

State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry

Yung Hsiang KAO (1), Andrew EH TAN (1), Richard HG LO (2), Kiang Hiong TAY (2), Mark C BURGMANS (2), Farah G IRANI (2), Li Ser KHOO (2), Bien Soo TAN (2), Pierce KH CHOW (3, 4), David CE NG (1), Anthony SW GOH (1)

(1) Department of Nuclear Medicine and PET, Singapore General Hospital

(2) Department of Diagnostic Radiology, Singapore General Hospital

(3) Department of General Surgery, Singapore General Hospital

(4) Duke-NUS Graduate Medical School, Singapore

*First author contact: Dr Yung Hsiang KAO
MBBS, MRCP(UK), FAMS(Nuclear Medicine)
yung.h.kao@gmail.com*

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory

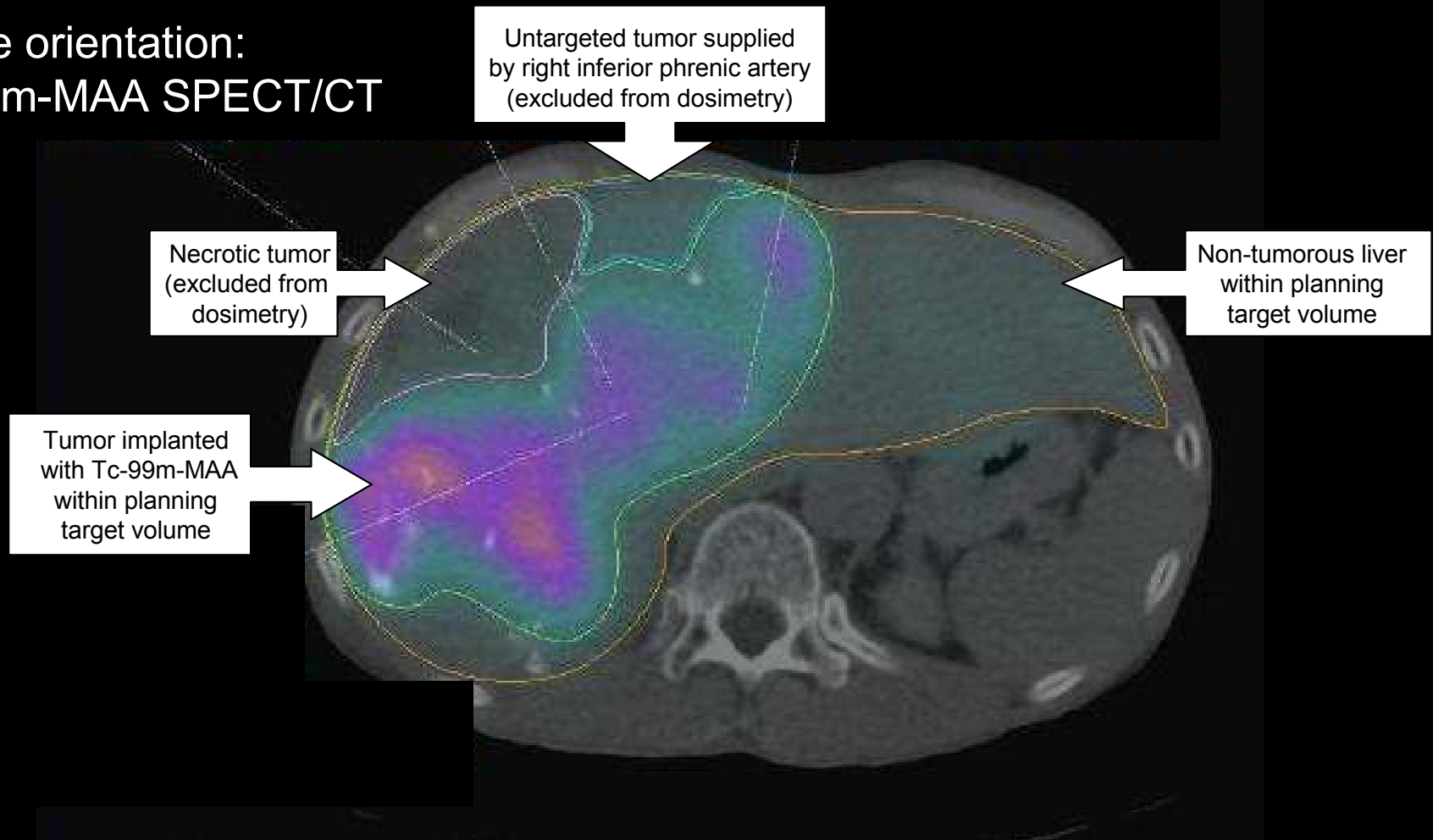
State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry

Note: This PDF file is best viewed in 'full screen' mode i.e. 'Ctrl+L'.

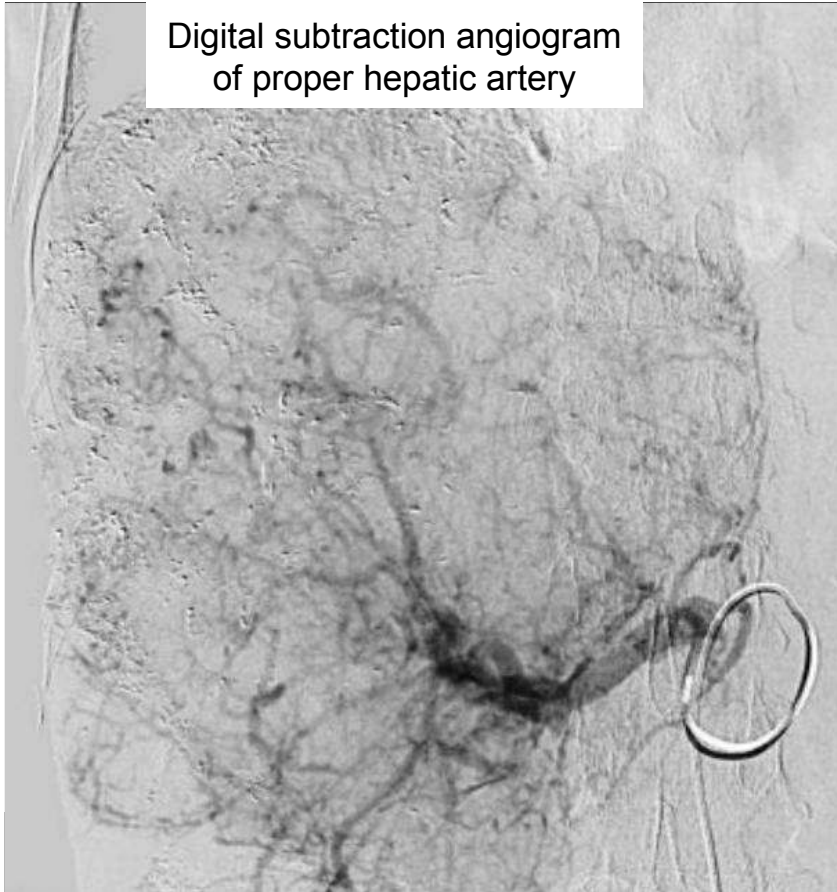


State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry

Figure orientation:
Tc-99m-MAA SPECT/CT



Digital subtraction angiogram
of proper hepatic artery



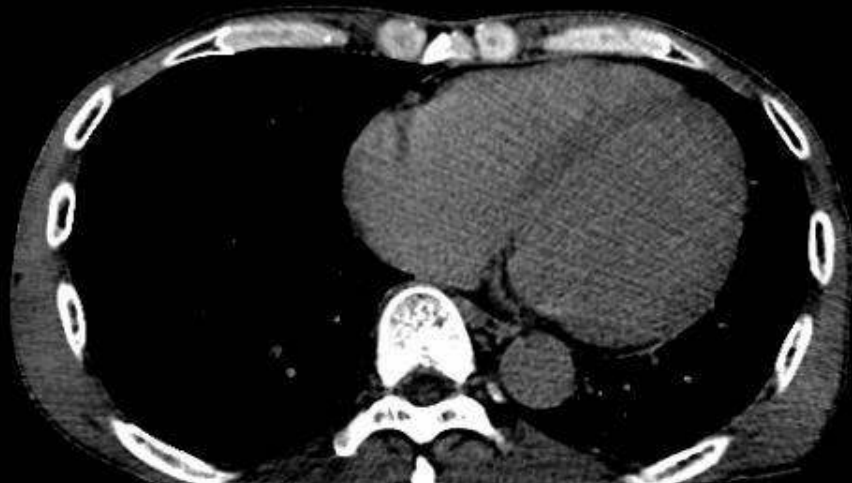
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

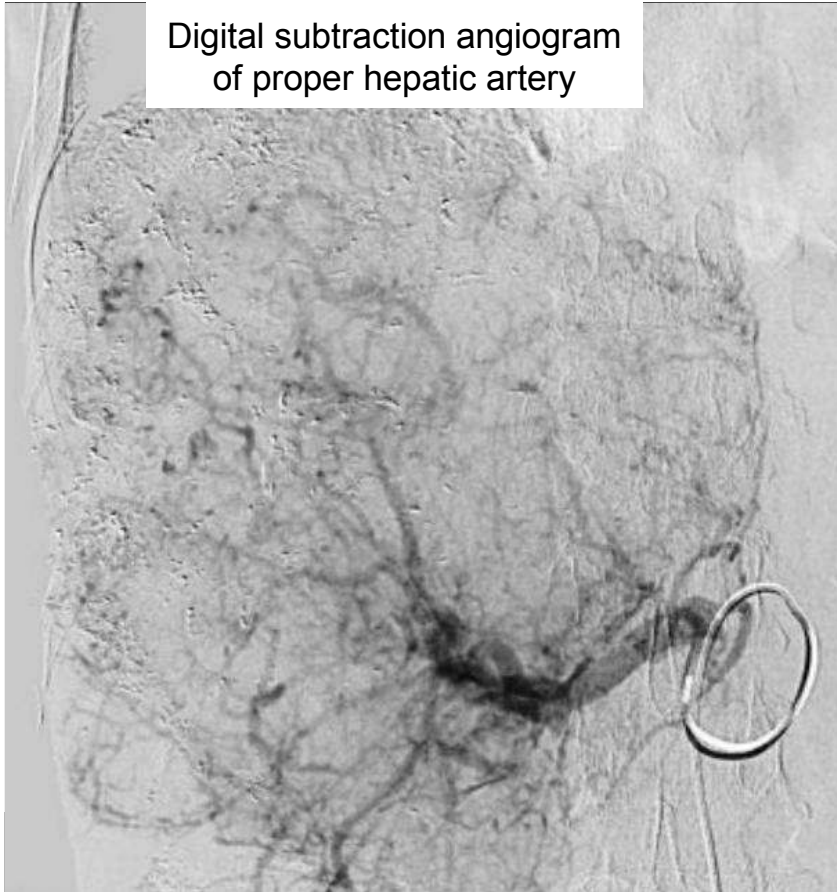


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

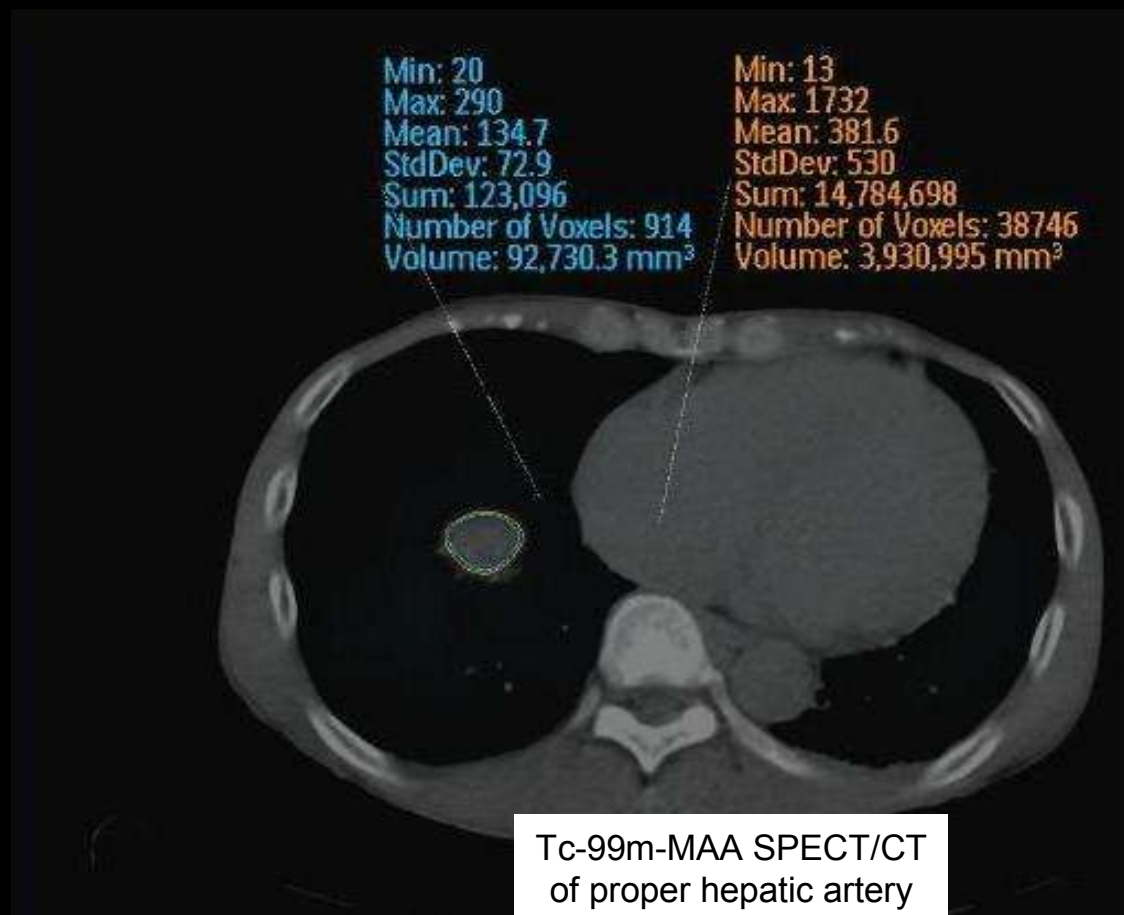
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

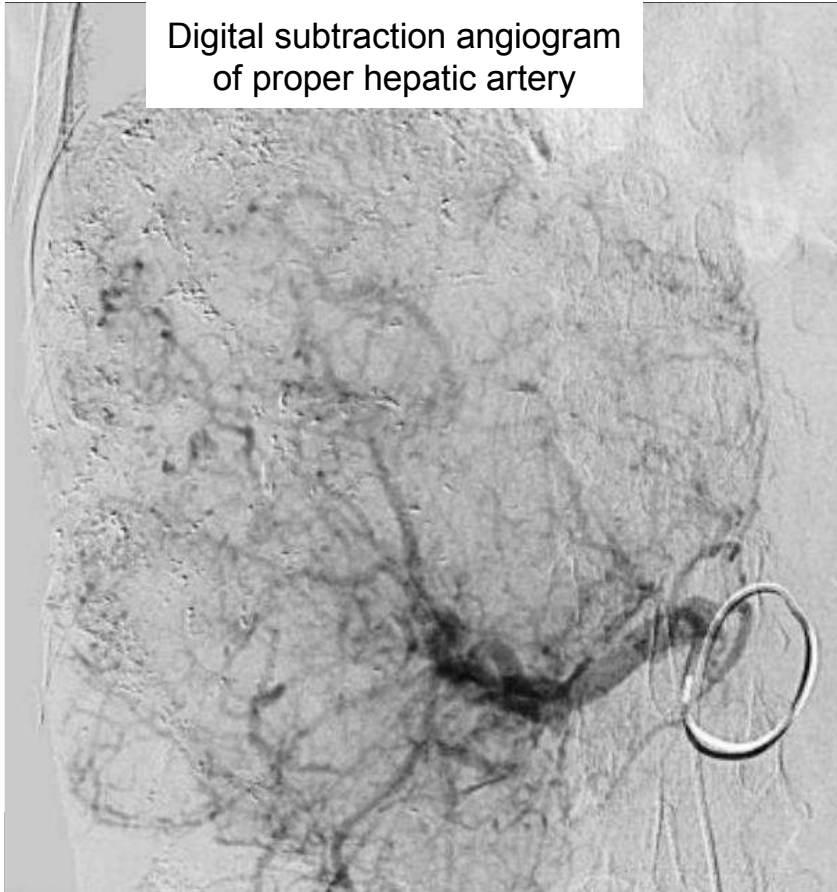


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



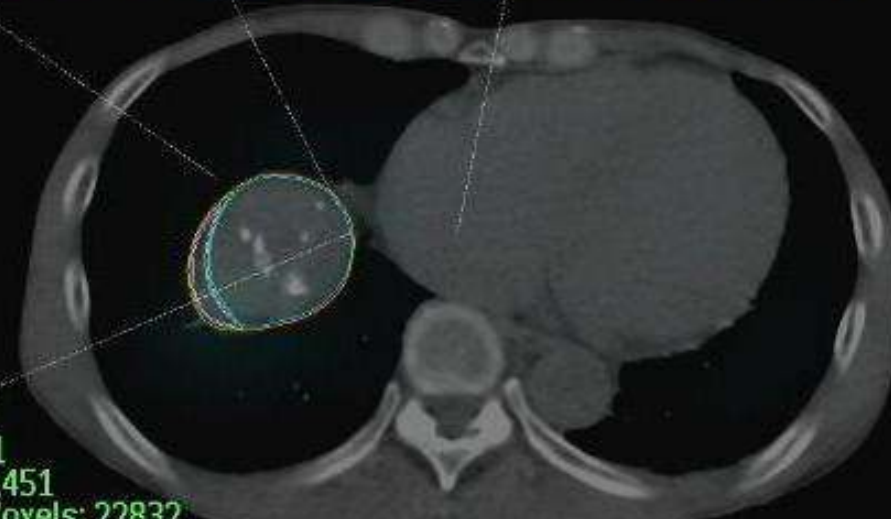
Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

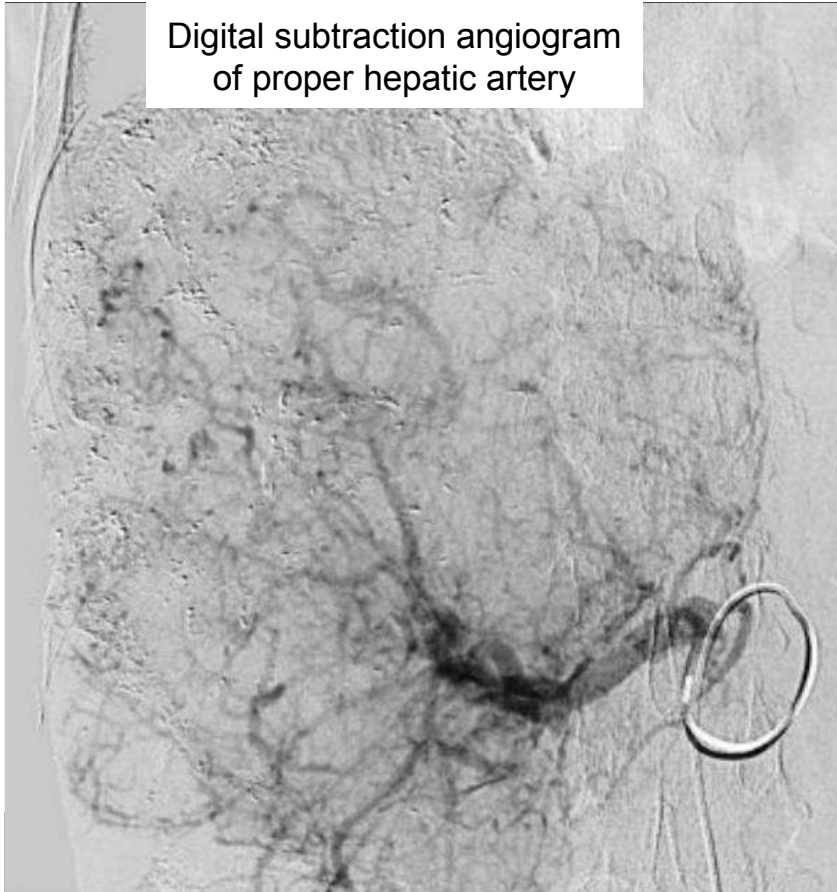
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



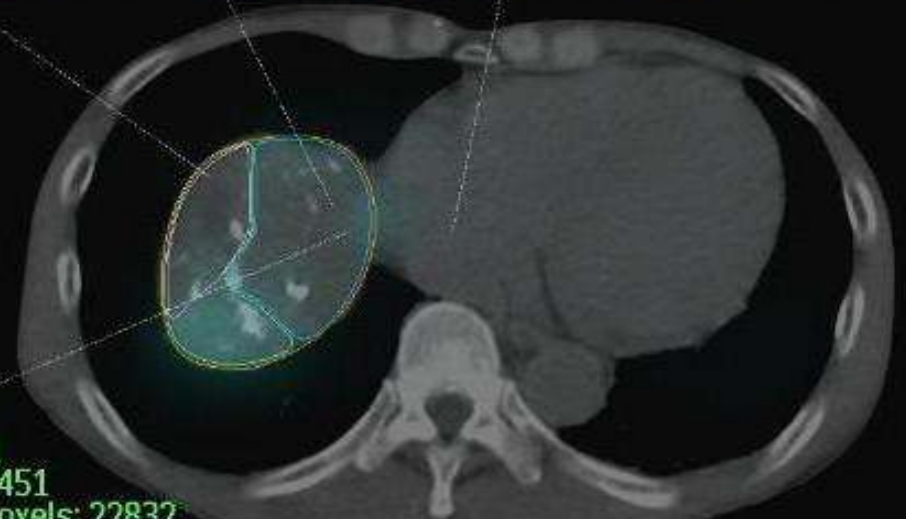
Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

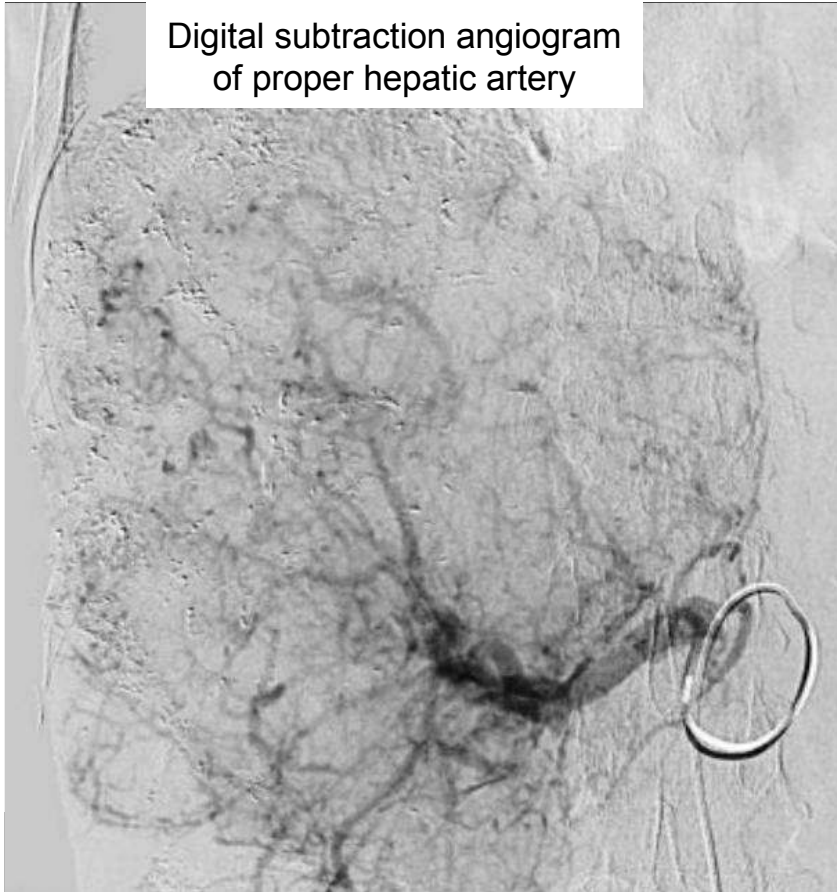
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



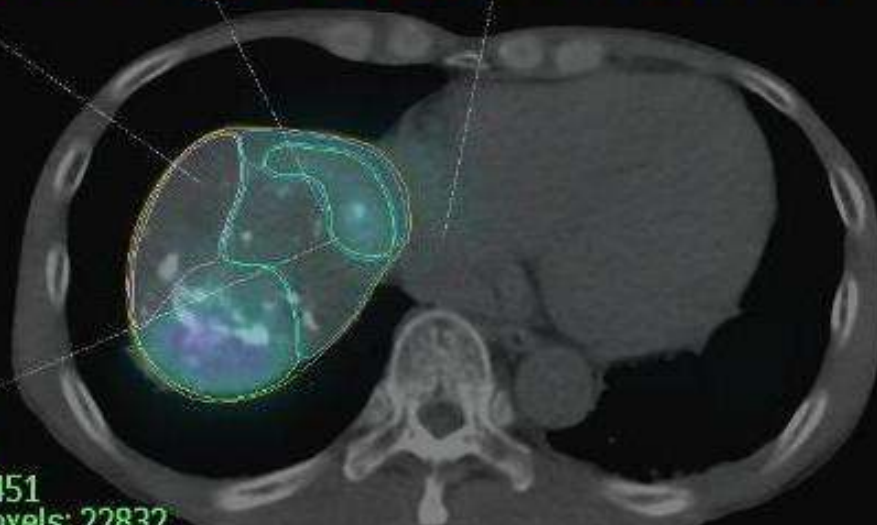
Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

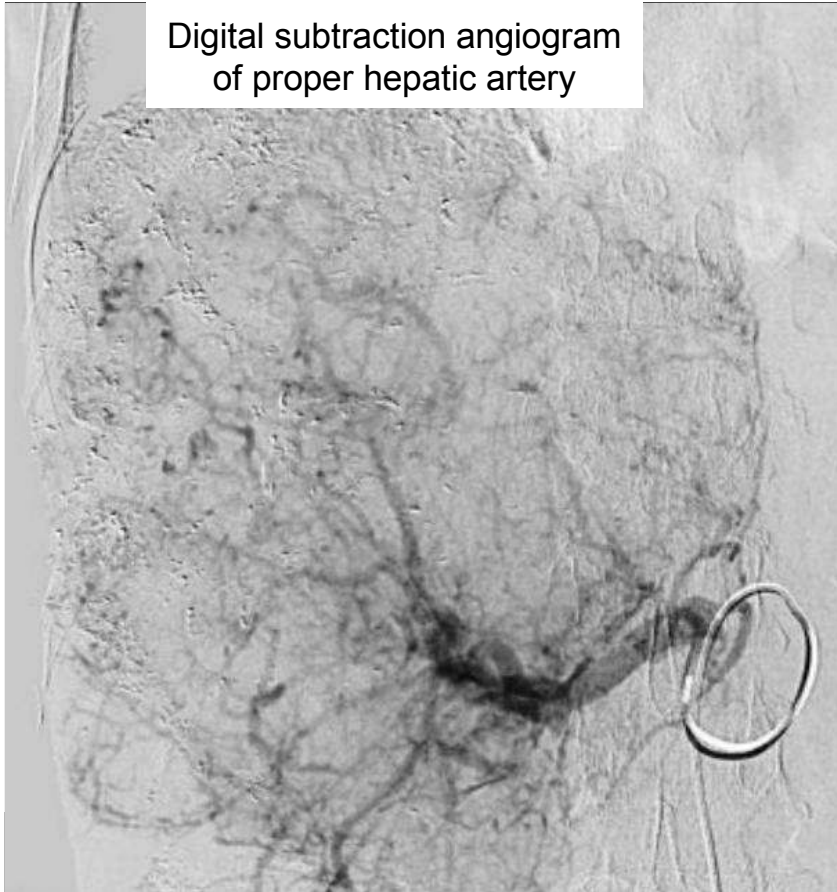
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



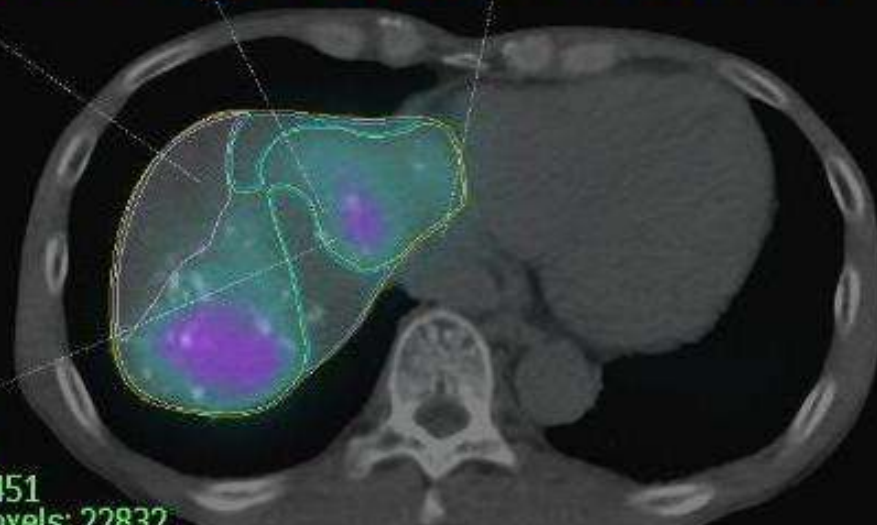
Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

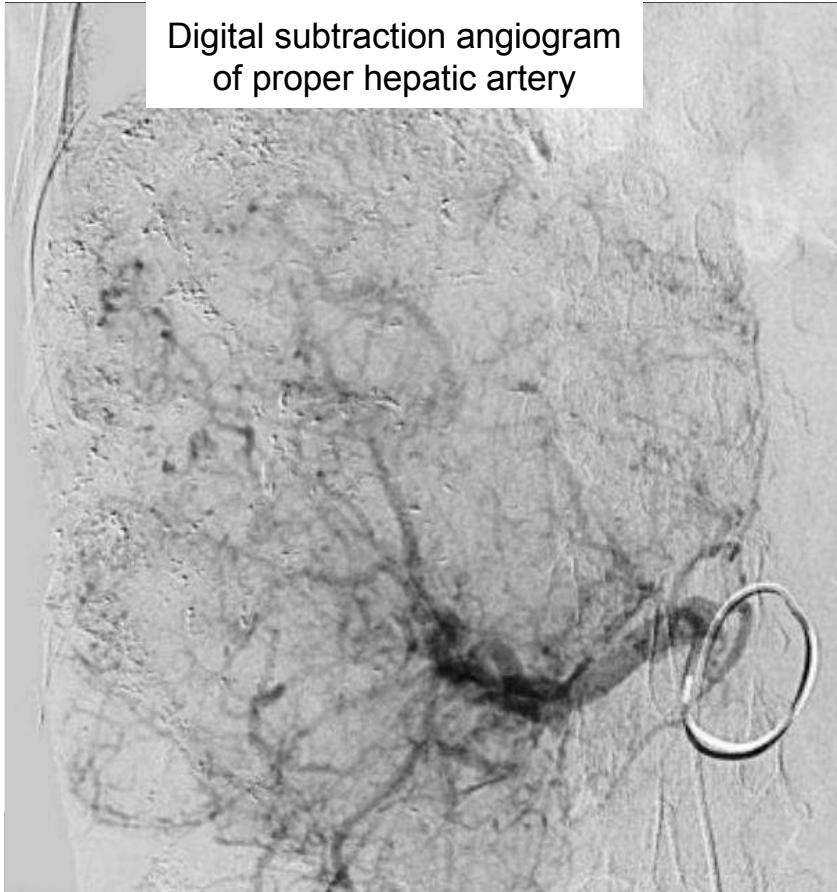
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



Singapore
General Hospital
SingHealth

© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



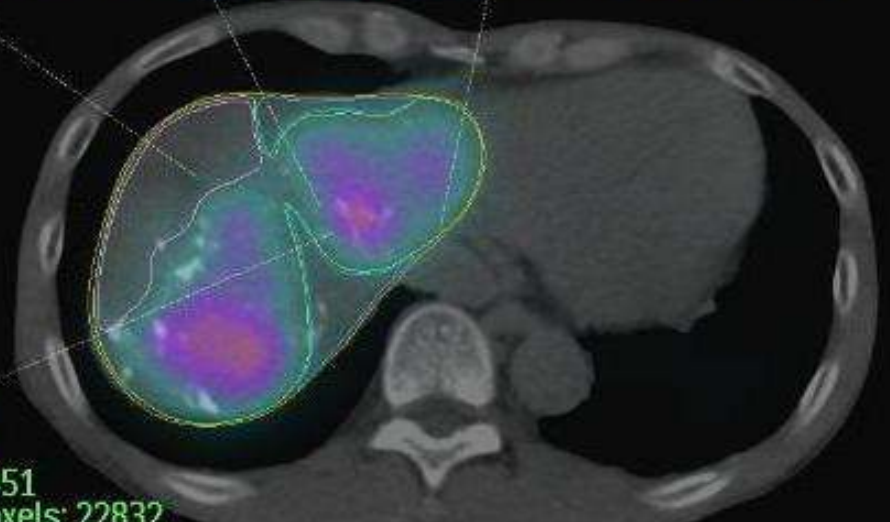
Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

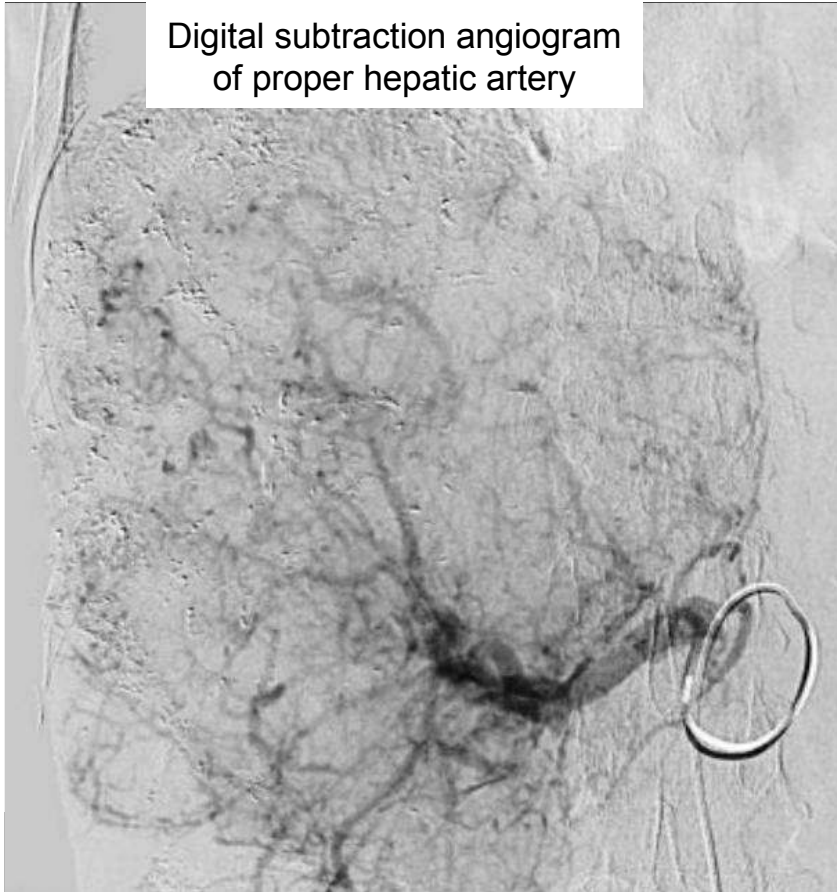
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



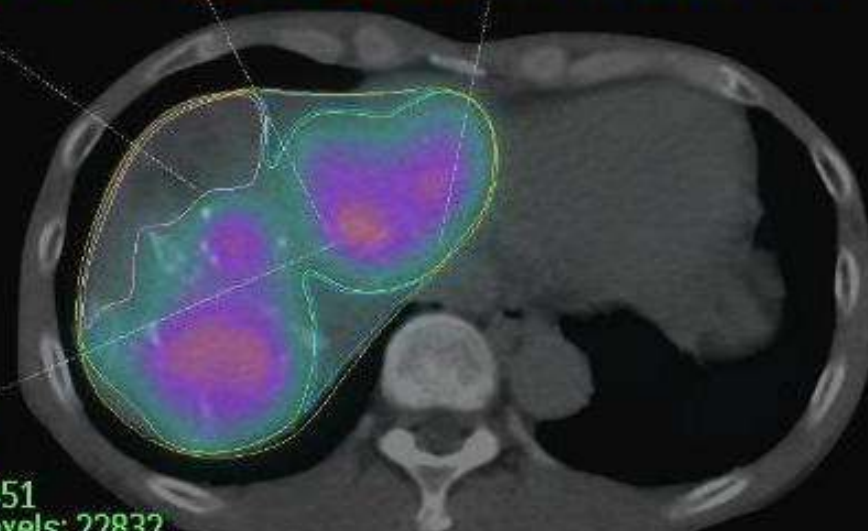
Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

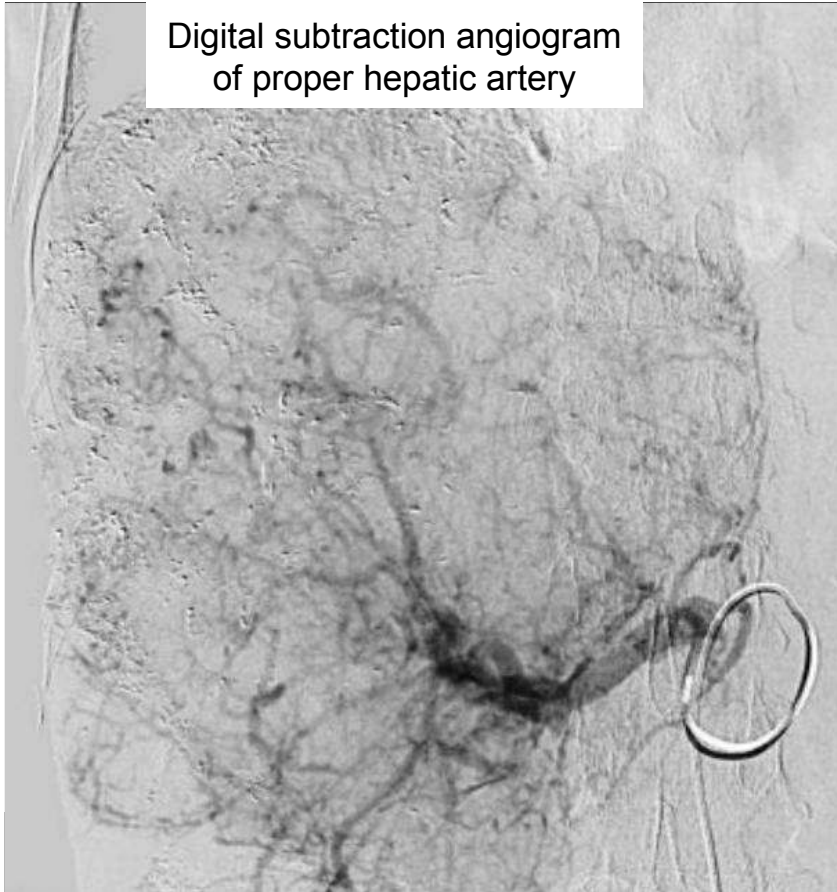
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery

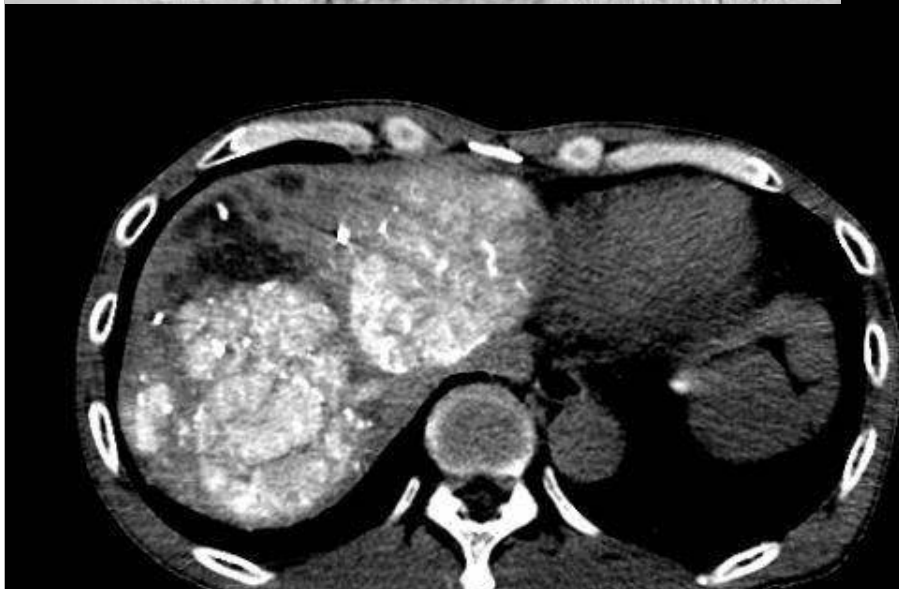


Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



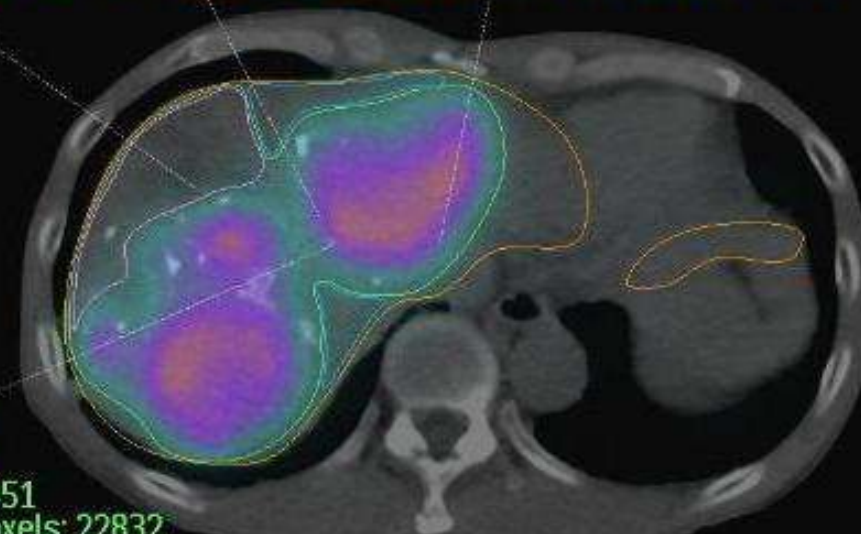
Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

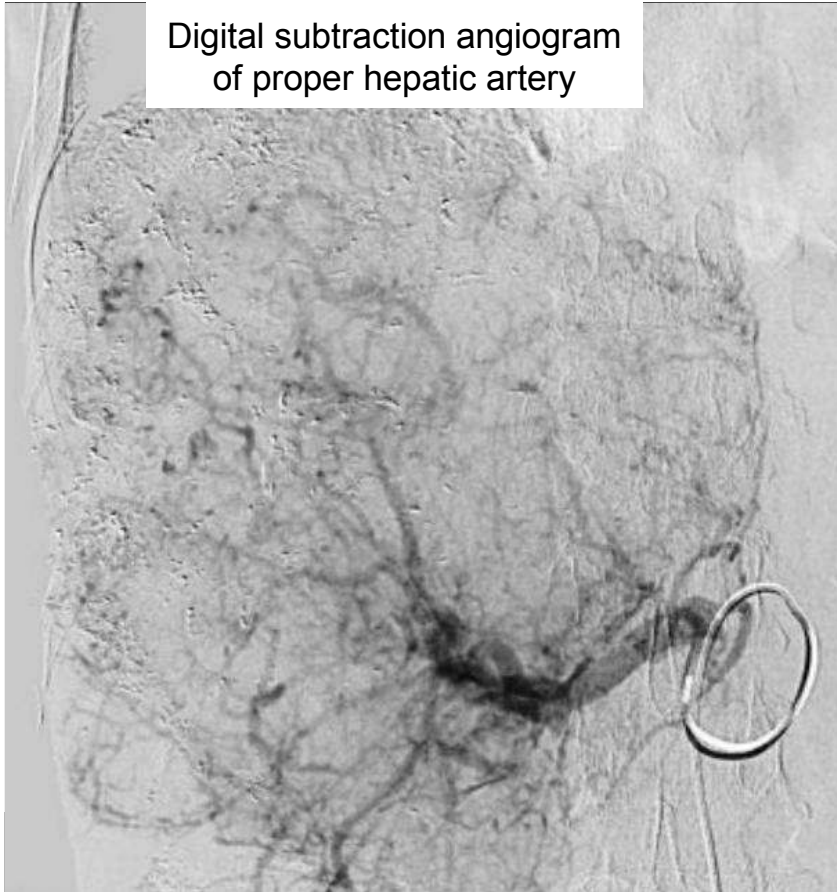
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



Singapore
General Hospital
SingHealth

© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



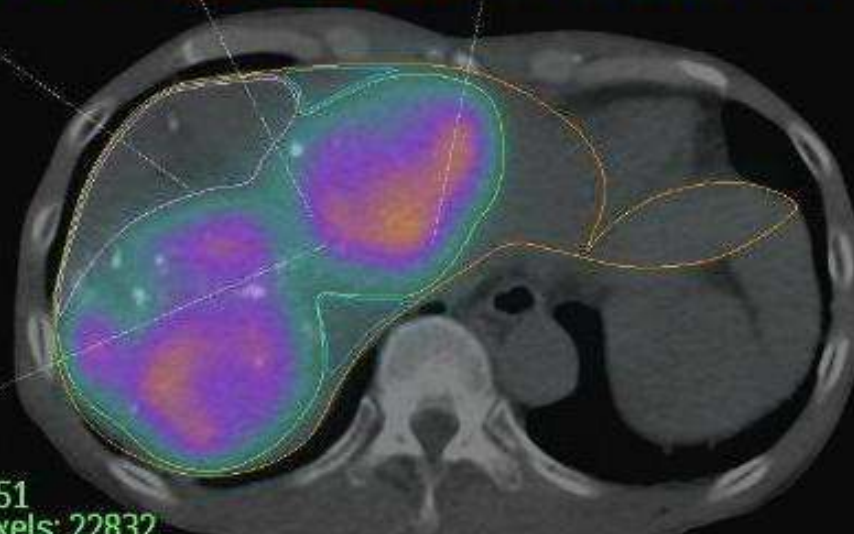
Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

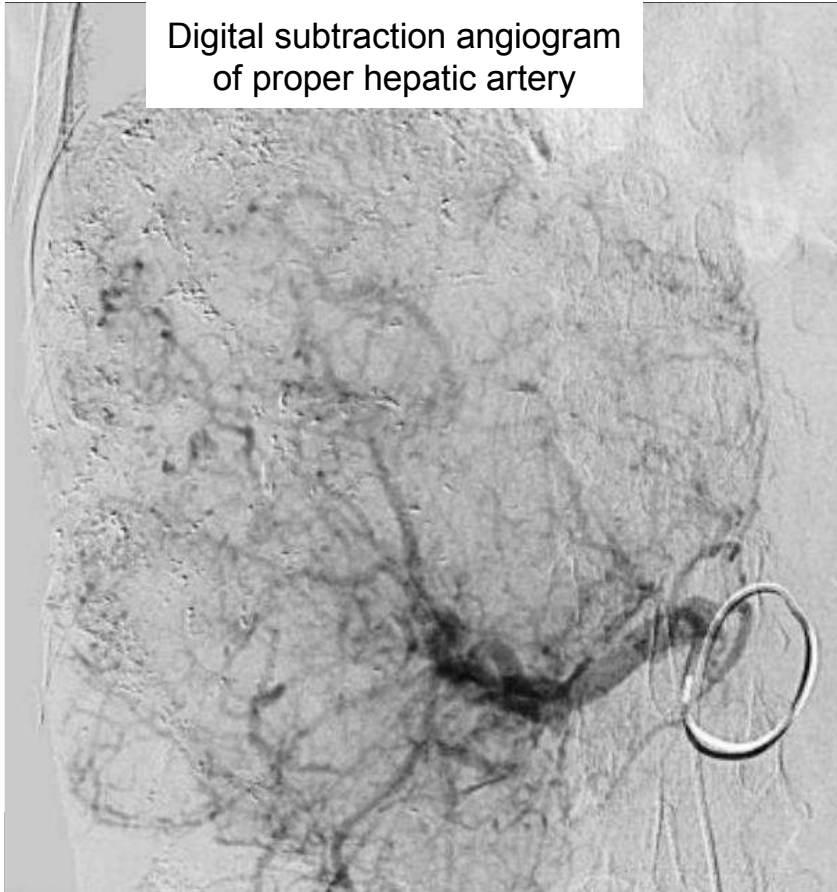
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



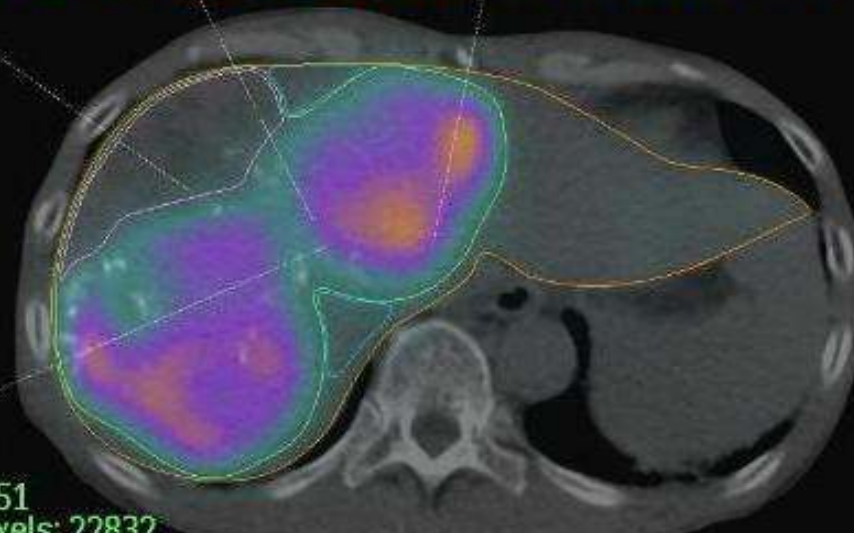
Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

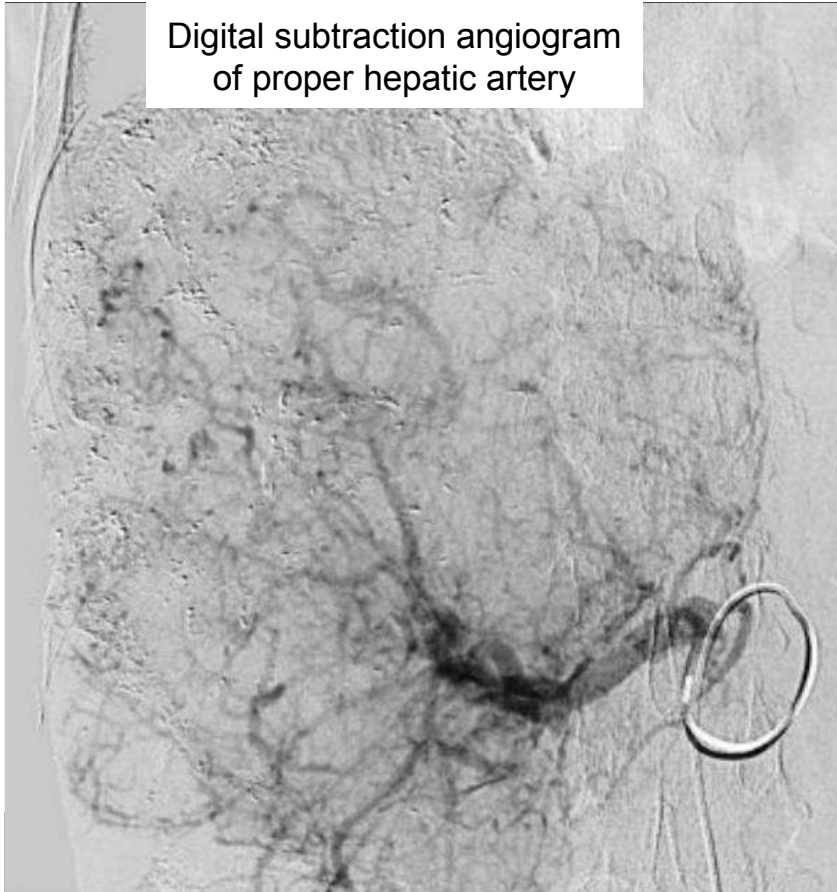
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery

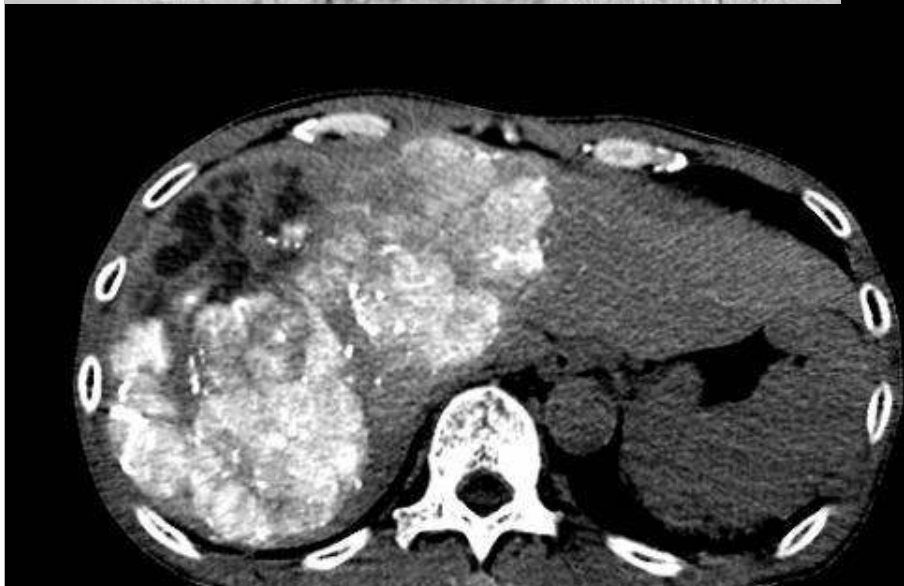


Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



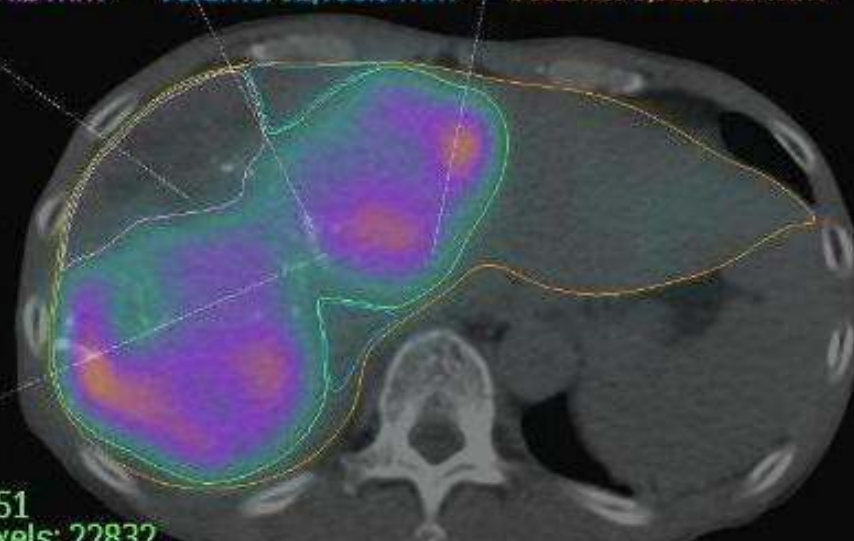
Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

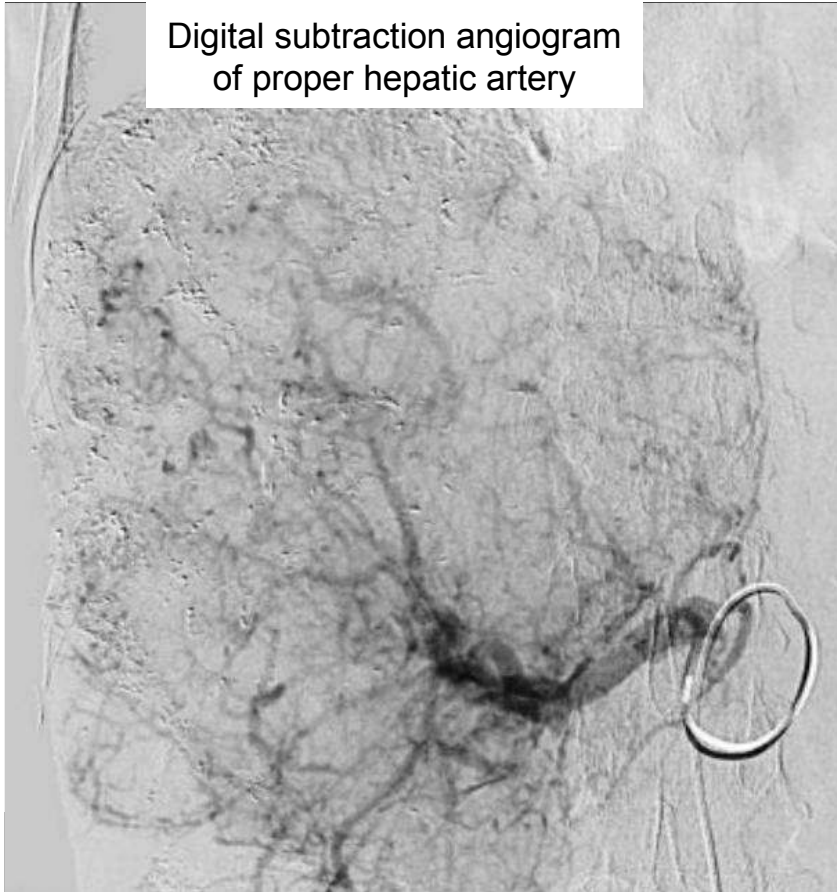
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



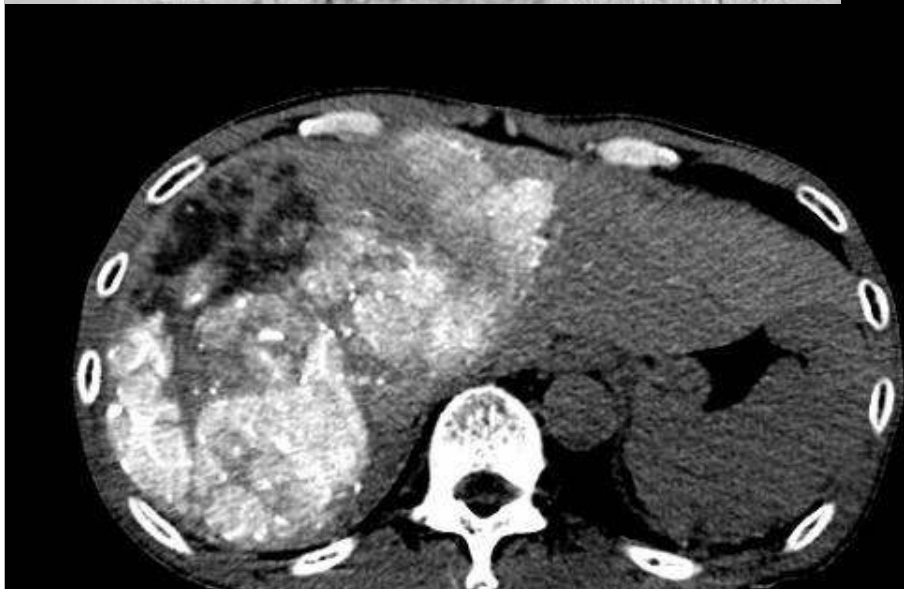
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



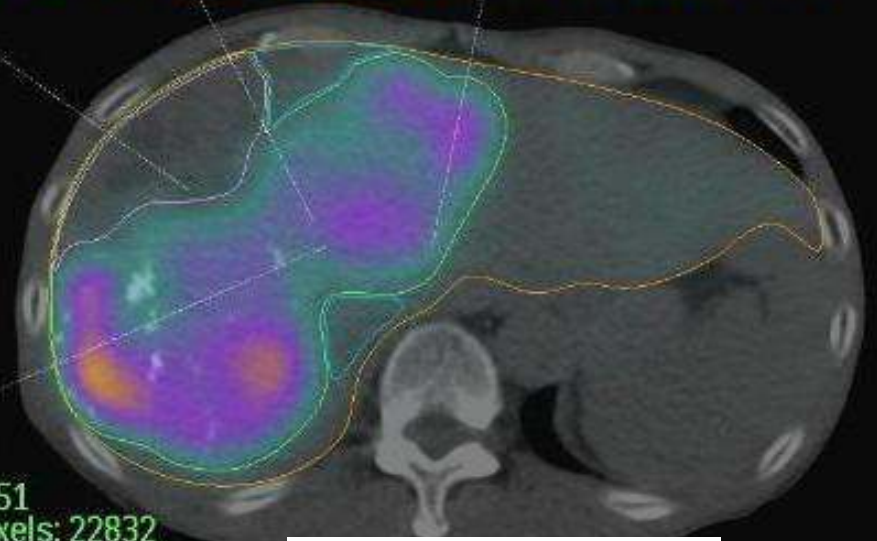
Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

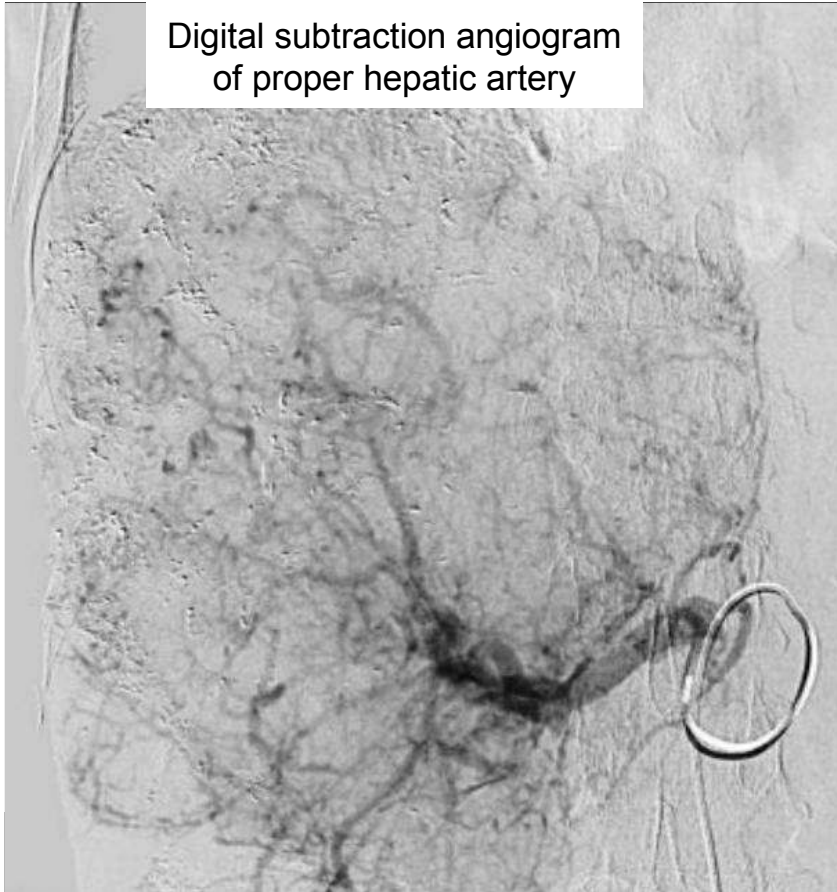
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



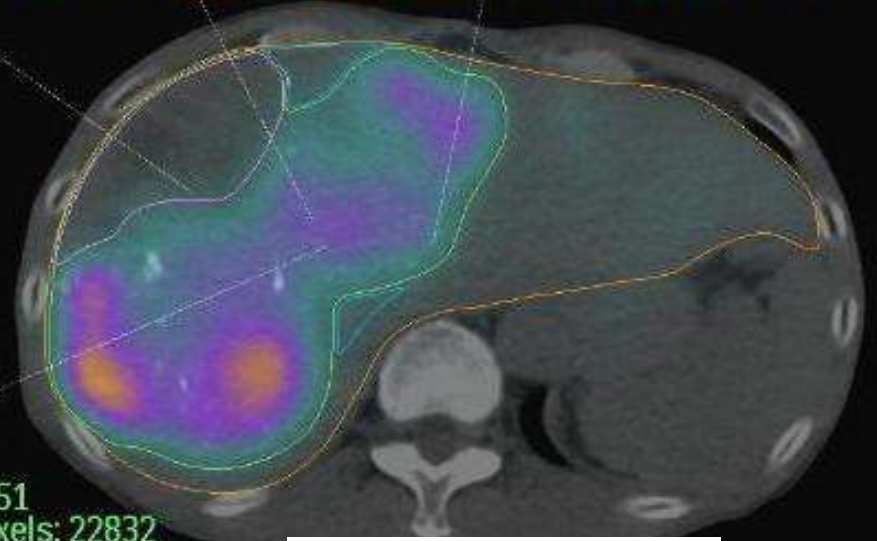
Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

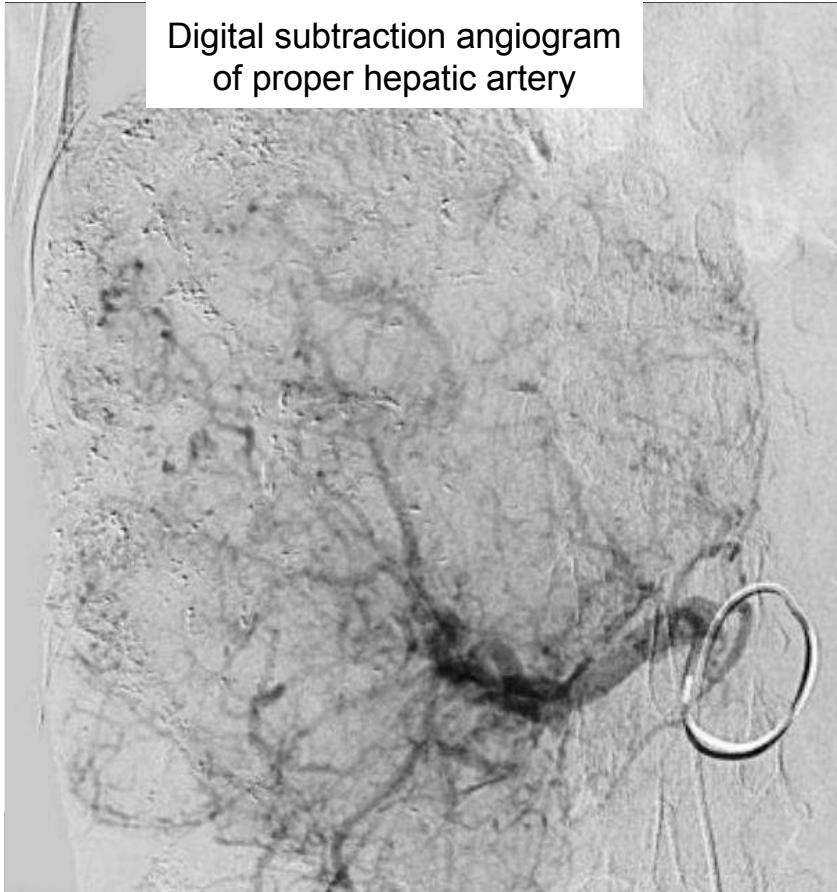
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



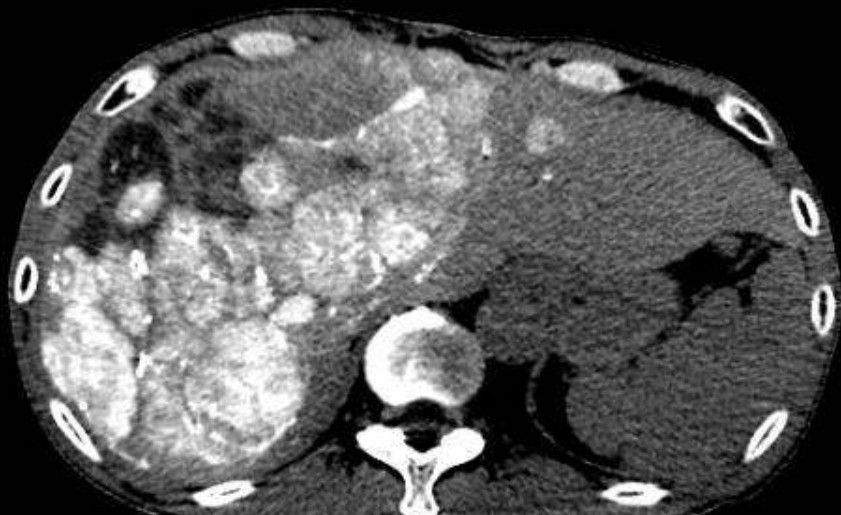
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



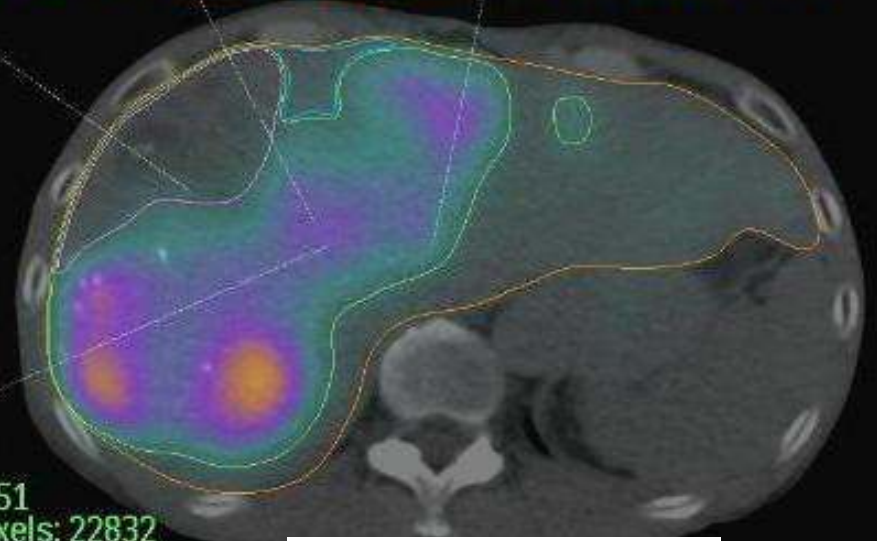
Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

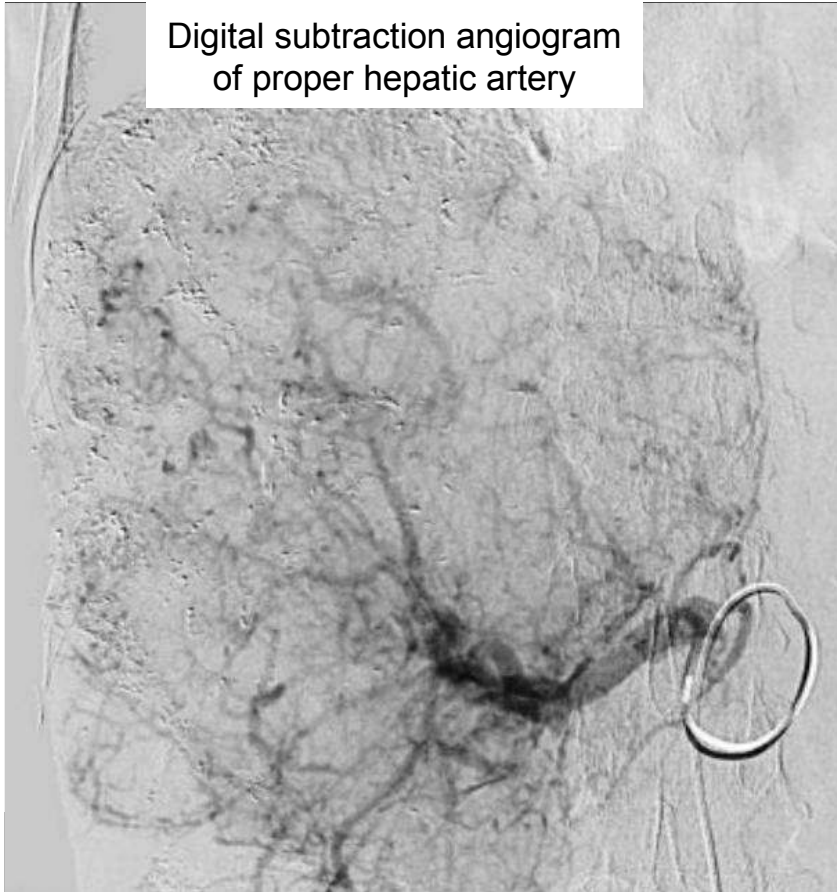
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



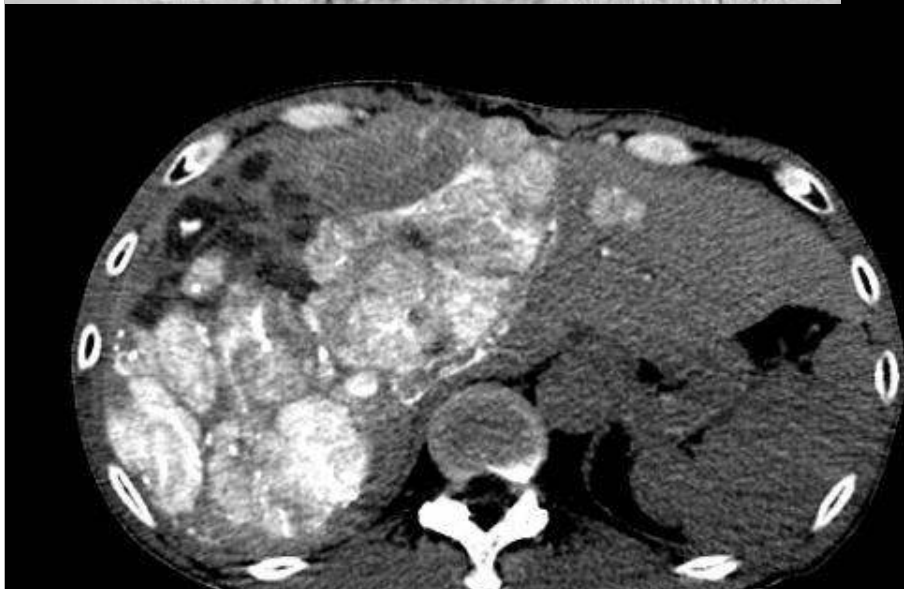
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



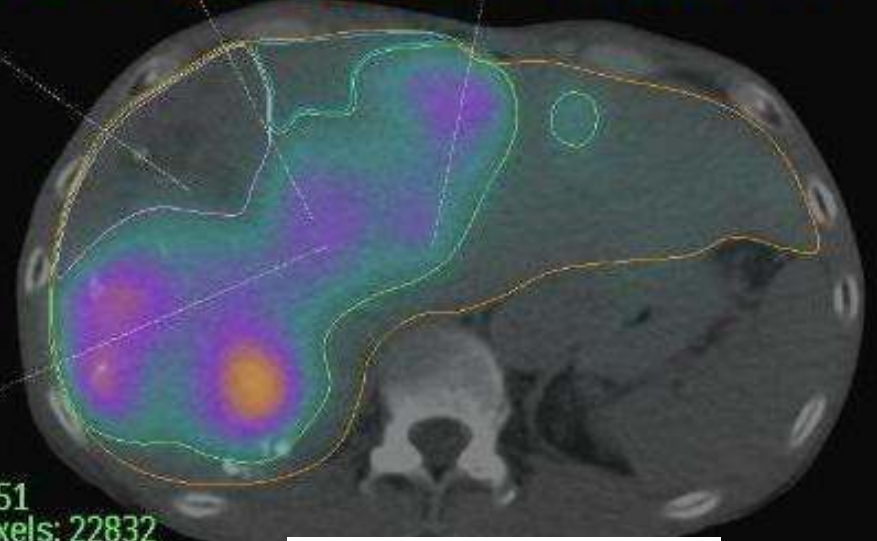
Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

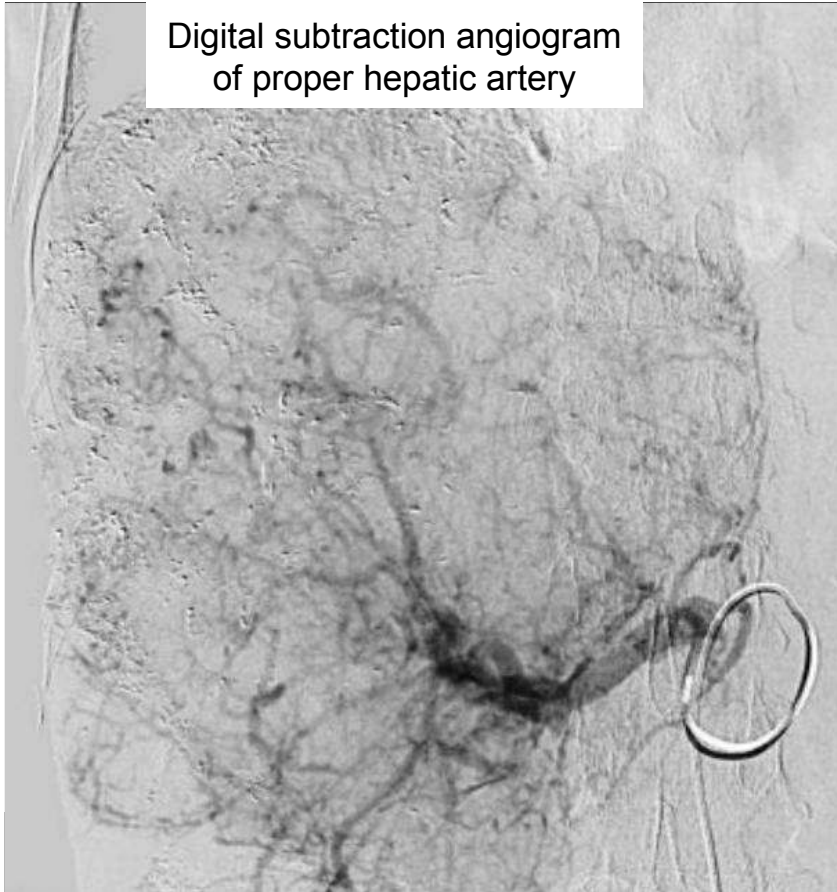
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



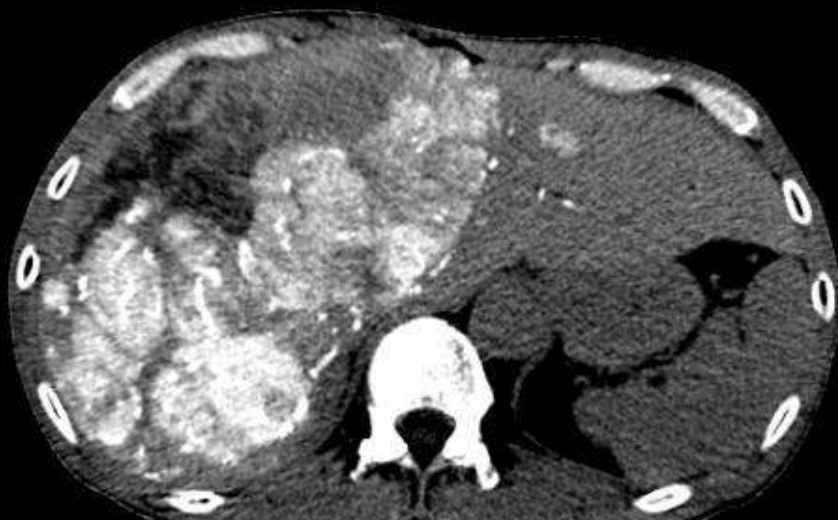
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



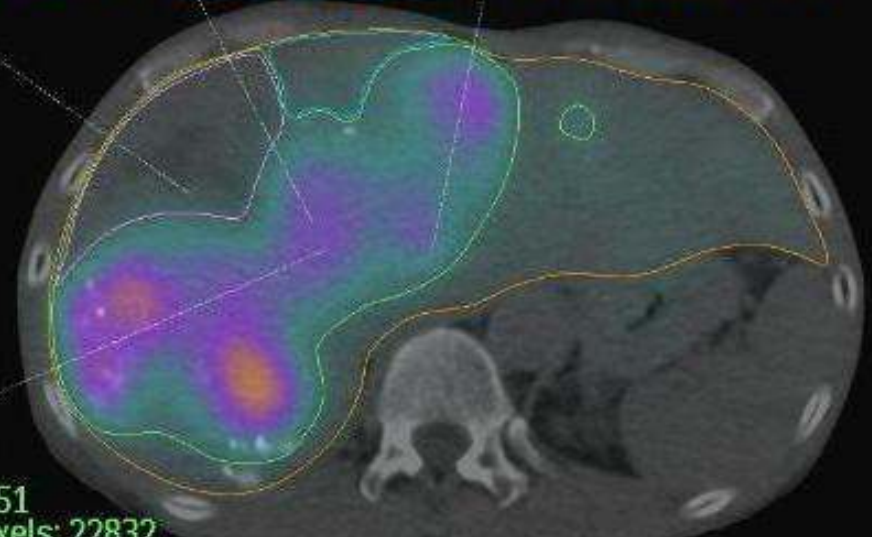
Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

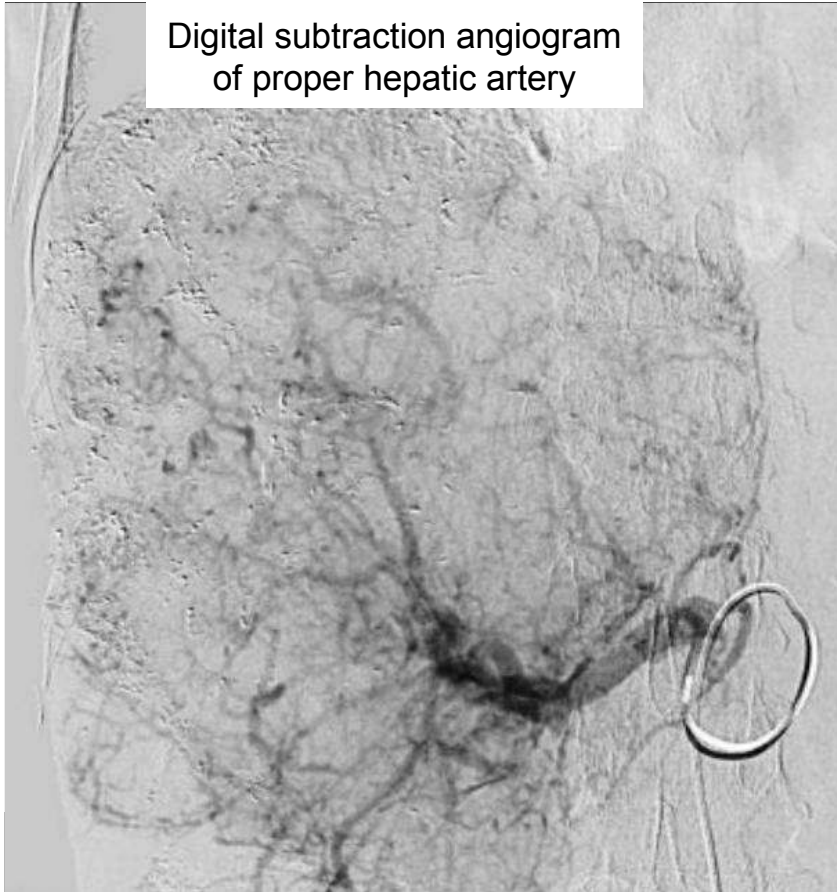
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery

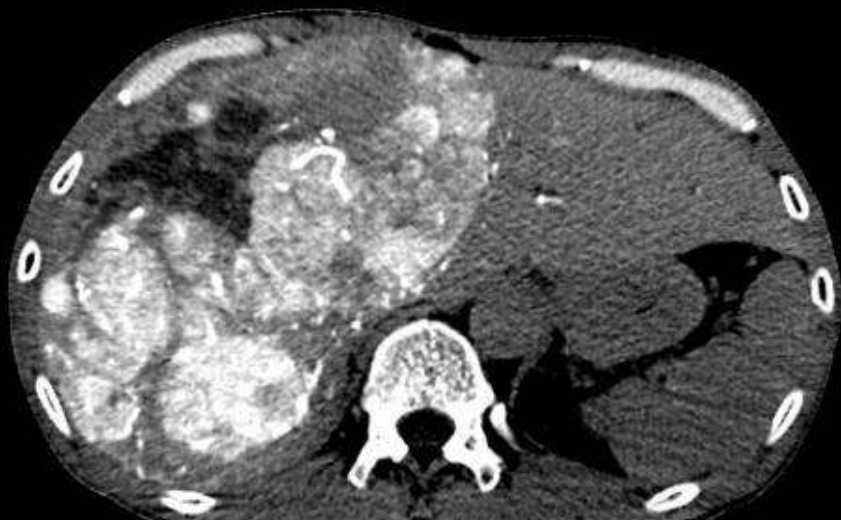


Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



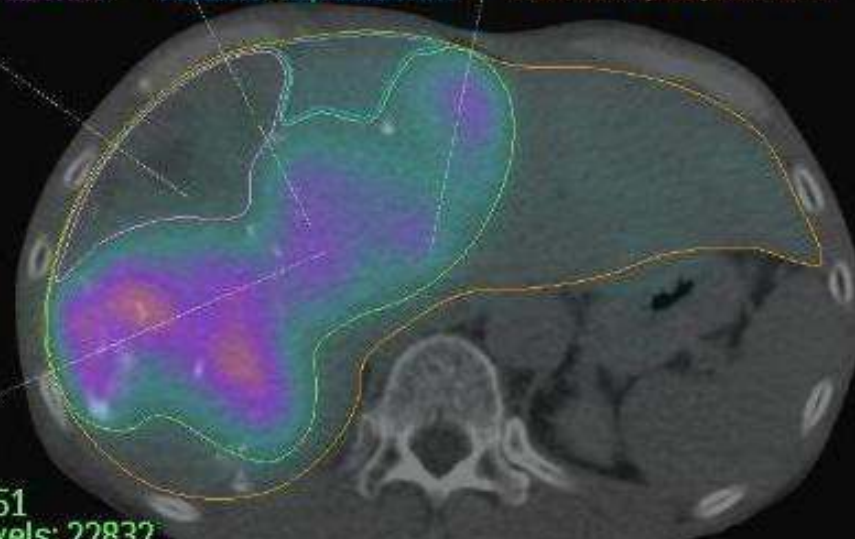
Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

Min: 20
Max: 290
Mean: 134.7
StdDev: 72.9
Sum: 123,096
Number of Voxels: 914
Volume: 92,730.3 mm³

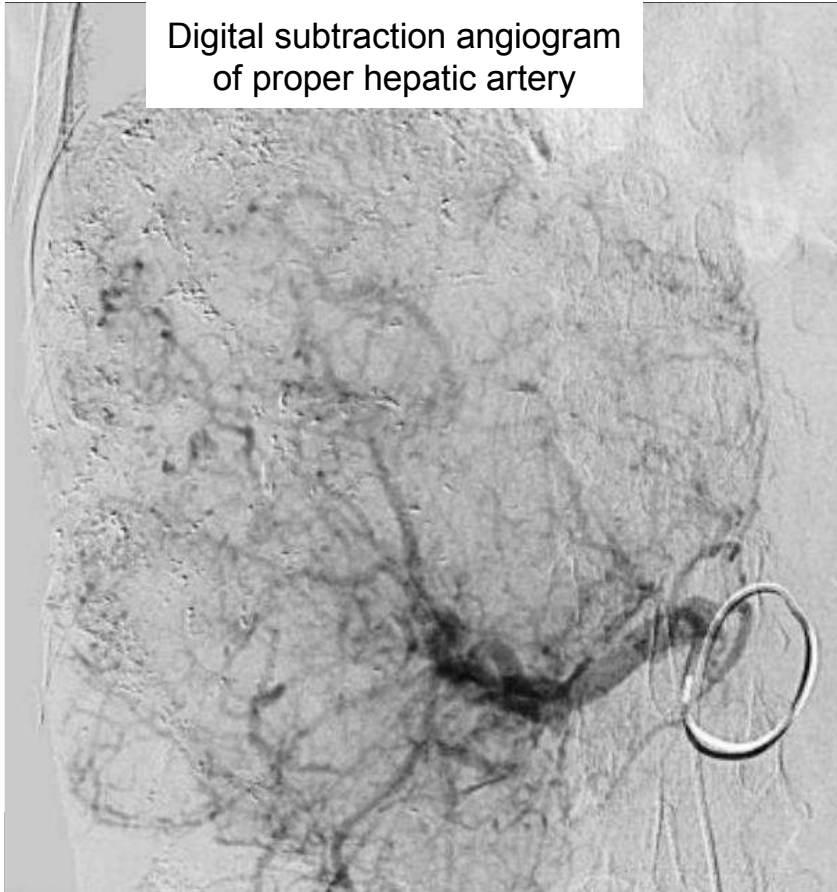
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



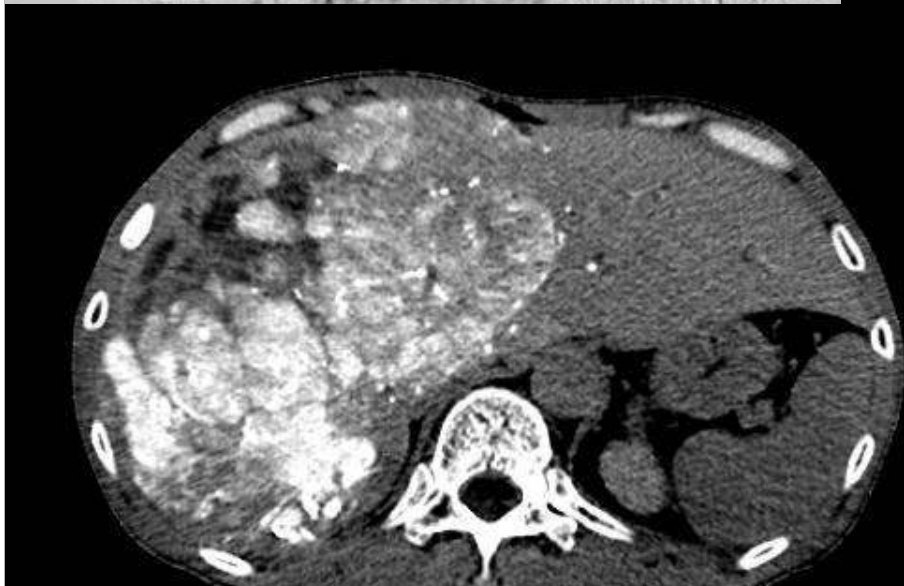
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



Singapore
General Hospital
SingHealth

© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

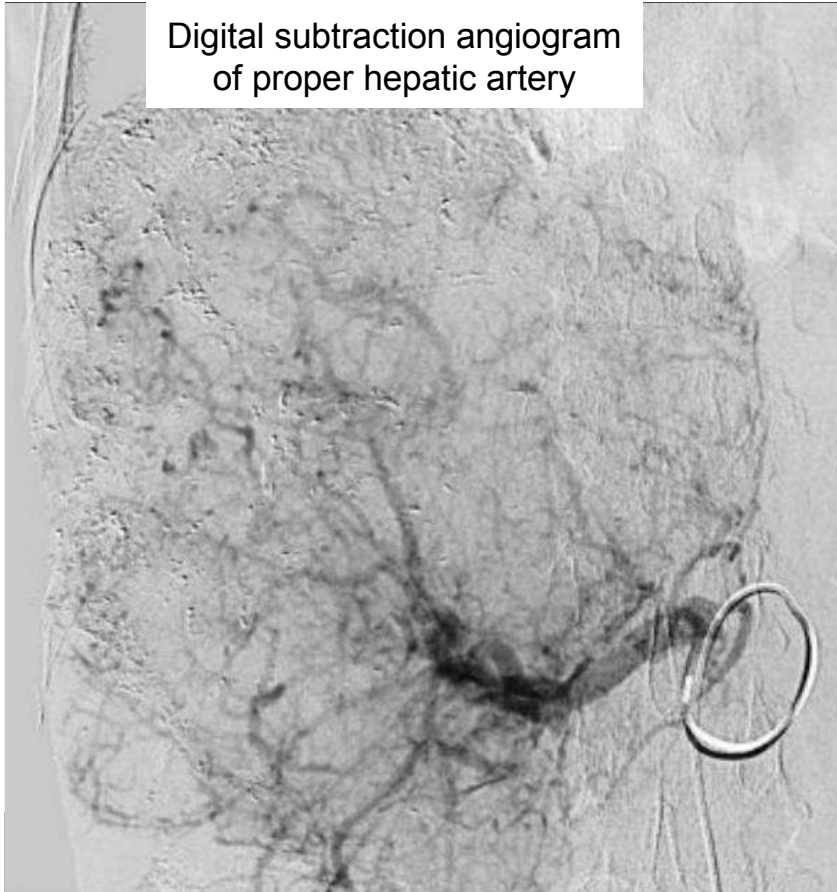
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery

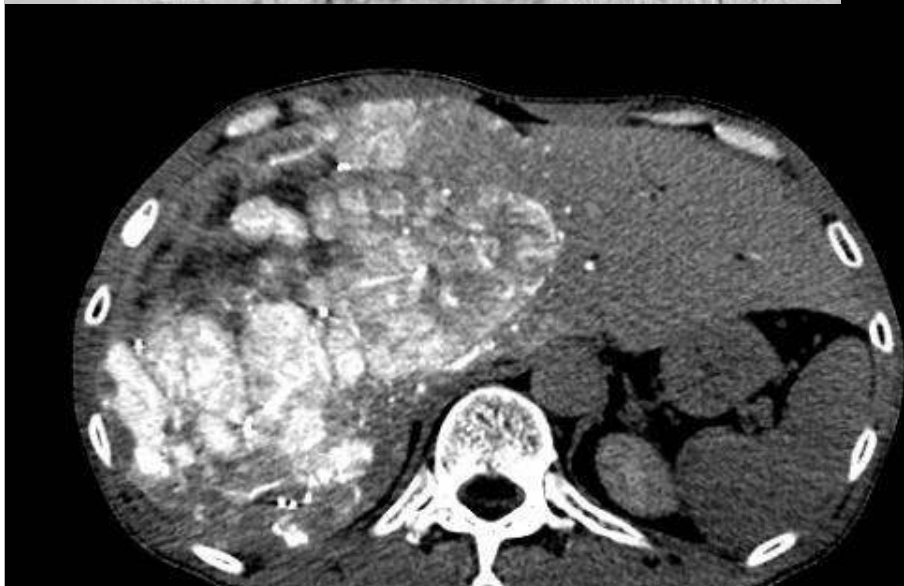


Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

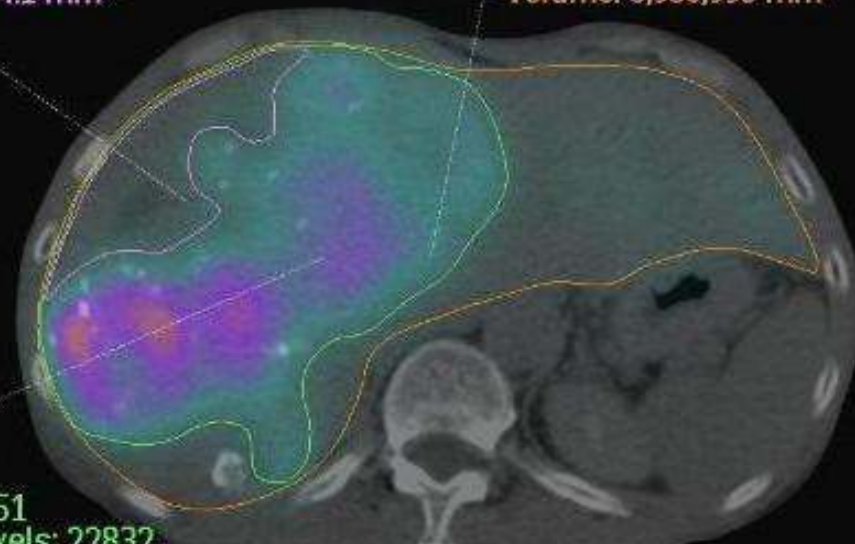


Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

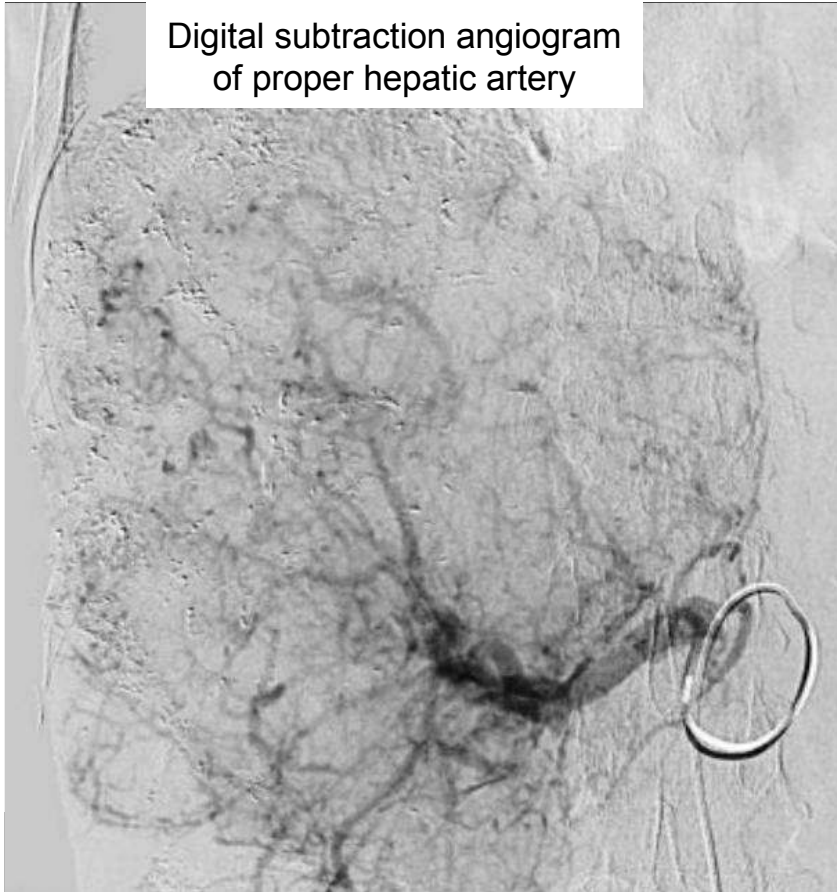
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

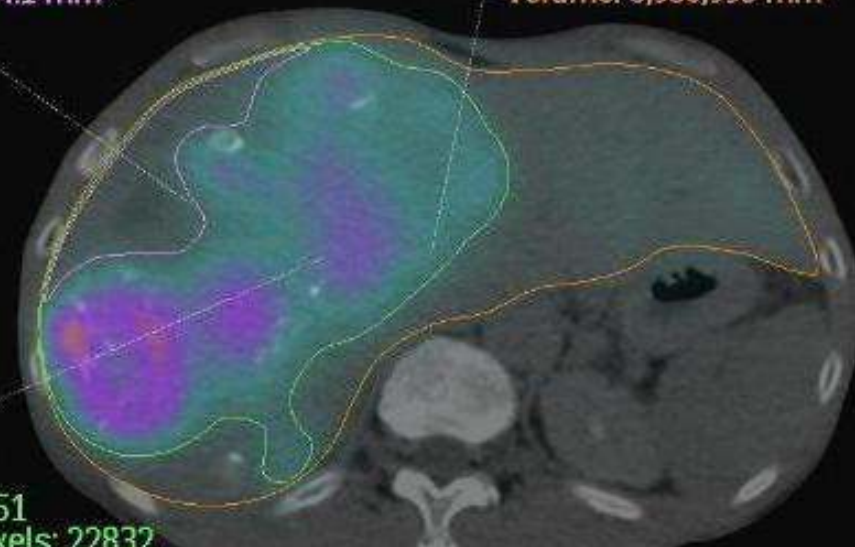


Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

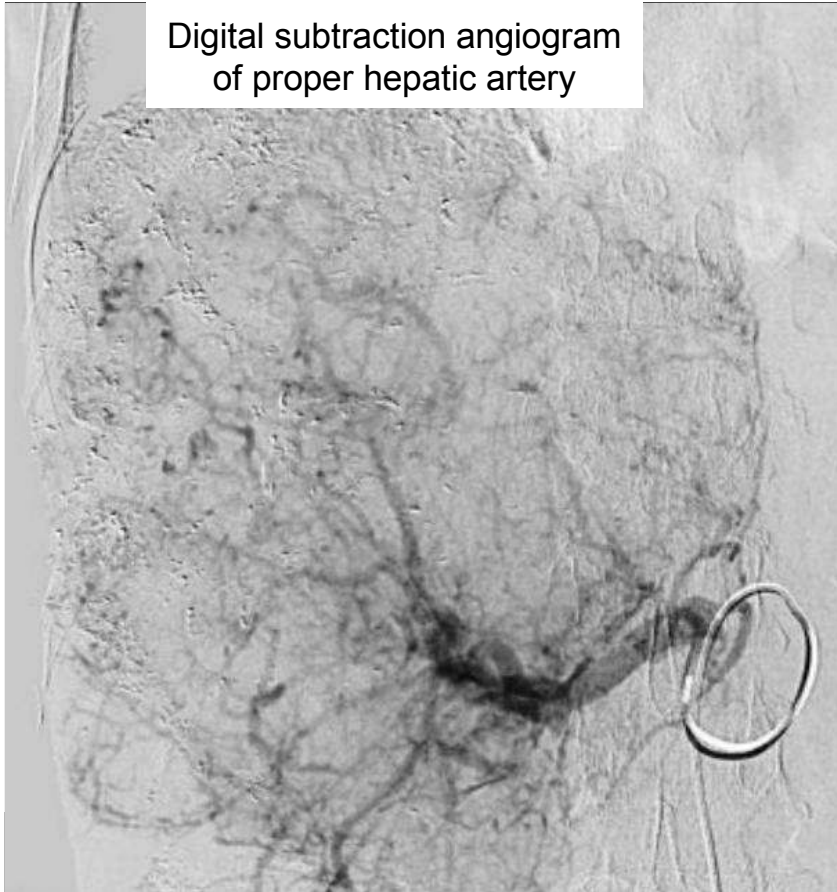
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



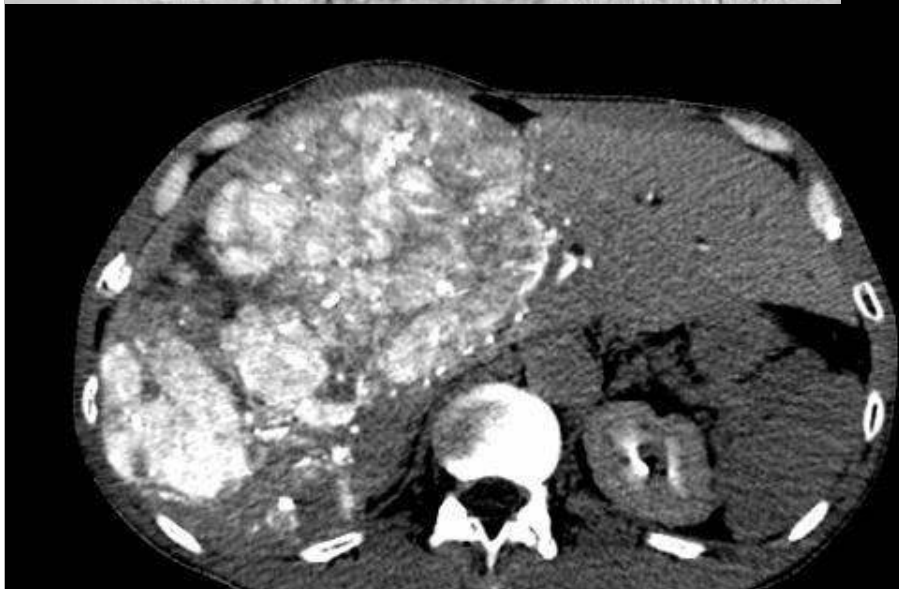
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



Singapore
General Hospital
SingHealth

© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

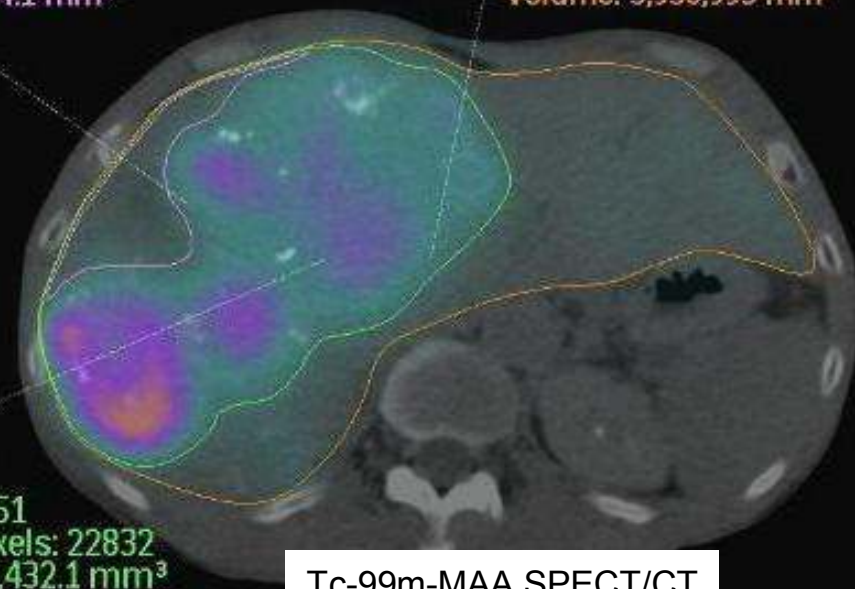


Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

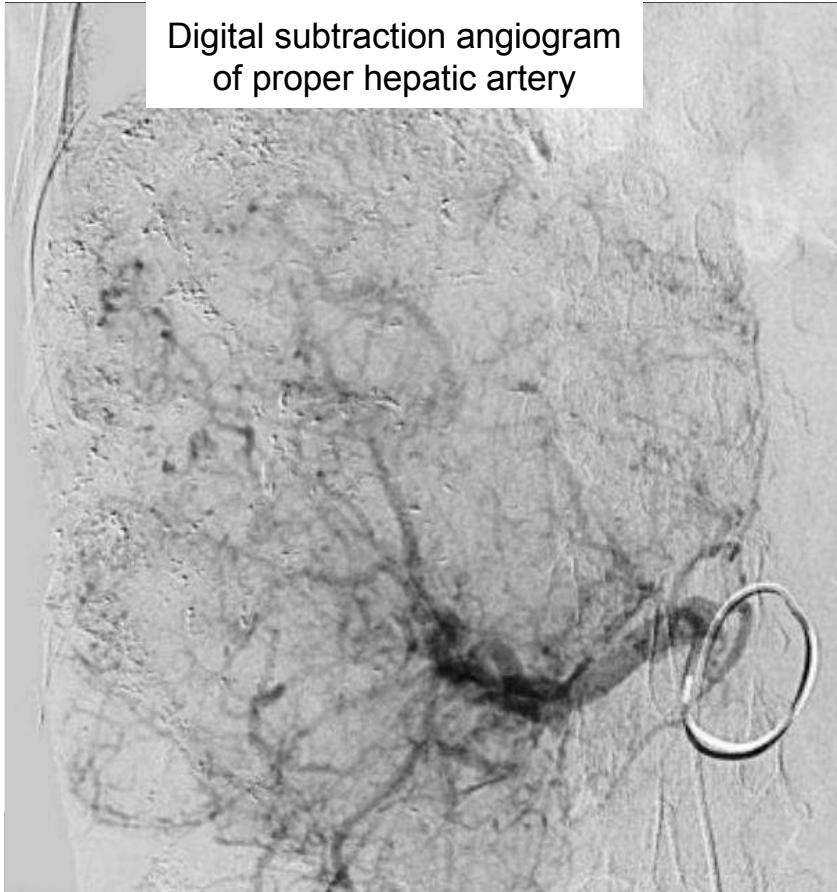
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



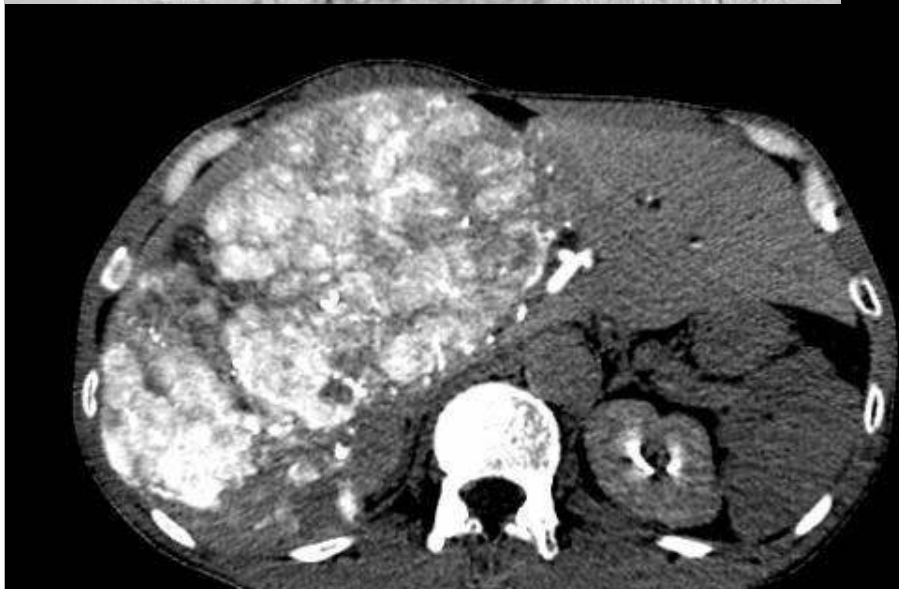
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



Singapore General Hospital
SingHealth

© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

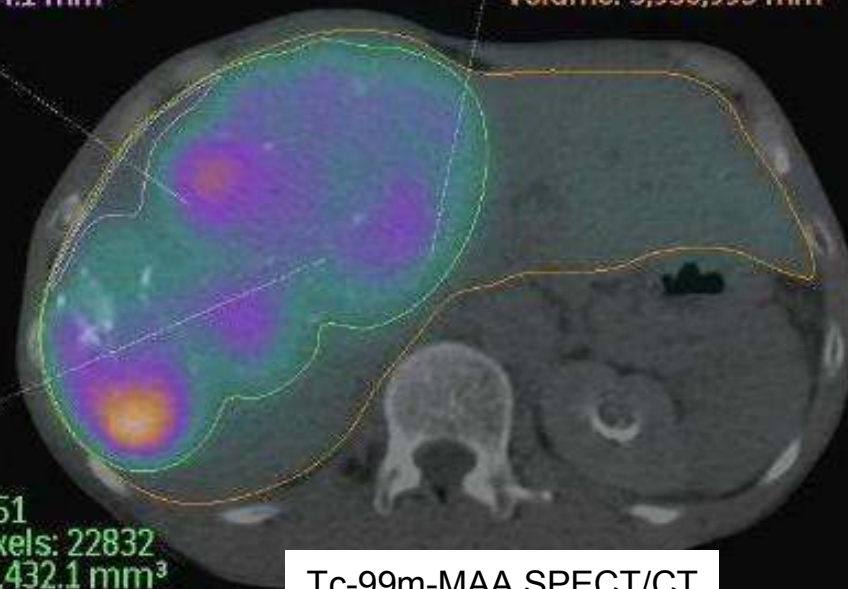


Catheter-directed CT hepatic angiogram of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

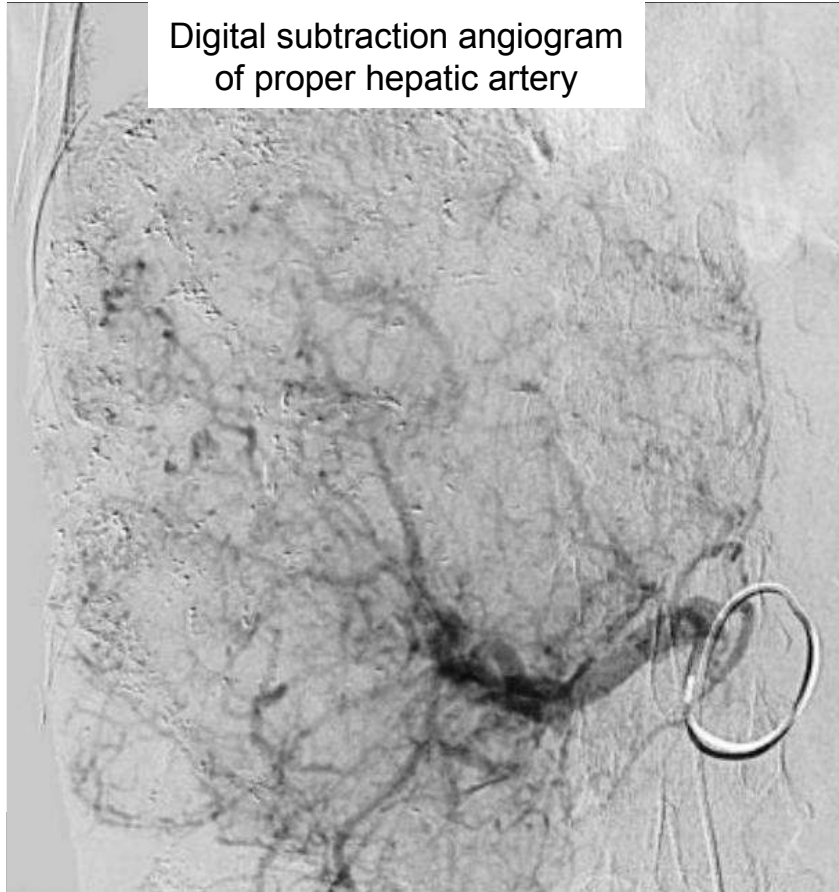
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

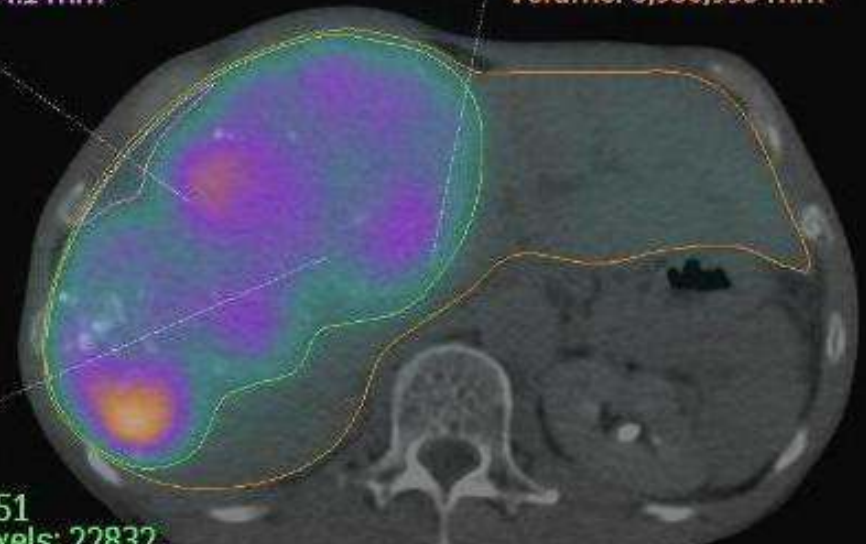


Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

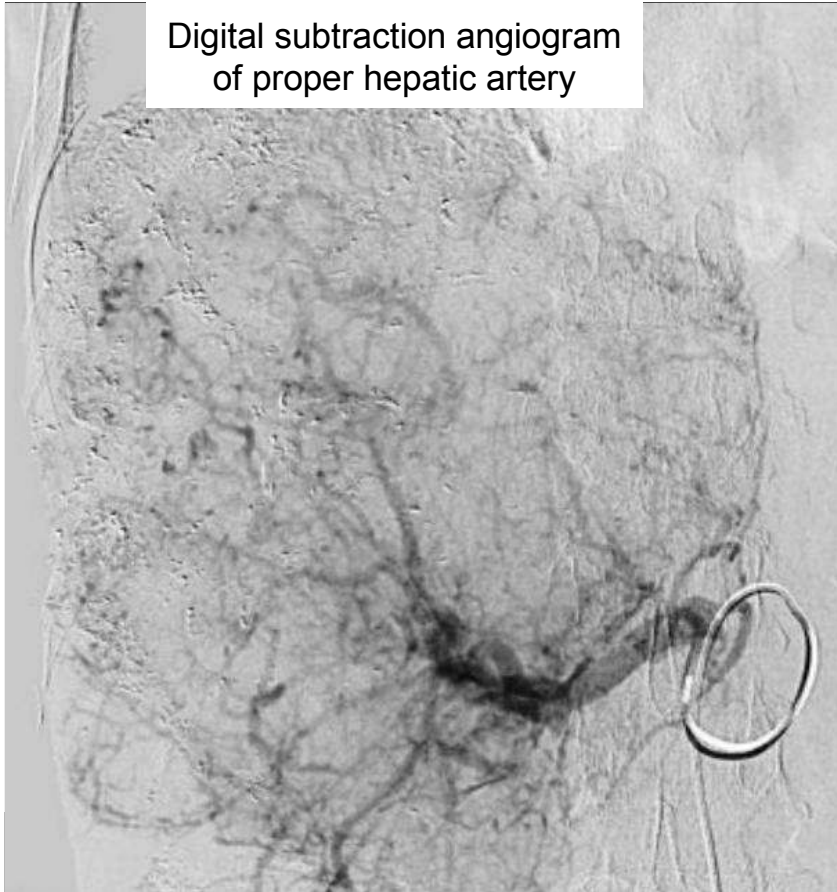
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

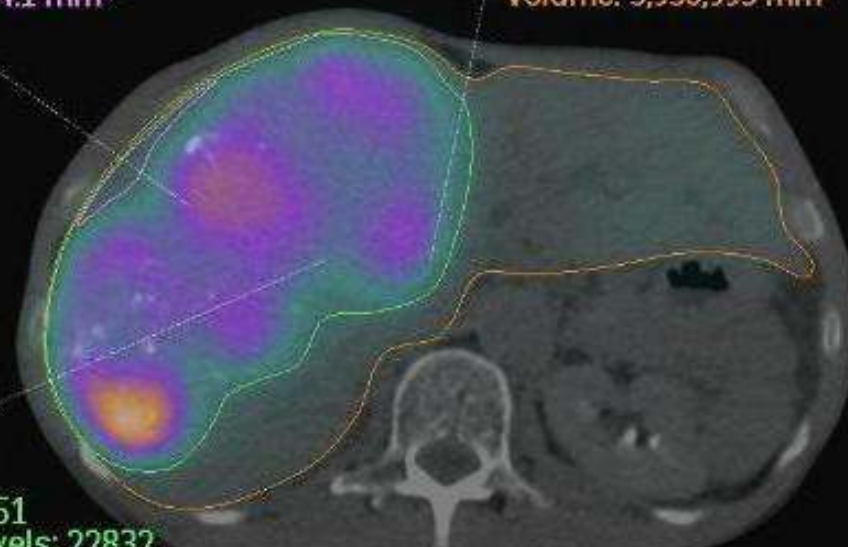


Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

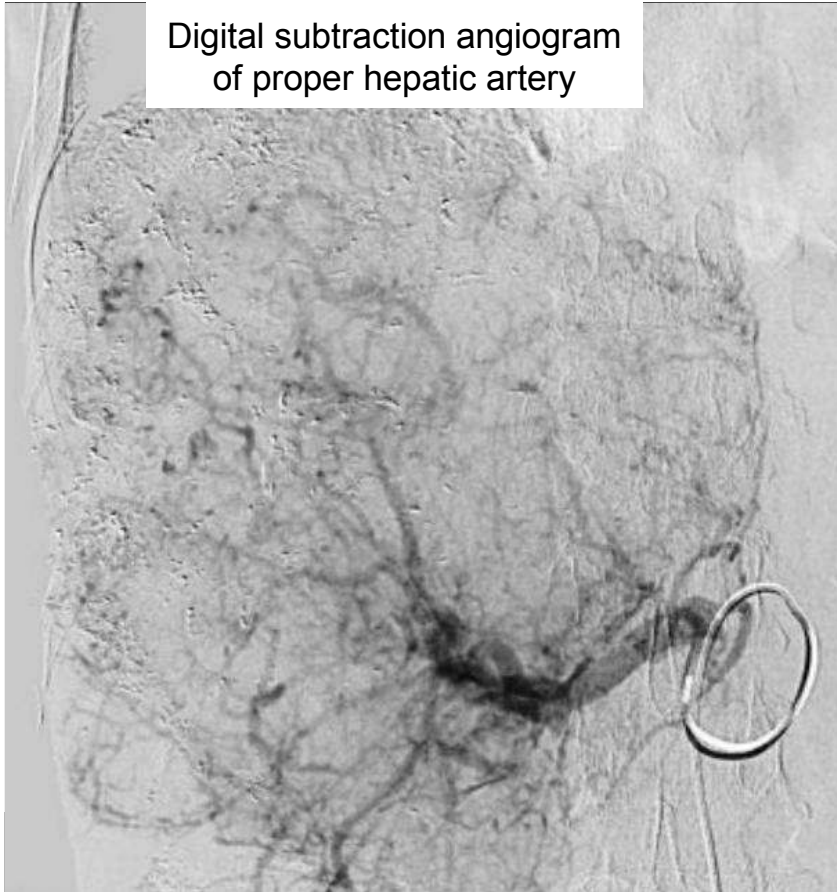
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

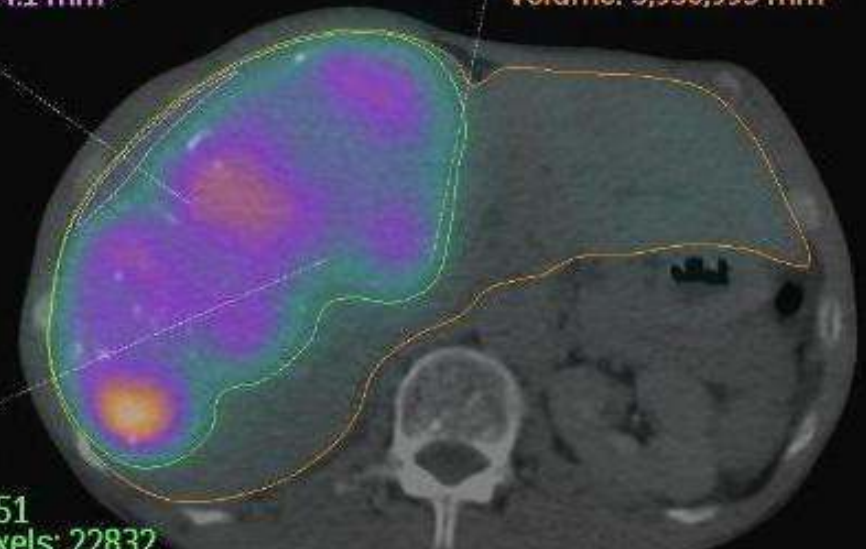


Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

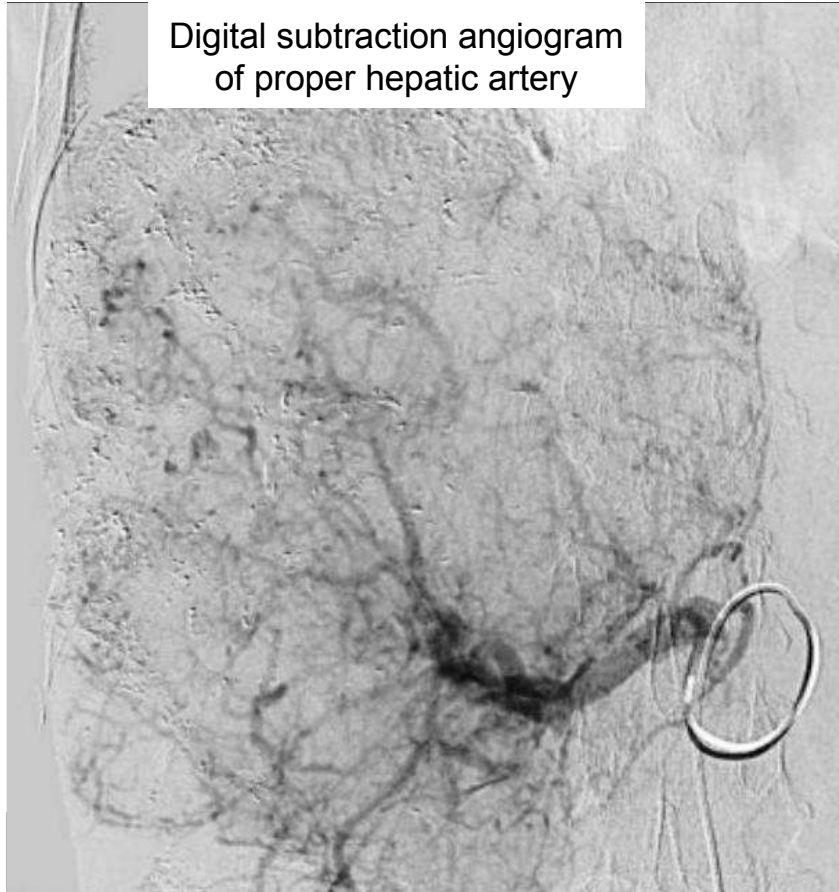
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



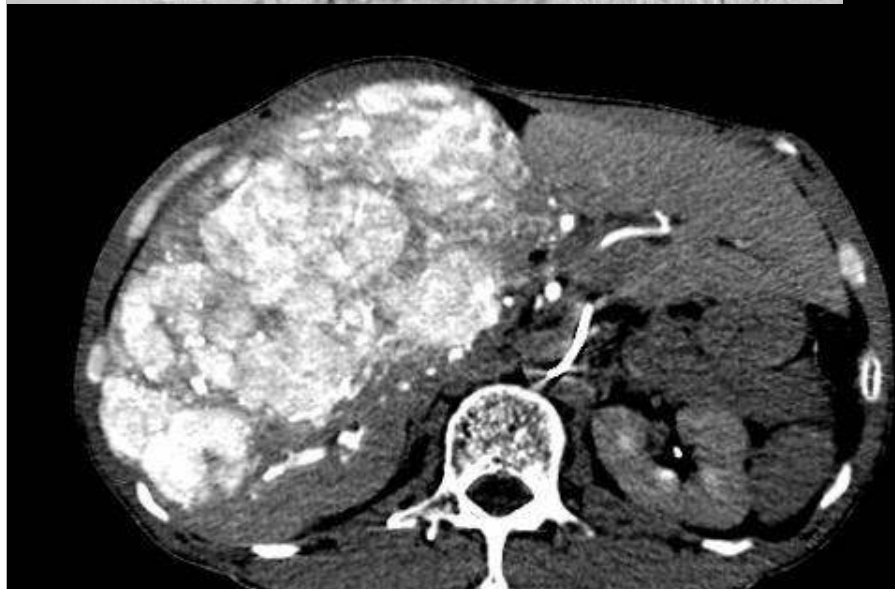
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



Singapore
General Hospital
SingHealth

© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

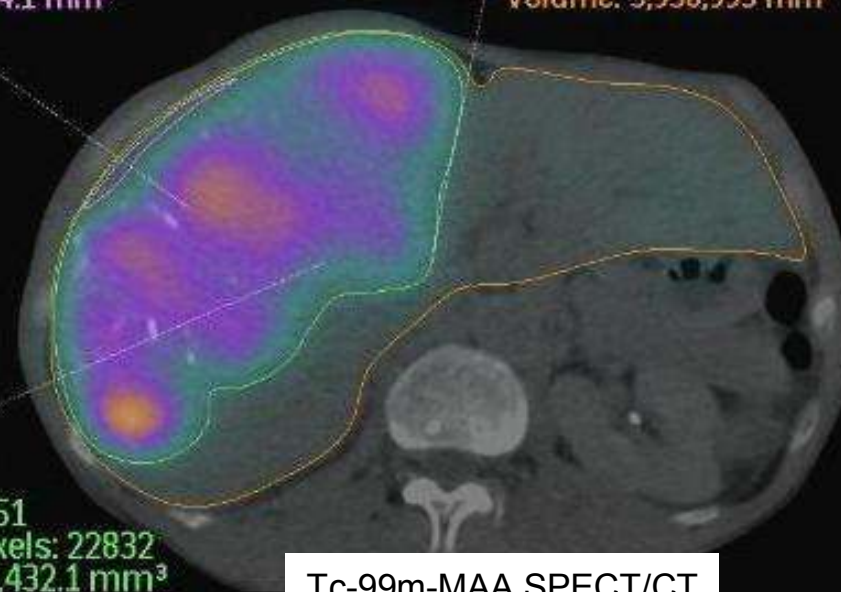


Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 16
Max: 298
Mean: 101.8
StdDev: 85
Sum: 236,654
Number of Voxels: 2325
Volume: 235,884.1 mm³

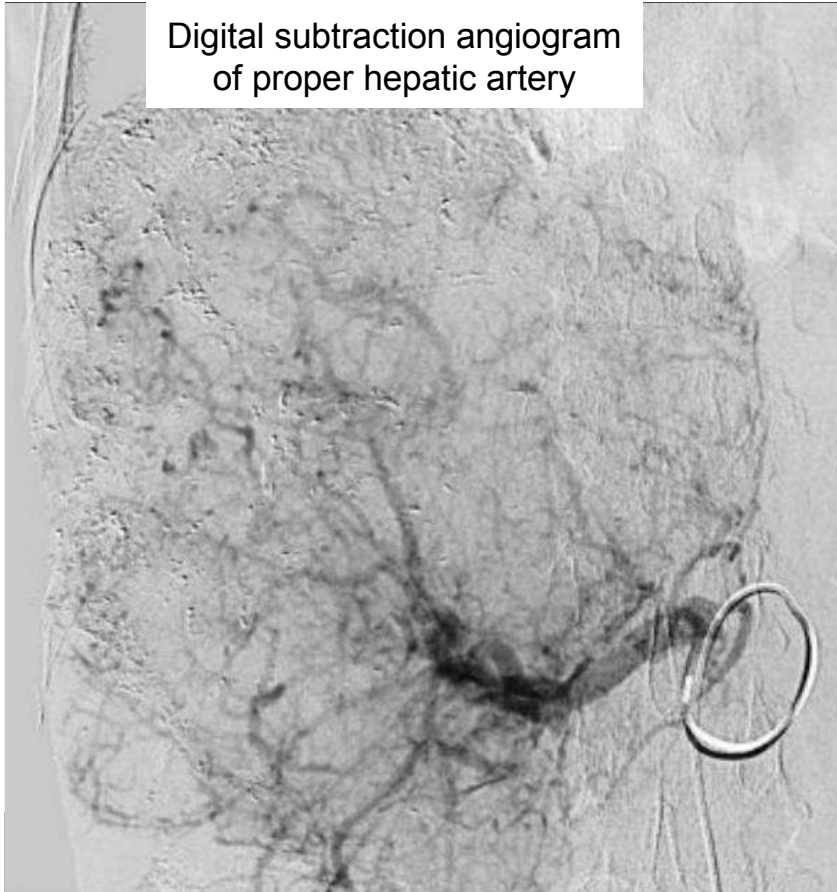
Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

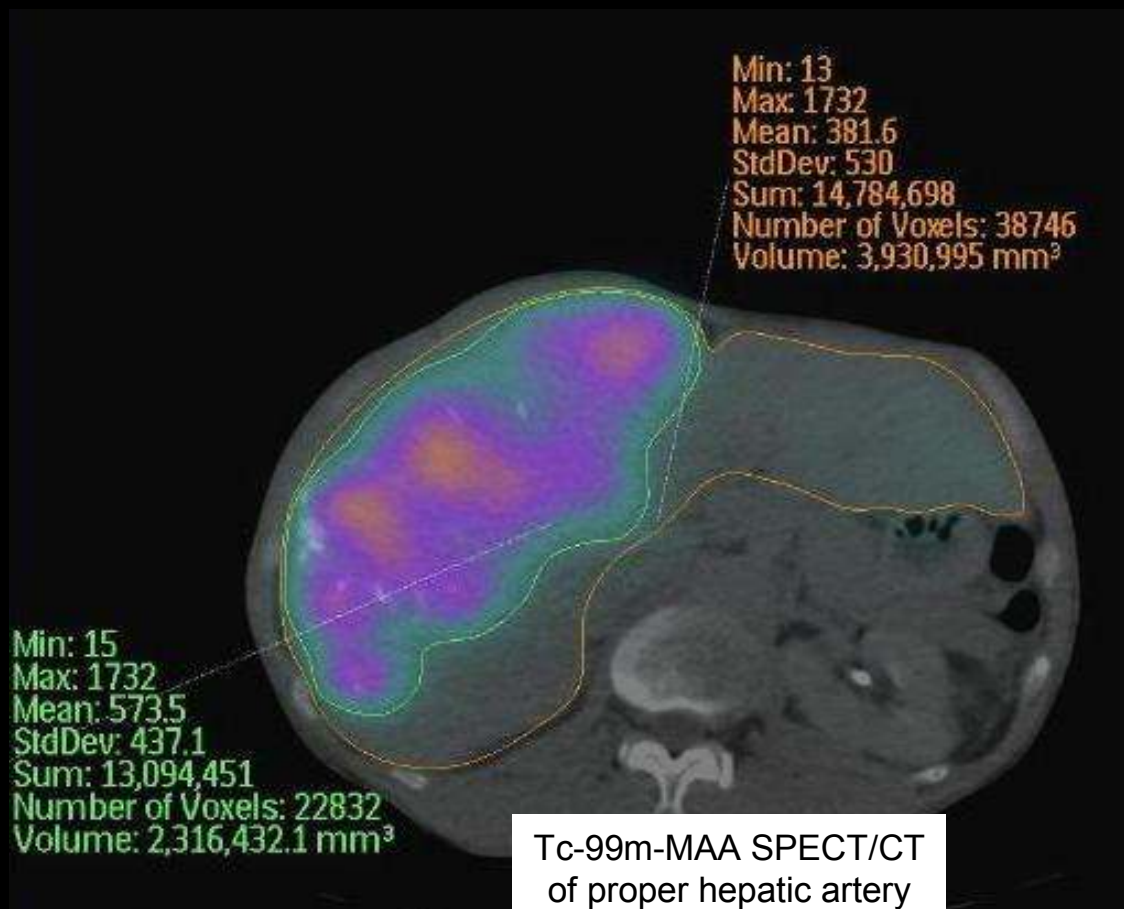
Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

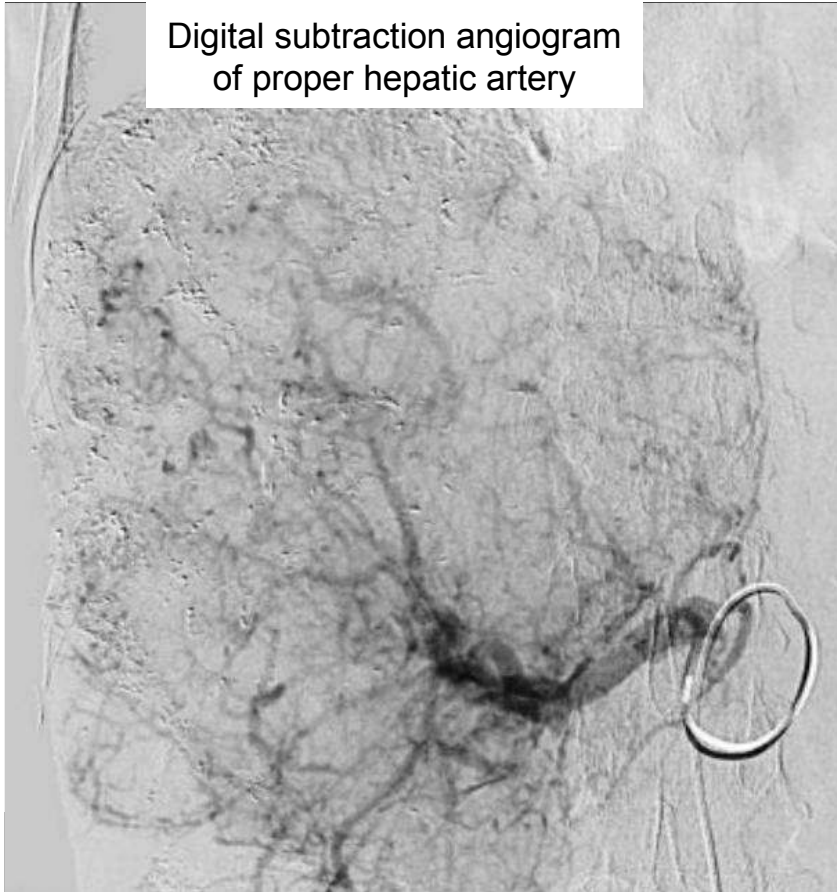


Catheter-directed CT hepatic angiogram of proper hepatic artery



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery

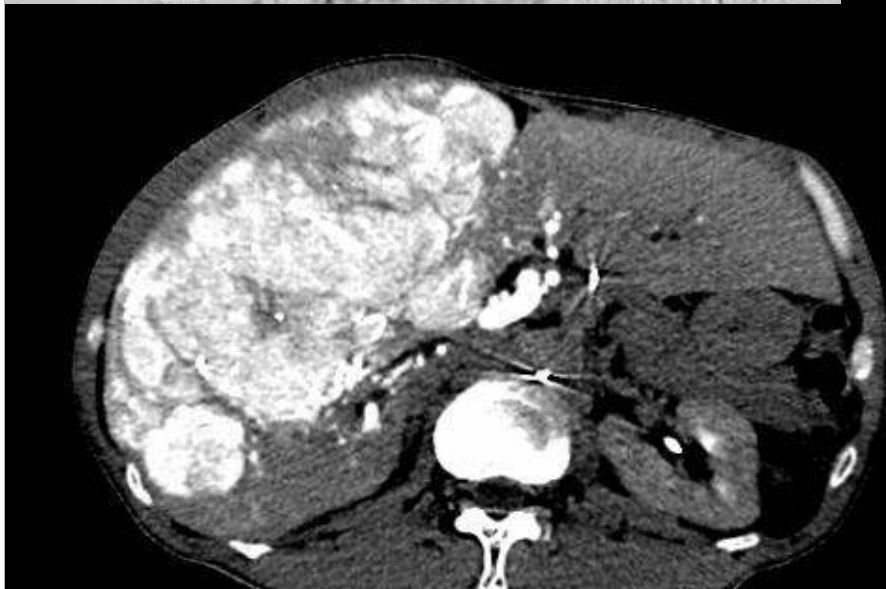


Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

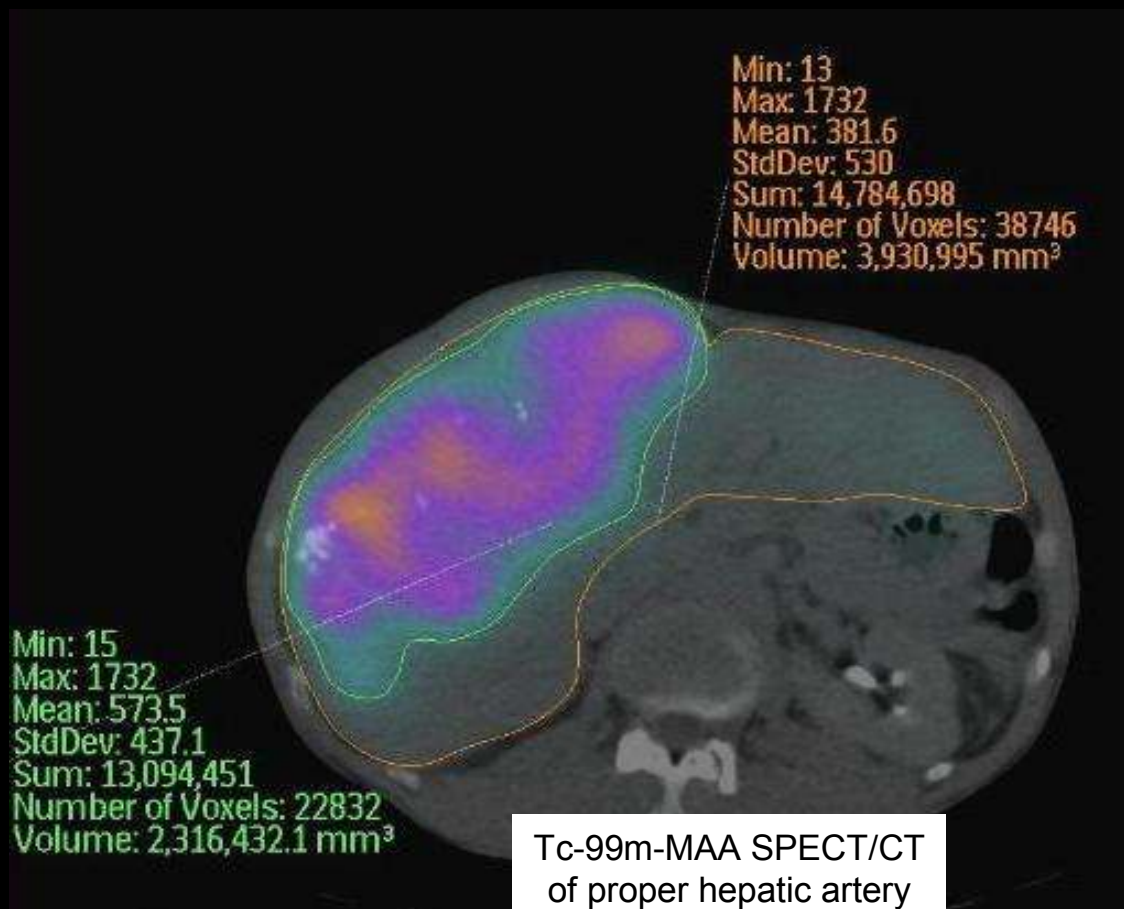
Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

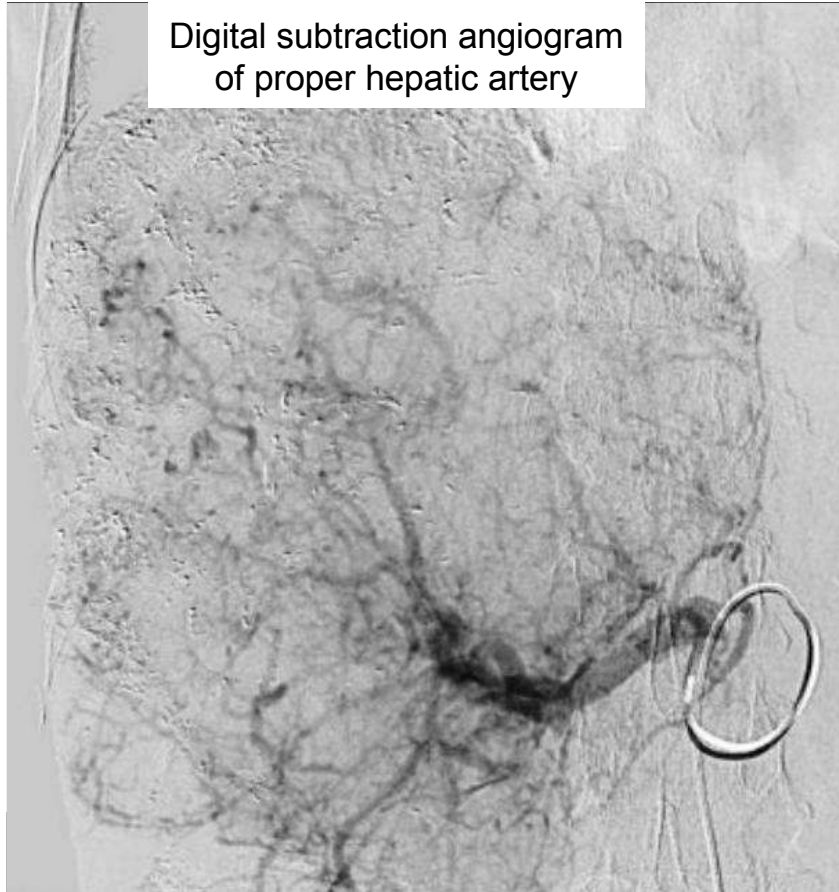


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



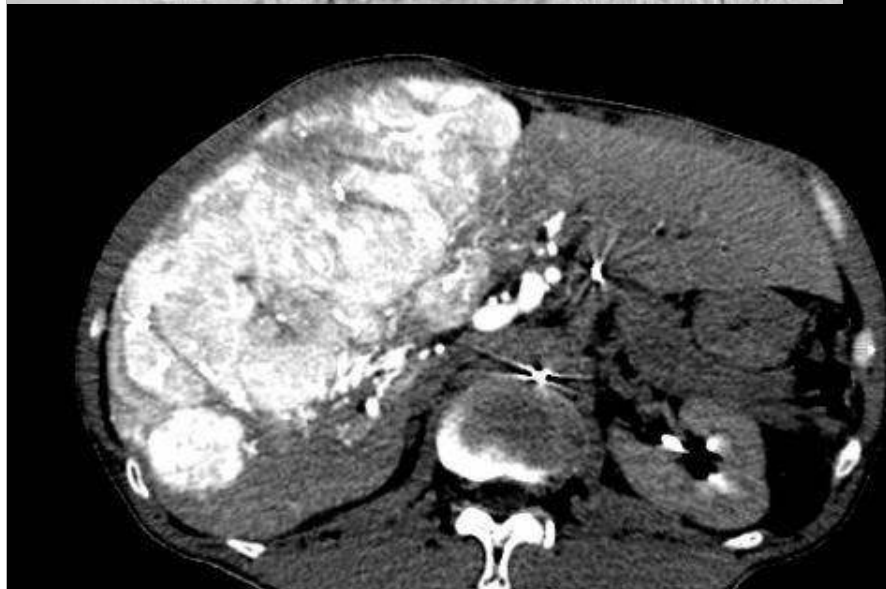
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



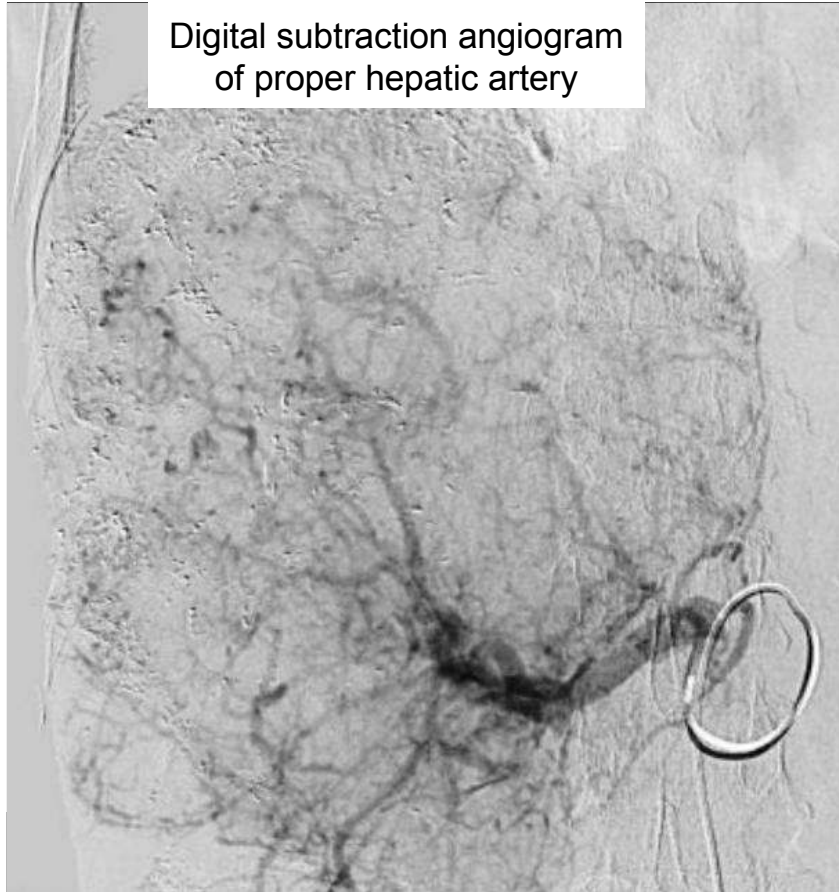
Catheter-directed CT hepatic angiogram
of proper hepatic artery

Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

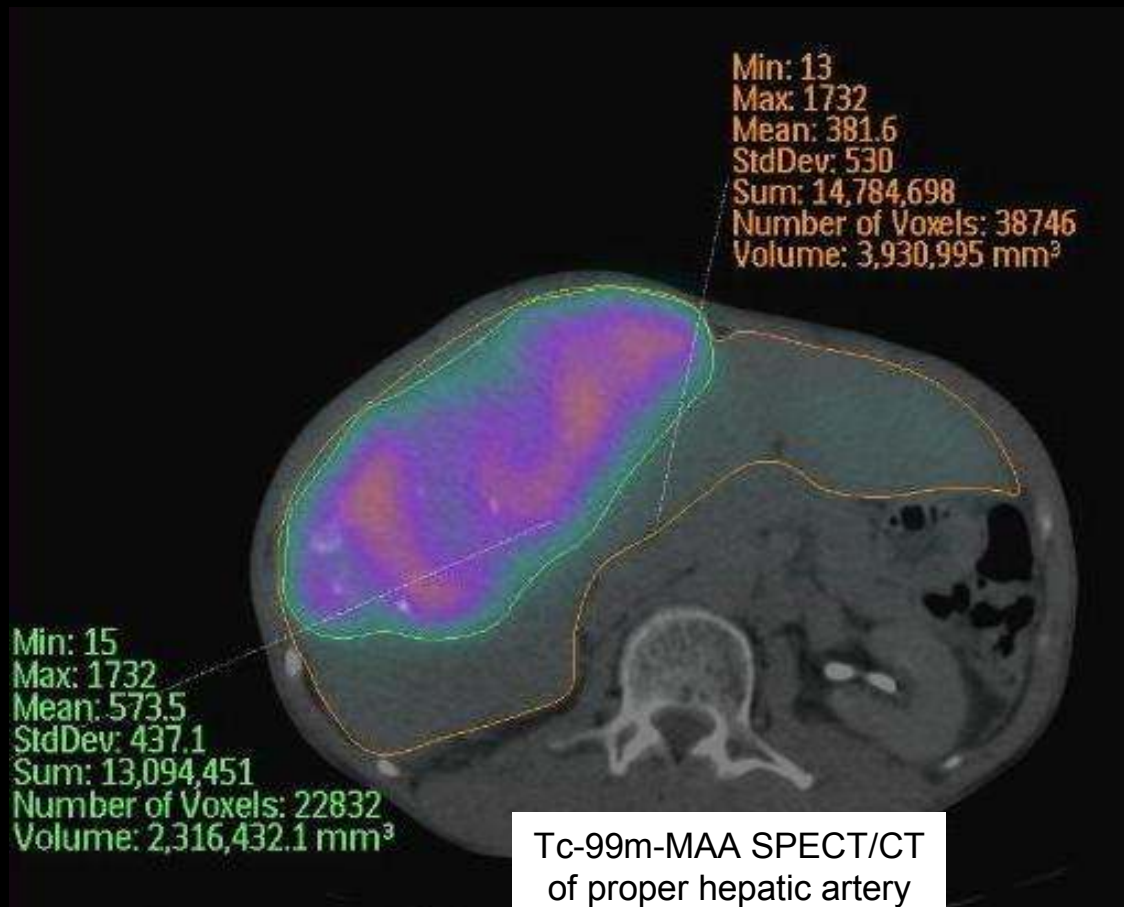
Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

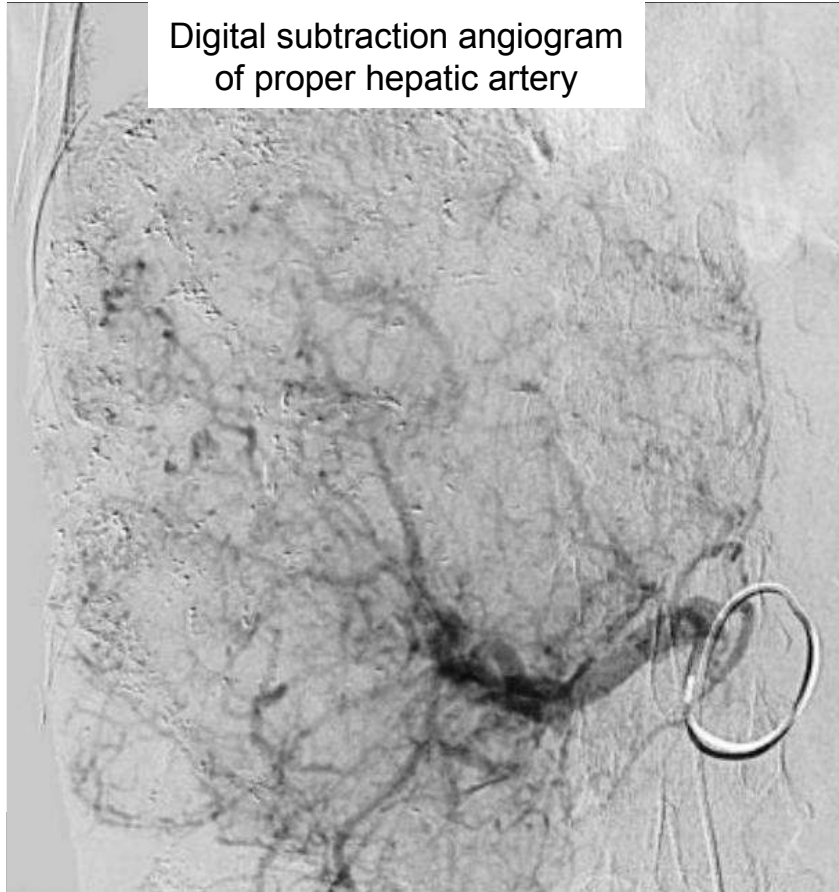


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

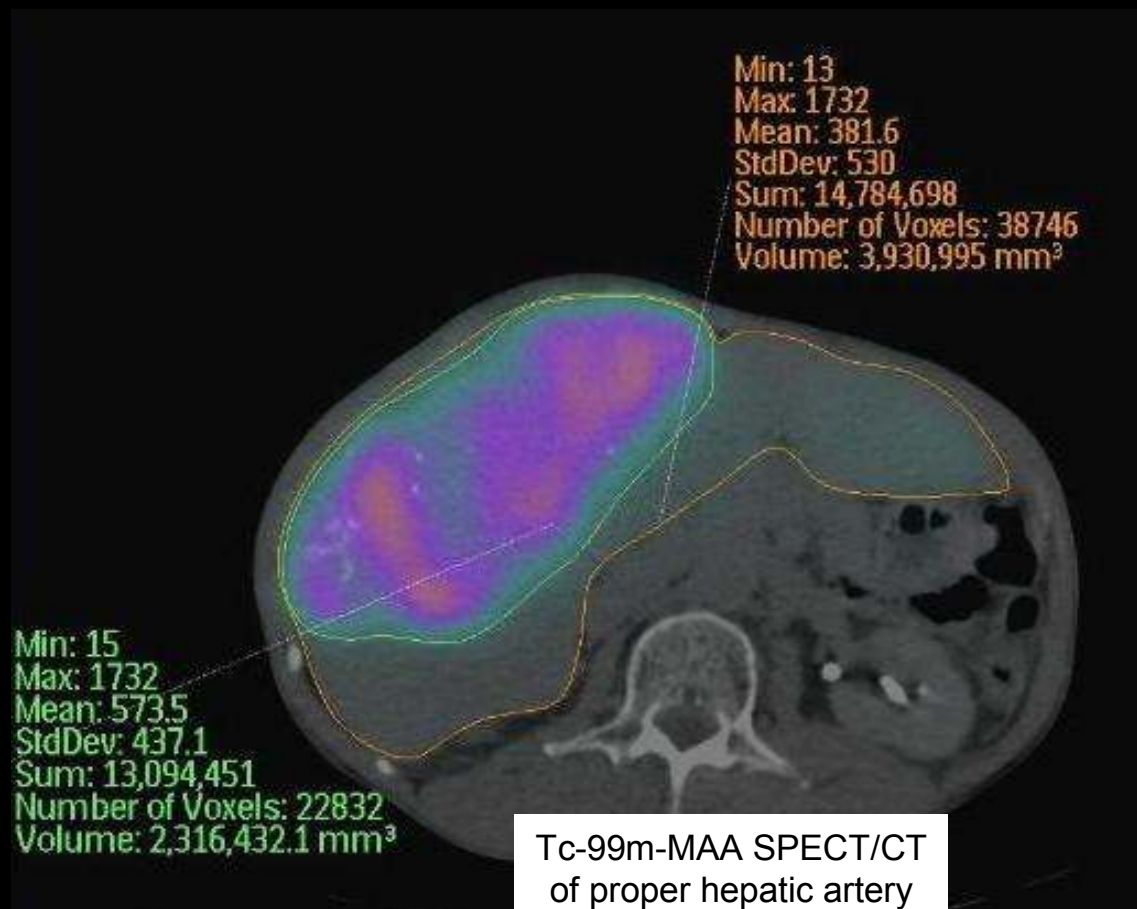
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

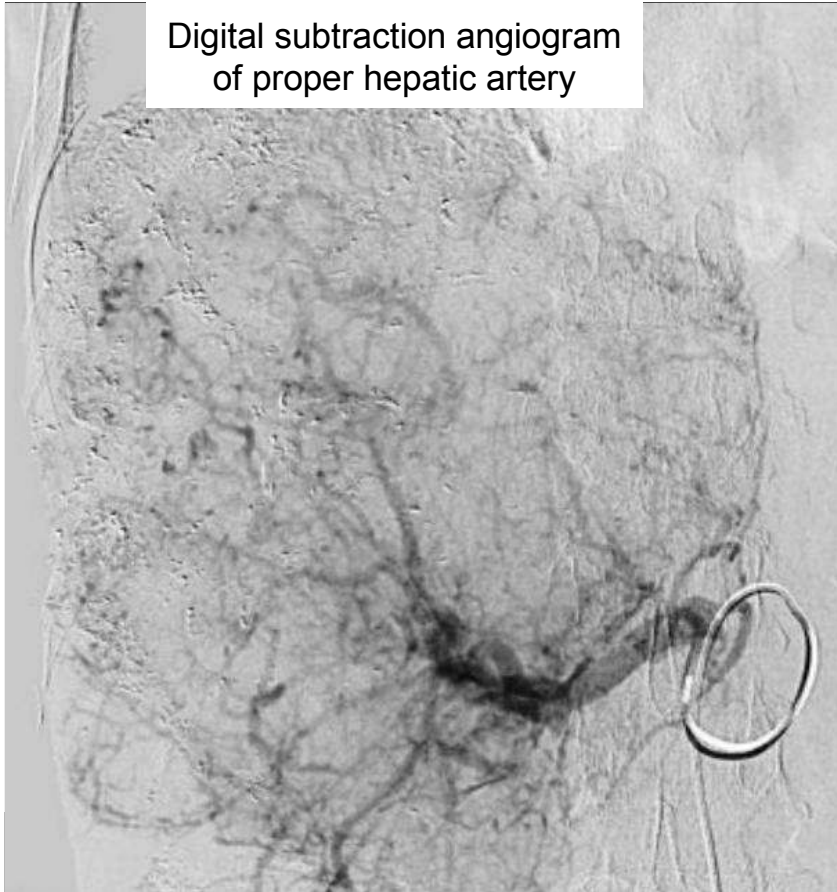


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

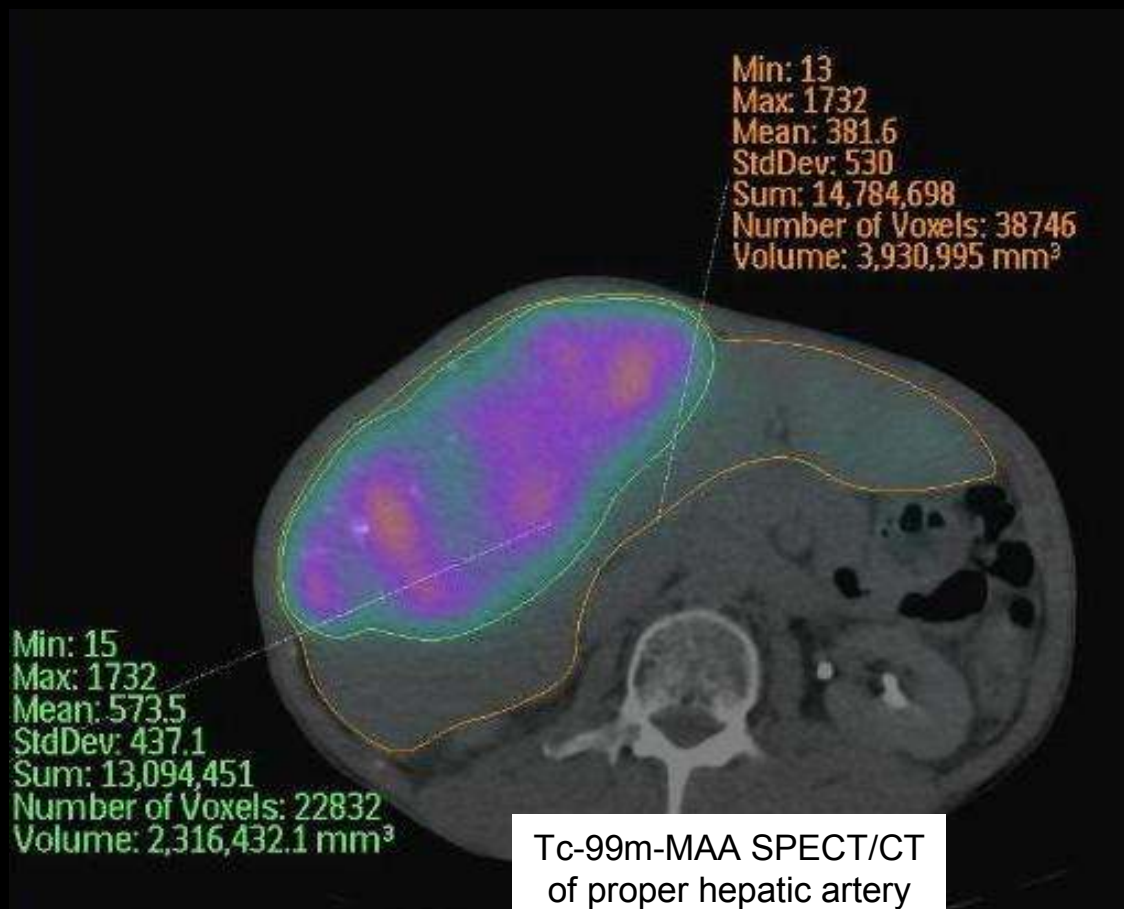
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

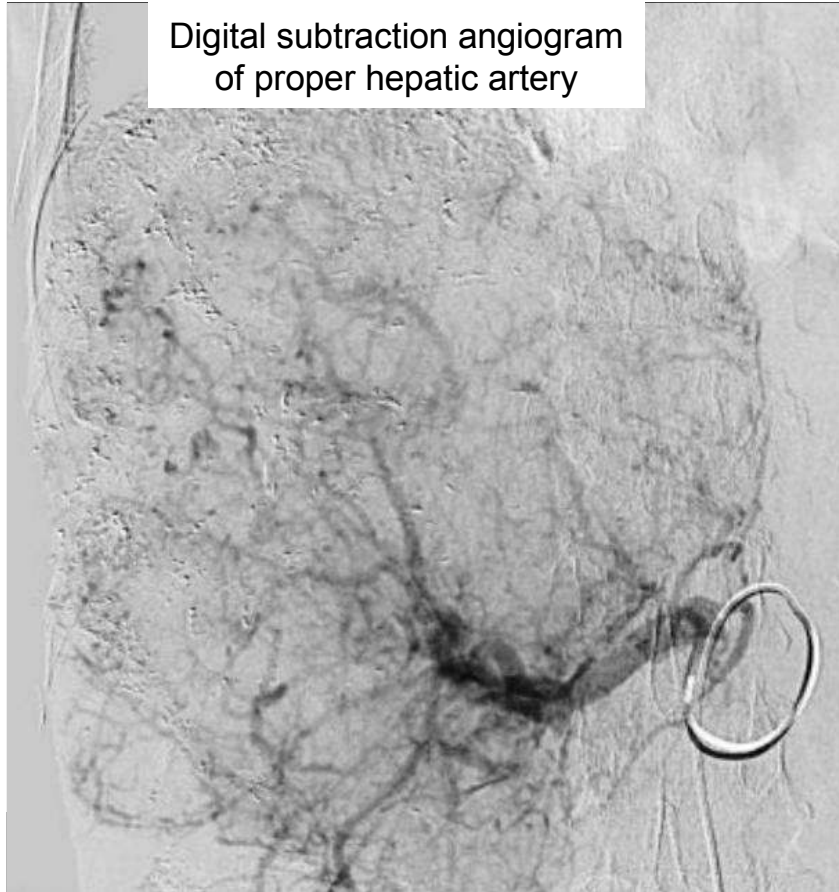


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

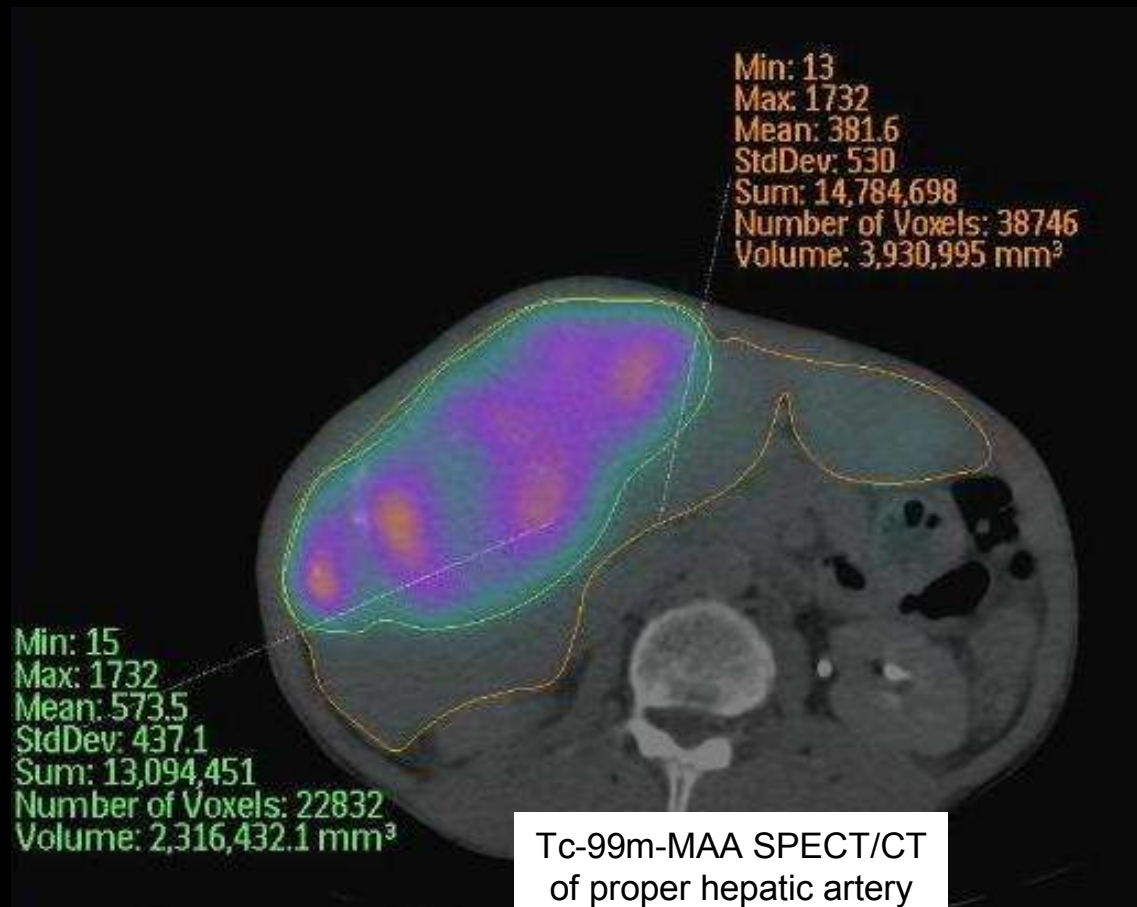
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

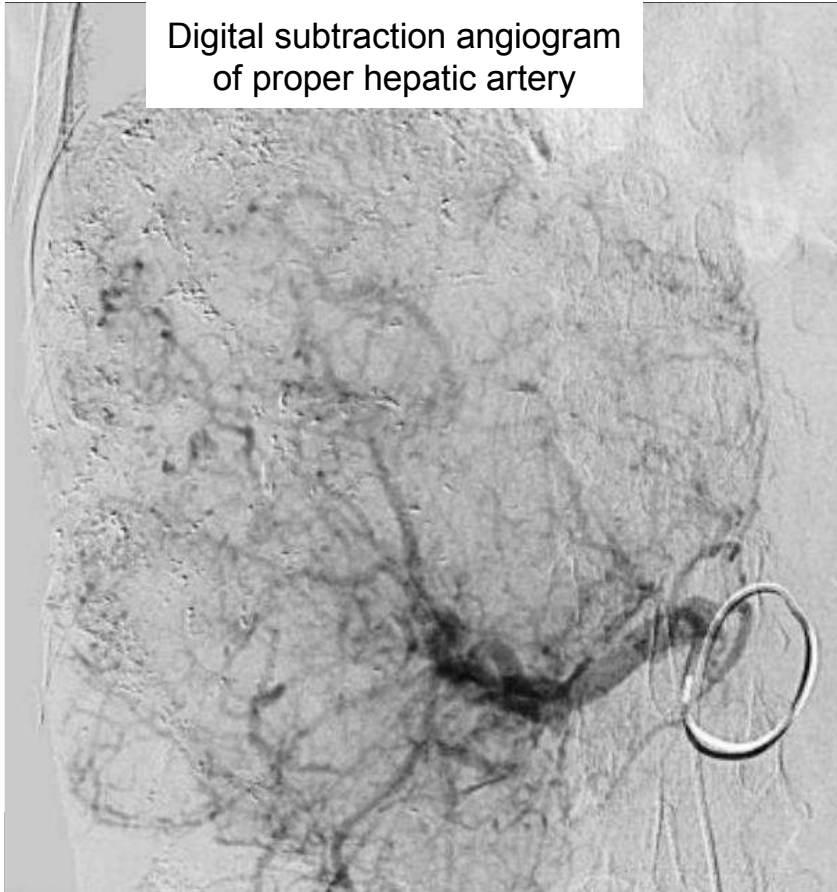


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram of proper hepatic artery

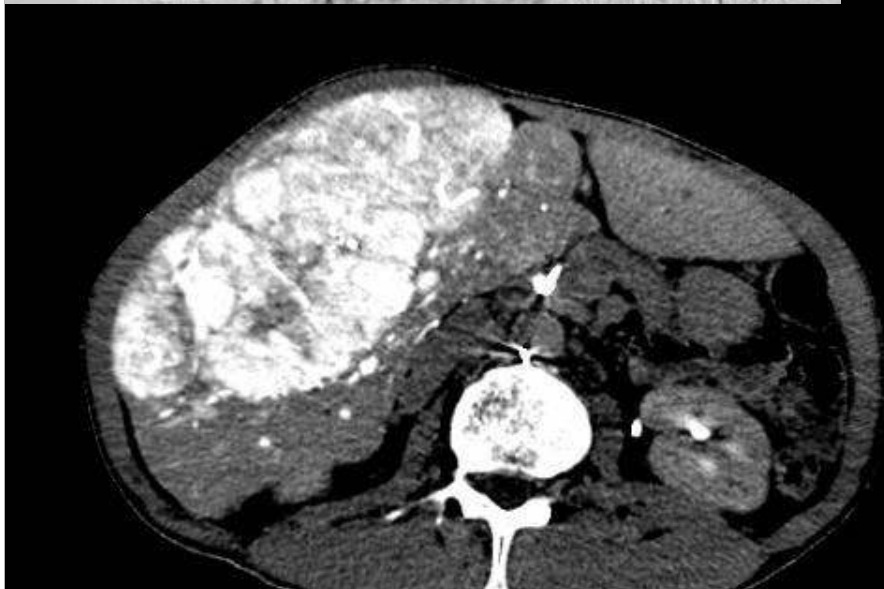


Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

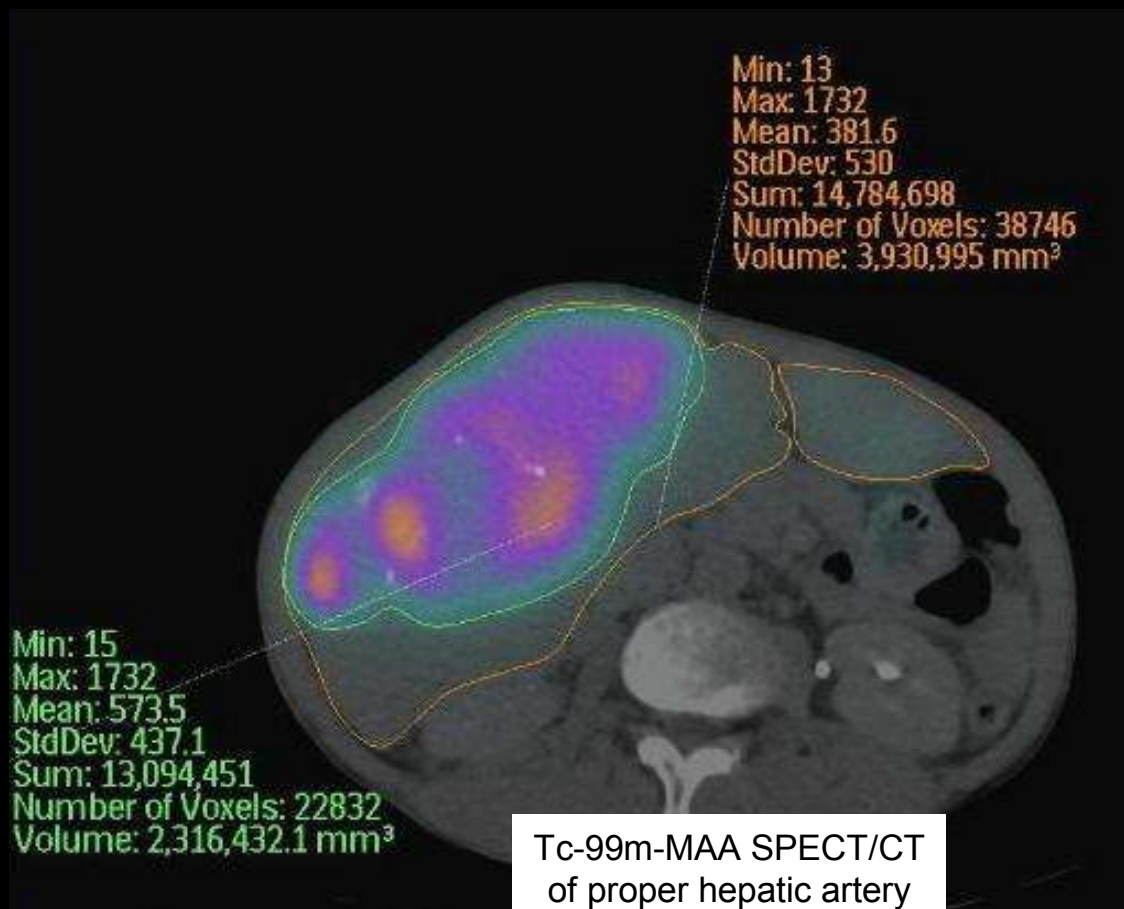
Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

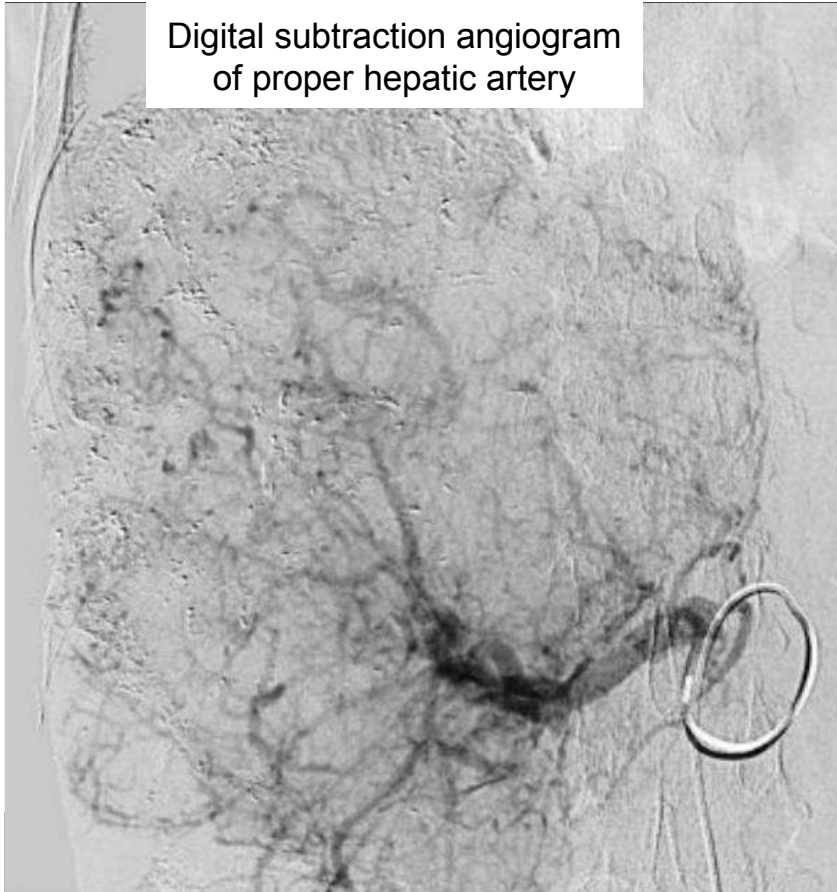


Catheter-directed CT hepatic angiogram of proper hepatic artery



Tc-99m-MAA SPECT/CT of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

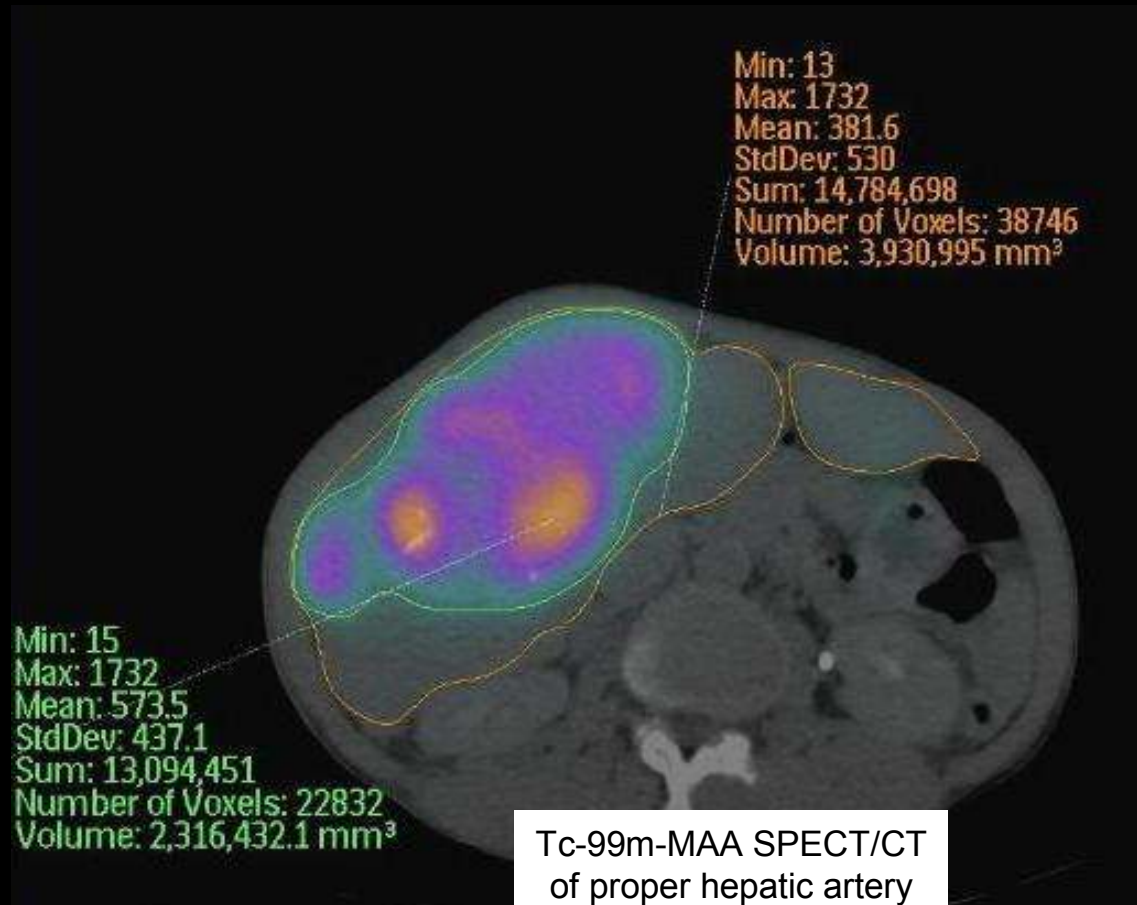
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

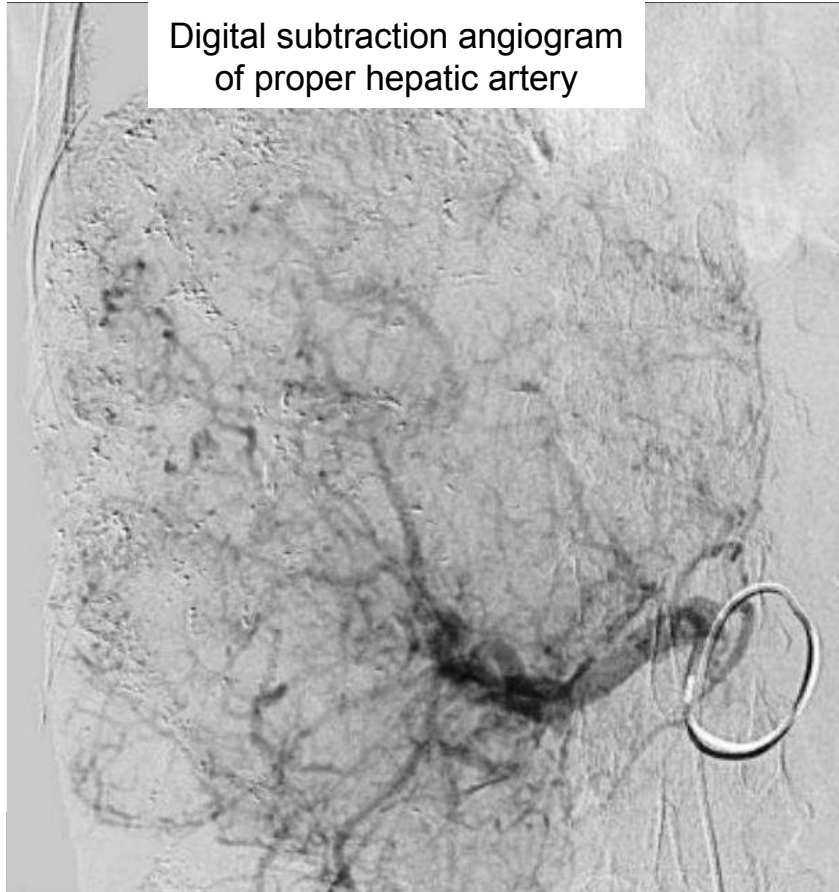


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



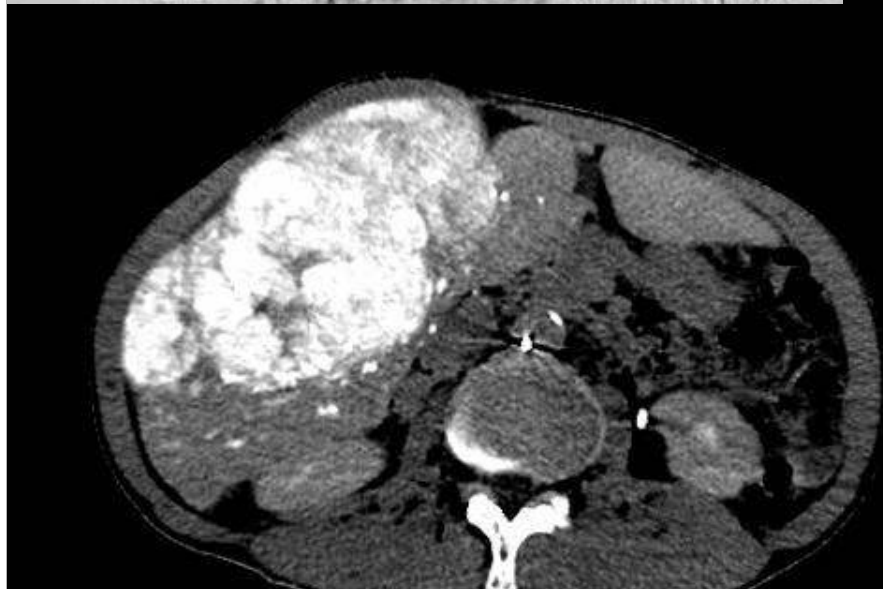
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



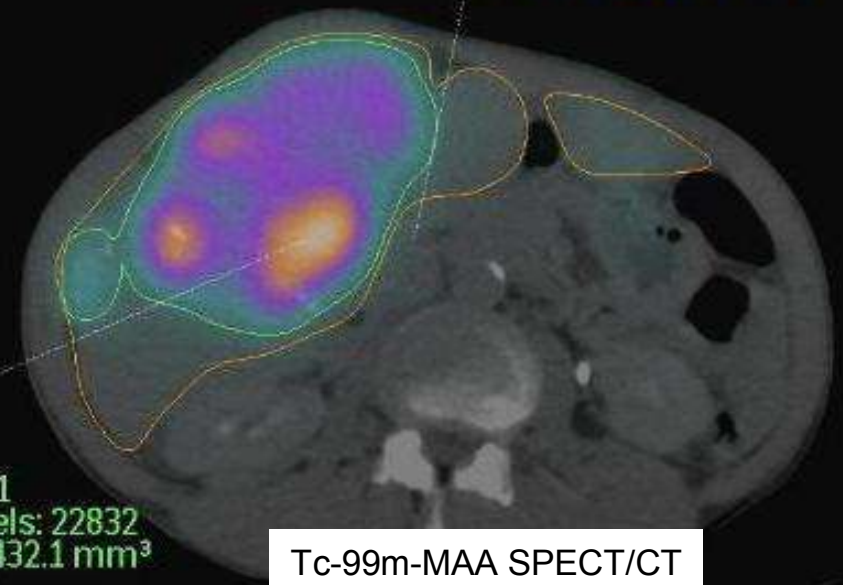
© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



Catheter-directed CT hepatic angiogram
of proper hepatic artery

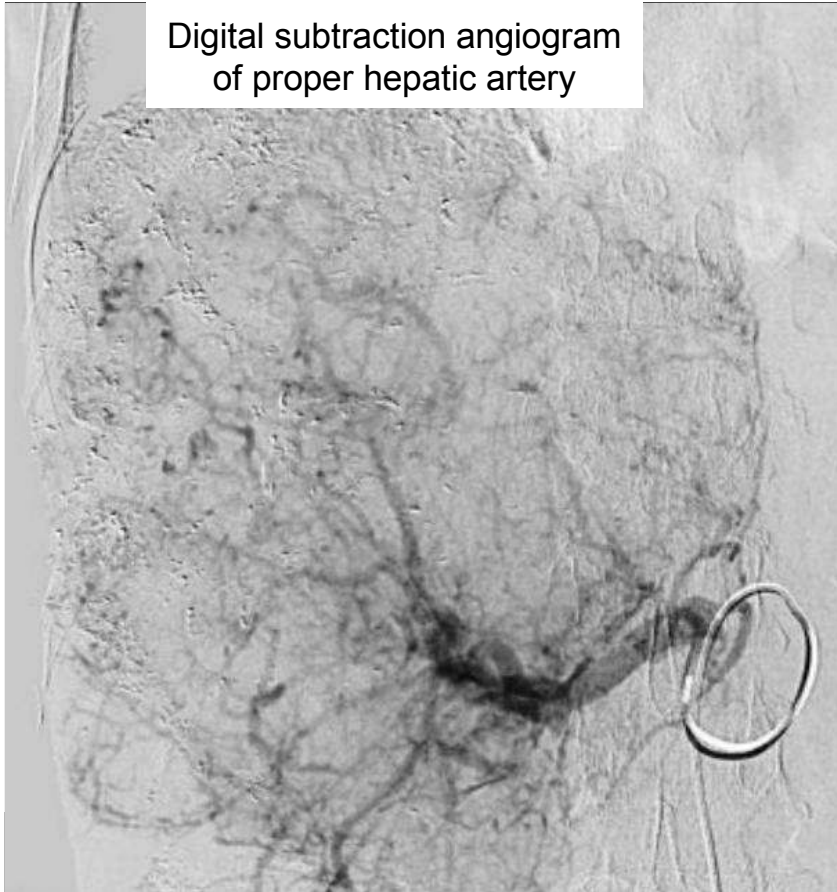
Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³

Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

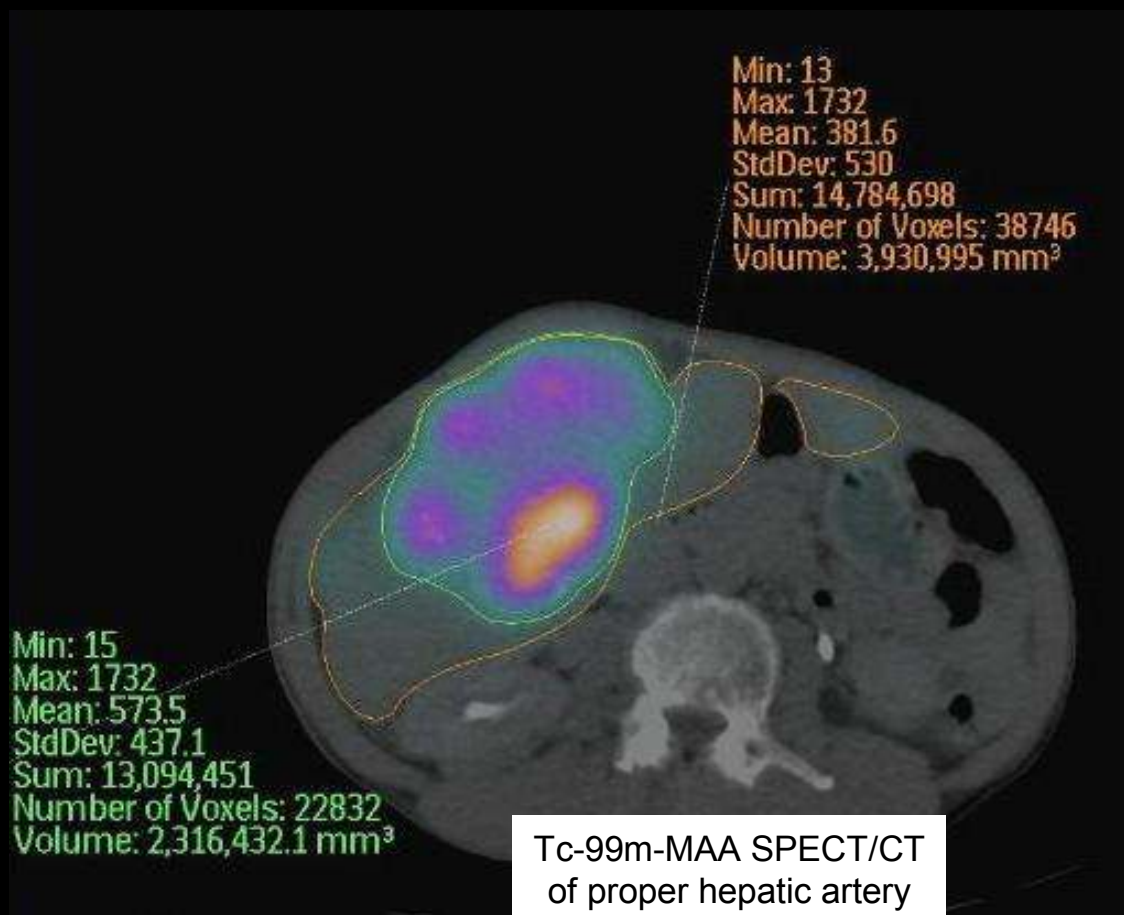
Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

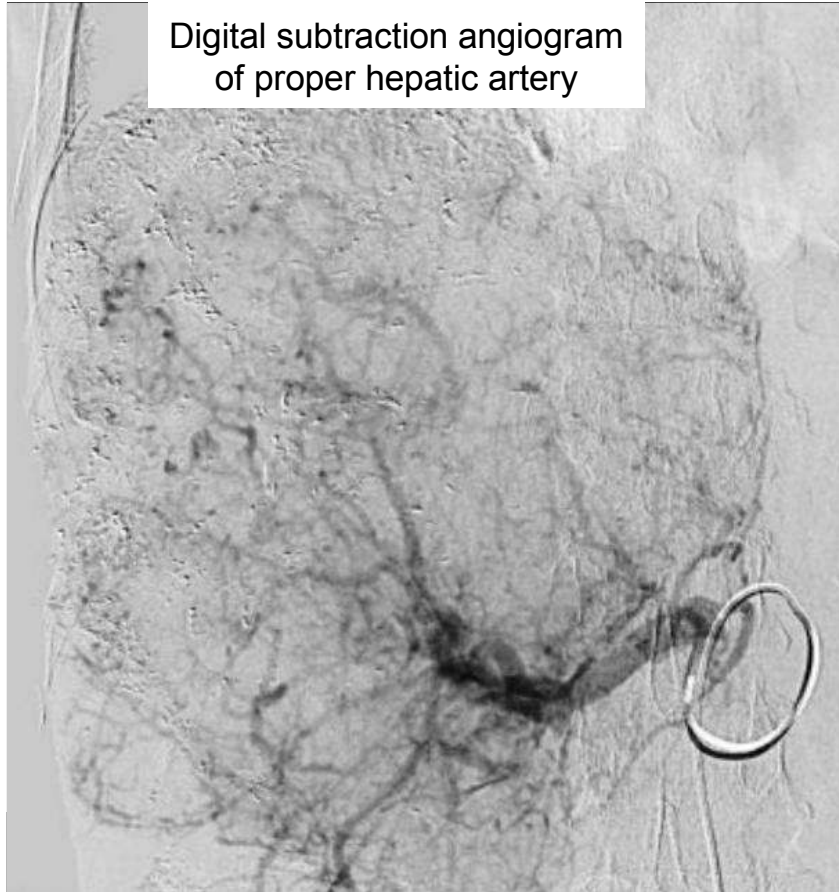


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



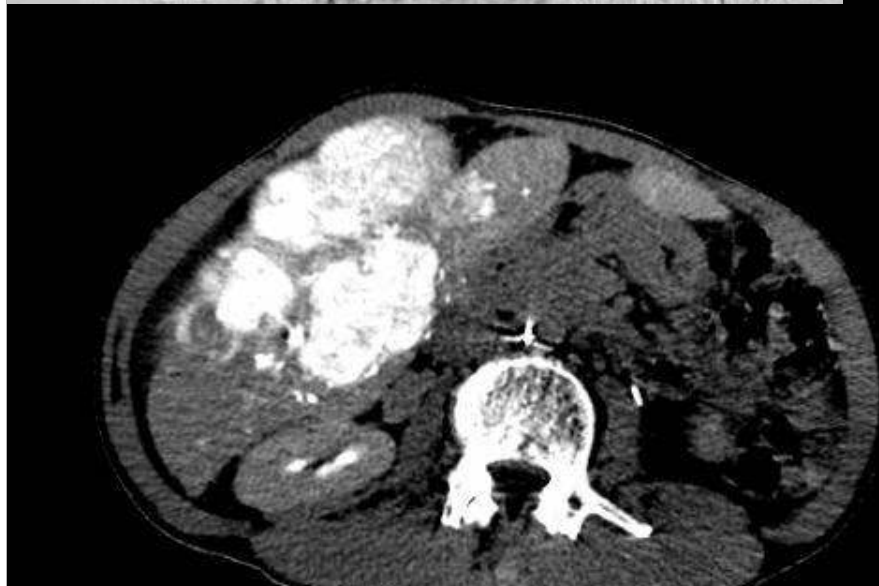
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

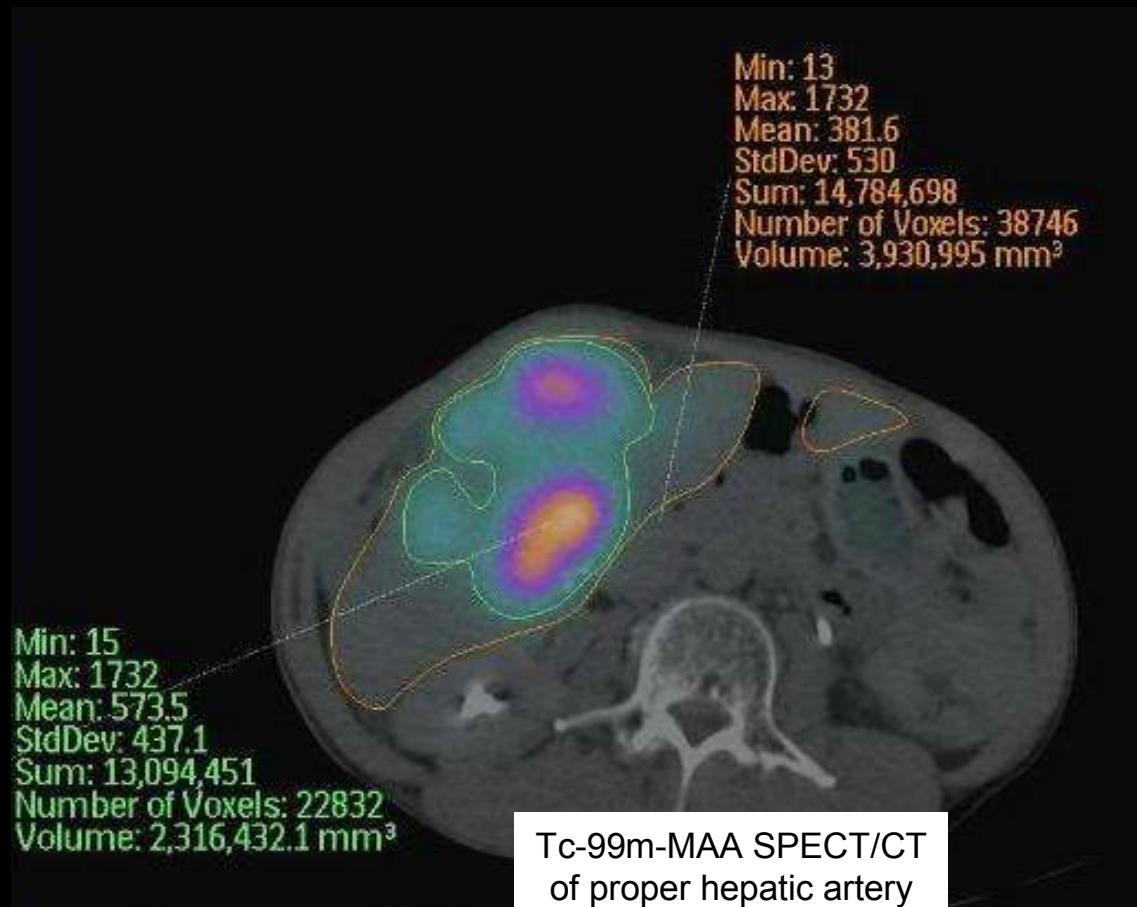
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

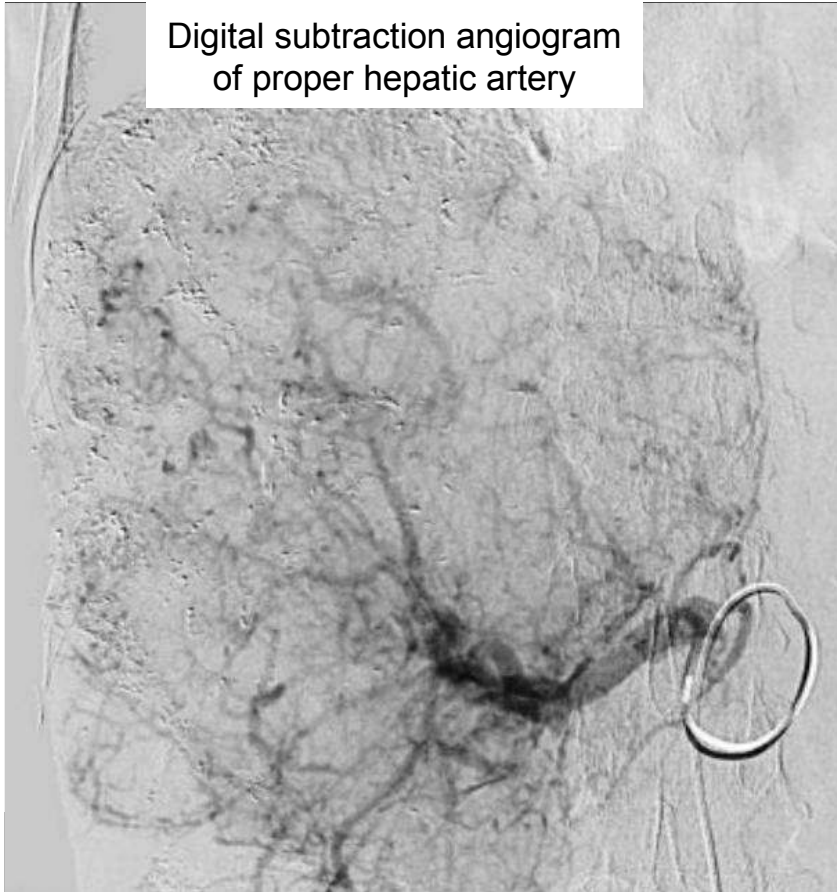


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory

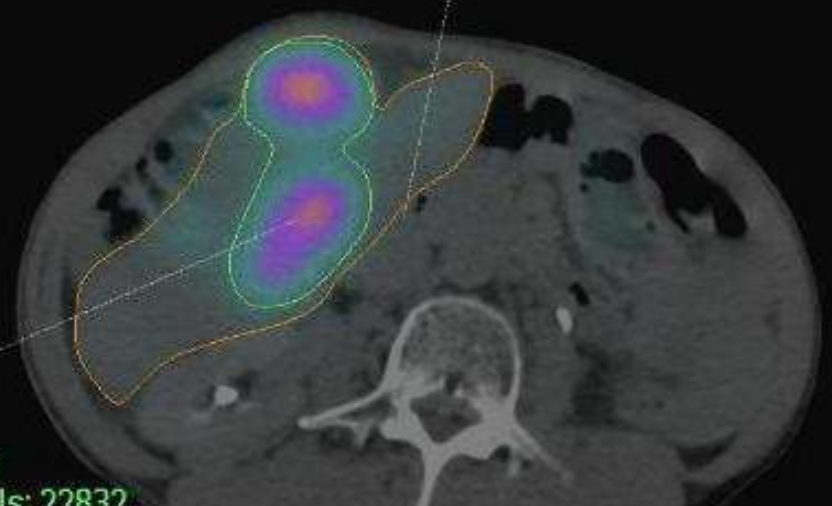


© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



Catheter-directed CT hepatic angiogram
of proper hepatic artery

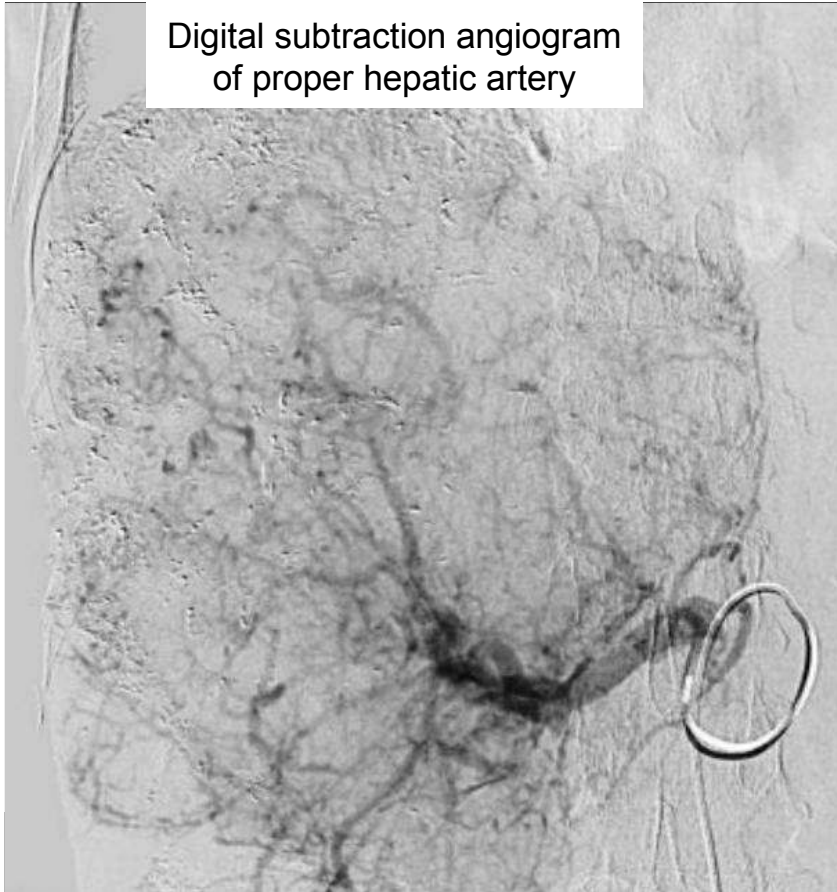
Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

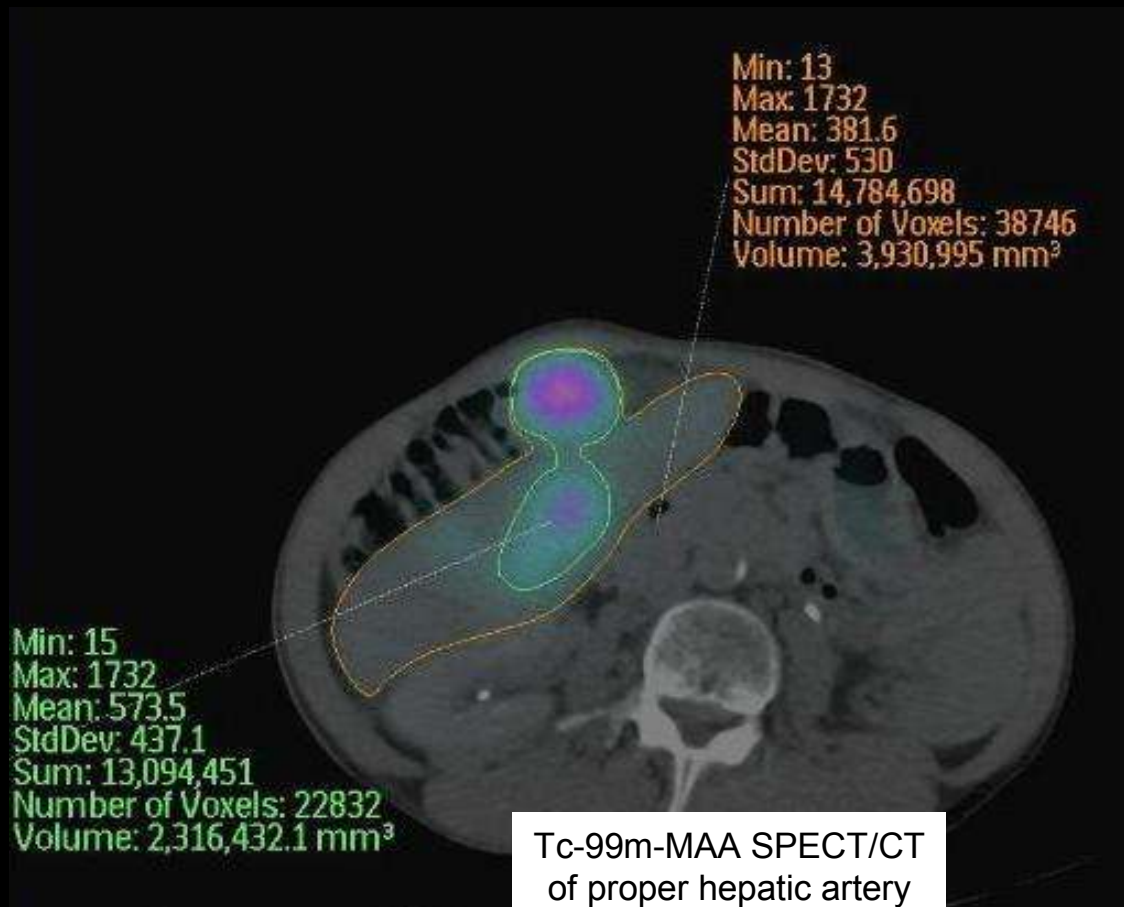
Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

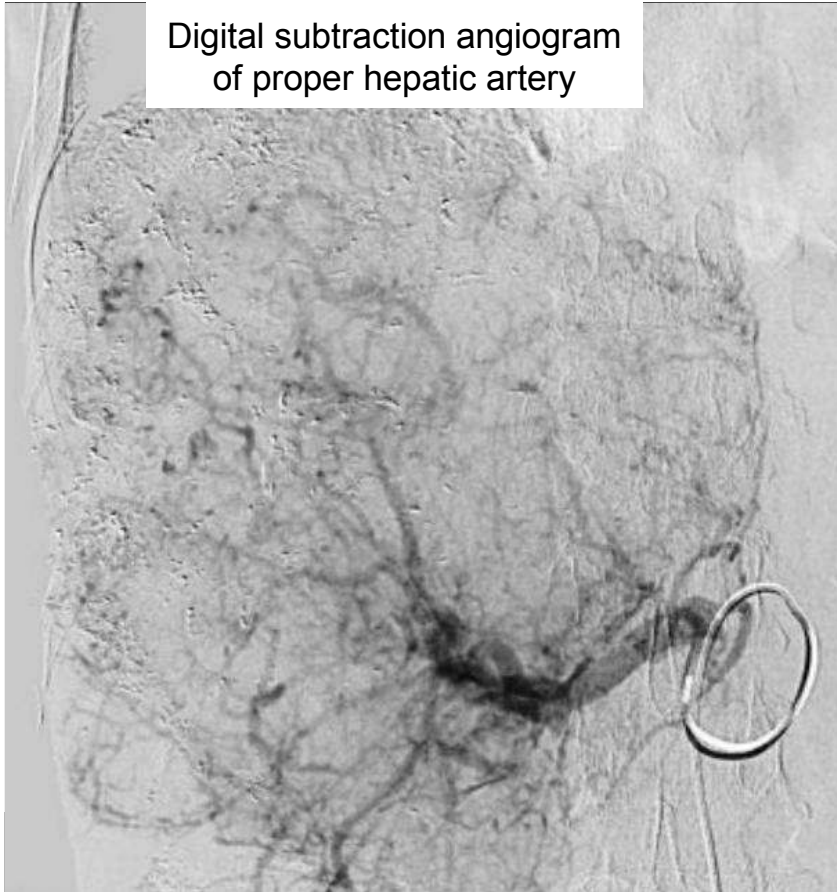


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory

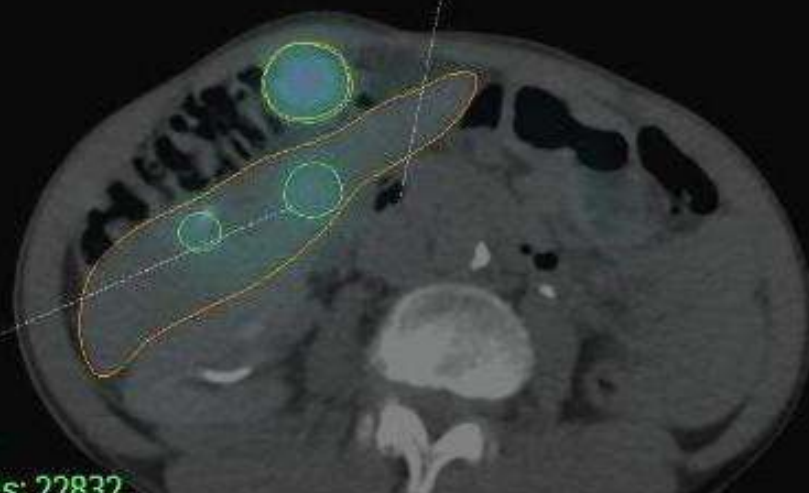


© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



Catheter-directed CT hepatic angiogram
of proper hepatic artery

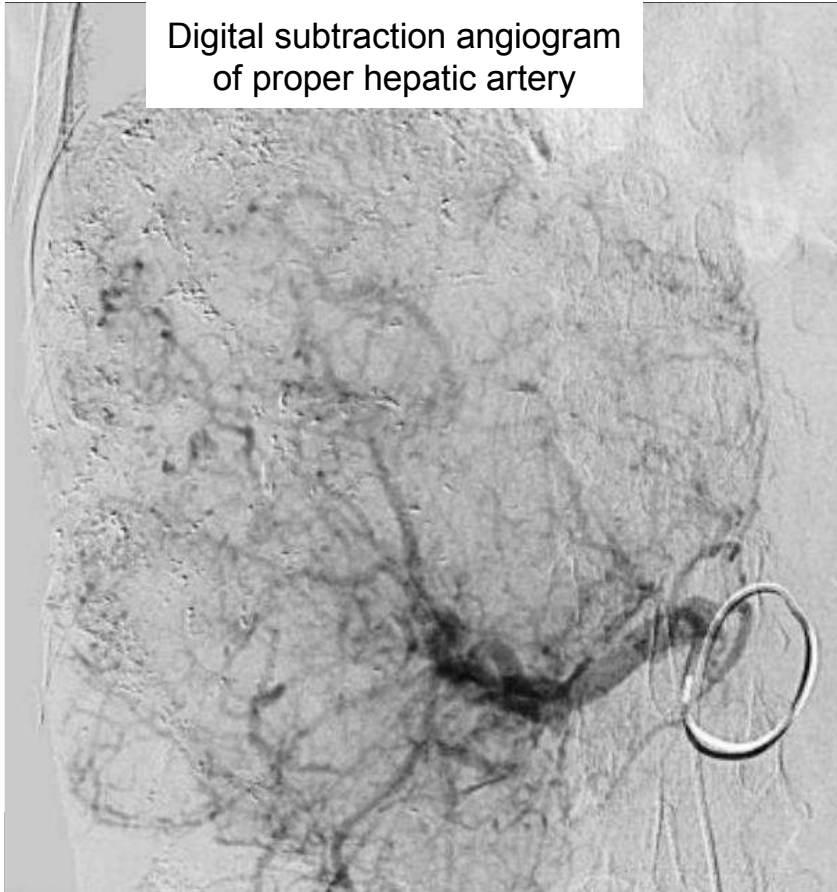
Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory

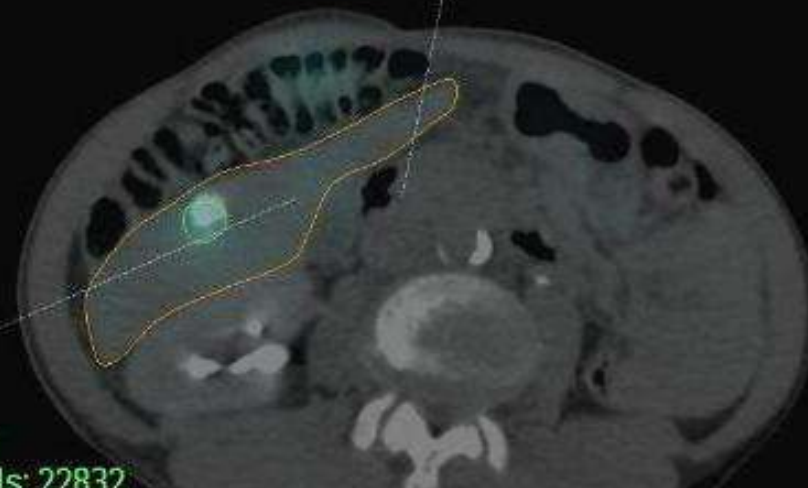


© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



Catheter-directed CT hepatic angiogram
of proper hepatic artery

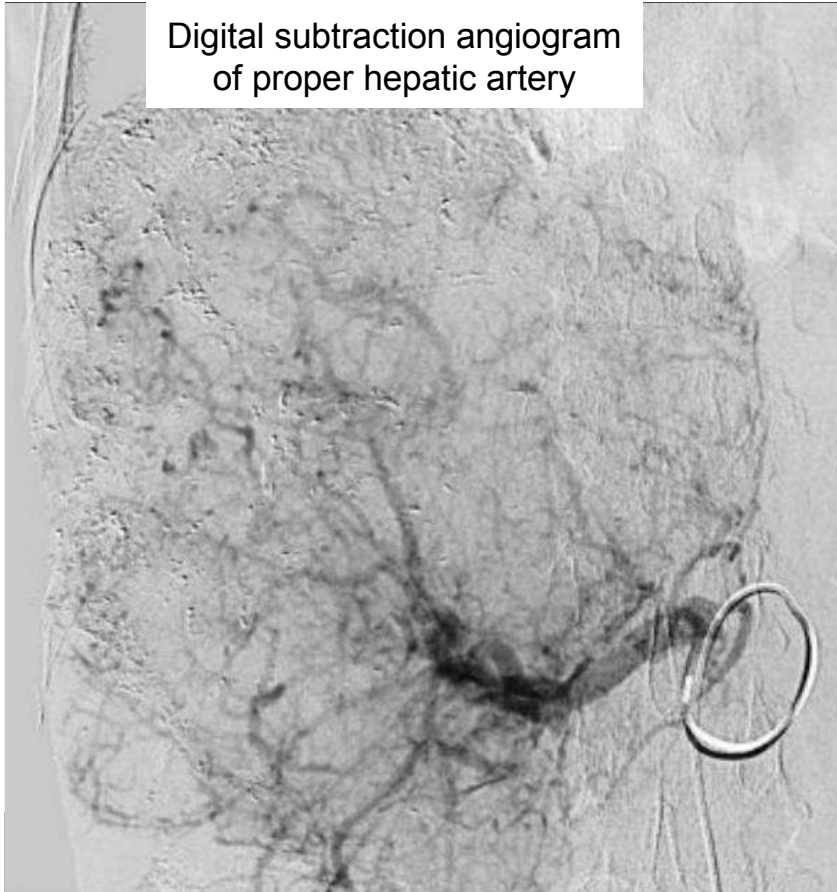
Min: 15
Max: 1732
Mean: 573.5
StdDev: 437.1
Sum: 13,094,451
Number of Voxels: 22832
Volume: 2,316,432.1 mm³



Min: 13
Max: 1732
Mean: 381.6
StdDev: 530
Sum: 14,784,698
Number of Voxels: 38746
Volume: 3,930,995 mm³

Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

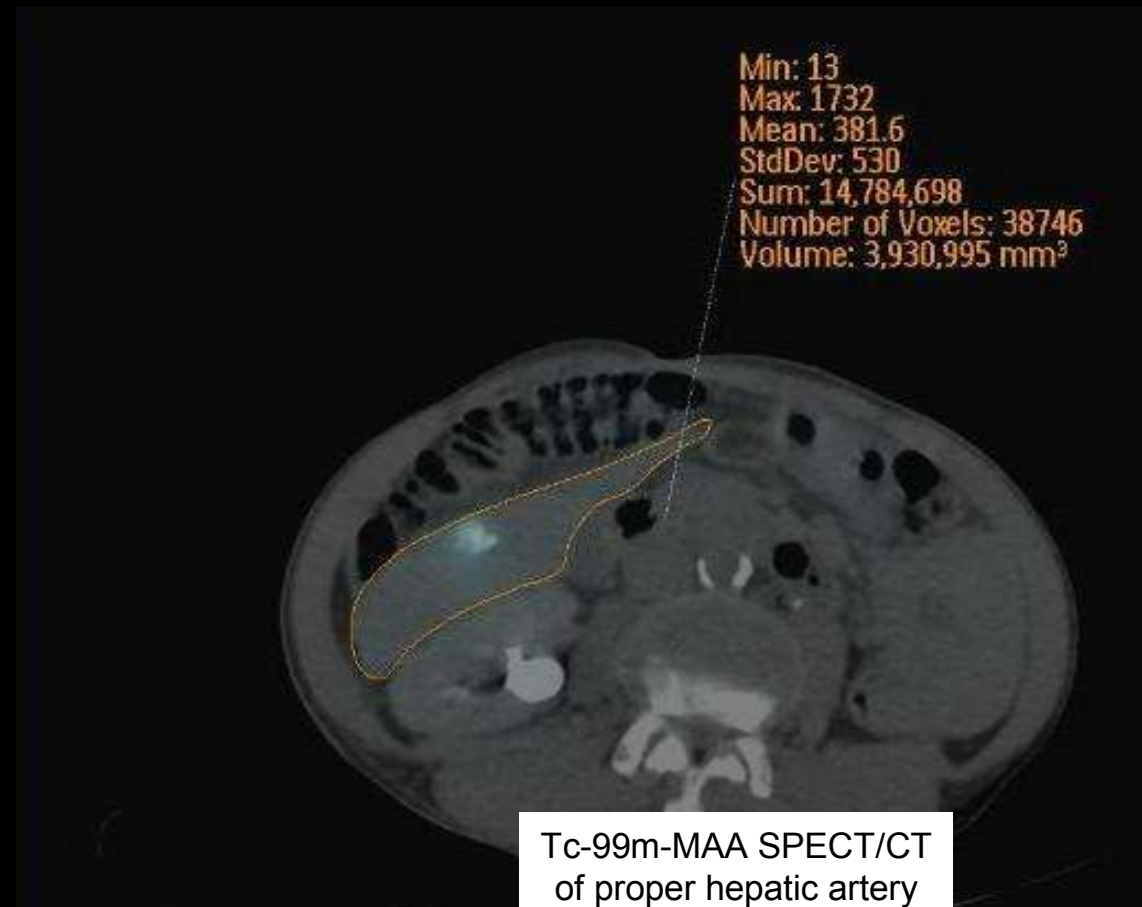
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

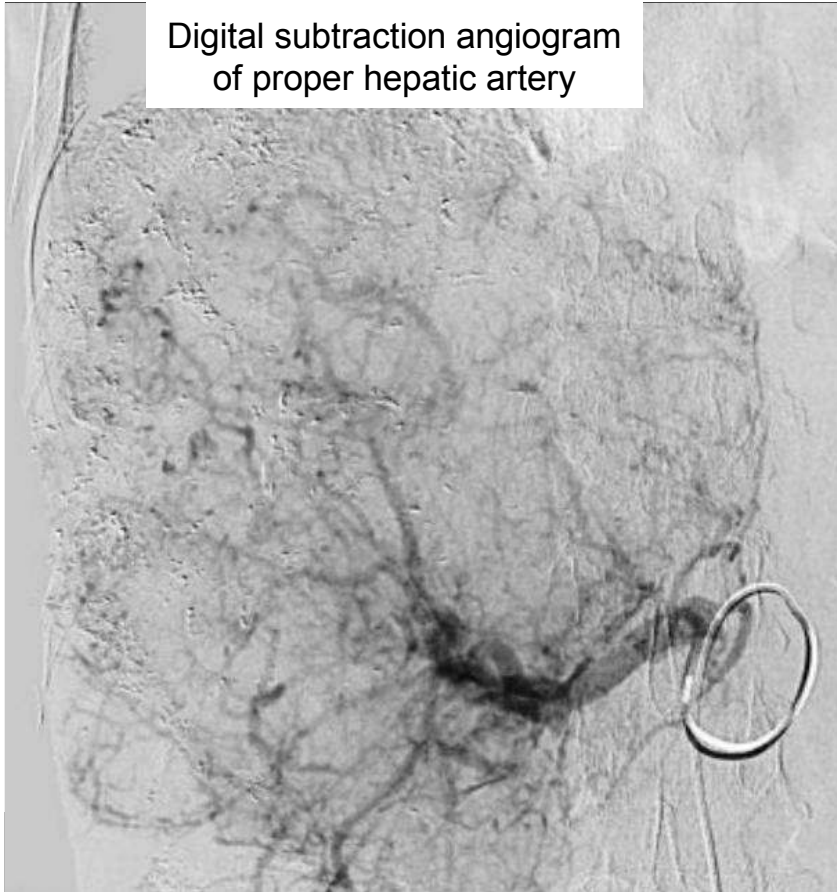


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

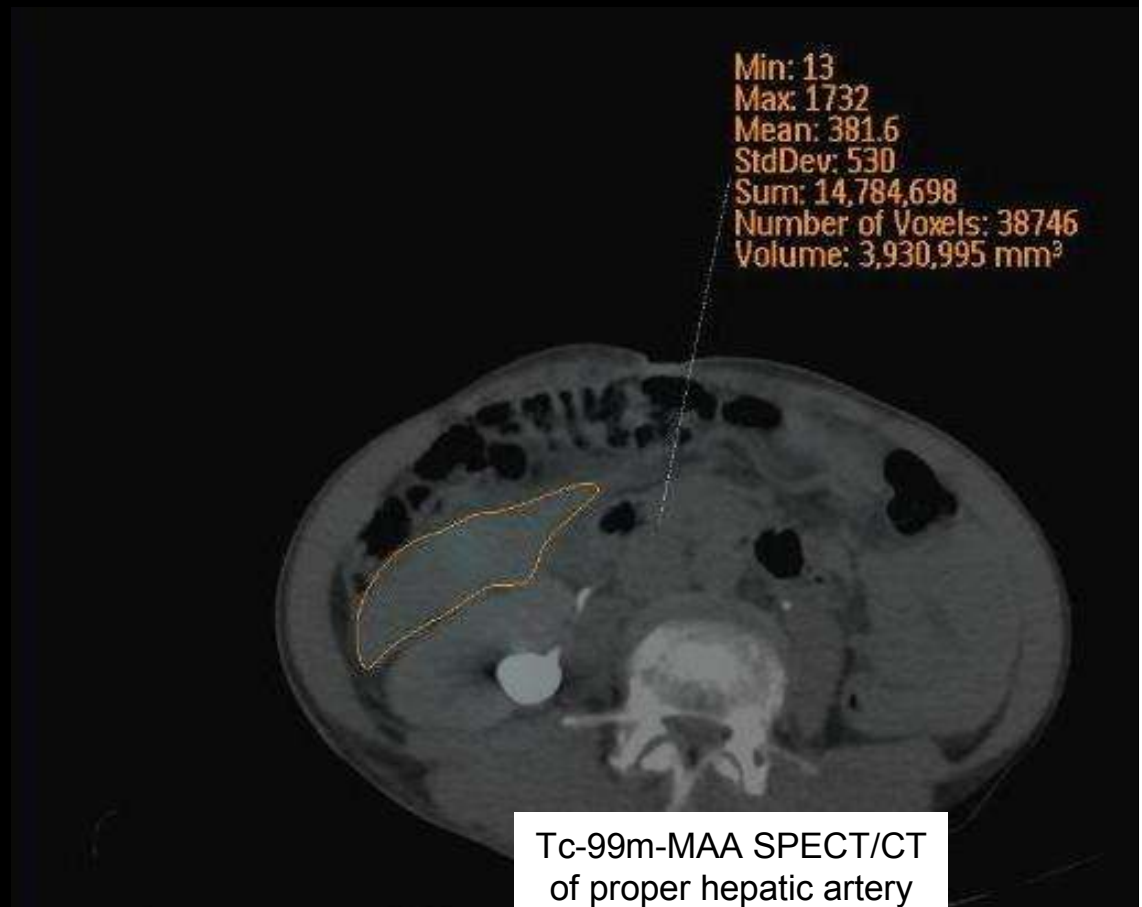
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

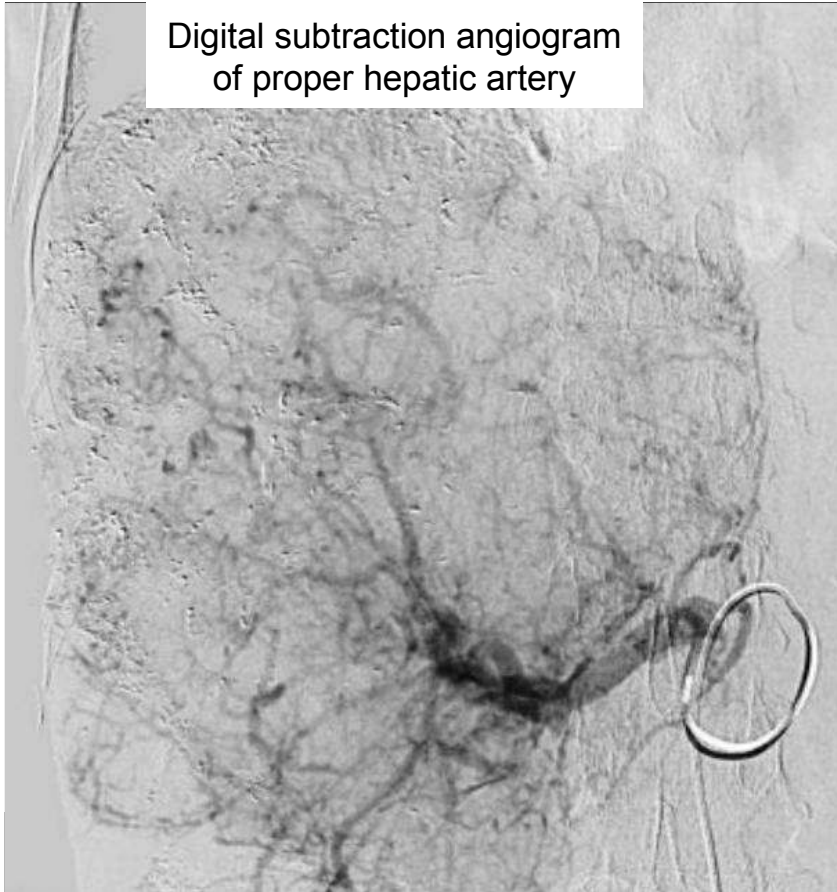


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

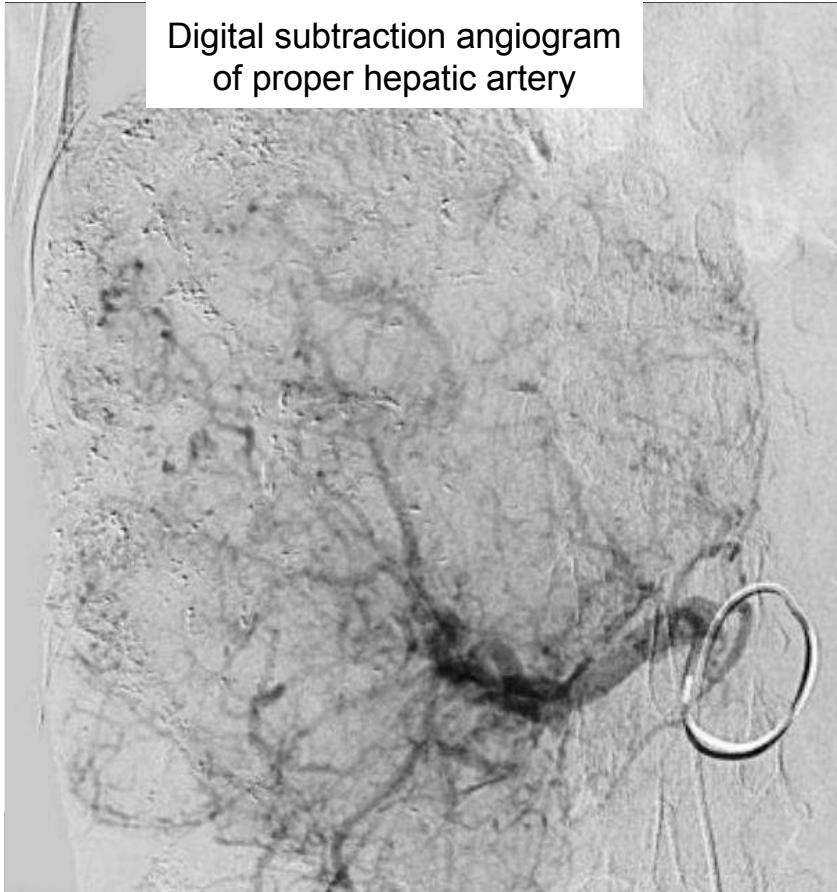


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

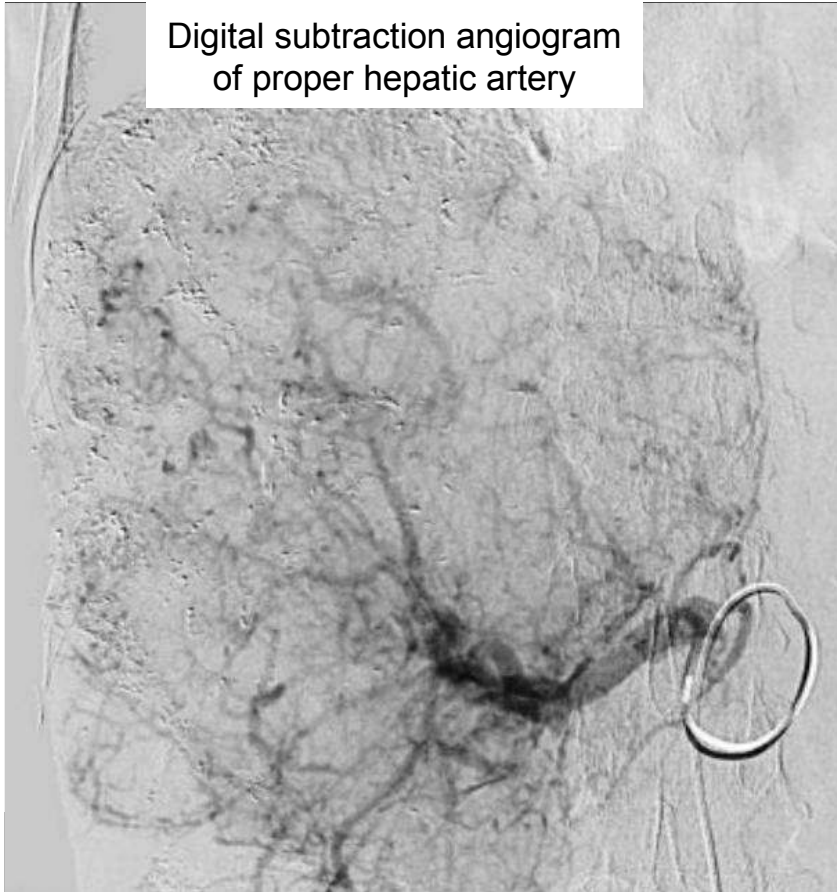


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com

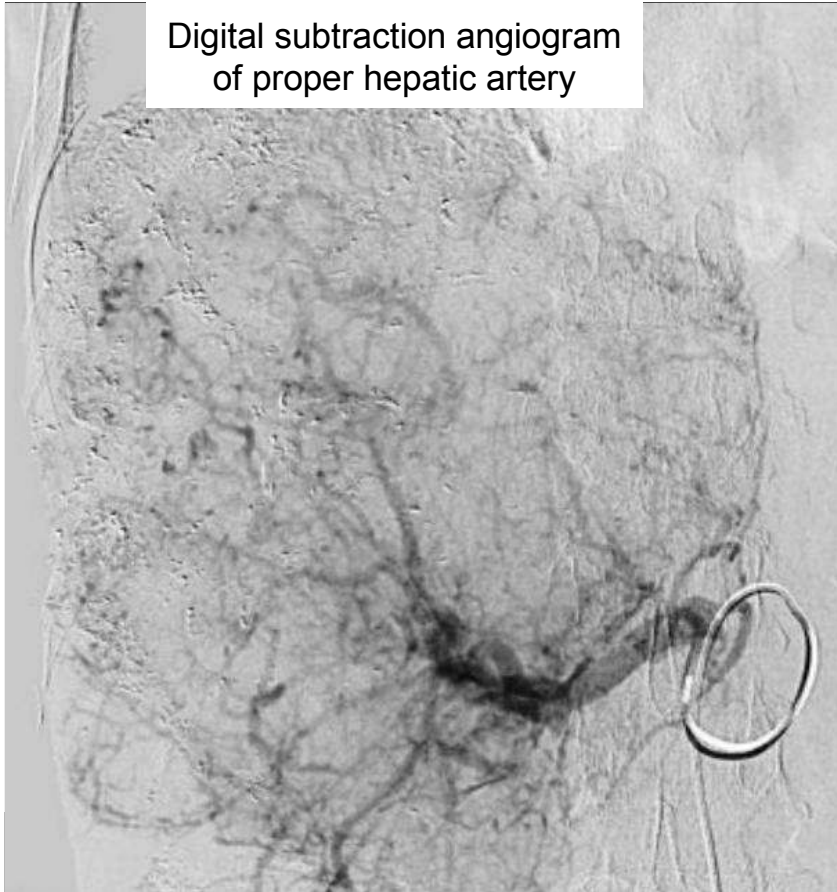


Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery

Digital subtraction angiogram
of proper hepatic artery



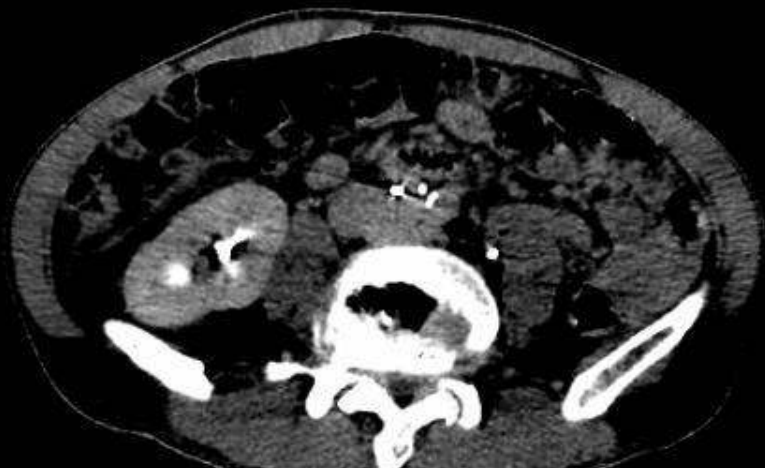
Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.

Supplemental Figure 1:

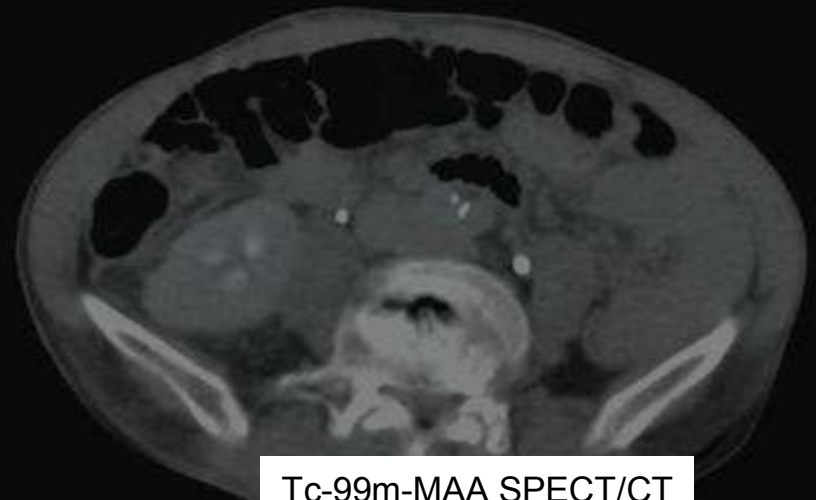
Worked example of artery-specific SPECT/CT partition modeling of a single arterial territory



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com



Catheter-directed CT hepatic angiogram
of proper hepatic artery



Tc-99m-MAA SPECT/CT
of proper hepatic artery



Worked example of artery-specific SPECT/CT
partition modeling of a single arterial territory

Reference: J Nucl Med. 2011; 52: 1084
Authors: Yung H KAO, Andrew EH TAN
v01.11.11. See Pg 3, 6 for instructions,
disclaimer and copyright information.

ARTERY-SPECIFIC SPECT/CT COMPARTMENTAL PERSONALIZED PREDICTIVE MIRD MACRODOSIMETRY

Total Mass of Targeted, Implanted, Non-Tumorous Liver	1,583	gm
Total Mass of Targeted, Implanted Tumor	2,164	gm
Total Mass of Targeted, Implanted (Non-Tumorous Liver + Tumor)	3,746	gm
Mean Liver-to-Lung Shunt Percentage	5.1	%
Total Lung Mass (Assumed Standard Man)	1,000	gm
Predicted Mean Radiation Dose to Lungs	11.8	Gy
PLANNING TARGET VOLUME 1 (TRI-COMPARTMENTAL MIRD)	Proper Hepatic	Artery
Desired Mean Radiation Dose to Implanted, Non-Tumorous Liver	15.0	Gy
Predicted Mean Radiation Dose to Implanted Tumor	90.0	Gy
PLANNING TARGET VOLUME 2 (TRI-COMPARTMENTAL MIRD)	Not Targeted	Artery
Desired Mean Radiation Dose to Implanted, Non-Tumorous Liver	0.0	Gy
Predicted Mean Radiation Dose to Implanted Tumor	0.0	Gy
PLANNING TARGET VOLUME 3 (TRI-COMPARTMENTAL MIRD)	Not Targeted	Artery
Desired Mean Radiation Dose to Implanted, Non-Tumorous Liver	0.0	Gy
Predicted Mean Radiation Dose to Implanted Tumor	0.0	Gy

Total Desired Yttrium-90 Activity by Predictive MIRD Macrodosimetry **4.64** GBq

ARTERY-SPECIFIC SPECT/CT TRI-COMPARTMENTAL PREDICTIVE MIRD MACRODOSIMETRY

<u>PLANNING TARGET VOLUME 1 (TRI-COMPARTMENTAL MIRD)</u>		
Mass of Targeted, Implanted, Non-Tumorous Liver	Proper Hepatic	Artery
Mass of Targeted, Implanted Tumor	1,583	gm
Mean Tumor-to-Normal Liver Ratio by Mean SPECT/CT Count Density	2,164	gm
Desired Mean Radiation Dose to Implanted, Non-Tumorous Liver	6.00	
Predicted Mean Radiation Dose to Implanted Tumor	15.0	Gy
Predicted Mean Radiation Dose to Lungs	90.0	Gy
Desired Artery-Specific Yttrium-90 Activity	11.8	Gy
	4.64	GBq
<u>PLANNING TARGET VOLUME 2 (TRI-COMPARTMENTAL MIRD)</u>		
Mass of Targeted, Implanted, Non-Tumorous Liver	Not Targeted	Artery
Mass of Targeted, Implanted Tumor	0	gm
Mean Tumor-to-Normal Liver Ratio by Mean SPECT/CT Count Density	0	gm
Desired Mean Radiation Dose to Implanted, Non-Tumorous Liver	0.00	
Predicted Mean Radiation Dose to Implanted Tumor		Gy
Predicted Mean Radiation Dose to Lungs	0.0	Gy
Desired Artery-Specific Yttrium-90 Activity	0.0	Gy
	0.00	GBq
<u>PLANNING TARGET VOLUME 3 (TRI-COMPARTMENTAL MIRD)</u>		
Mass of Targeted, Implanted, Non-Tumorous Liver	Not Targeted	Artery
Mass of Targeted, Implanted Tumor	0	gm
Mean Tumor-to-Normal Liver Ratio by Mean SPECT/CT Count Density	0	gm
Desired Mean Radiation Dose to Implanted, Non-Tumorous Liver	0.00	
Predicted Mean Radiation Dose to Implanted Tumor		Gy
Predicted Mean Radiation Dose to Lungs	0.0	Gy
Desired Artery-Specific Yttrium-90 Activity	0.0	Gy
	0.00	GBq

ARTERY-SPECIFIC SPECT/CT COUNTS & VOLUMES-OF-INTEREST (VOI)

ARTERIAL TERRITORY SUPPLIED BY: (i.e. PLANNING TARGET VOLUME 1)	Proper Hepatic (i.e. Artery1)	Artery
Perfused Territory (Liver + Tumor) SPECT/CT Counts	14,784,698	counts
Perfused Territory (Liver + Tumor) SPECT/CT VOI	3,930,995.0	mm3
Tumor 1 (Implanted + Necrotic) SPECT/CT Counts	13,094,451	counts
Tumor 1 (Implanted + Necrotic) SPECT/CT VOI	2,316,432.1	mm3
Tumor 2 (Implanted + Necrotic) SPECT/CT Counts		counts
Tumor 2 (Implanted + Necrotic) SPECT/CT VOI		mm3
Tumor 3 (Implanted + Necrotic) SPECT/CT Counts		counts
Tumor 3 (Implanted + Necrotic) SPECT/CT VOI		mm3
Tumor 4 (Implanted + Necrotic) SPECT/CT Counts		counts
Tumor 4 (Implanted + Necrotic) SPECT/CT VOI		mm3
Tumor 5 (Implanted + Necrotic) SPECT/CT Counts		counts
Tumor 5 (Implanted + Necrotic) SPECT/CT VOI		mm3
Tumor 6 (Implanted + Necrotic) SPECT/CT Counts		counts
Tumor 6 (Implanted + Necrotic) SPECT/CT VOI		mm3
Tumor 7 (Implanted + Necrotic) SPECT/CT Counts		counts
Tumor 7 (Implanted + Necrotic) SPECT/CT VOI		mm3
Tumor 8 (Implanted + Necrotic) SPECT/CT Counts		counts
Tumor 8 (Implanted + Necrotic) SPECT/CT VOI		mm3
Non-Implanted, Non-Tumorous Liver 1 SPECT/CT Counts	123,096	counts
Non-Implanted, Non-Tumorous Liver 1 SPECT/CT VOI	92,730.3	mm3
Necrotic Tumor 1 SPECT/CT Counts	236,654	counts
Necrotic Tumor 1 SPECT/CT VOI	235,884.1	mm3

ARTERY-SPECIFIC SPECT/CT MEAN TUMOR-TO-NORMAL LIVER RATIO CALCULATION

ARTERIAL TERRITORY SUPPLIED BY: (i.e. PLANNING TARGET VOLUME 1)	Proper Hepatic (i.e. Artery1)	Artery
Sum of (Implanted + Necrotic) Tumor SPECT/CT Counts	13,094,451	counts
Sum of (Implanted + Necrotic) Tumor SPECT/CT VOI	2,316,432.1	mm ³
Sum of Non-Implanted, Non-Tumorous Liver SPECT/CT Counts	123,096	counts
Sum of Non-Implanted, Non-Tumorous Liver SPECT/CT VOI	92,730.3	mm ³
Sum of Necrotic Tumor SPECT/CT Counts	236,654	counts
Sum of Necrotic Tumor SPECT/CT VOI	235,884.1	mm ³
Net Implanted, Non-Tumorous Liver SPECT/CT Counts	1,567,151	counts
Net Implanted, Non-Tumorous Liver SPECT/CT VOI	1,521,832.6	mm ³
<u>Net Implanted, Non-Tumorous Liver Mass</u>	1,582.71	gm
Net Implanted Tumor SPECT/CT Counts	12,857,797	counts
Net Implanted Tumor SPECT/CT VOI	2,080,548.0	mm ³
<u>Net Implanted Tumor Mass</u>	2,163.77	gm
Implanted, Non-Tumorous Liver Mean SPECT/CT Count Density	1.03	counts/mm ³
Implanted, Tumor Mean SPECT/CT Count Density	6.18	counts/mm ³
<u>Artery-Specific Mean Tumor-to-Normal Liver Ratio</u>	6.00	
by Mean SPECT/CT Count Density, specific to territory supplied by:	Proper Hepatic	Artery

Kao et al. State-of-the-art yttrium-90 selective internal radiation therapy: Technical aspects of artery-specific SPECT/CT partition model dosimetry. J Nucl Med. 2011; 52 (Supplement 1):1084.



www.facebook.com/radioembolization

SNM 2011 poster exhibit, dosimetric worksheet
and more worked examples are available for download at:
www.sgh.com.sg/Clinical-Departments-Centers/Nuclear-Medicine-PET



© Department of Nuclear Medicine and PET
Dr Yung H Kao, Email: yung.h.kao@gmail.com