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FUTURE OF INTERVENTIONAL RADIOLOGY EXPERT PANEL
NOVEMBER
20 & 21
2025
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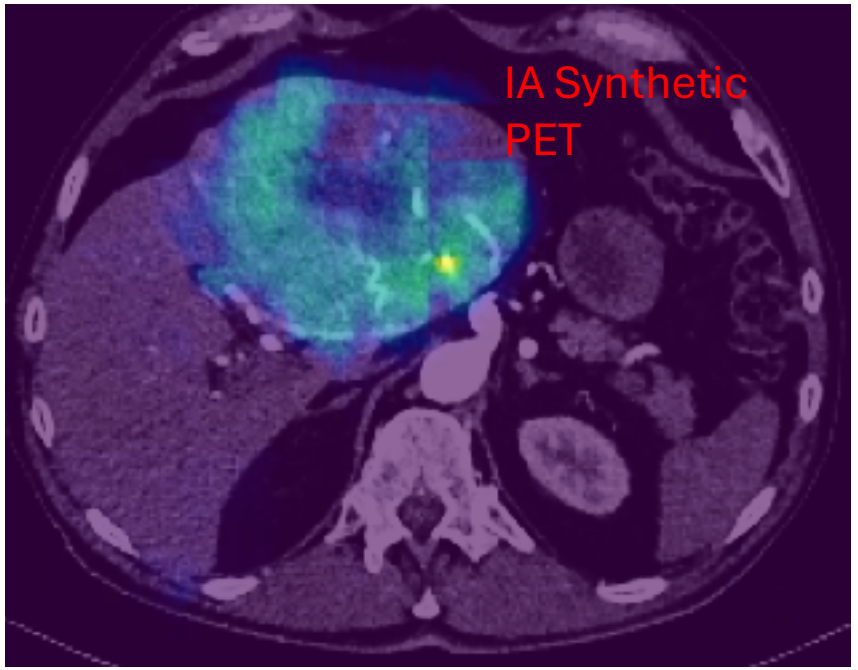
IA et SIRT des tumeurs hépatiques primitives, vers une stratégie dosimétrique pré-opératoire

La fin du work-up ?



Yan Rolland MD, PhD

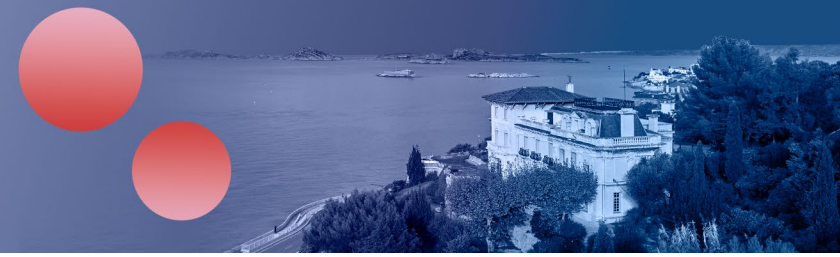
Imagerie Diagnostique et Interventionelle.

Comprehensive Cancer Center E Marquis / LTSI - UMR 1099

Rennes y.rolland@rennes.unicancer.fr

Conflits d'intérêts

AstraZeneca
Boston Scientific
Sirtex
Terumo
Thérenva



TARE vs SIRT

TransArterial Radioembolization

Selective Internal Radiation Therapy

ELSEVIER

Journal de Radiologie
Volume 88, Issue 2, February 2007, Page 217

Le compte rendu radiologique

F Joffre

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https://doi.org/10.1016/S0221-0363(07)89807-6 Get rights and content

Cancer
An International Interdisciplinary Journal of the American Cancer Society

Original Article | Free Access

Internal radiation therapy for hepatocellular carcinoma. Results of a french multicenter phase II trial of transarterial injection of iodine 131-labeled lipiodol

J. I. Raoul MD, J. F. Bretagne MD, J. P. Caucanas MD, E. A. Pariente MD, J. Boyer MD, J. C. Paris MD, H. Michel MD, P. Bourguet MD, G. Victor MD, F. Therain MD, J. J. Lejeune MD, B. Lemaire MD, H. Collet MD, R. Duvauferrier MD, J. L. Puech MD, J. F. Viala MD, P. L'Hoste MD, M. Poisonnier MD, P. Guiry MD

First published: 15 January 1992 | https://doi.org/10.1002/1097-0142(19920115)69:2<346::AID-

Randomized Controlled Trial for Hepatocellular Carcinoma with Portal Vein Thrombosis: Intra-arterial Iodine-131-Iodized Oil Versus Medical Support

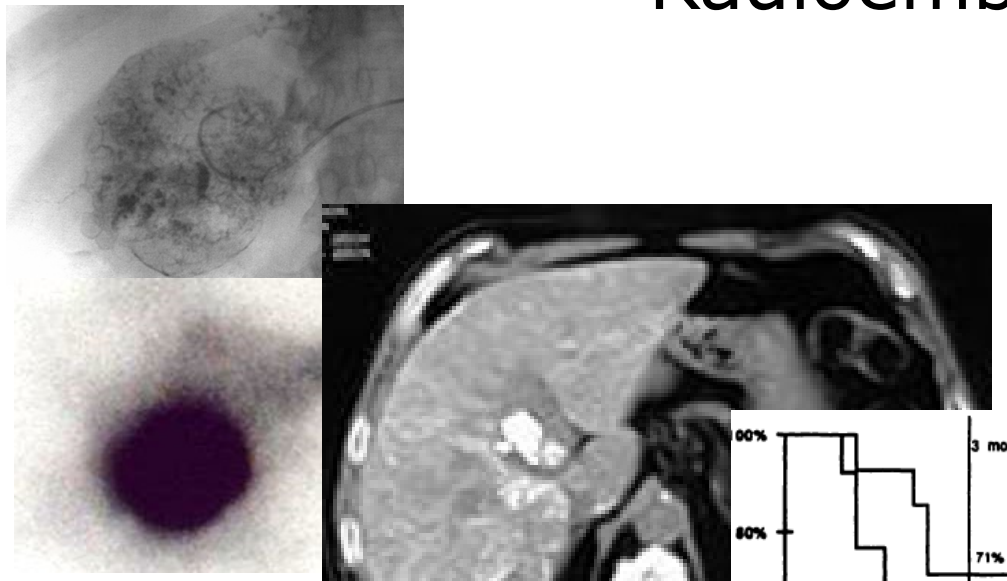
Jean-Luc Raoul, Dominique Guyader, Jean-François Bretagne, Régis Duvauferrier, Patrick Bourguet, Djemal Bekhechi, Yves M. Deugnier and Michel Gosselin

The Journal of Nuclear Medicine • Vol. 35 • No. 11 • November 1994

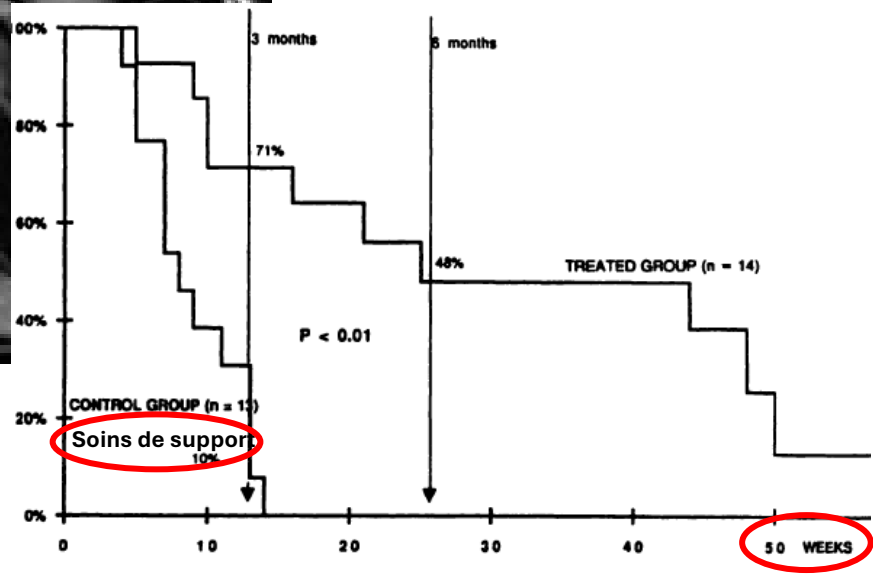
40 CHC, envahissement veine porte
infusion hépatique commune

émission γ : 1 semaine chambre plombée

Lipiocis, Cis bio International*



Radioembolisation



Dosimetric evaluation and therapeutic response to internal radiation therapy of hepatocarcinomas using iodine-131-labelled lipiodol

Becker, Stéphanie[a]; Laffont, Sophie[a]; Vitry, Fabien[d]; Rolland, Yan[b]; Lecloirec, Joseph[a]; Boucher, Eveline[c]; Raoul, Jean-Luc[c]; Herry, Jean-Yves[a]; Bourguet, Patrick[a]; Garin, Etienne[a]

Author Information

Nuclear Medicine Communications 29(9):p 815-825, September 2008. | *DOI:* 10.1097/MNM.0b013e32830439c6

Dosimétrie

Mean tumoral absorbed dose	1st Tt 248 Gy 2nd Tt 152 Gy
Correlation	tumoral dose / response to 1st Tt (p = 0.0071)
Threshold	280 Gy / no response below this threshold 84 % are responders after 1st Tt

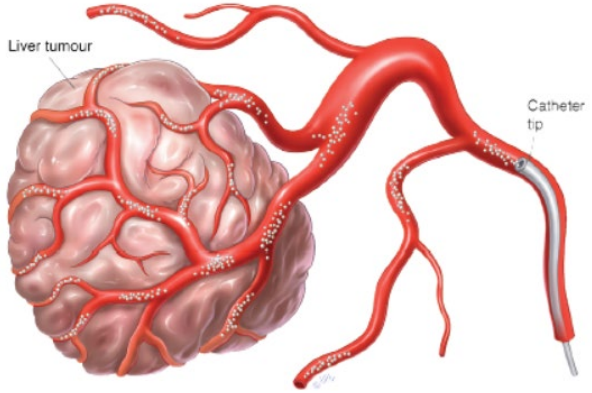
First experience of hepatic radioembolization using microspheres labelled with yttrium-90 (TheraSphere): practical aspects concerning its implementation

Etienne Garin · Yan Rolland · Eveline Boucher · Valérie Ardisson · Sophie Laffont · Karim Boudjema · Patrick Bourguet · Jean-Luc Raoul

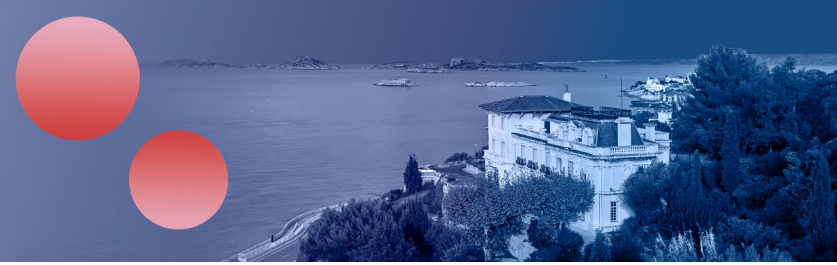
Eur J Nucl Med Mol Imaging (2010) 37:453–461

RadioThérapie Interne Sélective

Délivrer une dose tumoricide à une lésion tout en respectant le foie non tumoral



Vecteur: billes radioactives cheminant préférentiellement vers les vaisseaux tumoraux



Review > Cardiovasc Intervent Radiol. 2022 Nov;45(11):1608-1621.
doi: 10.1007/s00270-022-03215-x. Epub 2022 Aug 18.

Trans-arterial Radioembolization Dosimetry in 2022

Etienne Garin [1], Boris Guiu [2], Julien Edeline [3], Yan Rolland [4], Xavier Palard [5]

RadioThérapie

Activités différentes (Verre / Résine) en Gray

	Verre – Therasphere® Boston Scientific	Résine – SIRSpheres® Sirtex
Taille	20-30 µm	20-60 µm
Isotope	^{90}Y dans le verre	^{90}Y à la surface de la résine
Activité / sphère	2500 Bq	50 Bq
Nb sphères / Dose 3 GBq	1-2 millions	40-80 millions

Relation entre la dose / efficacité en Becquerel

Doses tumoricides

HFCs	100-120 Gy	^{90}Y resin microspheres
	205 Gy	^{90}Y glass microspheres
mCRC	39-60 Gy	^{90}Y resin microspheres
	139 Gy	^{90}Y glass microspheres
	90 Gy	^{166}Ho microspheres

Adaptation de dose lors de chaque traitement

Activité spécifique / patient

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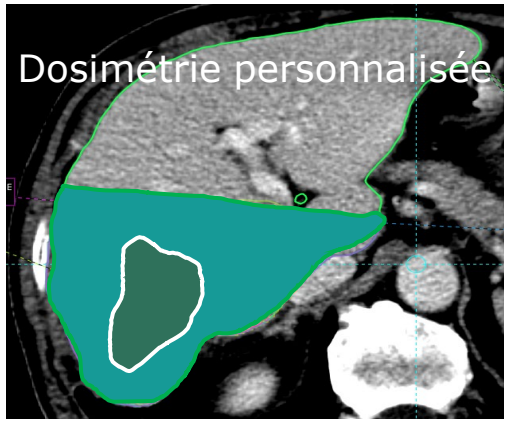
Personalised versus standard dosimetry approach of selective internal radiation therapy in patients with locally advanced hepatocellular carcinoma (DOSISPHERE-01): a randomised, multicentre, open-label phase 2 trial

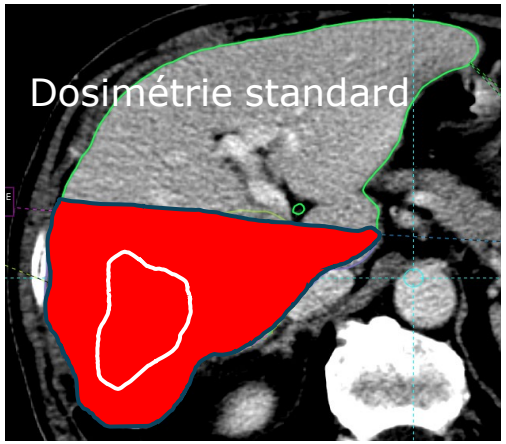
Etienne Garin, Lambros Tselikas*, Boris Guiu, Julia Chalaye, Julien Edeline, Thierry de Baere, Eric Assenat, Vania Tacher, Corentin Robert, Marie Terroir-Cassou-Mounat, Denis Mariano-Goulart, Giuliana Amaddeo, Xavier Palard, Antoine Hollebecque, Marilyne Kafrouni, Hélène Regnault, Karim Boudjema, Serena Grimaldi, Marjolaine Fourcade, Hicham Kobeiter, Eric Vibert, Samuel Le Sourd, Lauranne Piron, Danièle Sommacale, Sophie Laffont, Boris Campillo-Gimenez, Yan Rolland, on behalf of the DOSISPHERE-01 Study Group†*

Lancet Gastroenterol Hepatol
2020

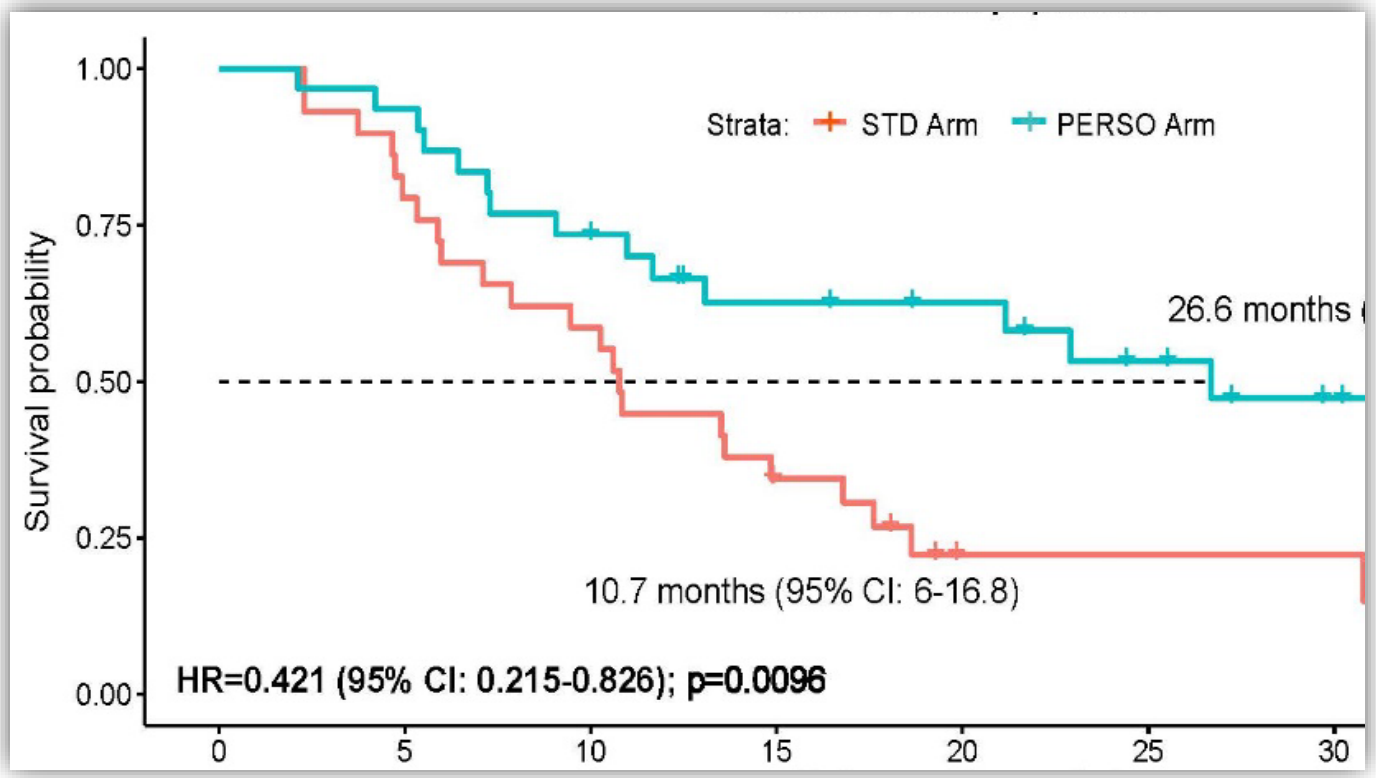
Dosimétrie



Bi compartimental



Mono compartimental



Personalised versus standard dosimetry approach of selective internal radiation therapy in patients with locally advanced hepatocellular carcinoma (DOSISPHERE-01): a randomised, multicentre, open-label phase 2 trial

Etienne Garin, Lambros Tselikas*, Boris Guiu, Julia Chalaye, Julien Edeline, Thierry de Baere, Eric Assenat, Vania Tacher, Corentin Robert, Marie Terroir-Cassou-Mounat, Denis Mariano-Goulart, Giuliana Amaddeo, Xavier Palard, Antoine Hollebecque, Marilyne Kafrouni, Hélène Regnault, Karim Boudjema, Serena Grimaldi, Marjolaine Fourcade, Hicham Kobeiter, Eric Vibert, Samuel Le Sourd, Lauranne Piron, Danièle Sommacale, Sophie Laffont, Boris Campillo-Gimenez, Yan Rolland, on behalf of the DOSISPHERE-01 Study Group†*

Lancet Gastroenterol Hepatol
2020

Personnalisation

Key Eligibility

Unresectable HCC
Tumor ≥ 7cm

Hepatic reserve
≥30%

Patients screened
N = 93

19 Screen Failure

Key Exclusion Criteria

Poor tumor targetting

LSF >30Gy
Risk of GI exposure

Dosimetric Angiography
N = 74

14 additional screen failures
6 lung shunt
3 poor tumor targeting
3 poor PVT targeting
2 other causes

R 1:1

Standard Dosimetry
N = 29

ITT population
N = 60

Personalised Dosimetry
N = 31

Standard Dosimetry received
N = 20

Personalised Dosimetry received
N = 8

Standard Dosimetry received
N = 1

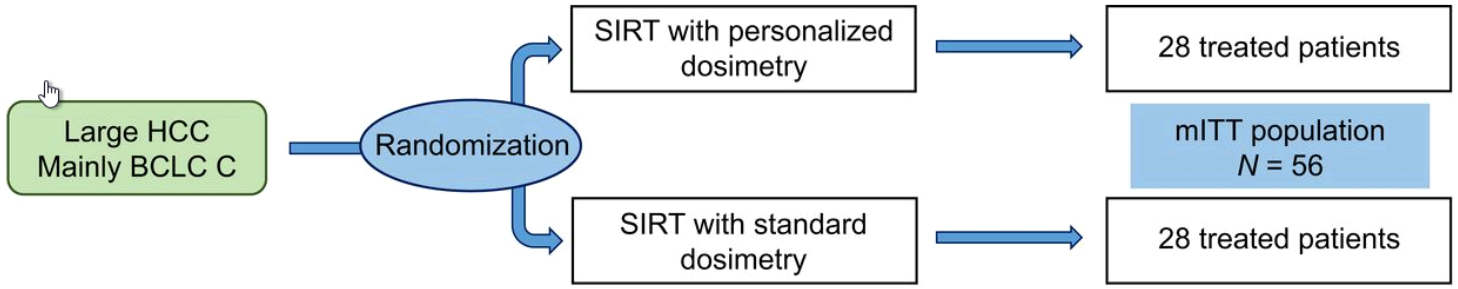
Personalised Dosimetry received
N = 27

Long-Term Overall Survival After Selective Internal Radiation Therapy for Locally Advanced Hepatocellular Carcinomas: Updated Analysis of DOSISPHERE-01 Trial

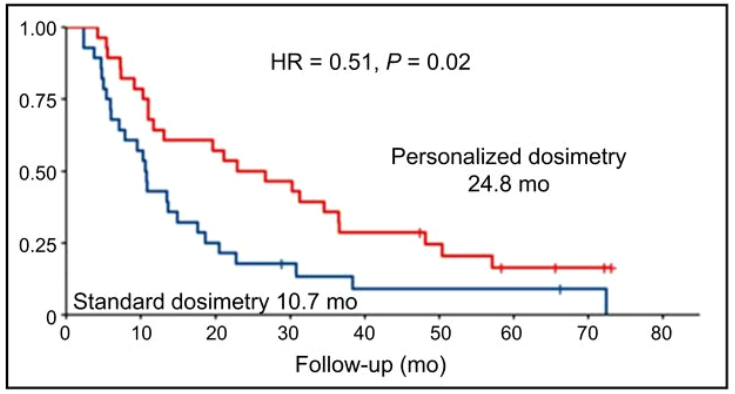
Etienne Garin, Lambros Tselikas, Boris Guiu, Julia Chalaye, Yan Rolland, Thierry de Baere, Eric Assenat, Vania Tacher, Xavier Palard, Desirée Déandreis, Denis Mariano-Goulart, Giuliana Amaddeo, Karim Boudjema, Antoine Hollebecque, Mohamad Azhar Meerun, Helen Regnault, Eric Vibert, Boris Campillo-Gimenez and Julien Edeline

Journal of Nuclear Medicine February 2024, 65 (2) 264-269; DOI: https://doi.org/10.2967/jnumed.123.266211

Impact de la personnalisation sur la survie

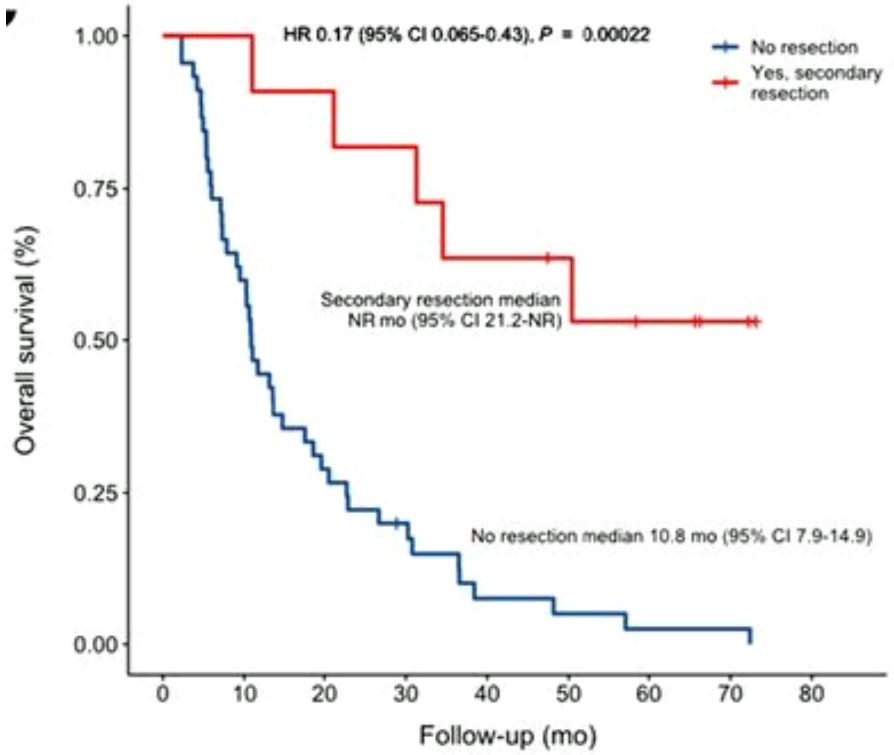


Median overall survival



Overall survival rates

OS rate (%)	2 years	3 years	5 years
Personalized vs. standard dosimetry	50.0 vs. 17.8	35.7 vs. 13.3	16.4 vs. 8.9
Tumor dose ≥205 Gy vs. <205 Gy	48.5 vs. 13.3	35.7 vs. 13.3	18.3 vs. 6.7
Resected vs. not resected	**81.8 vs. 22.2**	**63.6 vs. 15.0**	**53.0 vs. 2.5**



Clinical, dosimetric, and reporting considerations for Y-90 glass microspheres in hepatocellular carcinoma: updated 2022 recommendations from an international multidisciplinary working group

Riad Salem[1] · Siddharth A. Padia[2] · Marnix Lam[3] · Carlo Chiesa[4] · Paul Haste[5] · Bruno Sangro[6] · Beau Toskich[7] · Kirk Fowers[8] · Joseph M. Herman[9] · S. Cheenu Kappadath[10] · Thomas Leung[11] · Daniel Y. Sze[12] · Edward Kim[13] · Etienne Garin[14]

European Journal of Nuclear Medicine and Molecular Imaging (2023) 50:328–343

Stratégie RCP

- Curatif
- Pré chirurgie
- Palliatif

Scenarii

- Segmentectomie radique
- Lobectomie radique
- Contrôle / Downstaging
- Palliatif

Quelle stratégie ? Recommandations

Table 7 Scenario 5: HCC with macrovascular invasion recommendations using Y-90 glass microspheres

Treatment intent	Palliation and enabling disease control, combining and/or bridging to systemic treatment. Surgical conversion or downstaging may be possible [1, 34, 35]
Patient selection	1. Child–Pugh A patients with good tumor and MVI/PVT targeting and low NTAD can be considered when locoregional therapy is selected prior to the initiation of systemic therapy [1, 34–36, 45, 46]. Those with unilobar MVI/PVT should be considered for TARE, with early consideration for systemic therapy. Patients with bilobar MVI/PVT should be considered for upfront systemic therapy, especially if associated with CP B disease; these patients are unlikely to benefit from initial treatment with TARE 2. Treatment can be considered for segmental, lobar, or branch MVI/PVT, with follow-up imaging dictating when to consider adding systemic therapy. For main MVI/PVT with good targeting, ≥ 30% hepatic reserve, and unilobar treatment, some patients may benefit from TARE; however, early (1 month) post-Y-90 combination with systemic agents may be an option for this population [1, 34, 35, 37–39] 3. Larger tumors (e.g., > 10 cm) with MVI/PVT have been effectively treated with glass microsphere TARE using multicompartment dosimetry [1, 37, 39]
Treatment planning	
Diagnostic studies and target volume definition	1. Treatment should be performed in a location that is proximal enough to perfuse all feeding vessels both into the tumor and to the tumor thrombus. The use of contrast-enhanced cone-beam CT during angiographic mapping can aid in detection of MVI/PVT perfusion
Mapping and ^{99m}Tc-MAA	1. ^{99m}Tc-MAA MVI/PVT targeting evaluation should be performed [1, 39, 79]
Dose calculation and dosimetry considerations	1. Multicompartment dosimetry is preferred to maximize sparing of normal parenchyma [1, 35, 40]. This approach may be challenging in the setting of infiltrative disease, where tumor and normal parenchyma cannot be differentiated 2. For the multicompartment model, a recent randomized study demonstrated that tumor response in patients with ≥ 30% hepatic reserve is optimized and overall survival extended when the minimum tumor-absorbed dose is ≥ 205 Gy, with > 250 Gy where possible (with a mean of 331 Gy), and NTAD is ≤ 120 Gy, attained by treating on week 1 (Wednesday) [1]. The ideal candidate has good MVI/PVT ^{99m}Tc-MAA targeting (treatment intensification), as a suboptimal response is likely if there is no ^{99m}Tc-MAA MVI/PVT targeting or tumor-absorbed dose is < 205 Gy [39]. In such cases, advanced angiographic techniques may be attempted, e.g., boost dosing, if specific vessels can be identified. The use of systemic therapy in patients without significant uptake on MAA should also be strongly considered [1, 40]. Multicompartment dosimetry with good MVI/PVT and tumor targeting may be considered to downstage patients to surgery. Preservation of FLR function is a key consideration [1, 39]

IA peut elle faire bouger les lignes ?

Clinique : OMS 0-1

Biologie : Child Pugh A 5-6

Imagerie Dosimétrie Sécurité

JAMA Network Open

Original Investigation | Gastroenterology and Hepatology

Machine Learning–Based Selection of Resection vs Transplant and Survival in Hepatocellular Carcinoma

Hyun Uk Kim; Ji Won Han, MD, PhD; Pil Soo Sung, MD, PhD; Jeong Won Jang, MD, PhD; Seung Kew Yoon, MD, PhD; Ho Joong Choi, MD, PhD; Young Kyoung You, MD, PhD

JAMA Network Open. 2025;8(9):e2532353. doi:10.1001/jamanetworkopen.2025.32353

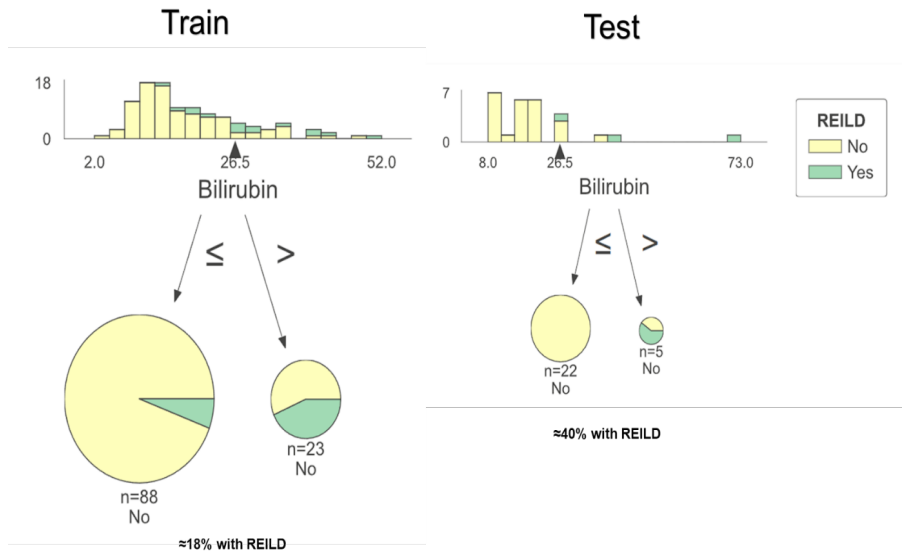
IA: Paramètres biologiques

Cliniques: OMS >1

Biologie : diminution du seuil de bilirubine

Machine learning models classifiers enable a strong prediction of RadioEmbolization-Induced Liver Disease, and define a new bilirubin threshold for selection of patients

Itzel Rivera[1], Heloïse Bourien[2], Ewan Morel—Corlu[1], Alexandre Peinoit[2], Samuel Le Sourd[2], Yan Rolland[1], Etienne Garin[3], Oscar Acosta[1], Julien Edeline[2],



Among 138 patients analyzed for REILD, ML identified bilirubin as a key predictor, with a refined threshold of 26.5 µmol/L associated with toxicity risk.

IA peut elle faire bouger les lignes ?

Clinique : OMS 0-1

Biologie : Child Pugh A 5-6

Imagerie: Dosimétrie Sécurité

IA: Paramètres d'imagerie (calcul dosimétrique)

Clinique : OMS 0-1

Biologie : Child Pugh A 5-6

Imagerie :

Volume hépatique

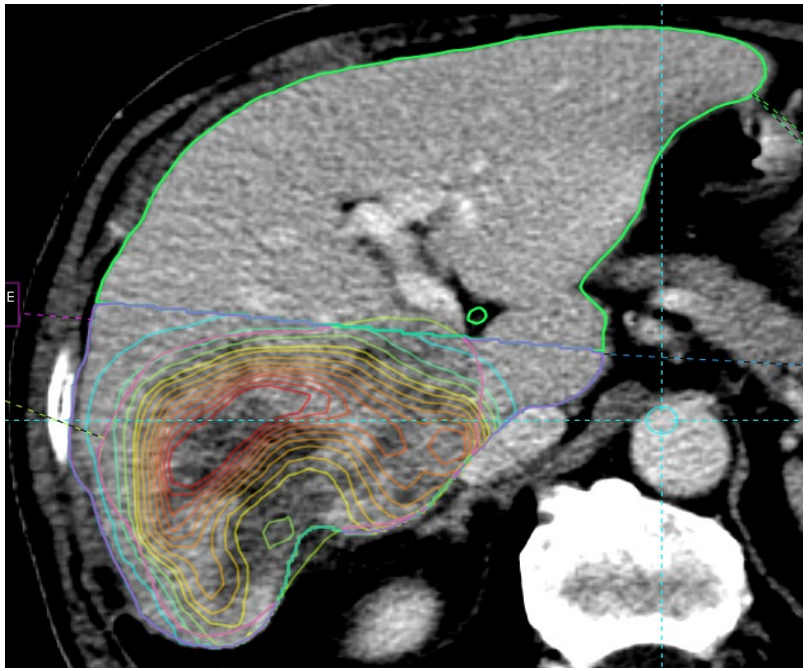
Volume perfusé

Volume tumeur

Perfusion T / Non T

Toxicité digestive

Toxicité pulmonaire



Key Eligibility

Unresectable HCC

Tumor ≥ 7cm

Hepatic reserve ≥30%

Key Exclusion Criteria

Poor tumor targetting

Risk of GI exposure

LSF >30Gy

Combien ?

Activité en GBq

Médecine Nucléaire

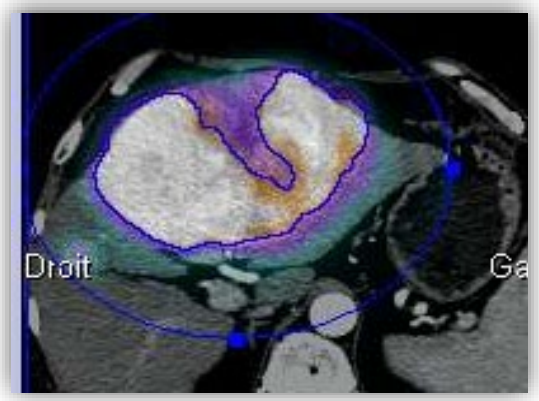
SPECT MAA
Prédiction dosimétrique Gy

Imagerie

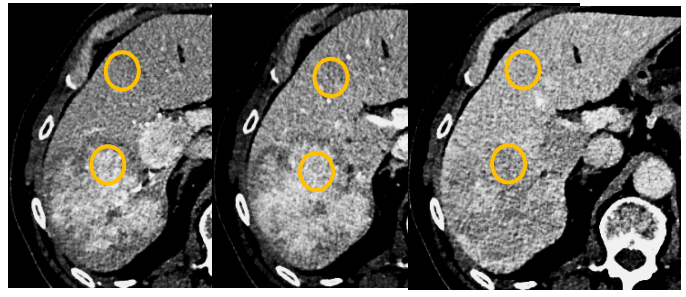
TDM multiphasique

IA ?

T/NT



T/NT



ELSEVIER MASSON

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Elsevier Masson France EM|consulte www.em-consulte.com

Médecine Nucléaire 36 (2012) 390–395

Médecine Nucléaire
Imagerie Fonctionnelle et Métabolique

Mise au point

Indicateurs dosimétriques et dose au patient☆

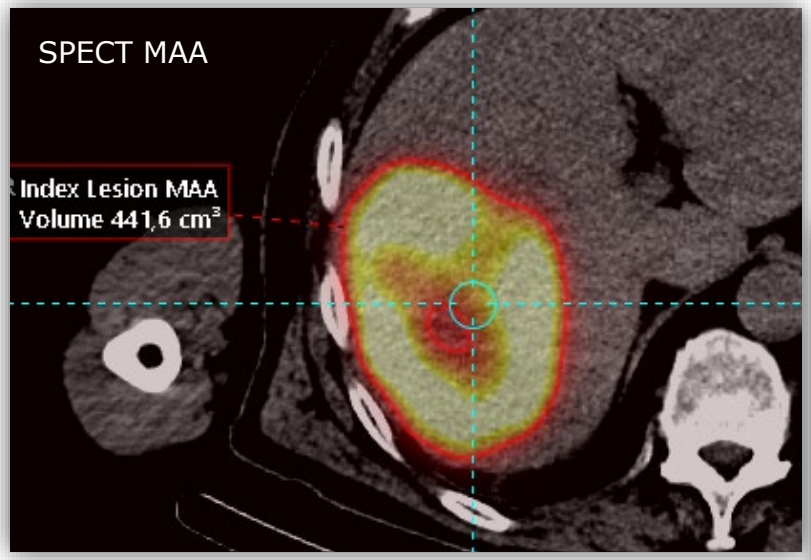
Dosimetric quantities and patient dose

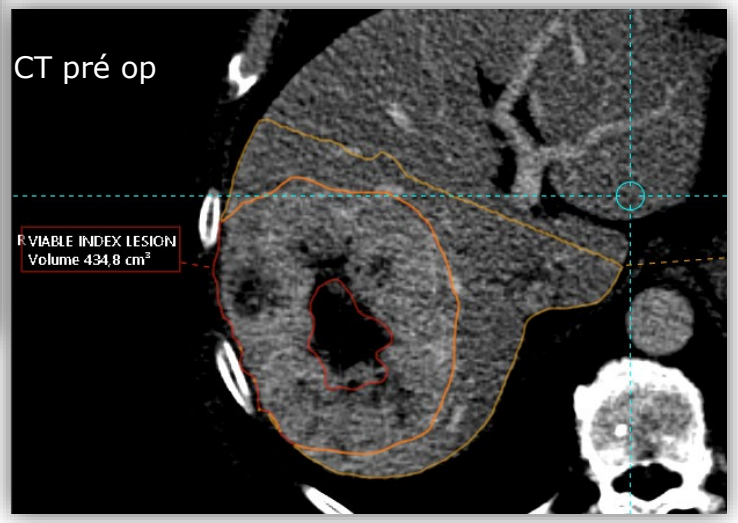
B. Aubert

PRP-HOM/SER/UEM. IRSN, BP 17, 92262 Fontenay-aux-Roses cedex, France

Médecine Nucléaire

Prédiction dosimétrique (Gy)





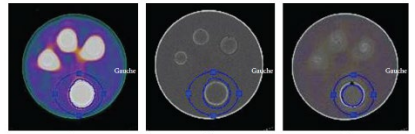
Volume perfusé

Rapport tumeur / non tumeur

Committee on Medical Internal Radiation Dose (MIRD)
Society of Nuclear Medicine

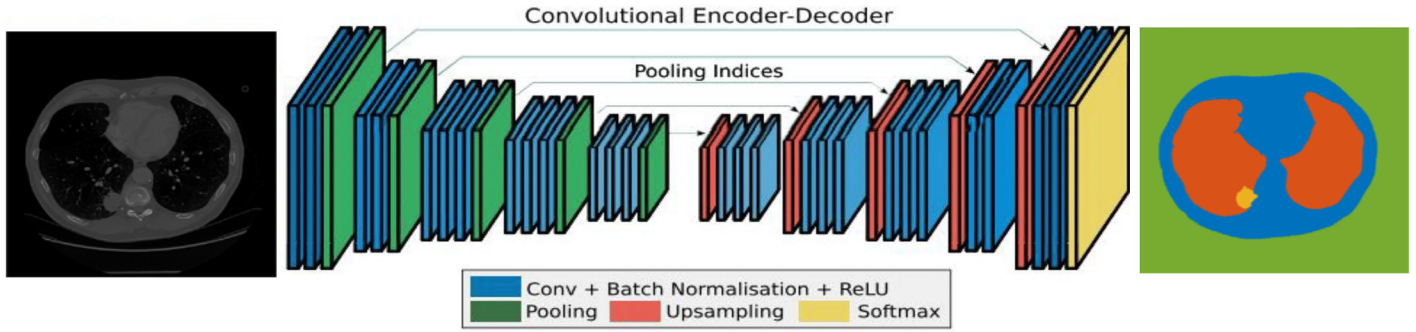
$$D\ (Gy) = A\ (GBq) \times 50 / masse\ (kg)$$

masse hépatique = volume x 1.03



**Garin et al. Nucl Med Comm 2012*

IA: Paramètres d'Imagerie

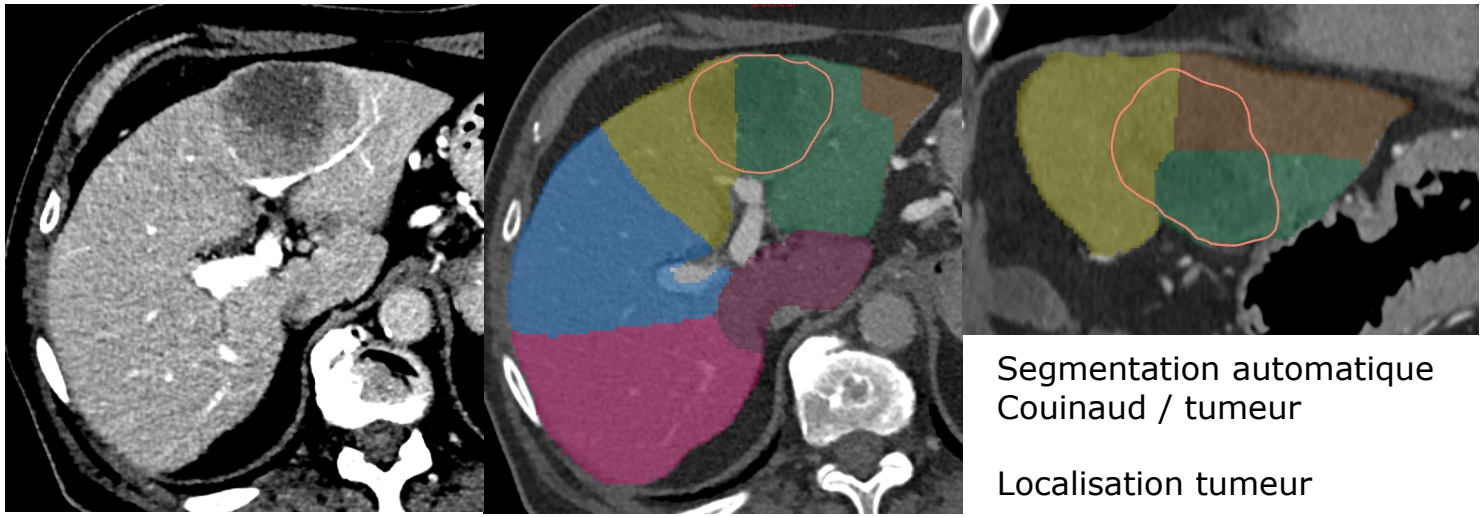


Unet : Convolutional Neural Network

Volume hépatique
Volume tumeur
Volume perfusé

Perfusion T / Non T

} IA



Segmentation automatique Couinaud / tumeur

Localisation tumeur

Morel-Corlu et al : ECIO 2024 / Tumour Targeting-Imaging-Radiotherapies 2025

MINIMALLY INVASIVE THERAPY & ALLIED TECHNOLOGIES
https://doi.org/10.1080/13645706.2021.1954953

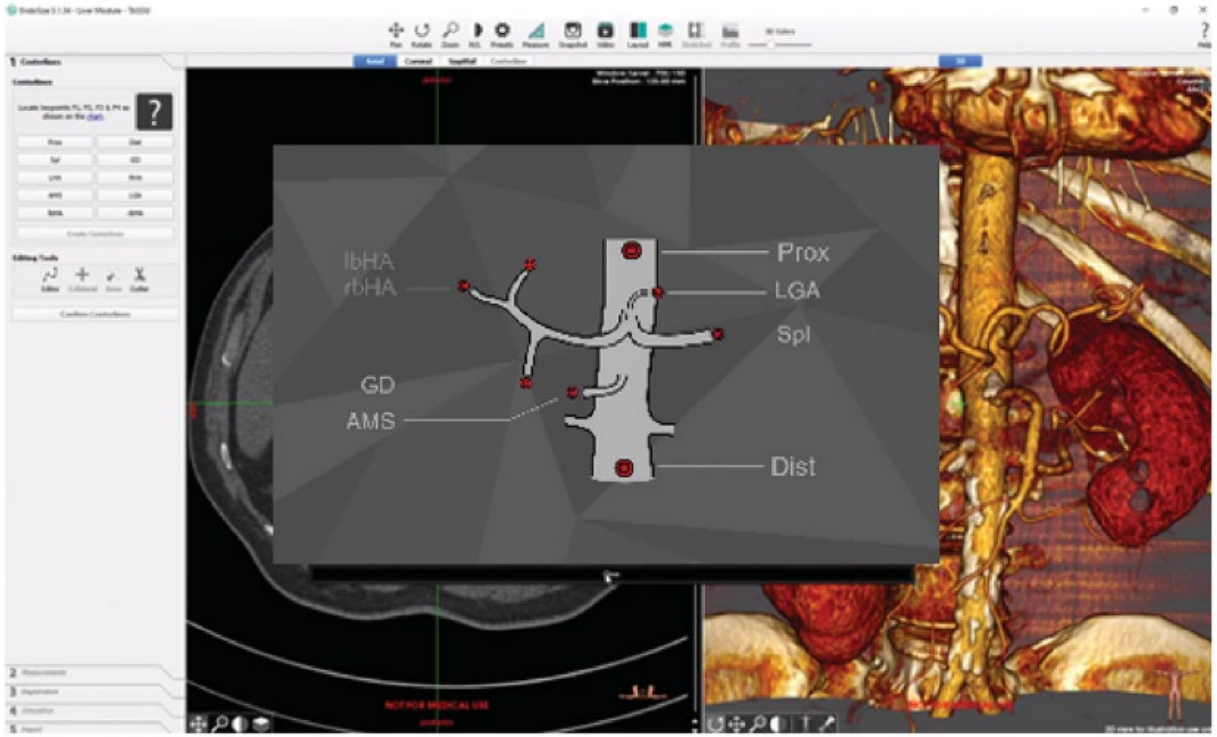
Taylor & Francis
Taylor & Francis Group

RESEARCH ARTICLE

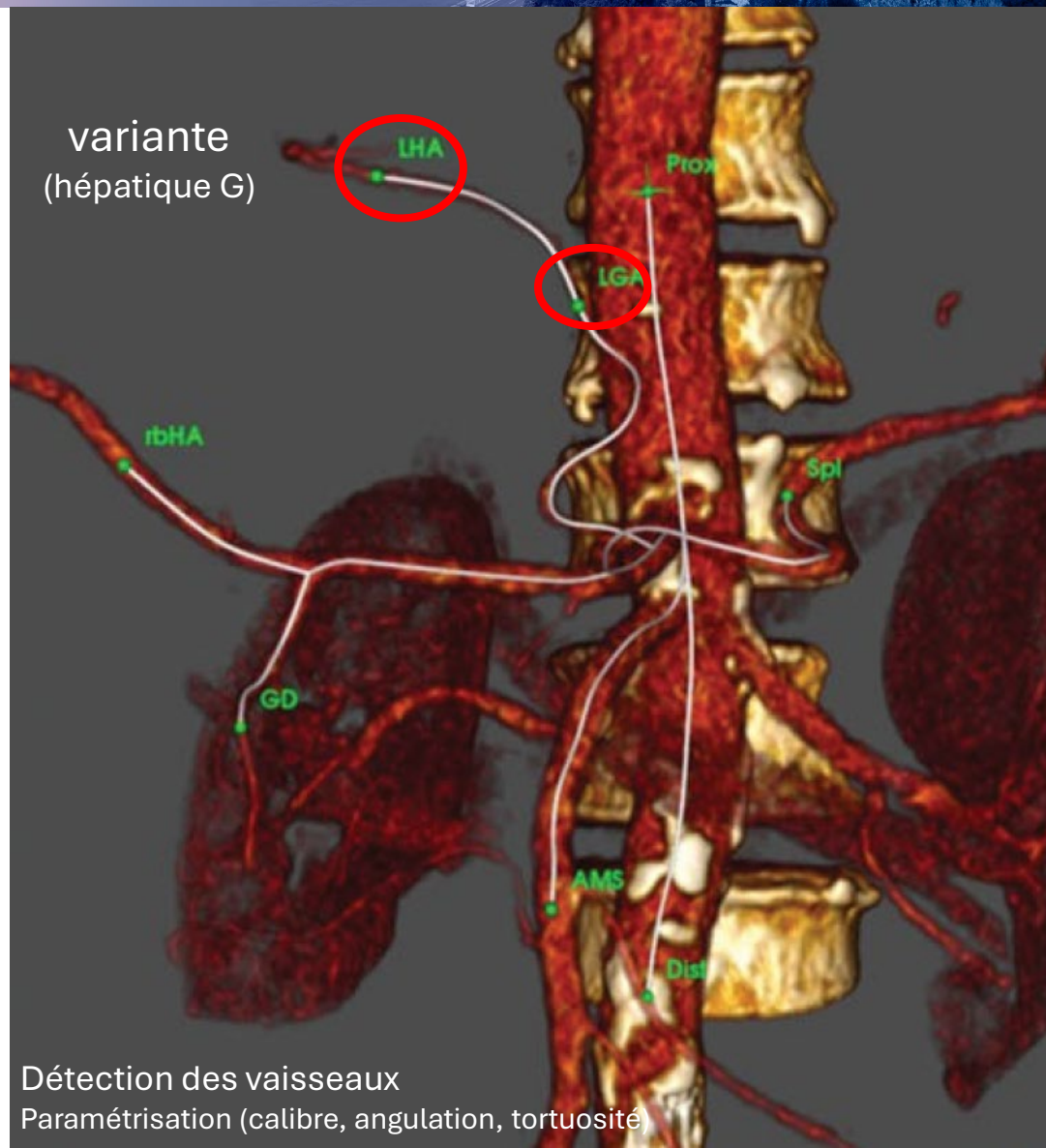
Check for updates

A new software tool for planning interventional procedures in liver cancer

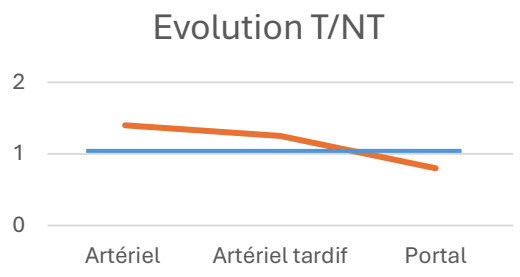
Ondine Delache[a], Anne Landreau[b], Lucas Royer[b], Antoine Petit[b], Chloé Rousseau[c], Yan Rolland[a] and Florent Lalys[b]



Mise en place de repères par le radiologue



Détection des vaisseaux
Paramétrisation (calibre, angulation, tortuosité)

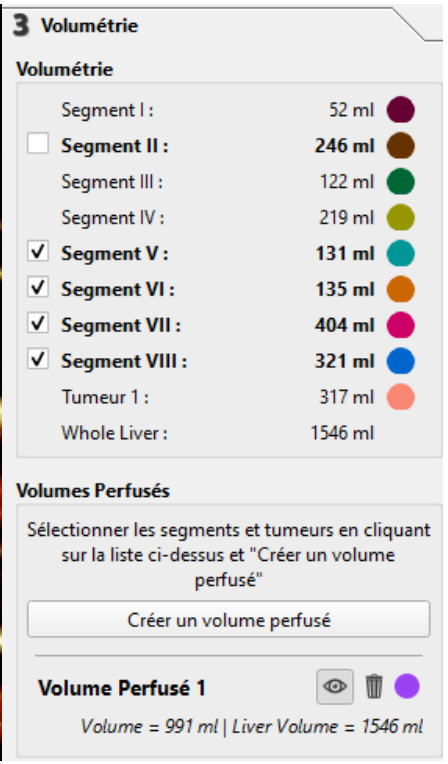


Interface dédiée: EndoSize*, Thérenva

TDM pré op

IA segmentation Couinaud / tumeur
Loc : Seg V VI VII VIII - vol : 317 ml

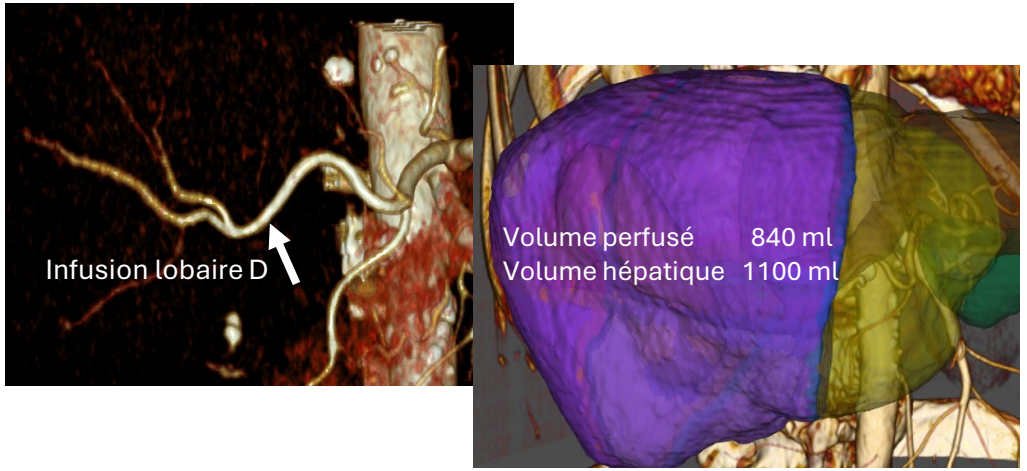
Stratégie
Volume perfusé / foie total
Réserve hépatique



infusion lobe D
991 / 1546 ml
36%

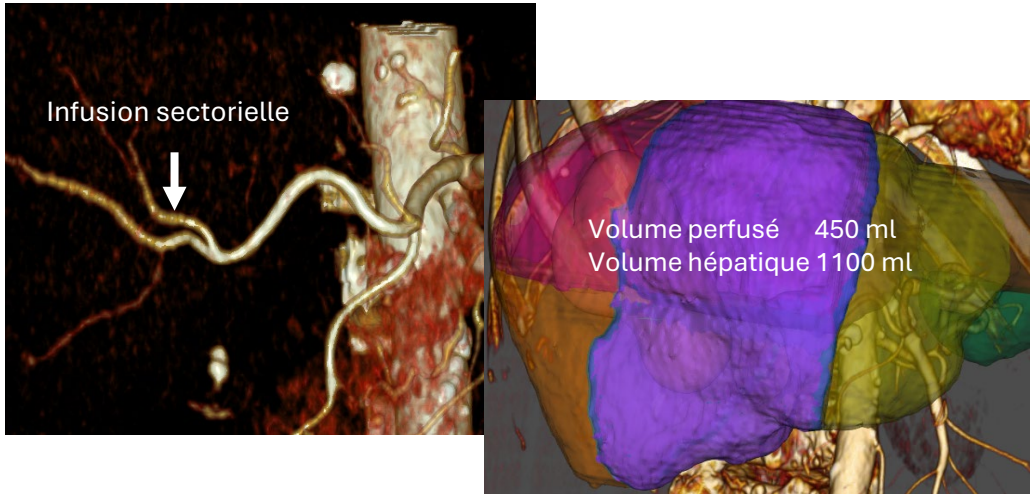
Vers une stratégie dosimétrique

Dose à la tumeur — Efficacité > 205 Gy (verre)
Dose au foie non tumoral — Toxicité < 150 Gy (verre)



Position du cathéter ?

- Infusion lobaire
- Infusion segmentaire
- Infusion sectorielle



Planification dosimétrique pré opératoire

- Dosimétrie standard — Activité à commander (GBq)

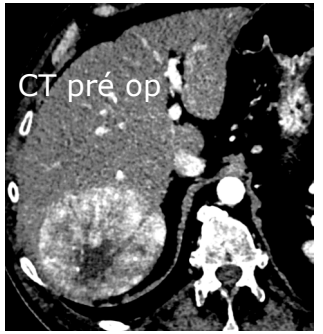
A microscopic model of the dose distribution in hepatocellular carcinoma after selective internal radiation therapy

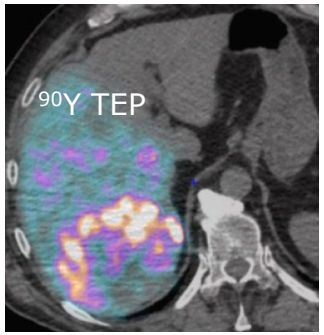
Elena Cutrì [a,b,c,*], Ewan Morel--Corlu [a], Yan Rolland [a], Hervé Saint-Jalmes [a], Pierre-Antoine Eliat [d,e], Etienne Garin [d,f], Johanne Bezy-Wendling [a]

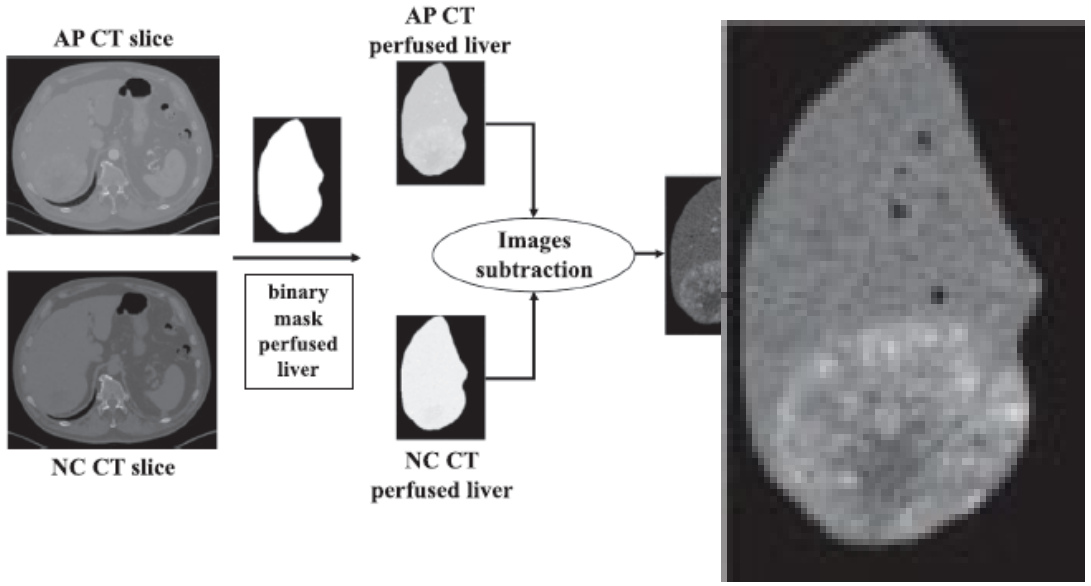
[a] Univ Rennes, CLCC Eugène Marquis, Inserm, LTSI - UMR 1099, F-35000, Rennes, France
[b] Université de technologie de Compiègne, CNRS, Biomechanics and Bioengineering, 60203 Compiègne Cedex, France
[c] Inria, Saclay Ile-de-France, Palaiseau, 91120, France
[d] INRAE, INSERM, Univ Rennes, Nutrition Metabolisms and Cancer, NuMeCan, St Gilles, Rennes, France
[e] CNRS, INSERM, Biosit UAR 3480 US_S 018, PRISM, Univ Rennes, Rennes, France
[f] Department of Nuclear Medicine, Centre Eugène Marquis, Rennes, France

Physica Medica 122 (2024) 103384

Perfusion T / Non T





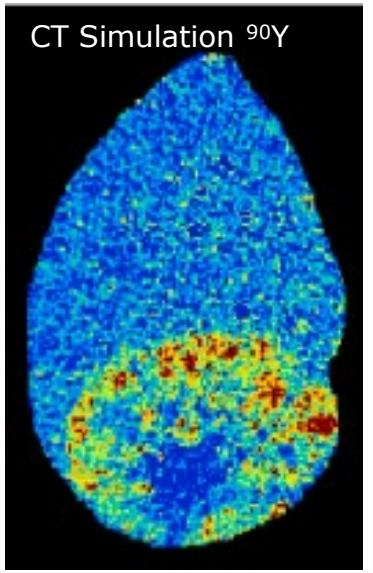


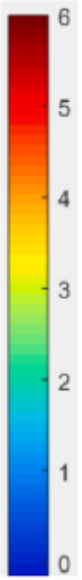
Loi de Russell

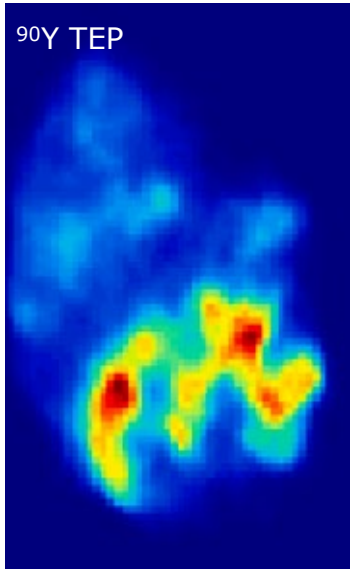
$$D = 0.989A\frac{1-\frac{r}{8}}{r^2}$$

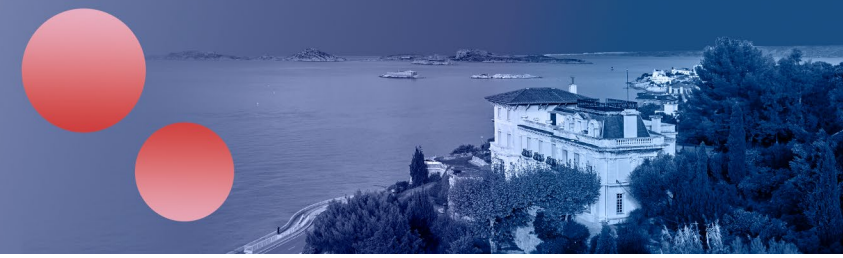
Dose dépend de l'Activité
de la distance à la source (r)

Russell Jr JL, Carden JL, Herron HL. Dosimetry calculations for yttrium-90 used in the treatment of liver cancer. Endocurietherapy/Hyperthermia. Oncology 1988;4: 171–86.







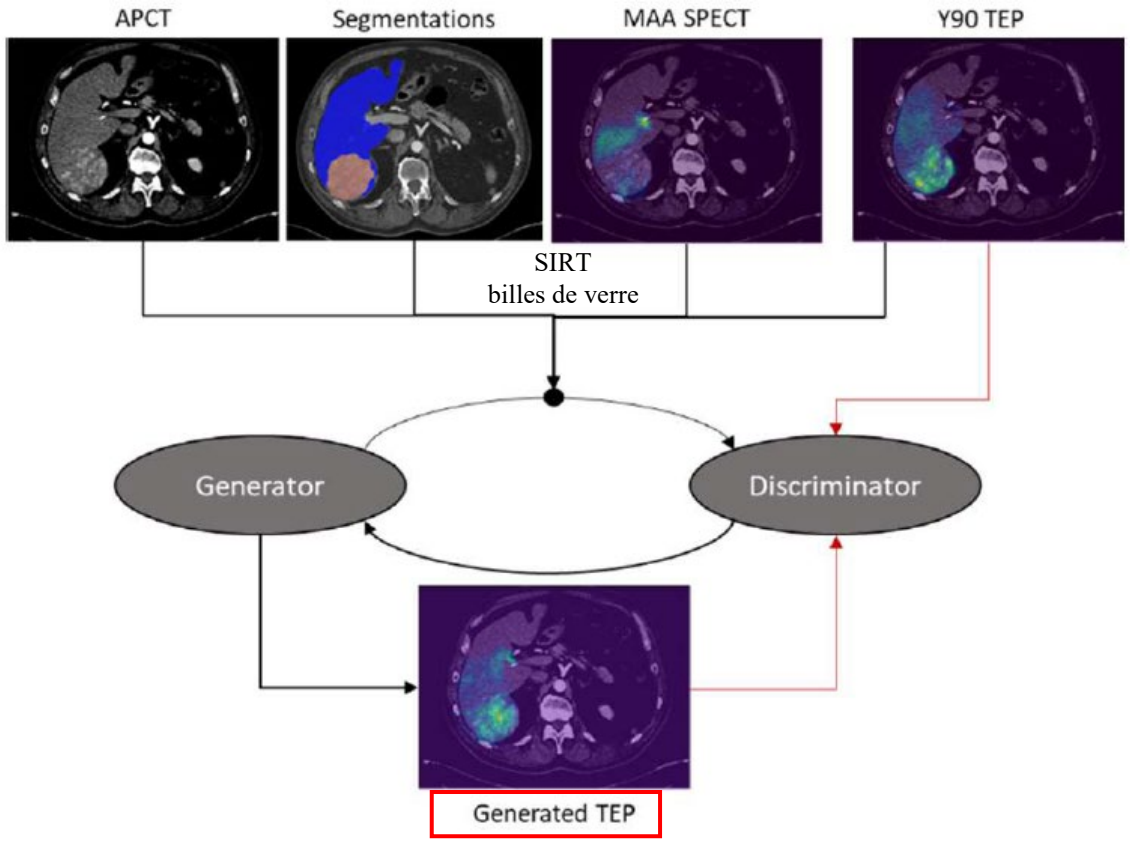


TOWARD A DEEP LEARNING PREDICTION OF THE BIODISTIRBUTION OF RADIOACTIVITY IN SELECTIVE INTERNAL RADIOTHERAPY

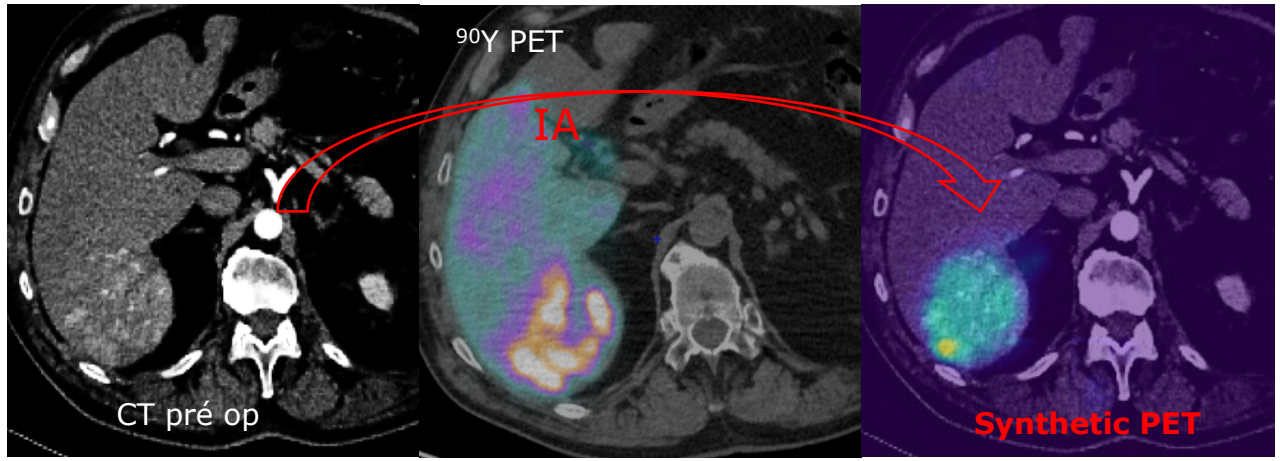
E. Morel Corlu [a,b], A. Petit [b], Y. Rolland [a], F. Lalys [b], P. Haigron [a], M. Garreau [a]

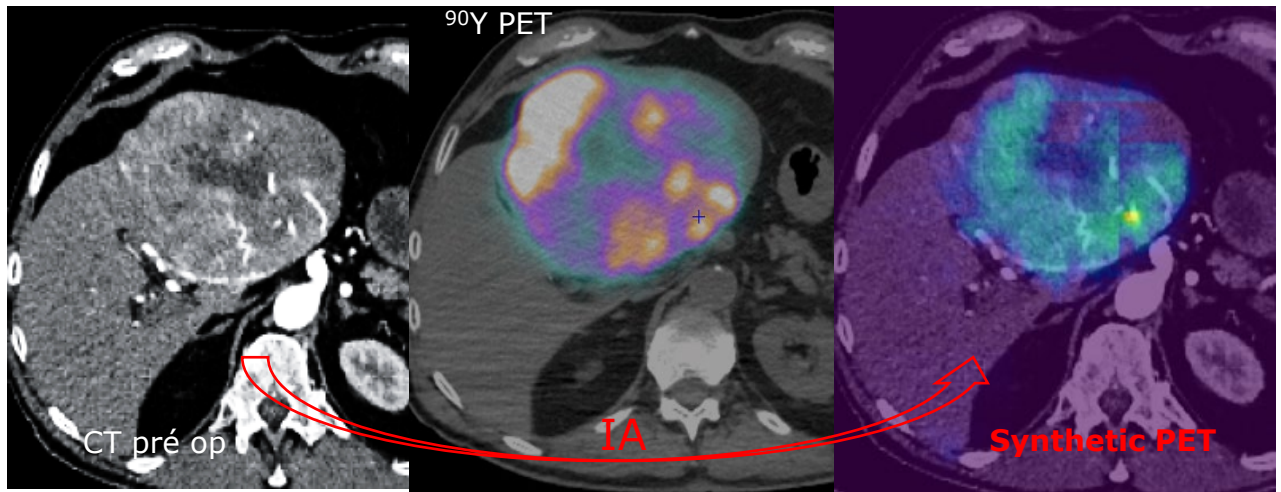
[a] Univ Rennes, CLCC Eugène Marquis, Inserm, LTSI – UMR_S 1099, F-35000 Rennes, France
[b] Therenva, F-35000 Rennes, France

2024 IEEE International Symposium on Biomedical Imaging (ISBI) | 979-8-3503-1333-8/24/$31.00

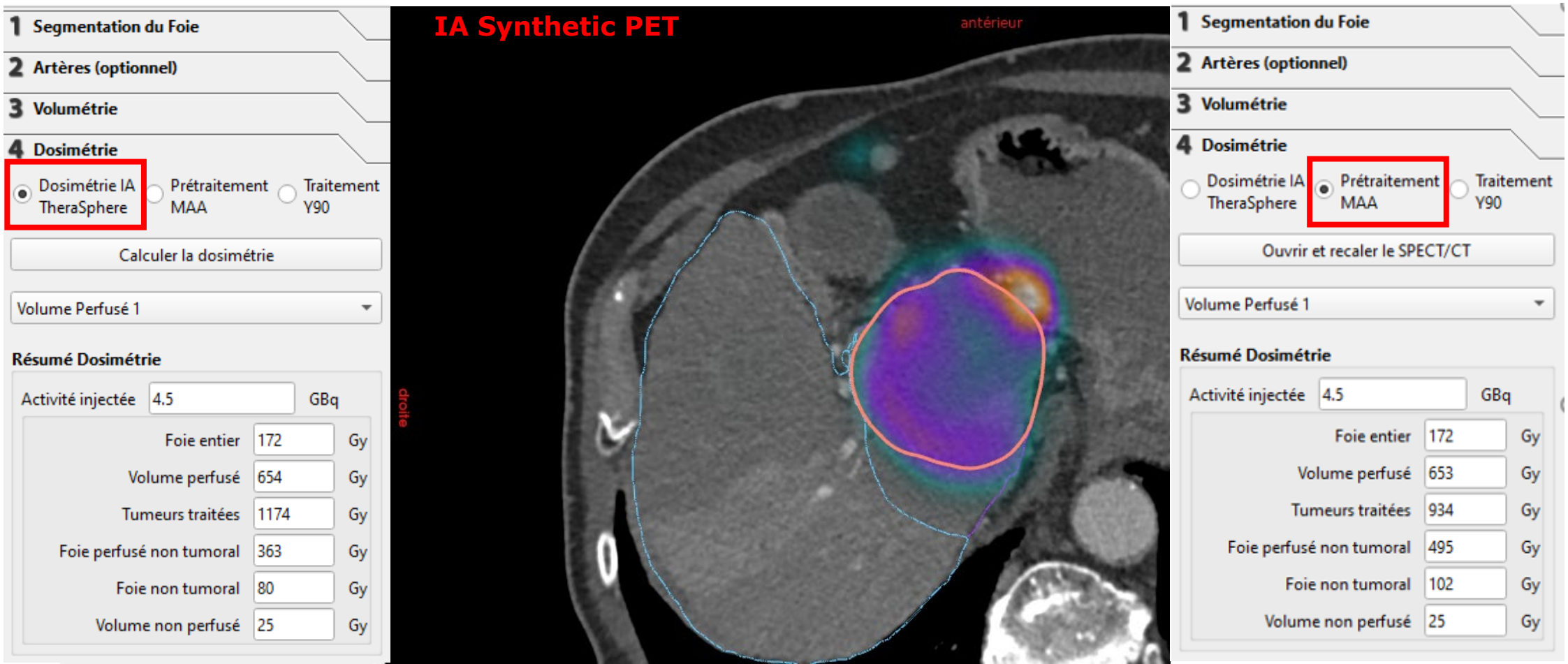


IA : Perfusion T / Non T





Vers une planification dosimétrique personnalisée pré opératoire



IA peut elle faire bouger les lignes ?

Clinique : OMS 0-1

Biologie : Child Pugh A 5-6

Imagerie: Dosimétrie Sécurité

Clinical Trial > J Vasc Interv Radiol. 2009 May;20(5):606-13. doi: 10.1016/j.jvir.2009.01.021.
Epub 2009 Apr 5.

Incorporating cone-beam CT into the treatment planning for yttrium-90 radioembolization

John D Louie [1], Nishita Kothary, William T Kuo, Gloria L Hwang, Lawrence V Hofmann, Michael L Goris, Andrei H Iagaru, Daniel Y Sze

Toxicité digestive

Segmentectomie

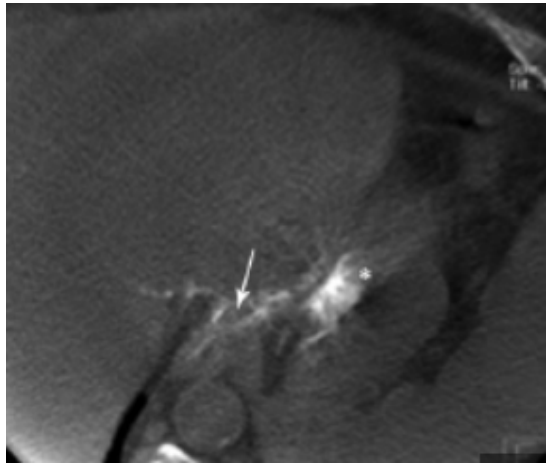
The need for prophylactic embolization is very low (unless distal branch from infusion site leads to the gastrointestinal tract) (e.g., left hepatic artery injection with accessory left gastric artery arising distally, left hepatic artery injection with esophageal branch arising distally)

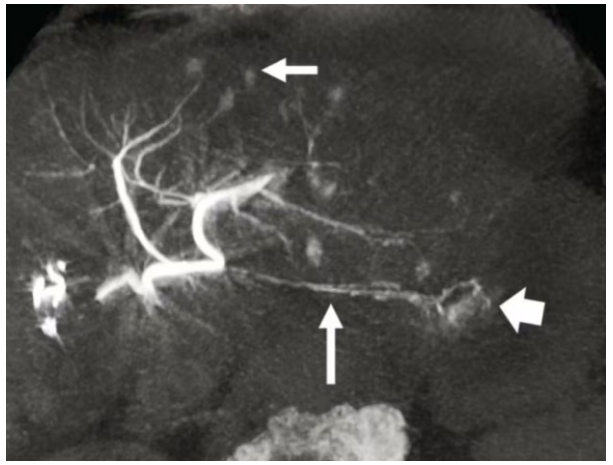
Lobectomie

CBCT +++

Lobe G

Vigilance car rare





Toxicité pulmonaire

Peut-être négligée s'il s'agit d'un traitement segmentaire

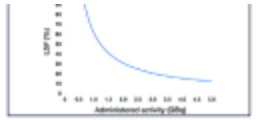
. Elevated lung shunt fraction limiting the intended dose is rarely an issue because of minimal tumor load (low shunting) and limited prescribed activities (small, perfused volumes) [16]. In the case of small tumors (i.e., those less than 5 cm) and in the absence of MVI/PVT, the risk of high lung shunt is low. In such cases, it may be possible to eliminate the ^{99m}Tc-MAA mapping step from the treatment planning process [16, 64]; however, more studies evaluating this concept are needed. In such cases, dosimetry is still required for dose determination. No formal recommendation on eliminating the ^{99m}Tc-MAA can be made at this time

Doit être pris en considération en cas de traitement lobaire.

) Elevated lung dose may be an issue if the lung shunt fraction is high in the context of large perfused volume

Type de tumeur: CHC >> CCK

Streamlining Radioembolization without Lung Shunt Estimation versus Regular Radioembolization in Patients with Hepatocellular Carcinoma within the Milan Criteria



Hyo-Cheol Kim, MD, Minseok Suh, MD, Jin Chul Paeng, MD, Jong Hyuk Lee, MD, Myungsu Lee, MD, Jin Wook Chung, MD, and Jin Woo Choi, MD

J Vasc Interv Radiol 2025; 36:78–87

STUDY DETAILS

Study type: Retrospective, observational, cohort study

Level of evidence: 3 (SIR-C)

RESEARCH HIGHLIGHTS

- This study retrospectively compared the effectiveness and safety following regular transarterial radioembolization (R-TARE) and streamlining transarterial radioembolization (S-TARE) for hepatocellular carcinoma within the Milan criteria.
- The complete response rates were not significantly different after R-TARE (92.1%, 35/38) and S-TARE (90.3%, 56/62) (P = 1.000).
- Time to progression by the modified Response Evaluation Criteria in Solid Tumours (P = .763) and that by localized modified Response Evaluation Criteria in Solid Tumours (P = .257) were not significantly different after R-TARE and S-TARE using glass microspheres.
- Serious adverse events rates were not significantly different after R-TARE (7.9%) and S-TARE (3.2%) (P = .365), and no radiation pneumonitis was reported.

Radiation Major Hepatectomy Using Ablative Dose Yttrium-90 Radioembolization in Patients with Hepatocellular Carcinoma 5 cm or Larger

Jin Woo Choi, MD, Minseok Suh, Jin Chul Paeng, Jae Hyun Kim, MD, and Hyo-Cheol Kim, MD

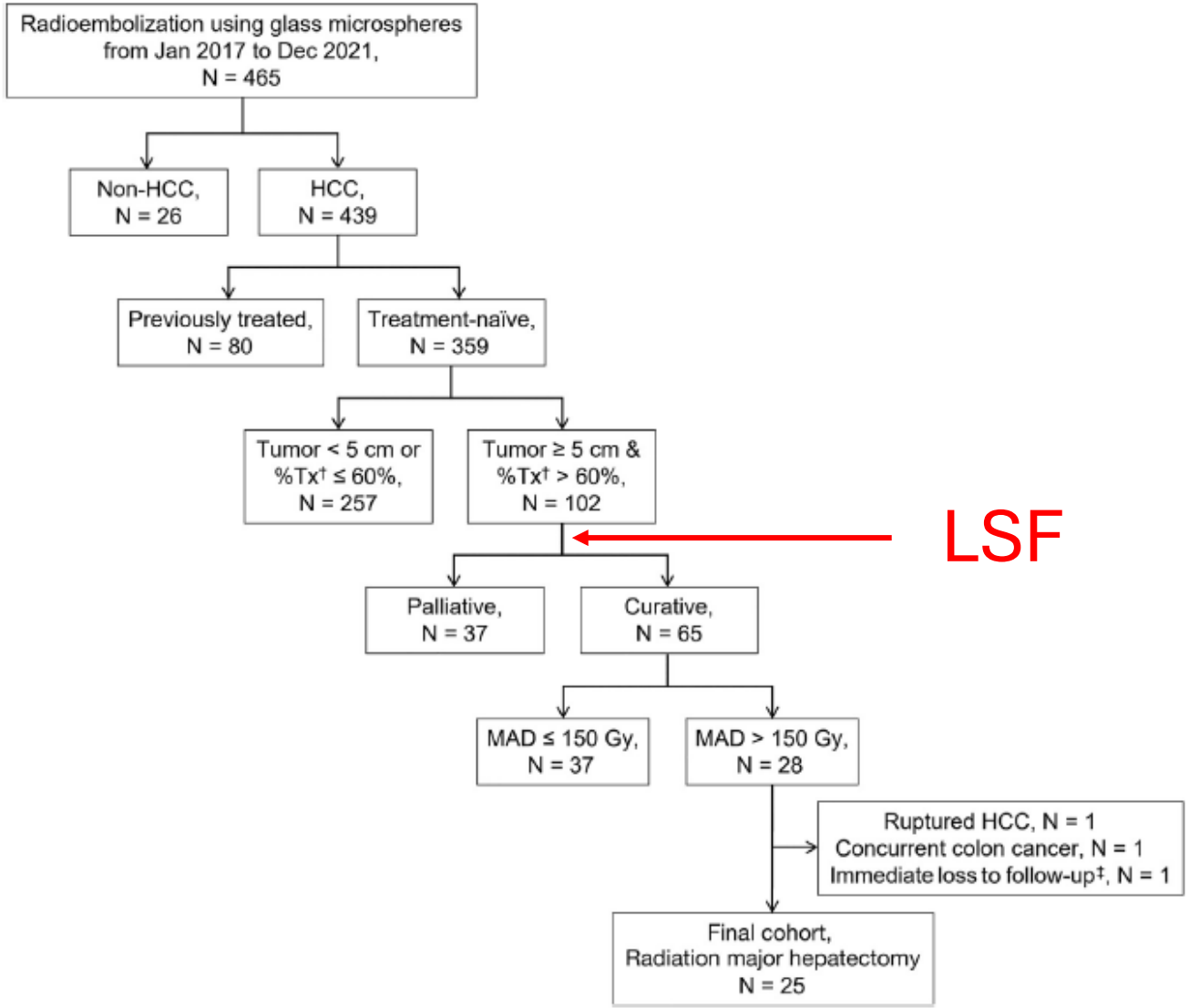
J Vasc Interv Radiol 2024; 35:203–212

Lobectomie radique

Lésions >5 cm

Adaptation de dose du fait d'un shunt

- Dosimétrie standard (<150 Gy)
- Dosimétrie personnalisée



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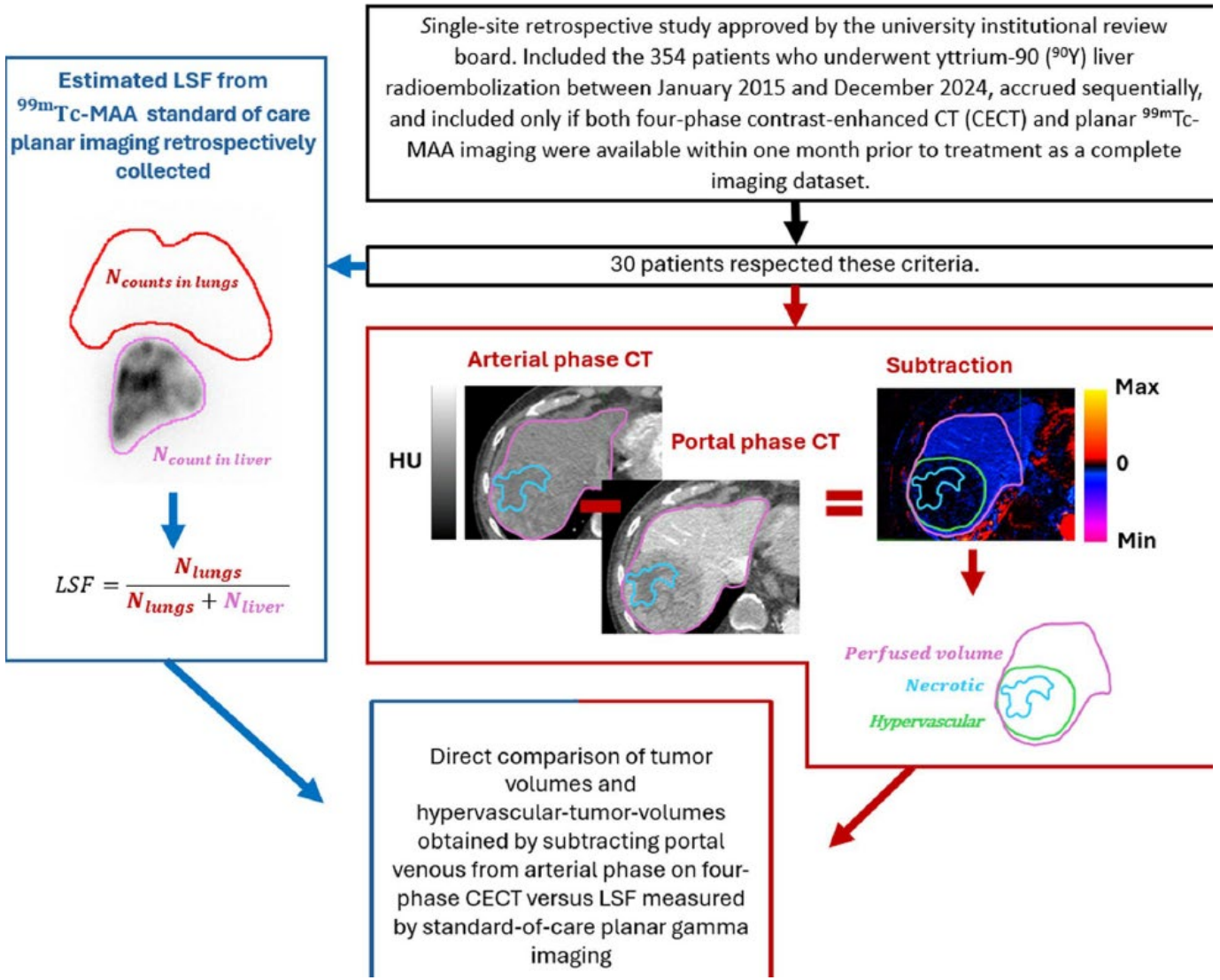
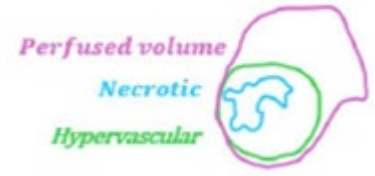
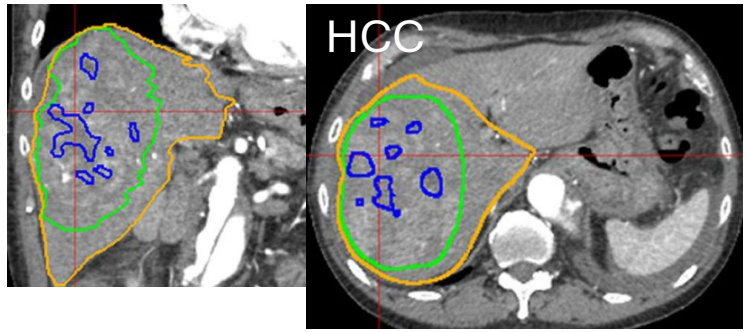
Contrast-enhanced CT as a non-invasive alternative for lung shunt fraction estimation in hepatic transarterial radioembolization

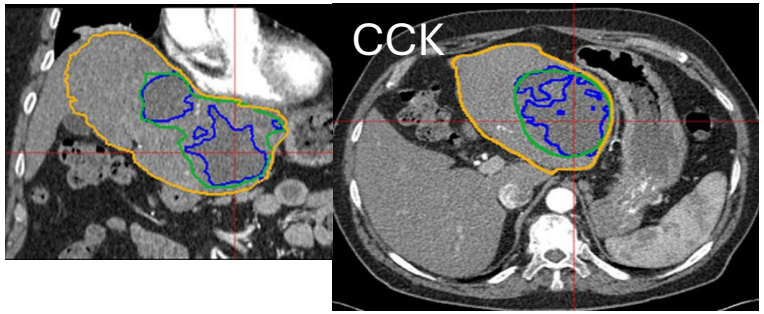
Brahim Mehadji, PhD, DQPRM, DABSNM*[,1], Talia Marx[2], Adrianna Carter, MD[1], Roger Eric Goldman, MD, PhD[1], Catherine Tram Vu, MD[1], Emilie Roncali, PhD[1,2]

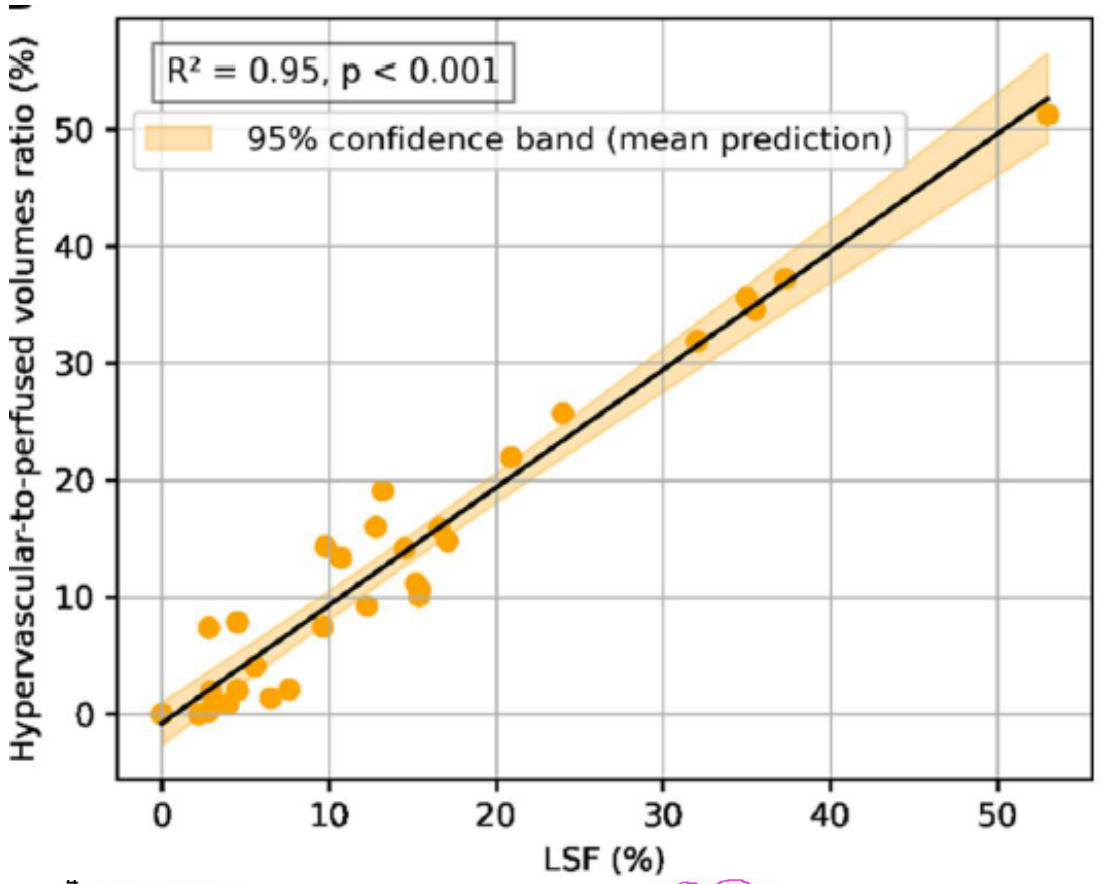
Radiology Advances, 2025, **2**(**4**), umaf025

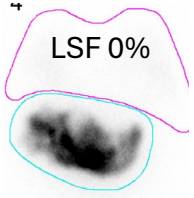


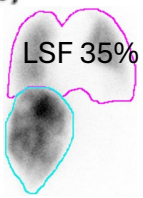

Perfused volume
Necrotic
Hypervascular


HCC


CCK


R² = 0.95, p < 0.001
95% confidence band (mean prediction)
Hypervascular-to-perfused volumes ratio (%)
LSF (%)
0
10
20
30
40
50


LSF 0%


LSF 35%

Vers une planification dosimétrique pré opératoire

Proposition en RCP

Clinique : OMS 0-1

Biologie : Child Pugh A 5-6

Stratégie dosimétrique

Imagerie :

- Volume hépatique
- Volume perfusé
- Volume tumeur

→ Dosimétrie standard
+/- IA

Perfusion T / Non T → Dosimétrie personnalisée
IA +++

Toxicité pulmonaire
Toxicité digestive

→ Prédiction pré opératoire
CBCT per opératoire

Radiologie et communication : transformer une offre de prestation en offre de service

J. Gregory [a,b]
G. Boulouis [c]
L. Tselikas [d,e]

Journal d'imagerie diagnostique et interventionnelle 2025;8:282–287