

PhD research pre-proposal

Code: BioMed-2021PhD2	
Title: Broken endodontic instruments: investigation of removal techniques based on the mechanical, electrochemical, and ferromagnetic properties of the Nickel-Titanium instruments	
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Host college: College of Health Sciences	Host research unit: BioMed

SUMMARY OF THE RESEARCH PRE-PROPOSAL

In dentistry, an unwanted complication of endodontic treatment is to break Nickel-Titanium instruments into the dental root canal. Many devices, techniques or methods have been described for the removal of the broken instruments. Although the operating microscope and ultrasounds have improved the management of broken instruments, removal techniques usually lead to excessive removal of dental tissues. Associated complications are root perforation, vertical root fracture, extrusion of the fragment beyond the apex, or secondary fracture of the instruments used for removal. The aim of this research is to develop new approaches for the removal of endodontic instruments focusing on the mechanical and the electromagnetic properties of the instruments and limiting the wear and loss of dental tissue.

REQUIRED ACADEMIC QUALIFICATIONS & SKILLS

Applicants should have a Master or Engineering degree in Biomaterials or be a Doctor in Dental Medicine with background in endodontic instruments used in dentistry, the anatomy and canal curvatures of teeth as well as the biological properties of dental tissues.

Academic qualifications and skills are required for the success of this project, such as, fluency in academic English, the ability to interpret clinical and radiological database of endodontic therapies and to read critically scientific articles.