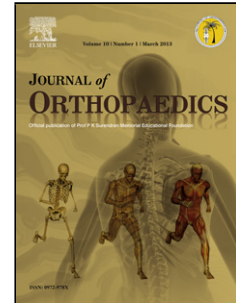


Accepted Manuscript

Title: The 3-Dot Circle: A Reliable Method For Safe and Efficient Digital Templating of the Acetabular Component

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PII: S0972-978X(17)30382-3
DOI: <https://doi.org/10.1016/j.jor.2018.03.027>
Reference: JOR 519



To appear in:

Received date: 9-11-2017
Accepted date: 25-3-2018

Please cite this article as: Arnaout F, Dewan V, Paliobeis C, The 3-Dot Circle: A Reliable Method For Safe and Efficient Digital Templating of the Acetabular Component, *Journal of Orthopaedics* (2018), <https://doi.org/10.1016/j.jor.2018.03.027>

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The 3-Dot Circle: A Reliable Method For Safe and Efficient Digital Templating of the Acetabular Component

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Abstract

Background: Templating for preoperative planning of joint arthroplasty has followed the evolution of digital templating software.

Objective: This study aims to provide a safe, reliable and reproducible method for prediction of acetabular component size based on measurement of the radiographic femoral head diameter, with the aid of templating software.

Methods: A defined methodology for femoral head measurement was applied to 97 consecutive, calibrated digital pelvic radiographs. Based on radiographic femoral head diameter, the minimum acetabular shell diameter was calculated and then compared to the size of the implanted acetabular shells.

Results: This method predicted safe minimum acetabular component size with an accuracy of 95.9% with a high inter-observer reliability of 97.6%.

Conclusions: This study presents a simple, reproducible and accurate method for templating of the minimum safest acetabular component diameter.

Key words

Hip replacement, preoperative templating, preoperative planning, THR

Introduction

Hip templating refers to a structured process of predicting hip arthroplasty implant size and position.

There are four main reasons to template:

- 1 - To aid the selection of the most favourable implant size, to restore anatomy & biomechanics, improve function and improve joint stability, e.g. to reproduce femoral offset.
- 2 - To facilitate operating room preparation, to assure availability of an appropriate implant size selection and optimize procedure duration (13).
- 3 - To estimate the position and insertion depth of both components (12) and thus restore the centre of hip rotation
- 4 – To predict potential complications and detect anatomic anomalies (12), e.g. to detect protrusion and the need for bone graft. And to reduce risk of periprosthetic fractures from oversized implants.

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