level selection is determined by factors like alloy properties used, size of object and amount of erosion required.. The advent of this technology in dental field help to attain a passive fit of implant prostheses and fixed partial restorations, which is imperative in avoiding failures. The cutting-edge accuracy thus achieved, helps perfect critical adjustments in individual components thereby increasing the quality of treatment and hence, patient contentment and clinical success. .

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CANTILEVER DESIGN IN IMPLANT SUPPORTED PROSTHESIS

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Cantilever design is frequently used for implant supported prosthesis, and several widely diverging guidelines have been recommended for their use ranging from no extension at all to several teeth. (Carl. E. MISCH). The distance between most anterior and most distal abutment is divided into the length of the cantilever to determine the mechanical advantage to the farthest abutment from the cantilever. Takayama has suggested that the cantilever should not extend beyond the distance between the implant to keep the mechanical advantage under one times the distance. So to achieve this, the size of the cantilever should not be greater than a premolar of similar size. The most important factor in determining the length of the cantilever is the amount of force the patient places on the cantilever. . The amount of force generated against the cantilever is more critical than other factors like cantilever length and mechanical advantage. In addition, an angled force is more detrimental than a force in the long axis of the abutments. The crown height also influences the amount of the force on the cement and bone interface. As such, cantilever magnifies any other force, factors presented and therefore should be used with caution.

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RADIATION STENTS: MINIMIZING RADIATION INDUCED COMPLICATIONS PROSTHODONTICALLY

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Protecting normal tissues from radiation injury is as important as it is to target diseased tissues with radiation. The success of radiation therapy is often limited by adverse sequelae to the surrounding tissues away from the treatment field. At times, the head and neck surgeon and radiotherapist are unaware of the supportive services that a prosthodontist can achieve through a prosthesis. The use of customized radiation shields/stents is recommended to maximize the protection of normal tissues, ensure appropriate delivery to radiation to precise depth and allow reproducibility of the patient positioning on a day to day basis. A whole array of prostheses, including radiation source carriers, peri-oral cone positioning stents, shielding stents, tissue re-contouring stents, and tissue bolus compensators can be used to limit the complications following radiation therapy. These devices are usually made out of acrylic resin and are fabricated prior to the radiation simulation appointment to ensure that the calculated dosimetry is taken into account. This paper aims at describing the various prosthodontic options available to prevent post radiation morbidity.

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VIRTUAL ARTICULATORS: A FUTURE ORIENTED TECHNOLOGY

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Articulator enables the technicians to carry out a study of occlusal relations between dental arches and to detect harmful occlusal interferences on models before more sophisticated occlusal equilibration procedures are performed on the patient. But there are certain drawbacks of the mechanical articulators like they cannot simulate the mobility of the teeth when using plaster casts in it, the distortion and deformation of the mandible during loading conditions and the complexity of movement patterns because the movements of the mechanical articulator follow border structures of the mechanical joint. The accuracy of reproduction gets hampered by the deformation of bite registration material, the stability of the articulator itself and the use of rigid and expanded plaster material. Because of these basic errors, the reproduction of dynamic, excursive contacts seems to lower the reliability of mechanical articulator. In recent years many innovative and technological advancements have been made in the field of prosthodontics with several articulator designs. The virtual articulators also known as software articulators have been introduced. It is based on virtual reality and will reduce the limitation of the mechanical articulator by simulating real patient's jaw such as static and dynamic occlusion and also jaw relation.

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BONE LEVEL VS TISSUE LEVEL IMPLANT: WHY AND WHERE?

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The rehabilitation of partially edentulous patients with dental implants has become a routine method of treatment. The maintenance of the crestal bone support around dental implants over a period of time is considered as one of the most important factors of long-term efficacy and criteria of successful dental implant treatment. Several issues to be considered during treatment planning include the type and number of implants required to replace the missing teeth, appropriate positions for implantation, prosthesis design, cantilever length, proper diameter and length of implants, prosthetic materials, and type of occlusion. Studies have shown that supracrestal position of implant placement results in significantly lesser marginal bone reactions as compared to crestally placed implants. It has been seen that tissue level implants with the Implant abutment junction (IAJ) coronal to the crestal bone level would result in minimal marginal bone resorption. However, the concept of horizontal offset (platform switching) has made it possible to place implant shoulders at the crestal bone level with predictable minimal marginal bone resorption. Certain studies also show bone deposition on the implant shoulder when implants with horizontal offset abutments were used with the IAJ in deeper subcrestal regions.

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FIXED DETACHABLE HYBRID PROSTHESIS

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The importance of an accurately fitting fixed prosthesis or a removable prosthesis is essential for the success of the restoration. Ill fitting prosthesis may cause mechanical failure of the prosthesis, implant system or biologic complications of the surrounding tissues. The major limitations of the cast partial dentures in distal extension situations are lesser retentive denture and aesthetics which is affected due to display of clasp retainer assemblies. These limitations of cast partial denture are reduced with attachment hybrid prosthesis. A precisely attached fixed prosthesis or a removable prosthesis on the denture bearing area is of paramount importance for the success of the restoration. The attachment hybrid prosthesis uses an extra coronal attachment, with the matrix which is casted with the FPD framework and the patrix to the RPD. The fixed removable union between the FPD and RPD improves the retention and reduces the limitations of the conventional cast partial dentures.

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OSSEODENSIFICATION: A NOVEL APPROACH TO IMPLANT DENTISTRY

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Osseodensification sets a paradigm for the preservation of the compact bone at the site of implant placement.This presentation speaks about the necessary introduction to this new approach and how it is different from the conventional approach.It also speaks about the bone quality bone matrix formation and how it provides primary stability at the implant site thus increasing osseointegration process.

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A NEXT-GEN MAGNETO-DYNAMIC METHOD OF IMPLANT PLACEMENT….!

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A next-gen magneto-dynamic method of implant placement….!. Abstract: Certainly, technology has helped us provide dental services of higher quality to our patients. Magnetic mallet has been lately an innovative addition to the host of advances in recent times. The main applications of magnetic mallet are implant placement, helping us avoid all the disadvantages of the drills and in maxillary sinus lift surgery, in protocols of vertical and horizontal compaction and expansion, and more generally in all cases where the surgical hammer is used, as also root extraction, insertion of post-extractive implants, and crown retrieval. This paper will highlight its feature, part of the kit, its application, its advantages followed by a case presentation.

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NANOMODIFIED PEEK IMPLANTS

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Polyetheretherketone (PEEK) is a semi crystalline linear polycyclic thermoplastic that has been proposed as a substitute for metals in biomaterials. PEEK can also be applied to dental implant material as a superstructure, implant abutment or implant body. If PEEK is used as a dental implant body, it may exhibit lower stress shielding than titanium due to closer compatibility of the mechanical properties of PEEK and bone. There are many methods to increase the bioactivity of PEEK by increasing the surface roughness, increasing the hydrophilicity and coating osseoconductive materials. Melt-bending with bioactive nanoparticles can be used to produce bioactive nanocomposites, while spin-coating, glass plasma etching, electron beam and plasma-ion immersion implantation can be used to modify the surface of PEEK implants in order to make them more bioactive. This paper summarizes the current research on PEEK applications in dental implants, especially for the improvement of PEEK surface and body modifications.

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A RISK-BASED APPROACH TO SIMPLIFY THE MANAGEMENT OF FRACTURED IMPLANT SCREWS

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The long-term success of implant prosthesis is dependent on both biological and mechanical factors. Fractured abutments and prosthetic screws are a challenging and time-consuming complication in implant dentistry and often require meticulous planning for its successful management. When a screw fractures, the fragment inside the implant or abutment should either be removed or modified to re-attain the original ability of the implant to retain prosthesis. . . Several techniques have been reported for the clinical management of broken screws. In the situation of a fractured implant screw, initial treatment in the form of conservative retrieval is always the first and most preferable option. The retrieval techniques can be roughly classified as low risk (instrumentation and instrument modification), moderate risk (screw modification) and high risk (implant modification) of irreversible implant damage and should be applied in a structured approach. . . Some of the low risk techniques include use of scalers, modified spoon excavators etc. The moderate risk techniques include the use of screw retrieval kits, rotary instruments with modified burs. The high-risk techniques include modification of the internal anatomy of the implant and placement of a custom cast post and core. . . This paper will highlight the various techniques used for screw retrieval, along with the advantages and the indications for each of the techniques. A case report on the clinical management of broken abutment screw will also be presented.

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RECENT ADVANCES IN PRECISE MARGIN PREPARATION FOR FIXED PROSTHODONTICS

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RECENT ADVANCES IN PRECISE MARGIN PREPARATION FOR FIXED PROSTHODONTICS. ABSTRACT. The success of a Prosthodontic restoration largely depends on the accuracy with which the preparation of the tooth is carried out, given that excessive reduction of dental tissue can lead to retention problems and corresponding functional loads. Therefore, sufficient professional knowledge and perfect control of instruments are fundamental prerequisites for achieving good final result. This also applies to finishing abutment margins and surfaces. Smooth and precise marginal preparation facilitates impression making and fabrication of a precisely fitting restoration, which contributes to a durable, esthetic and functional result. . Ultrasonic instruments have oscillating action compared with the rotation of conventional instruments which has led to their recent adaptation to finish line preparations. These instruments are atraumatic to gingival attachment, pulp and adjacent teeth. Esthetic restorations in anterior dentition with subgingival finish line can be fulfilled with them. Their action allows for a greater degree of control when preparing areas with difficult access. Laser technologies can also be used which enhance the precision of tooth preparation along with the quality and predictability of treatment outcome - all for patient's ultimate benefit. Thus, clinicians should utilize these recent advances in technology to have precise tooth preparation for achieving predictable success in fixed prosthodontics.

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TECHNIQUES OF CUSTOM MADE PRECISION ATTACHMENTS IN OVER DENTURES

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. The desire to balance between functional stability and cosmetic appeal in dental prosthesis gave rise to the development of Precision Attachments in dental field. Since then, Precision Attachments have always been surrounded by an aura of mystery. The use of Precision Attachments for partial denture retention is a practice builder for the better class of dentistry and helps to elevate the general standards of partial prosthodontics. Even though this is the best possible retention aid available, it comes at a fairly high cost. In this presentation, our aim is to present, same quality of precision with desirable mechanical proper ties using day to day items like plastic buttons, coffee straws in replacement to conventional matrix and patrix system. This presentation give us an insight of basic information about precision attachments and how simple attachment systems can be inspirational to the young dentist.

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PHOENIX BONE: THE ANSWER TO AUGMENTATION

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Large-size bone defects can severely compromise both aesthetics and musculoskeletal functions. Many patients present with . . insufficient alveolar bone or they lack the confidence to undergo major invasive surgical or auto grafting procedure, in these cases adipose derived stem cells (ASCs)-based bone tissue engineering has recently become a promising treatment. strategy. As robust osteoinductive cytokines, bone morphogenetic proteins (BMPs) are commonly used to promote the . . osteogenesis of ASCs. In this process, BMP signalling plays a pivotal role.Bone Morphogenetic Proteins (BMPs) form a unique . . group of proteins within the Transforming Growth Factor beta (TGF-ƒÀ) super family of genes and have pivotal roles in the . . regulation of bone induction, maintenance and repair. They act through an autocrine or paracrine mechanism by binding to . . cell surface receptors and initiating a sequence of downstream events that have effects on various cell types. Storage . . within the bone matrix allows for their involvement in the modelling/remodelling process by mediating coupling of osteoblasts and osteoclasts. This study reviews the application, indication, contra-indication of Bone Morphogenic Protein. (BMP)

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IMPRESSION PROCEDURES FOR PATIENTS WITH RESTRICTED MOUTH OPENING-A REVIEW.

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Detailed impression of tissues and record of anatomic landmarks is required for fabrication of any prosthesis. This is essential for the development of custom tray and final impressions. In patients who have limited mouth opening, inserting a stock tray may not be possible. This presentation deals with techniques adopted for such patients in an attempt to restore their function and esthetics.

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MAXILLARY PROTRUSION AND WIDER UPPER ARCH: A CONCEPT OF TEETH ARRANGEMENT

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The upper-lower ridge relationship is an individual problem for each complete denture patient. When it is normal, not much effort is needed to obtain a suitable arrangement of artificial teeth. However, when these relations are abnormal, one has to deviate from the usual procedures to achieve successful results. The lower cast appears to be too far back in its relationship to the upper cast. However, the artificial teeth must be arranged to harmonize with the centric relation, even though the problems of tooth arrangement are complicated by the disharmony in the sizes of the two jaws. The problems involve both mechanical and esthetic considerations. The current paper describes a method and management of arranging artificial teeth for patients with an unfavourable Class II jaw relationship i.e., maxillary protrusion and wider maxillary arch. The posterior teeth are positioned so that esthetics, proper lip and cheek support are not sacrificed in order to develop balanced occlusion that should be free of lateral interference.

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TOOTH-IMPLANT SUPPORTED TELESCOPIC PROSTHESIS – A PRAGMATIC APPROACH?

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The use of tooth-implant connection is still not universally accepted or advocated. The use of dental implants in cases where healthier teeth are present adjacent to less favourable bone poses a unique problem. If these teeth are retained, the feasibility of providing a fixed rehabilitation with use of implants becomes questionable. If these teeth are extracted, it goes against the very foundation of prosthodontics - the de van's dictum, “preservation of what remains is more important than meticulous replacement of what is missing”.. The telescopic prosthesis resolves this problem by providing a fixed-removable solution in such cases by using both implants and teeth as abutments. This review presentation is an attempt to present this treatment option and review the literature supporting or rejecting the same.

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GINGIVAL BIOTYPE-A PROSTHODONTIST INSIGHT

VAIBHAV SHRIVASTAVA

During treatment planning it is important to recognize different gingival biotypes and forms, because they can affect the esthetic outcome of the treatment. This review provides an insight into the different gingival biotypes, their response to inflammation and trauma; significance in different prosthodontic modalities like esthetic rehabilitation and implant therapy.

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CHANGING SURFACE TOPOGRAPHY OF DENTAL IMPLANTS- SMALL WONDERS, PAVING A GREAT FUTURE

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Title- CHANGING SURFACE TOPOGRAPHY OF DENTAL IMPLANTS- SMALL WONDERS, PAVING A GREAT FUTURE. Abstract- The endosseous dental implant has become a scientifically accepted and well-documented treatment for fully and partially edentulous patients because of its good biocompatibility and mechanical properties. But for successful implant osseointegration various factors such as biologic factors, local factors, clinician, and implant -related factors play a very important role. Amongst all the above listed factors, implant surface plays a vital role. This surface is continuously being improved to achieve faster osseointegration and a stronger bone to implant interface. Dental implant surface should stimulate bone growth around them upon placement. The surface modification of implants can be obtained on three levels namely- macrotopographically, microtopographically, and nanotopographically. The surface topography of an implant is variably modified with surface treatments and coating in order to promote predictive osseointegration. Also movement, form and arrangement of the cells of various tissues were influenced by the different surface patterns. The future of dental implantology should aspire at establishing surfaces with standardized surface chemistry of a titanium (Ti) dental implant which implies to be assuring to enhance osseointegration.

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SOCKET SHIELDING TECHNIQUE

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Healing of extraction sockets are characterized by bone formation within the socket and loss of the alveolar ridge width and height externally .The alteration of ridge contour may compromise the restoration-oriented three-dimensional positioning of the implant which requires optimal support and stability of surrounding hard and soft tissues.In esthetic region, the height and thickness of facial and interproximal bone walls are the important factors for successful pink esthetic outcomes, which are made up by the color, shape, and character of the marginal peri-implant mucosa and the presence of interdental papilla. Different techniques such as immediate implant placement and ridge preservation procedure have been proposed to maintain the ridge dimension to a certain amount. However, applying these methods to extraction sockets could not. completely preserve the coronal part of facial bone walls which were comprised almost entirely of bundle bone.In 2010, Hürzeler et al. introduced a new method, the socket shield technique, in which a partial root fragment was retained around an immediately placed implant with the aim of avoiding tissue alterations after tooth extraction.Healthy periodontal ligament of the tooth segment, minor volumetric change of the ridge contour, and direct bone-to-implant contact manifested that this . technique is a feasible treatment option.

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ALL-ON-4 VARIATIONS

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All on Four concept offers as an alternative to conventional implant application. The All on Four concept is founded on the principle that four implant, a combination of two straight anteriors and two tilted posteriors placed within the premaxilla or anterior mandible, would provide enough support to maintain a full arch fixed prosthesis. Splinted implant along with full arch prosthesis are biomechanically sound with marginal bone height maintained with these implants. This paper describes the basic concept of All on Four and its variations.

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TAKING A PEEK AT PEEK- A NEOTERIC ALTERNATIVE IN PROSTHETIC DENTISTRY AND IMPLANTOLOGY

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Thermoplastic polymers, like PEEK, have many potential uses in field of dentistry. It is used as an alternative implant material to metals like titanium. It exhibits lesser stress shielding than titanium, has mechanical advantages equal to bone and has four times lesser modulus of elasticity than others. It is more aesthetic, stable, biocompatible and has reduced degree of discoloration thus, a promising material for RPDs and FPDs. Peek is therefore establishing a future prospect in the field of dentistry and with further modifications its application may increase manifold.

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PRE-TREATMENT EVALUATION OF IMPLANT SUPPORTED COMPLETE DENTURE: A NEW INSIGHT

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Potential patients for implant restoration of the completely edentulous arches are usually interested in receiving a fixed prosthesis as opposed to a removable denture. The ability to determine early, during diagnosis, the type of prostheses necessary to provide the best functional and esthetic results is advantageous. Treatment of the edentulous arches poses a number of challenges. The nature of the patient's dental condition and whether the residual ridge is visible in both the relaxed lip and smiling state, direct the choice of dental prostheses. Expectations regarding the esthetics of the definitive prosthesis are high. Achieving adequate phonetics and stable masticatory function are major concerns. A systematic pretreatment approach for evaluation of edentulous patients allows a better communication between the implant team as well as the patients, leading to a predictable treatment outcome. The purpose of this paper is to outline initial screening methodology for determining which type of implant-supported prostheses should be selected to fulfill esthetic, phonetic, and hygienic demands which can be a practical application for implant treatment.