

UC Irvine

UC Irvine Previously Published Works

Title

QUANTIFICATION OF CORONARY STENOSES FROM DIGITAL IMAGES

Permalink

<https://escholarship.org/uc/item/3cp9d3cv>

Journal

CIRCULATION, 68(4)

ISSN

0009-7322

Authors

NALCIOGLU, O

LANDO, A

BOONE, J

et al.

Publication Date

1983

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

Cardiovascular Radiology: Cardiac Angiography Wednesday Afternoon

QUANTIFICATION OF CORONARY STENOSES FROM DIGITAL IMAGES

1382

Orhan Nalcioglu, Anthony Lando, John Boone,
Werner Roeck, Jonathan Tobis, Walter Henry.
University of California, Irvine, CA.

Digital imaging holds promise for quantifying coronary stenoses with low doses of contrast such as might be achieved with aortic root injections. To evaluate this possibility, both mask-mode subtraction (MMS) and interpolated background subtraction (IBS) were used to measure percent stenosis of aluminum coronary phantoms of known diameter. The coronary phantoms, which had a density equal to 20% Renografin 76, were placed inside a chest phantom and imaged using digital processing and storage. MMS was performed both with and without motion of the chest phantom mask to examine the effect of motion artifacts. IBS was performed on unsubtracted images. The results of 5 repetitive densitometric measures of percent stenosis are summarized below:

<u>Actual Stenosis</u>	<u>MMS</u>		<u>IBS</u>
	<u>No Motion</u>	<u>Motion</u>	
50% (2.0/4mm)	52.2±0.7	64.7±10.2	57.7±4.1
63% (1.5/4mm)	66.8±1.8	50.4±19.6	64.3±4.1
75% (1.0/4mm)	80.3±0.9	35.0±26.7	78.3±6.8

Thus, IBS and MMS both allow quantification of stenosis down to a minimum lumen diameter of 1.0 mm. The advantage of IBS over MMS is that it does not use temporal subtraction and, therefore, is not subject to motion artifacts.