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Innovation. Revolution. Evolution of Prosthodontics

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ABSTRACT

OBJECTIVE: The objective of this is it highlights the new innovations made for the ease of work in prosthodontics. It shows how the methods and the materials are evolved and the uses of the materials in the branch. The rate of innovations in prosthodontics has been picking up considerable momentum and products have emerged, demonstrating superb strength and high esthetics.

INTRODUCTION:

The word "Innovation" comes from the Latin word "***novus***" meaning NEW. *Evolutionary innovation* seeks incremental changes to existing products, processes, systems, and structures. EVOLUTION refers to a slow and a gradual change whereas a REVOLUTION refers to a sudden dramatic change. Dentistry has shown a great revolution with the passage of time. It has a long history. Oral diseases have been a problem since time beginning. Prosthodontics is one of the eight recognized specialities of dentistry. Prosthetic dentistry deals with the diagnosis, treatment planning, maintenance of oral function,comfort,appearance,clinical conditions associated with missing and deficient and oral and maxillofacial tissues using biocompatible substitutes.

HISTORY:

600BC Etruscans practice dental prosthetics using gold crowns and fixed bridgework. 20th century saw significant development in dentistry. In 1770 Alexis made the partial denture from Porcelain teeth and Ivory base; with passage of time on 20th century Acrylic denture were in use. Some recent improvements seen in prosthodontics are Stereolithography; Laser application in prosthetic dentistry; a CAD/CAM system; Impression material; Adhesive; Ceramics; Cements; Waxes; Gingival Retraction system; Dental drills.

EVOLUTION IN PROSTHODONTICS:

The use of Stereolithography for manufacture of implantable prosthesis is relatively new aspects of the dentistry data extracted from CT-scan can be used to produce computer models of 3-D anatomical structures. Laser application in prosthetic dentistry; the current application or use of laser in Reconstructive Dentistry encompasses a wide variety of soft tissue procedure. Sulcur gingivoplasty improves impression technique and minimize gingival recession. So far, the use of CAD/CAM has primarily being focussed on fixed restoration such as Inlays crown because difficulty in recording soft tissue morphologies of edentulous areas and interocclusal relationship. Rubber based impression material, non aqueous impression materials most widely used rubber based impression material is Polyvinyl

siloxane. Hydrophilic polyvinyl siloxane to improve hydrophilic properties surfactant and hydrophilic monomer are added whose result is a truly low contact angle. Nano-filled polyvinyl siloxane nanofillers are integrated in polyvinylsiloxane impression material.

INNOVATION IN MATERIALS:

The newest class of elastomeric impression material is a Vinyl-polyether hybrid material called SENN.Acrylic adhesives includes the Cyanoacrylate family, similar to super glues traditional single component types cure primarily via reaction with atmospheric moisture. Silicone adhesive strong biocompatible and have very high flexibility can be cured by radiation, heat and moisture. Cements used in dentistry. Glass ionomer cements lack toughness GIC's can be re-enforced physically. Hybrid ionomer is a resin modified GIC.This material is intended to overcome the disadvantages of conventional GIC's. Compomer is a unique material that has dual properties. Fluoride release is less than conventional GIC's. The use of dental implants has evolved rapidly over the past decade since the advent of the concept of osseointegration. Development in the field of oral implantology has led to the development of successful and predictable restorative options for partially as well as completely edentulous patients. Correct placement of the implant is an important phase. For the quick fabrication of high-precision metal parts, RP technologies including Selective laser melting and SLS technology are used. In maxillofacial prosthetics, RP(Rapid prototyping) is being used. With advancements in various RP systems, this technology is becoming portable and more pervasive. The availability of this technology is growing as well. Nowadays, CAD and RP technologies are being used in various fields of medicine and dentistry and have had a considerable impact, especially on the rehabilitation of patients with head and neck defects. Dental waxes are low molecular weight esters of fatty acid derived from natural and synthetic components such as petroleum derivatives that soften to plastic state at a relatively low temperature. These are easy to use, have excellent strength and elasticity. Gingival retraction system includes EXPASYL; is a temporary gingival retraction system. It is an alternative to traditional gingival retraction procedure. Digital technologies have also touched removable prosthodontics. To varying degrees Digital Denture systems have incorporated digital workflows. The Ivoclar Vivadent system is cleverly designed in that the dentist can work at a traditional level of analog border-molded impressions and, through the process, merely make a few numeric settings that allow the dental laboratory to work in a nearly completely digital workflow.

CONCLUSION:

Recent innovations in modern materials, digital technology, software, and integration of systems make the future appear bright for prosthodontics. With the control, reduced capital investment, added capabilities, increased flexibility, and the precision available, never there has been a more exciting time in fixed and removable prosthodontics. The rate of innovations in prosthodontics has been picking up considerable momentum and products have emerged, showing superb strength and high esthetics.

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