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COMPARISON OF THE DIAGNOSTIC ACCURACY OF CBCTs AND OPGs: CLINICAL AND MEDICO-LEGAL ISSUES

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Background: *Since a long time the OPG is the most widespread and prescribed radiological examination. The introduction of the digital imaging has allowed the reduction of the exposition dose to x rays and an important improvement of the quality of the images. Moreover, some three-dimensional radiological examinations are becoming ever more used in the dental diagnostic routine since they are relatively inexpensive and easy accessible and provide accurate examination. Particularly a CBCT scan allows to accurately detect site and dimension of oral pathological conditions which the OPGs, on the contrary, cannot definitely recognize and implies very low radiation dose respect to traditional CT. Given that, the CBCT scan may become a recommended procedure in specific clinic conditions and the omitted prescription may raise medico-legal and ethical issues.*

The aim of the present study is to evaluate the different diagnostic accuracy of CBCT compared with that proper to a digital OPG.

Materials and methods: *100 OPGs and CBCTs (a total of 200 upper and lower dental arches) were selected for the study, performed for ordinary clinical purposes in the same day, in the same radiology office and with the same devices, have been submitted for the comparison to 3 general dentists. The operators examined first the OPGs and after 1 week the CBCTs, and listed in details every detectable oral alterations (transparencies, opacities, etc).. The difference in diagnostic accuracy between the two exams has been evaluated. The intra-operator variability has also been evaluated re-submitting the 10% of the exams to the operators after two weeks. The inter-operator variability is also evaluated.*

Results: *Even if the research is still in progress, it is already clear that the CBCT exam allows to obtain a more accurate diagnostic evaluation of the oral clinical conditions than the OPG exam does. The CBCT particularly allows to reveal more precisely the site and the actual dimensions of the pathological processes of the maxillary bones only poorly or not detectable at all by the OPG. In most samples at least one lesion not revealed by OPG is showed by CBCT, especially for periapical radiotrasparencies of endodontically treated teeth. The most striking cases will be described and discussed. Hence the ethical as well as the medico-legal implications will be discussed in terms of appropriateness of two different radiological examinations, given their radiation dose, the costs and the difference in efficacy in specific diagnostic procedures.*



Conclusion: *The preliminary results of our study show the evidence of the greater value of the CBCTs in the diagnostic resolution in comparison to the OPGs. The drastic reduction of the dose of exposition to x-rays permitted by the most recent radiographic devices, and the reduction in the cost of the single examination, put even further the CBCT in a prominent position in some clinic circumstances. The connected medico-legal issues deserve discussion in terms of appropriateness of the different radiological approaches and for the possible implications in terms of standard of care.*

KEYWORDS: Forensic Odontology, Diagnostic Accuracy, CBCT and OPG.

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