Oral Health Dent Manag 2016, 15:4(Suppl)
http://dx.doi.org/10.4172/2247-2452.C1.034

Game changers in orthodontics

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The specialty of Orthodontics has undergone some dramatic transformation in the past decade or so. New technologies have arisen and developed that have both changed the way treatment is instituted, and opened the door for new possibilities. First among this list has to be aligner therapy. Led by Invisalign, the very appliance that is utilized to align teeth has been revolutionized. Further, this technology has evolved far beyond what was originally introduced, and the variety of case types that are amenable to aligner therapy has expanded greatly. Second is the utilization of extra-dental sources of anchorage. Implants and mini-screws are now commonly employed as part of orthodontic mechanotherapy to effect dramatic movements and to expedite treatment. Lastly, "orthodontic acceleration" has become a buzzword. Whereas efficiencies for many years were directed at appliance design and streamlined mechanotherapies, a shift in thinking has occurred to where now the biologic aspects of tooth movement are now being addressed instead. Originally accomplished by surgical means, the information that was attained through these techniques has led to some very non-invasive and effective methods to stimulate and accelerate tooth movement. Other advantages of these methods are also being realized as a result. This presentation will address these modalities through carefully documented clinical cases and literature citations. Interdisciplinary case types will be illustrated that are of interest to dentists and dental specialists of all walks.

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Ceramics in implant and restorative dentistry: Best practices and issues

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Ceramics are being used increasingly for both structural and esthetic components of prostheses and implants. The increasingly varied all-cermic systems will be reviewed in simplified but rational systematic fashion. Study of failed clinical specimens as well as examination of specimens from clinically-valid fatigue testing is yielding valuable information about what clinicians and manufacturers can do to best optimize both esthetics and function. Such study also leads to some concerns such as manufacturers who do not appear to have used basic ceramic engineering principles when transitioning a metal part to ceramic and extreme performance differences between manufacturers for seemingly identical parts. From the analysis of clinical failure, basic engineering principles have been worked-out to learn how clinicians and laboratories can optimize both durability and esthetics. This leads to some very practical recommendations that are easily incorporated into practice with all-ceramic systems. Zirconia ia increasingly of interest, both full-thickness and veneered. We have now solved the problem of porcelain chipping and are coming to better understand how to minimize/prevent wear of opposing teeth with full-thickness zirconia. With proper preparation and cementation ceramic systems for anterior teeth can now be selected from nearly any system; based upon many years of clinical trial data.

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