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THE EFFECT OF MAGNETIC RESONANCE IMAGING (MRI) ON SOME PROPERTIES OF ACRYLIC RESIN DENTURE BASE MATERIALS

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Introduction: Magnetic resonance imaging have been used nowadays as one of the accepted tool for diagnosis, estimation, and evaluation of many of human been disease; in dentistry, many of prosthodontics patients and maxillofacial-prosthesis patients may fall under the category who might be subjected to routine MRI check-up either for follow-up of certain disease or cancer patient for determination of the degree of healing or metastasis, thus, there has been growing interest in the research of the possible effect of MRI procedure on different component of dental appliances wears by those patients and one of these components is heat cured acrylic resin.

Aims: The aims of this study were to evaluate the effects of magnetic resonance imaging on mechanical (tensile strength, hardness), physical (color change) and chemical (FTIR, NMR) properties at different periods of time exposure.

Material & Methods: Total samples of (454) were prepared from acrylic based heat cured denture material, which divided into two main groups Clear, Pink, each main group was subdivide, into four groups according to exposure to MRI control; (5, 15, 30) minute each of the four sub-groups undergo different tests such as tensile strength, hardness (Rockwell) test, dimensional accuracy test, color change by spectrophotometry, surface roughness, water sorption, residual monomer release FTIR and NMR.

Results & Conclusions: It was concluded that exposure to MRI at different periods of time lead to altering of some physical properties at different level of significant with the exception for one to two experiments water sorption and residual monomer which showed less significant than other tests done. Also, FTIR and NMR tests demonstrated a change in vibration of bonds between two, atoms but without rotation of molecule without alter the main chemical structure of material.

Biography

Ahmed I AL-Khyet is an Assistant Lecturer in Prosthodontic Dentistry, Mosul University, Iraq. He has MSc degree in Prosthodontic Dentistry. He has published more than 8 research papers in national and international academic journals, authored 1 book. He has expertise in Oral-health and Dental field. His specific work deal with effects of (MRI) on polymers and dental products, his MSc Thesis considers the 1st one all over middle east and available on more than 10 search engines on internet.

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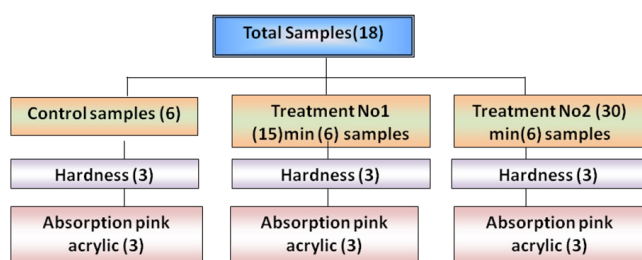


Figure 1: Experimental design of pilot study