

PROSTHODONTICS: ACHIEVING QUALITY ESTHETIC DENTISTRY AND INTEGRATED COMPREHENSIVE CARE



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Prosthodontics is the dental specialty responsible for diagnosis, rehabilitation and maintenance of patients with complex clinical conditions involving missing or deficient teeth and/or craniofacial tissues. The essence of the specialty is expert treatment planning.¹

ADVANCES IN PROSTHODONTICS:

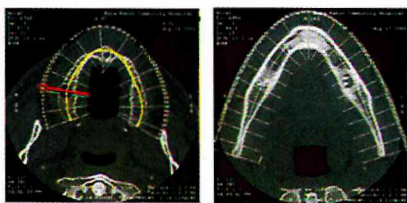
A TEAM APPROACH. The generation of a successful resolution for a patient's problem depends on a prosthesis that restores esthetics, form and function. This results from the integration of the skill and knowledge of general dentists, prosthodontists, other dental and medical specialists, oral biologists, material scientists and industry.. The most significant changes in the practice and teachings of prosthodontics result from the continued advances made in examination and diagnosis, implant therapies, esthetic and adhesive dentistry, and material science and dental technology, as well as in periodontics and maxillofacial surgery.

EXAMINATION AND DIAGNOSIS

A: DENTASCAN:

The CT Dentascan is a specially developed computerized reformatting program that has been developed to obtain true cross-sections of the mandible (jaw) and maxilla (upper mouth) from the easily obtained CT scans for patients being considered for dental implant surgery in either the mandibular or maxillary arches.

The main use of dentascans today is in the pre-operative planning and pre-operative modeling of endosseous dental implants and subperiosteal implants.



B: DIFOTI:

(Digital Imaging Fiber-Optic Trans-Illumination) Uses safe visible light .It safely and instantly creates high-resolution digital images of occlusal, interproximal and smooth surfaces.

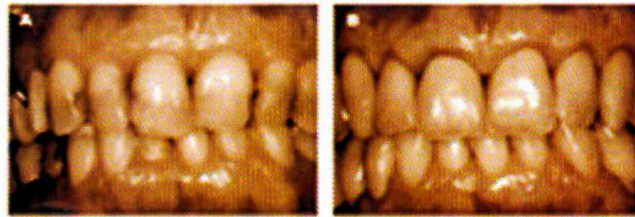


C: DIAGNODENT:

The visual and radiographic evaluation of hidden occlusal caries can be significantly more accurate with the use of KaVo's DIAGNOdent caries detection aid.

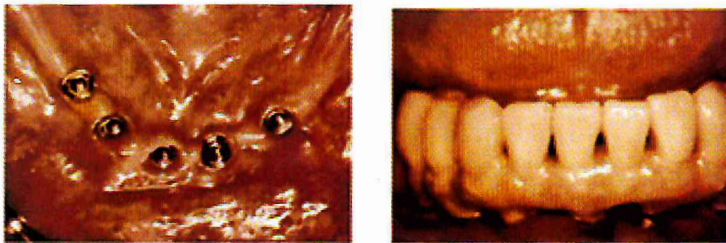
PERIODONTICS.

Classic periodontal treatment in conjunction with prosthodontic treatment has improved during the past 20 years, allowing the retention of teeth (as abutments) that in the past would have been sacrificed.²



MAXILLOFACIAL SURGERY. Maxillofacial surgery has improved grafting procedures for bone and soft tissue in all areas of the mouth.³

IMPLANT DENTISTRY. Prosthodontists have been influential leaders in implant research and design, and their work has led to restoration treatment (whether involving a single tooth or a complete dentition) that is completely different from that of the past. Implants today can securely retain extraoral prostheses for orbital, auricular and nasal areas of the face, as well as larger areas of the face. They can retain prostheses to repair defects caused by clefts, facial deformities, tumors and trauma. Implant therapy has advanced to allow immediate loading with a provisional prosthesis in certain conditions⁴



DENTAL TECHNOLOGY

STEREOLITHOGRAPHY

Data extracted from Computed Tomography (CT) scan can be used to produce computer models of three dimensional (3D) anatomical structures. Using stereolithography, a rapid prototyping technique these computer models can be made into solid physical models.

The surface and internal structure of the anatomical site can be reproduced by polymerization of UV light sensitive liquid resin using a laser beam. The laser rays progressively polymerise photomonomer on the surface of the vat solution. The model is built vertically step by step as the polymerized section submerged beneath the surface of the solution. These models are then used for diagnosis and treatment planning of various cases.



LASER DENTISTRY:

Laser dentistry minimizes bleeding , bacterial infections and damage to surrounding tissues . Certain procedures performed using soft dental lasers may not require anesthesia and sutures. Thus wounds heal faster.

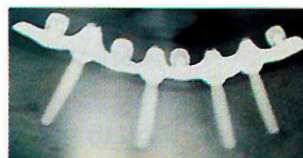
APPLICATION OF LASER DENTISTRY TO PROSTHODONTICS

- 1) Lasers can be used for teeth preparation.
- 2) Temporomandibular Joint Treatment: Dental lasers may be used to quickly reduce pain and inflammation of the temporomandibular joint.



NANODENTISTRY:

Nanodentistry will make possible the maintenance of comprehensive oral health by involving the use of nanomaterials, biotechnology (including tissue engineering) and ultimately dental nanorobotics (nanomedicine).



DENTAL MATERIALS

VALPLAST

Valplast is a thin, light weight, flexible, esthetic and biocompatible material . It is more durable than acrylic and does not stain or absorb odour.



BPS DENTURES

BPS(Bio-functional Prosthetic System) Dentures are precision dentures that provide optimum function while eating, speaking or laughing. The BPS system utilizes a modular and standardized approach to denture construction. BPS Dentures are made to restore the natural look of your lips and support of your facial muscles .BPS Dentures are extremely life-like, comfortable, functional and durable.

The three core components of the BPS system are:

Stratos articulator system

Ivoclar Vivadent denture teeth

The SR Ivocap injection moulding system

BPS® impressions are made utilizing the Accu-Dent impression system. A Stratos 200 or 300 Ivoclar articulator is used to strategically position the teeth.BPS Dentures are made using the SR Ivocap processing system. This unique system uses continuous heat and injection to produce dentures that are comfortable and functional..

ACETAL CLASPS

Tooth coloured clasps available to match any 'IVOCLAR' shade. These are ideal for situations where metal clasps may be visible and can be very unsightly.



ROXOLID:

Roxolid™, is an alloy of titanium and zirconium. "The combination of enhanced strength and osseointegration could open the door for a new generation of smaller, safer implants, which would be particularly advantageous in situations where there is limited space between teeth. A further potential advantage could be the use in thin bone (narrow bone ridge), where wider implants would necessitate bone augmentation/grafting procedures."



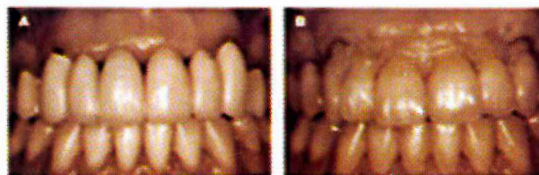
CEREC 3:

CEREC can fabricate restorations for all single-unit clinical indications like inlays, onlays, partial crowns, crowns (posterior & anterior), and veneers. Unlike other indirect processes, CEREC restorations are milled from solid, homogenous blocks of all-ceramic material. The production process for CEREC blocks ensures optimal consistency with very little variation in strength or quality. Ceramics used for CEREC restorations display enamel wear characteristics more comparable to natural tooth enamel than other materials.



USE OF CERAMIC ORAL MUCOSA.

Gingiva-colored ceramics have been developed sufficiently so that they now are suitable for use in tooth- or implant-supported fixed prosthodontics. They are used to re-create normal mucosal contour and are particularly effective in flat edentulous areas or in areas with residual ridge defects. They also can improve dental-gingival symmetry or correct gingival defects that cannot be repaired surgically. They can provide lip support for patients with implants, and they offer the advantage of being easy to clean.



SHADE SELECTION

Research continues to develop methods to record the complexities of tooth color with computers that analyze such data. Different areas of a tooth have different color properties and factors that influence the absorption and reflection of light such as opacity, translucency, opalescence, iridescence and fluorescence. ⁵ SHADEPILOT™ - The measuring device

Shadepilot™ opens up a whole new world of precision, information and communication for shade matching. The future of shade matching is digital. With Shadepilot™ you can experience this variety today. Perfect picture and analysis quality, a vast number of various uses and attractive communication services have turned it into the perfect companion for even the most demanding requirements. The Shadepilot™ permits you work easily, precisely, quickly and safely.



SHADEEYE NCC

Shade taking of natural teeth with a conventional dental shade guide is significantly affected by various surrounding conditions. What one person perceives as color is not always what another person observes. Difference in age, fatigue, lighting, surroundings, all influence the visual assessment of correct color determination.

SHADEEYE NCC saves time, is economic, improves quality, is portable and is compatible with the most porcelain systems.



VITA EASYSHADE

Is an electronic shade-selection device that uses a light source and spectrophotometer to determine a tooth shade based on either the VITA Classical or Vitapan 3D-Master porcelain shade guide

ADVANTAGES: The EasyShade can select a single overall tooth shade or it can select separate shades for the cervical, middle, and incisal thirds. It can also verify the shade of a completed porcelain restoration. The EasyShade does not require a computer as it does not generate or work



CONCLUSION

During the last decade, dental technology, science and practice have advanced dramatically, greatly expanding and improving the choices of materials and techniques. The most important issue in dentistry today is not the debate about which material, color or technique is best; rather, it is the establishment of good communication among general practitioners, prosthodontists, other dental specialists and dental technicians and patients.

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- 5 Ishikawa-Nagai S, Sato R, Furukawa K, Ishibashi K. Using a computer color-matching system in color reproduction of porcelain restorations. Int J Prosthodont 1992;(pt 1):495502