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Cone-beam CT and maxillofacial district: Real diagnostic potential?

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CT imaging has radically changed the study of both acquired and congenital craniofacial malformations, while 3D MDCT reconstructions were initially developed to assist clinical management of patients with craniofacial deformities; these images are now being used by craniofacial researchers to document the effects of surgery on craniofacial growth. They continue to assist clinicians in planning and assessing the outcomes of surgical intervention, and in developing and refining treatment protocols. The use of 3D scans can also assist in the formulation and evaluation of hypotheses about the mechanisms of congenital malformation and deformation in the craniofacial region. The CBCT technology developed in the 1990s has become increasingly popular among general dentists and specialists (oral surgeons, endodontists and orthodontists) because of the advantages of image acquisition at a lower radiation dosage than MDCT. However, there is a lack of agreed guidelines on its clinical indications. The work done by our group has shown a good similarity between MDCT and CBCT images. Particularly, with appropriate studies, if we could demonstrate the true overlapping of images obtained from both types of diagnostic examination, then we could ask for the actual applicability of the CBCT exam to the craniosynostosis field given the greater versatility (referred to the age of the investigated patient) and the radiation dose significantly lower than the traditional 3D acquisition modality. Large scale, multi-centre, prospective double-blinded randomized control trials are desirable to determine the efficacy and effectiveness of both MDCT and CBCT in craniofacial clinical practice. CT technology has come a long way since the invention of the first CT scanner in 1970s, and emerging new technologies are likely to further broaden the horizons of craniofacial clinical practice, dental practice and phenomics research.

Biography

Luca Barbera has completed his PhD from University Milan, Italy. He performed his pre and postgraduate fellowships in Human Normal Anatomy Dept. (Univ. of Milan, Faculty of Medicine) Thoracic Surgery Unit, Plastic Surgery Unit, Orthopedic Surgery Unit, Oral Surgery Unit (University of Milan, Faculty of Medicine) and, finally Maxillofacial Surgery Unit (HSM Pordenone). He is Director of Luca Barbera srl Private Dental Clinic (Monza), Director of Odontostomatologic Unit H Habilita Zingonia (BG) and Sarnico (BS), Scientific Director of Multisystem Factory Dental Implant and Surgical Devices. He is attending II Level Master's course in Digital Dentistry (University of Insubria, Italy).

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