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CONTENTS

Marching ahead to the future

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The future very often arrives faster than expected. In 1996, a renowned biologist, Lee Silver of Princeton University, wrote that it is impossible to clone mammals via cell-nucleus transfer. His book had not even reached the bookshops that scientists of the Roslin Institute in Scotland announced that they had succeeded in cloning Dolly the sheep.

The best way to predict the future is to invent it because the visions of the future created by research laboratories, think tanks, science fiction authors and other visionaries not only form a matrix for the social perception of tomorrow's world but also open up the associated opportunities. Such futuristic thoughts are known as memes which propagate in society like a cultural gene. Richard Dawkins defined memes as units of cultural transmission. India has witnessed a sea change in the world of music in that western music has taken over classical music. In the field of prosthodontics, conventional dentures face a big challenge from dental implants, thus making implant therapy a meme in the field of prosthodontics.

The future belongs to those who tell the best stories about the future; in other words, only creative thinkers will get an opportunity to contribute towards future professional needs. Prosthodontists should become visionaries of a technically improved future like the chief executive officers (CEOs) of the Information Technology (IT) sector who imagine a land with intelligent refrigerators, thinking shoes, autonomous cars and online physicians. We prosthodontists must be able to visualize denture designs that would release oral fresheners and laser guns that would crumble the luting agents present beneath the crowns, thus enabling us to remove crowns without damaging abutments. Why can't we have bar codes incorporated in all our prostheses so that all patients' data can be retrieved? Ideas need not be positive to be effective as even negative ideas may serve to generate fears which will have a cautionary effect. Let us paint the future with colorful dreams.

The mass media dictate collective expectations of the society and hence, can analyze the memes. Cinema can project new technologies as being real even if they are in the developmental stage and society will accept it, at least in the subconscious mind. Dental and medical facts integrated into the imagery might thus spur the research potential of many enthusiastic professionals. The most radical ideas from science and fiction may find solutions to problems which we face in real life. On the other hand, consumer expectations are also programmed in this way. A programmable toothbrush shown in a film, which analyzes the periodontal health status at the end of the brushing session, would make the toothbrush manufacturer instruct his design department to make such a brush and a patient would ask for such a gadget in the supermarket.

Prosthodontic practice might be forced to accept many developmental products in the future. Electronic slaves might replace cheap labor in the clinic. We may not get many patients in the future because human beings might improve genetically and thus require less care. Many of our gadgets might have multiple functions. A mouth mirror with a built-in camera might serve as a suction device and also as an oral illuminator. Prosthodontists must design dream products which might improve function, ergonomics and efficiency.

Human life might also become programmable. Families will be designed and children selected according to catalogs. The gender of children might be reversible during the course of pregnancy and the little brother will be a robot. (!!!!!) Thus, our notion of family happiness might get programmed and human beings would like to make the entire world a theme park where spectacular experience boosters are available. One minute holidays and artificial hibernation of unproductive times will become the order of the day. A patient undergoing long prosthodontic treatment might go into hibernation providing much comfort to the operator.

In the healthcare sector of the future, less emphasis will be placed on curing illnesses than on prevention and well-being. Beings and machines will merge; body and consciousness will be rewired. The new combination of natural and artificial hardware and software will create mechanical humans and human machines. Death might become optional with artificial parts increasingly replacing diseased organs. Prosthodontic treatment will be greatly dictated by implanted trend products. The secret of self-healing will be decoded

changing the treatment pattern in dentistry. But the human evolution will continue and result in new intelligent beings.

TECHNOLOGY AND CHANGE

There are two types of technologies: disruptive and sustaining. Disruptive technologies can completely reorder the environment. Sustaining technologies enhance current procedures or environment. Dental implants are the finest examples of disruptive technology, which are almost rephrasing conventional treatment methodology of prosthodontics. Improvement in impression materials is an example of sustaining technology wherein the technology of impression is sustained by going from compound to alginate to elastomers but tremendous improvement is made in the quality of materials.

Traditionally, prosthodontists are against change and they maintain a stick-in-the-mud attitude about change, thinking that what has been done previously is the best. Certainly a conventional metallic crown has many advantages compared to an all-ceramic crown. But if the patient wants an all-ceramic crown, all your arguments will be wasted and clinging to old technology will only relegate you to obsolescence. Remember the fate of typewriter manufacturers when computers were introduced. Similar pressures are faced by prosthodontists also. Prosthodontists can no longer afford the luxury of sitting back and just trying to improve technologies only when they are widely accepted. Prosthodontists should not hesitate to become beta testers on a routine basis because being the best with old technology is not a winning position. Evidence-based practice and professional advancement programs become relevant in this context. Prosthodontics was generally considered as a skill-based specialty but we have begun to establish our knowledge base. As a knowledge-based specialty, adoption of new technology is a natural extension of our commitment to patient care and not to skill-based bravado. Many new technologies are adopted from other fields *viz*. nanotechnology, lasers etc. With a solid knowledge base, we will not be afraid of technological failures and adopt technology as early as possible. Many technologies are popularized by corporate investments which may not be inherently interested in patients but be more of business opportunities. Marketing interest being the primary goal, companies will make the prosthodontist procedurally competent rather than knowledgably proficient. The profession has to manage the pressures without ignoring them because ignoring them will be fatal to our future growth. The story of dental implants will be a befitting example of this scenario.

Implant dentistry has reduced the distance between the general practitioner and the specialist, especially the skills' gap, because of the policy of corporate managements to make everyone procedurally competent. However, knowledge bank-based diagnostic skills will never be refurbished by the companies. The proficiency of the specialist is in the merger of procedural competence and diagnostic knowledge. A prosthodontist has to cope up with these pressures and emerge as a leader in both clinical delivery and technology adoption. Only the future can tell whether a new technology will cause the collapse of the traditional specialty structure of dentistry because of the procedural overlap.

THE NEW AGE PROSTHODONTIST

New Age prosthodontists will acquire the following characteristics:

- they will have purpose, conviction and clarity of vision.
- they will be hungry to learn and will attend professional advancement programs.
- they will learn best by doing and will be interested in hands-on programs.
- they will have great mentors.
- they will surround themselves with the right people professionally and socially.
- their practice will be structured for success.
- their perception of their profession will be 51% business and 49% technical.
- they will be excellent communicators.
- they will do a lot of marketing.

SKILLS FOR THE FUTURE PROSTHODONTIST

The practices of yesteryears may not help the prosthodontist to achieve excellence in the future. A few examples are cited here. A skill of preparing a tooth is very demanding and there is absolutely no scope for guesswork. Visibility plays a great role in tooth-preparing techniques and we will be compelled to use magnification as a routine clinical practice. A prosthodontist will be forced to provide better designs of tooth preparation to suit computer-aided design / computer-aided manufacturing (CAD/CAM) techniques. Cumbersome laboratory processes will be eliminated by CAD/CAM techniques and we will have to upgrade our awareness level to suit the modern technology.

Imaging technology will also undergo great change. Volumetric radiography procedure will become in-office and will help the clinician to diagnose complicated temporo-mandibular disorders. Interactive computer programs like Simplant will become popular in decision-making process of implant treatment. The number and size of implants suited to the edentulous space can

be visualized well ahead of the actual surgery and it will be based on computed tomography (CT) scan images taken in the in-office machine.

Analyzing the occlusion through C?T Scan will become handy to the prosthodontist and detecting occlusal anomalies will not be a hard task any more. Nanotechnology-based products will be common place, especially for restorations and impressions. Prosthodontists might witness caries-resistant teeth and bioengineered tooth replacements. Thus, prosthodontists will never be able to keep away from the rapid advancements, which may have a disruptive effect on the present system.

ROLE OF THE PROSTHODONTIC SOCIETY

The society should make its members step out of conservatism to adopt newer technologies and should make pioneering efforts in conducting conferences on newer technologies probably with industry participation. There must be a concerted effort to promote research by establishing a clearing house on information based on evidence. Members should be able to access information on any material or technique when needed. A practice-based research network should be created and the members should be prepared to do testing and research and to share the collected data with the society.

The society should address knowledge gaps about the basic fundamentals of prosthodontics, *i.e.*, what is learned *vs* what is practised. As a primary step, the society should publish guidelines for the practice of prosthetic and implant dentistry. This document should include all possible and acceptable clinical variants to reduce confusion among young professionals and to avoid intellectual rivalry expressed during examination sessions. The tooth as a functional unit is lost in edentulism and tissues undergo postextraction changes which are continuous and irrevocable. Hence, our society should recognize edentulism as a handicap which, as recognized by the World Health Organization (WHO), is a disadvantage for a given individual resulting from an impairment or a disability that limits or prevents the fulfilment of a role that is normal for that individual.

The Prosthodontists' society should also take leadership in improving public and professional awareness of the specialty of prosthodontics. There is a widespread feeling that complete edentulism is on the decline and graduate dentists are losing interest in making complete dentures. While it is true that graduate dentists are presently ill-equipped to meet the challenges of making a complete denture, it does not mean that complete dentures should be made an exclusive subject of prosthodontists. By doing so, we may be lacking in our social obligation towards senior citizens. The society should give serious consideration to the prosthodontic curricular requirements of the graduate dentist to meet the demographic needs of the society. By the year 2020, 20% of the population will be senior citizens.

LET US DREAM

Dreaming has no limit, limited only by conditioned realism. An attempt is made here to list futuristic thoughts as applicable to our specialty. *Within the next 15 years:*

- Graduate dentists will almost stop treating complete edentulism by using removable complete dentures, which will be restricted to prosthodontists.
- Impression compound, Green stick, Zinc oxide eugenol impression paste, Sticky wax, Gingival retraction cords etc will become museum pieces.
- Cast removable partial dentures (RPDs) will be almost extinct but we will still teach, argue and frame questions on surveyors. Even if we become a developed nation, a lot of people will require plastic RPDs but only prosthodontists will know how to make them.
- Only removable prosthodontics and maxillofacial prosthetics will remain as prosthodontists' exclusive forte. However, although prosthodontists will practise fixed prosthodontics and implants, there will be no exclusivity.
- Mandibular complete denture design will automatically include dental implants for support or retention if patients can afford them.
- Impression material-mixing machines will not become popular unless given free as an 'offer'.
- Shade selection process may be taken over by the lab.
- Many flexible denture base materials will be developed especially to meet Indian needs.
- Arguments over spacer designs for complete denture special trays will be a thing of the past or it may remain as a mere academic exercise totally incapable of igniting young brains.
- Semiadjustable articulators will become more popular with prosthodontists.
- Periodontists and endodontists will redefine their roles because patients will lose interest in advanced periodontal treatment and complicated endodontic therapy. An easier option will be implant treatment which prosthodontists will still remain knowledgeable about to diagnose and plan.
- Prosthodontics, conservative dentistry and endodontics might merge into a singular entity.

MARCH TO THE FUTURE

Personal computers and the Internet have enabled man

to transcend the barriers of physical distance. People no longer limit their learning to educational settings such as schools, colleges or universities. Learning can take place at home or ain the office. The future of technology will enable people to be life-long learners. Learners do not have to depend on their memories. They can store information on their personal computers and be able to retrieve it at all times. The concept of knowledge has changed from having information in the brain to having access to information and knowing how to use it. Teachers' roles will ultimately change since they will no longer be providers of information. They will be facilitators of learning. Our educational institutions have to change at a fast pace. If the rate of change inside an institution is less than the rate of change outside, the end is in sight. If education fails to keep up with current trends, will it keep up with those of the future?

REFERENCES

1. Dawkins R. The selfish gene. Oxford University Press, 1st ed. 1976, 2nd ed. 1989.
2. Hobkirk JA. Prosthodontics: A past with a future? J Can Dent Assoc 2005;71:326.

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