

# Digital Versus Conventional Workflow in Fixed Prosthodontics: An Update on the Scanning Technology and Manufactured Casts

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**Boudabous Emna<sup>1,2,3\*</sup>, El Ayachi Islam<sup>1,2,3</sup>, Ben Othmen Ilhem<sup>1,2,3</sup>, Riahi Zeineb<sup>1,2,3</sup>, Nouira Zohra<sup>1,2,3</sup>, Omezzine Moncef<sup>1,2,3</sup>, Jilani Saafi<sup>1,2,3</sup>, Hadyaoui Dalenda<sup>1,2,3</sup> and Harzallah Belhassen<sup>1,2,3</sup>**

<sup>1</sup>University of Monastir, Faculty of Dental Medicine of Monastir, Tunisia

<sup>2</sup>Department of Fixed Prosthodontics

<sup>3</sup>University of Monastir, Research Laboratory of Occlusodontics and Ceramic Prostheses LR16ES15, 5000, Monastir, Tunisia

**\*Corresponding Author:** Boudabous Emna, DDM, Department of Fixed Prosthodontics, Research Laboratory of Occlusodontics and Ceramic Prostheses LR16ES15, Faculty of Dental Medicine, University of Monastir, Tunisia.

## Abstract

Fixed prosthodontics has seen a rapid technological advance over the last several years.

The computerized engineering technology seems to offer efficient means of treatment planning. However, clinical investigations do not deliver consistent data about the accuracy and treatment outcomes of the digital workflow.

Therefore, the aim of this article is to compare the performance of digitalized workflow to conventional one.

**Keywords:** Digital; workflow; cast; Scanning; accuracy

## Introduction

The purchase of the workflow in the field of fixed prosthodontics has rapidly evolved towards an effective cost and time prosthetic chain thanks to the continuous development in computer technologies [1, 2].

Conventional treatment approach included mainly traditional impression techniques and stone casts.

The lost-wax-technique was currently and routinely used to produce acrylic and porcelain fused to metal crowns [2].

However, these procedures need a higher degree of standardization within the workflow steps to reach accurate final results [3].

This paper reports the current state of computerized software applications in fixed prosthodontics.

It exposes the advantages and the potential limitations of the digital workflow as it compares it to conventional techniques.

## Discussion

Digitalization is the current trend in the dental community.

The development of CAD/CAM-technologies has revolutionized practice in fixed prosthodontics.

It brought many comfort to practitioners and patients by the means of effective impression taking procedures, virtual simulation of the patient's jaw movements, on-screen designing of his smile and rapid prototyping process(CAD) [2].

Intraoral scanning is one of the most commonly investigated procedure in digital dentistry.

It has been considered to be accurate regarding the outcomes of final CAD-CAM crowns.

Studies have shown that it provides less marginal gap values in CAD CAM crowns than that of crowns resulting from conventional impressions [4].

In contrast, conventional impression techniques may present distortion errors that may be related to an inadequate impression tray selection, limitations regarding the impression material flowability and hydrophilicity, deficiencies that may occur while handling, pouring or removing the impression trays such as tearing and deformation [5].

Nevertheless, while the accuracy of intra oral scanning systems is showing promising results, they still vulnerable to several factors including the technology and the strategy of the scanning, the software's resolution, the use of the powder.. [6].

CAD studies have also focused on assessing and comparing casts produced by conventional and digital workflows. Manufactured casts and gypsum casts were found to have similar accuracy within the acceptable range for the manufacture of tooth-supported cast.

However, the quality of the scanned data showed to be highly sensitive to the printing settings and the manufacture technology which could be responsible of altering the quality of manufactured casts [7].

Despite the tempting services of the digital workflow, the improper understanding of the use of its technology may lead to an accumulation of distinguishing errors that could compromises their effectiveness over conventional techniques [8].

## Conclusion

In conclusion, digital workflow technologies seem to offer a better streamlined ways of treatment planning, however, high quality scientific trial investigations are needed.

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