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CHIETI*



VARIABILITÀ INTEROSSERVATORE NELLA CONTORNAZIONE DEGLI ORGANI A RISCHIO NELL'IRRADIAZIONE DELLA MAMMELLA: CUORE IN TOTO, ARTERIE CORONARIE E PLESSO BRACHIALE

DOTT.SSA CARMEN CEFALOGLI





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INTRODUCTORY PAPER

**QUANTITATIVE ANALYSES OF NORMAL TISSUE EFFECTS IN THE CLINIC
(QUANTEC): AN INTRODUCTION TO THE SCIENTIFIC ISSUES**

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QUANTEC: ORGAN SPECIFIC PAPER

Thorax: Heart

RADIATION DOSE-VOLUME EFFECTS IN THE HEART

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RTOG

CLINICAL INVESTIGATION

Head and Neck

**DEVELOPMENT AND VALIDATION OF A STANDARDIZED METHOD FOR
CONTOURING THE BRACHIAL PLEXUS: PRELIMINARY DOSIMETRIC ANALYSIS
AMONG PATIENTS TREATED WITH IMRT FOR HEAD-AND-NECK CANCER**



doi:10.1016/j.ijrobp.2010.07.1977

CLINICAL INVESTIGATION

**CONSIDERATION OF DOSE LIMITS FOR ORGANS AT RISK OF THORACIC
RADIOTHERAPY: ATLAS FOR LUNG, PROXIMAL BRONCHIAL TREE, ESOPHAGUS,
SPINAL CORD, RIBS, AND BRACHIAL PLEXUS**

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AND WALTER J. CURRAN, JR., M.D.,**

RadioGraphics

**Brachial Plexus Contouring
with CT and MR
Imaging in Radiation
Therapy Planning for
Head and Neck Cancer¹**

**TEACHING
POINTS**
See last page

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Rathan M. Subramaniam, MD, PhD • Jimmy W. Wang,
Wu, MD • Meilin Khatadkekar, MD, PhD • A. Chnce N
Sahai, MD, PhD



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CLINICAL INVESTIGATION

Breast

**DEVELOPMENT AND VALIDATION OF A HEART ATLAS TO STUDY CARDIAC
EXPOSURE TO RADIATION FOLLOWING TREATMENT FOR BREAST CANCER**

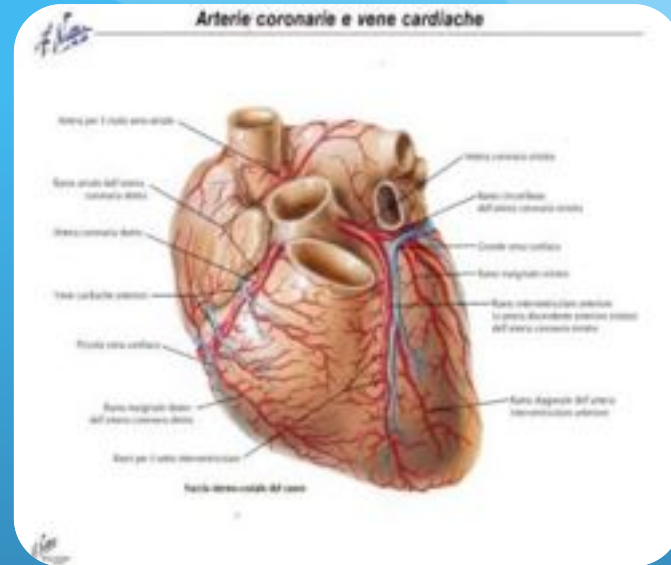
MARY FENG, M.D.,* JEAN M. MORAN, Ph.D.,* TODD KOELLING, M.D.,¹ AAMER CHOUDHRI, M.D.,²
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Plesso brachiale

Il plesso brachiale è composto dai 6 plessi nervosi del SNP, costituiti dalle radici anteriori dei nervi **C5-T1** e rami anastomotici di C4 e T2. Comprende tre tronchi: Superiore (C5-C6); medio (C7); inferiore (C8-T1).

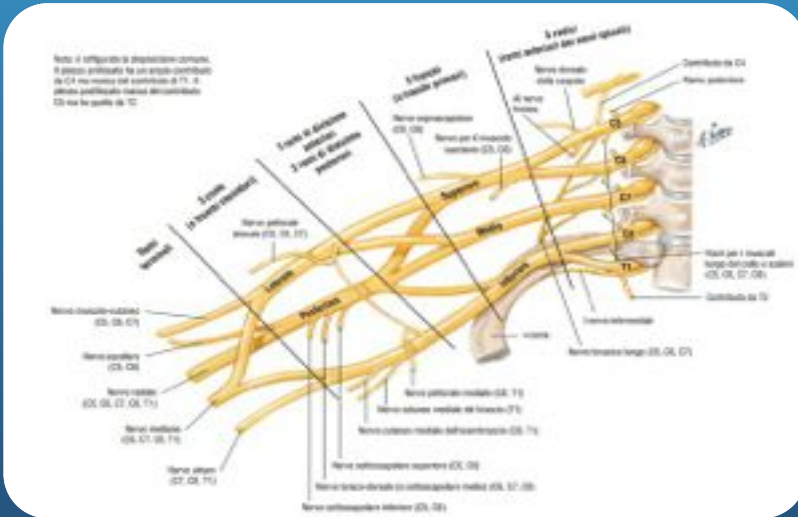
Si estende infero-lateralmente tra i muscoli scaleni anteriore e medio, segue l'arteria succlavia, cui si colloca inizialmente al davanti e successivamente lateralmente; al di sotto della clavicola si fa posteriore e parallelo all'a. succlavia.

Cuore-coronarie



L'**Arteria coronaria sinistra** raggiunge il solco coronarico e si divide in **discendente anteriore**, e **arteria circonflessa**.

L'**arteria coronaria destra** origina dal seno aortico destro e va in basso davanti al solco atrioventricolare, circonda il margine acuto e termina alla crux cordis.



Scopo

Valutare la variabilità inter-osservatore delle contornazioni del cuore in toto, delle arterie coronarie e del plesso brachiale con e senza l'uso di atlanti di riferimento tra medici con un'esperienza relativamente breve nel contouring.

Materiali e metodi

Due radioterapisti con esperienza inferiore ai 5 anni hanno contornato in cieco con e senza atlante plesso brachiale, cuore in toto e arterie coronarie di una paziente affetta da carcinoma della mammella. È stato successivamente l'indice di conformità.

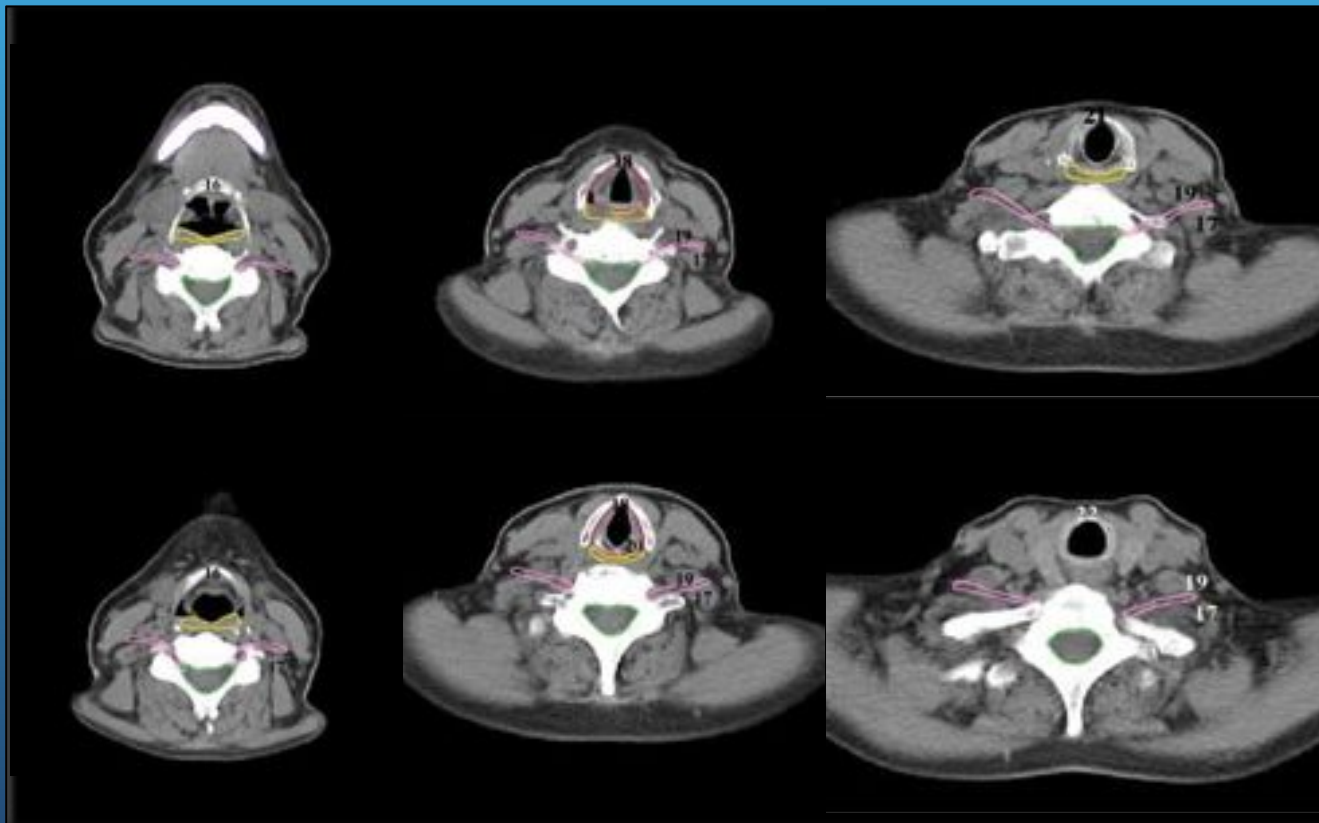
IC: Volume di intersezione/Volume di unione

➤ Testo di riferimento



Limiti anatomo-radiologici

Organ at risk	Cranial	Caudal	Lateral
Brachial plexus	Neural foramina C4-C5	First half of clavicular head	Sternocleidomastoid muscle, subclavian and axillary neurovascular bundle



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D. Genovesi
C.A. Perez
Springer 2013

Limiti anatomo-radiologici

Organ at risk

Cranial

Caudal

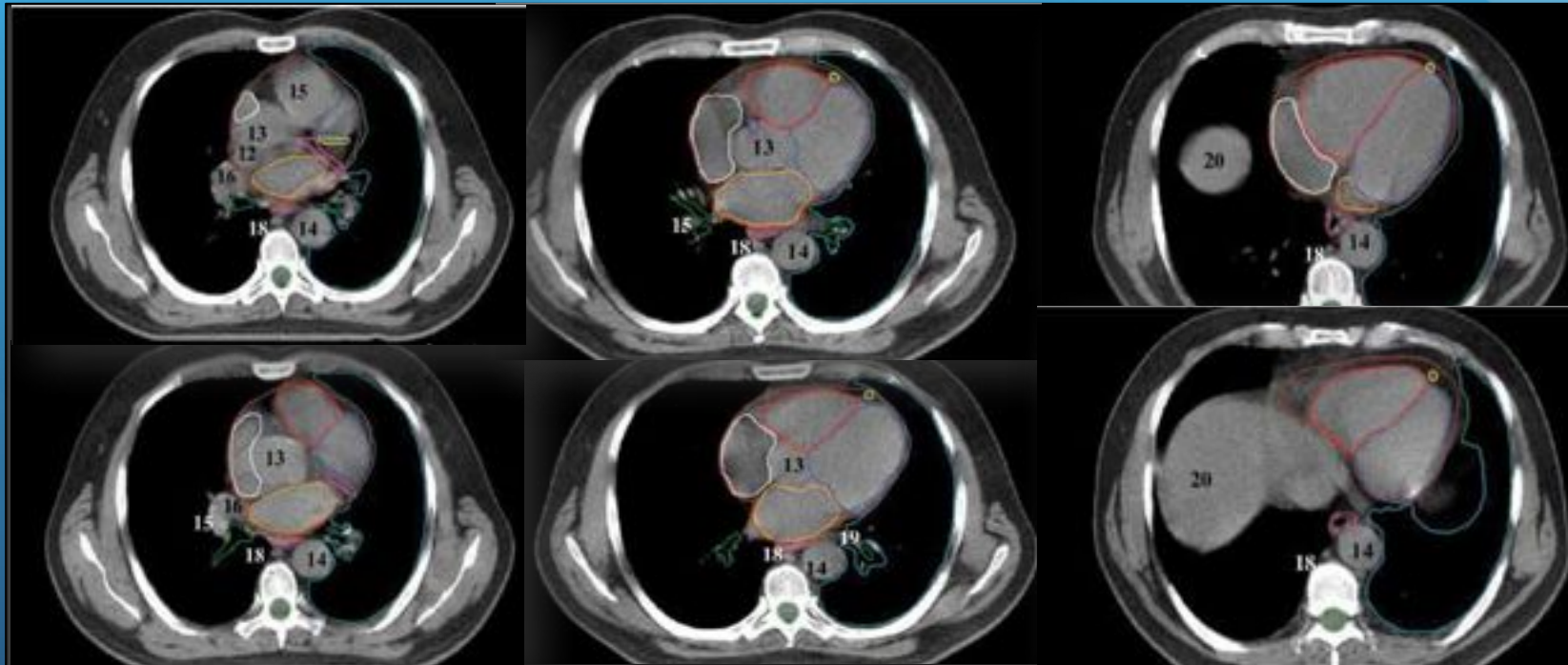
Lateral

Heart and pericardium

Line through the inferior aspect of left pulmonary trunk

Line through the superior aspect of left hepatic lobe

Mediastinal pleura and lung parenchyma

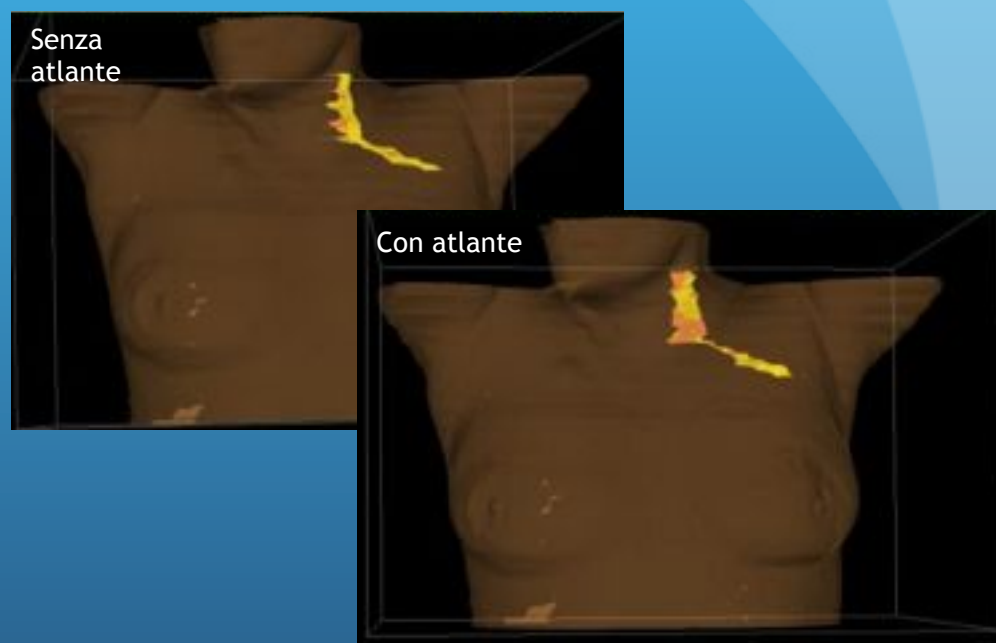
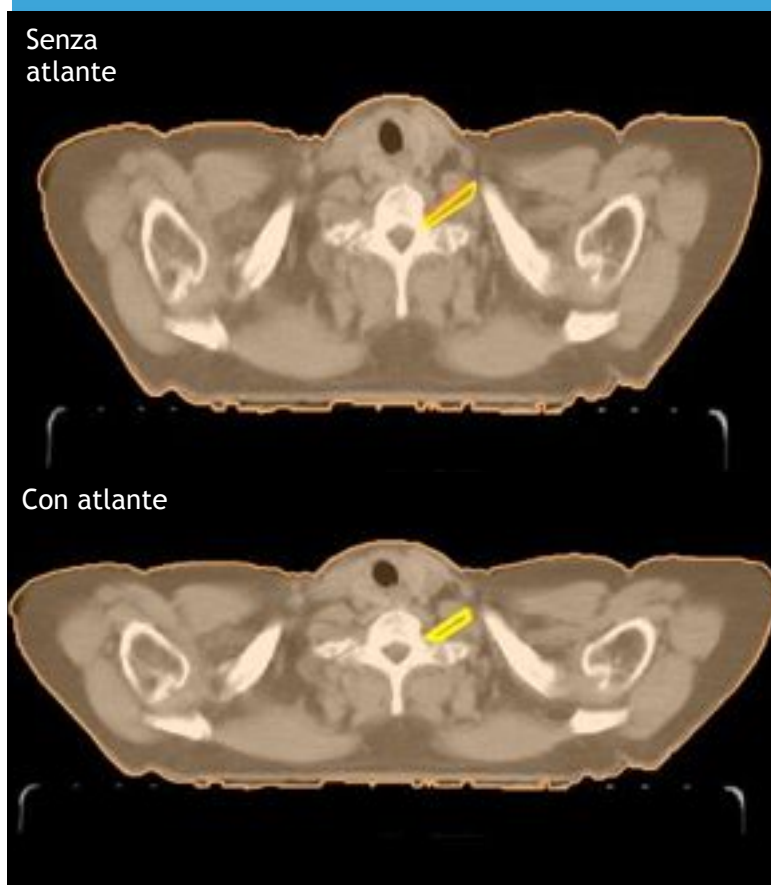


G.Ausili Cefaro
D.Genovesi
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Risultati: Plesso Brachiale

Volume (cc)	A	B
Senza atlante	2	5,1
Con atlante	6,6	8,5

Estensione Cranio-Caudale	A	B
Senza atlante	8,5	8
Con atlante	9	9



I.C.	Plesso senza atlante	Plesso con atlante
	13%	60%

Risultati: Cuore

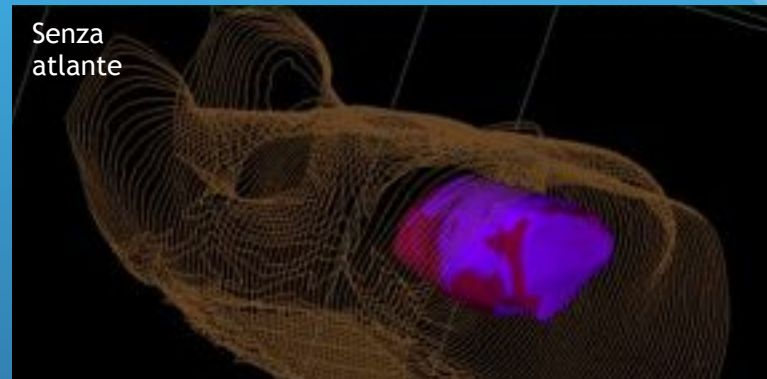
Volume(cc)	A	B
Senza atlante	610.7	623.8
Con atlante	641.3	629.9

Estensione cranio-caudale	A	B
Senza atlante	8.5	9
Con atlante	9,5	9

Senza atlante



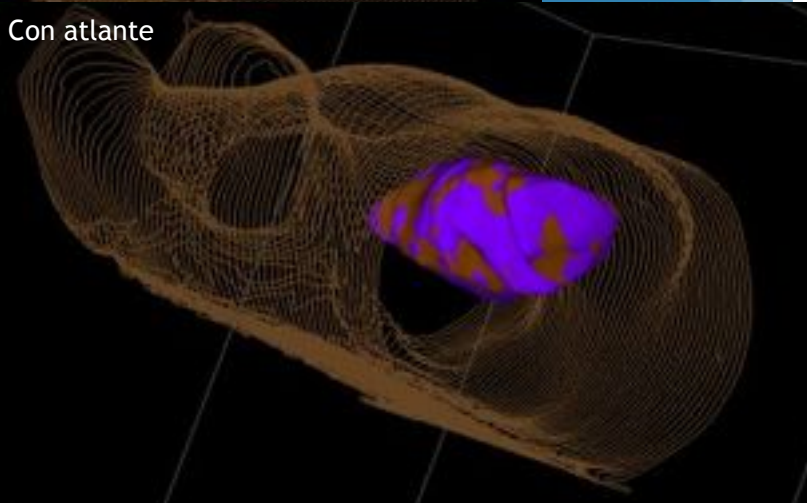
Senza atlante



Con atlante

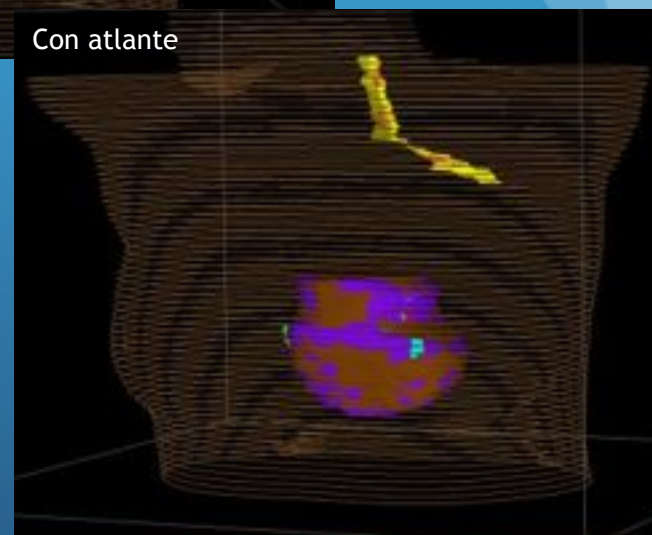


Con atlante



Risultati: Cuore

Cuore	A	B
Diam. A-P 1	9.06	9,05
Diam. A-P 2	9.26	9.04
Diam. L-L 1	13,09	12,58
Diam. L-L 2	12,89	13,02



I.C.

C. Senza atlante

90%

C. Con atlante

96%

Risultati: Coronarie

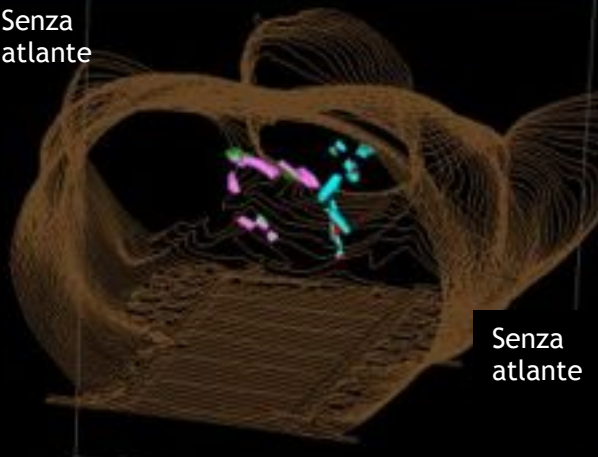
Coronaria dx

Volume cc	A	B
1	2,73	4,05
2	2,44	3,64

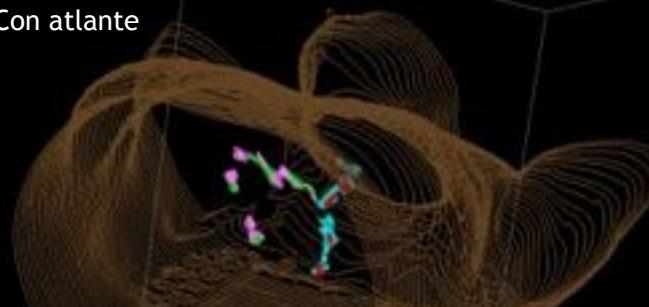
Coronaria sx

Volume cc	A	B
1	2,53	3,62
2	3,79	4,87

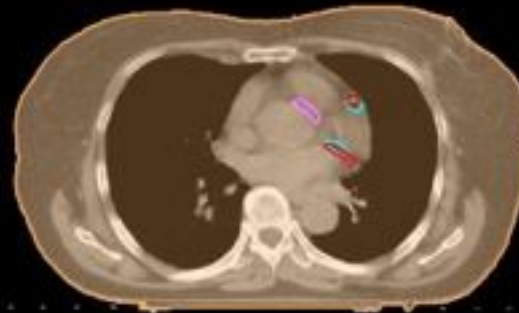
Senza atlante



Con atlante



Senza atlante



Con atlante



I.C.

Coronaria Dx senza atlante

22%

Coronaria Dx con atlante

44%

I.C.

Coronaria Sn senza atlante

31%

Coronaria Sn con atlante

51%

Conclusioni

- Conoscenza dell'anatomia
- Esperienza nel contouring
- Utilizzo routinario di linee guida ed atlanti
- Scegliere adeguati indicatori di processo
- Utilizzo del mezzo di contrasto

Grazie dell'attenzione!