
**1 de Dezembro** **08h30 | 10h00 – Sala 2**

**Cirurgia Refrativa | Refractive Surgery**

Moderadores | Chairs: Maria Céu Brochado (CHUP), João Póvoa (CHUC), Joaquim Mira (CJM)

**CO 21**

## AGREEMENT OF VAULT SIZE MEASUREMENTS BETWEEN THE PENTACAM®, THE ANTERION® AND THE SPECTRALIS®

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**Introduction and Purpose:** Despite good refractive results, Implantable Collamer Lens (ICL) implantation may lead to postoperative complications. One indicator of the ICL safety is the vault size. Our purpose is to evaluate the agreement of vault size measurements between the Pentacam®, the Anterion® and the Spectralis®.

**Materials and Methods:** Cross-sectional analysis of eyes previously submitted to ICL implantation, evaluated in a refractive surgery outpatient clinic, between the 1st of June and the 31st of August 2022. Vault size was evaluated with the Pentacam HR® (OCULUS, Optikgerate GmbH), the Anterion® (Heidelberg Engineering, Inc,) and the Spectralis® (HRA+OCT, anterior segment module, Heidelberg Engineering). Secondarily, the anterior chamber depth (ACD) was evaluated with the Pentacam® and the Anterion®. Images of each patient were performed in the same day, by the same technician. Vault and ACD measurements were performed by two refractive surgeons (O1 and O2). The horizontal median images were used for analysis and the measurements were obtained using the on-screen calibration system. Images were randomly divided into three groups and each group was analyzed one week apart, by each observer, with images in a randomized order. The agreement between exams was assessed with an Intraclass Correlation Coefficient (ICC). The differences between devices were evaluated using paired T tests. For correlations between devices the Pearson and Spearman correlations were used.

**Results:** Fifty-five eyes of 30 patients were included. The ICC for absolute agreement was excellent between the Anterion® and the Spectralis® (O1: 0.972; O2: 0.977) and good between the Pentacam® and the Anterion® (O1: 0.831; O2: 0.849) and between the Pentacam® and the Spectralis® (O1: 0.825; O2: 0.836). The ICC for consistency for both observers was excellent between the Pentacam® and the Anterion® (O1: 0.932; O2: 0.942) between the Pentacam® and the Spectralis® (O1: 0.934; O2: 0.938) and between the Anterion® and the Spectralis® (O1: 0.972; O2: 0.973). The vault measurements obtained with Pentacam® were inferior to those obtained with the Anterion® and the Spectralis® ($p<0.001$) There were no differences between the Anterion® and the Spectralis® ($p>0.697$). The differences in the vault measurements between the Anterion® and the Pentacam® correlated positively with the increase of the vault size in the Anterion® ($R(53)>0.629$, $p<0.001$) and the differences between the Spectralis® and the Pentacam® correlated with the increase of the vault size in the Spectralis® ($R(53)>0.569$, $p<0.001$). The difference in vault measurements between the Anterion® and the Pentacam® correlated positively with the increase of the pupillary diameter in the Anterion® ($R(53)>0.365$, $p<0.006$) and the difference between the Spectralis® and the Pentacam® correlated with the increase of the pupillary diameter in the Spectralis® ($r(67)>0.329$, $p<0.014$). For ACD, the ICC for absolute agreement and for consistency between the Pentacam® and the Anterion® was good (ICC >0.790). Pentacam® provided inferior ACD sizes, compared to the Anterion® ($p<0.001$).

**Conclusion:** While the Anterion® and the Spectralis® may be used interchangeably, Pentacam® provided inferior values to those obtained with the other devices. The differences in vault size between devices are influenced by the vault size and the pupillary diameter measured with the Spectralis® and the Anterion®.