Reconstructive dentistry—The way forward

By Prof. Urs Belser, University of Geneva, Switzerland

General dentistry has undergone major changes during the last 20 years, not just in the way clinicians treat their patients, but particularly in the way patients request treatment and their increased expectations of treatment outcomes. This, together with the significant advances made in surgical and prosthetic techniques, as well as in the fields of innovative biomaterials, has driven the practice of dental medicine and taken it to much higher levels than could have been anticipated some years ago.

In particular, the practice of restoring patients’ compromised teeth has become less complex in some ways, yet more challenging in others. Restoration has become simpler mainly because the range of indications for conventional crown and bridge prostheses on existing teeth has become more limited. This is partly due to the increased performance of more rigorous technologies that allow the clinician to avoid full-coverage fixed dental prostheses, even in cases in which the teeth are severely damaged and/or eroded. Such technologies are based on biomimetic principles, that is designing and modelling new materials following the structure and function of the biological systems they are meant to restore or replace. Another reduction in treatment complexity comes from the less frequent use of fixed dental prostheses in recent years, as they are nowadays regarded as a more invasive option, or perhaps because, compared with restorations supported by dental implants, they appear to have a higher risk of failure and greater difficulty of subsequent rectification or reattachment if complications occur.

Tooth replacement is increasingly being performed through the use of restorations supported by dental implants, and numerous elegant and predictable clinical approaches to this have been developed. This has become especially important and advantageous when considering tooth replacement in the anterior maxilla, the area in which aesthetic considerations are crucial, and where patient expectations can be particularly demanding. There are convincing and scientifically documented arguments for placing implants in the first few weeks after tooth extraction (early placement), followed by prosthetic rehabilitation at an early stage after implant placement. This approach clearly has several advantages, provided that the appropriate preoperative, surgical and post-operative decisions and steps are taken. It is crucial, however, that the restorative clinician and/or surgeon have the competence to address the different challenges presented by single-tooth sites, two adjacent missing teeth, and more extended edentulous jaw segments. In addition, each of these situations may be accompanied by substantial areas of insufficient bone and gingival tissue.

The increase in the use of dental implants is also partly due to the developments in the design of the implants themselves and of the components available to complete the restoration. Not least among these has been the rise of computer-aided design/computer-aided manufacturing, which has brought high-strength ceramic elements into the clinic, for example. In parallel, there have been major advances in the field of digital dentistry, through concepts such as intra-oral scanning and computer-aided surgical-implant planning and positioning.

All of these advances, however, would be of little use without well-defined decision-making criteria when considering treatment in the context of either damaged or missing teeth. Accurate diagnosis is essential, and the clinicians involved must always have the aesthetic aspects of the treatment foremost in mind when dealing with site located within the appearance zone.

The most relevant elements of the evolution in reconstructive dental medicine will be presented in detail today in a lecture given by Prof. Urs Belser, Prof. Pascal Magne and MDV Michel Magne.