

II Congrés d'Ecografia Clínica en Atenció Primària (EcoAP)

"Enlaira't amb l'Ecografia"

2 i 3 de juliol de 2026
Campus Universitari Igualada - UdL
Ciències de la Salut
Igualada

ECO-OBESITAT, UNA NOVA EINA PER FENOTIPAR LA COMPOSICIÓ CORPORAL I EL RISC CARDIOVASCULAR

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Prof. Titular Nutrició. Estudis de Ciències de la Salut de la UOC.

Gabriel Cuatrecasas. Metge de Medicina Familiar i Comunitària.
EAP Sarrià-Vallvidrera, Les Planes. Coordinador del grup obesitat de CAMFiC.



COMPOSICIÓ CORPORAL: DIAGNÒSTIC D'OBESITAT

Home
>25%
Dona
>32%



Clasificación IMC (SEEDO 2000)

BAJO PESO	< 18.5
NORMOPESO	18,5-24,9
SOBREPESO I	25-26,9
SOBREPESO II	27-29,9
OBESIDAD I	30-34,9
OBESIDAD II	35-39,9
OBESIDAD III (mórbida)	40-49,9
OBESIDAD IV (extrema)	> 50



$$\text{IMC} = \text{Kg} / \text{m}^2$$



FRAMEWORK FOR OBESITY DIAGNOSIS, STAGING AND MANAGEMENT

REFRAMING OBESITY AS A CHRONIC DISEASE

The European Association for the Study of Obesity (EASO) has introduced a framework to align obesity diagnosis and treatment with chronic disease standards



WHY A NEW FRAMEWORK?

Obesity is a chronic, relapsing disease with multifactorial causes, yet traditional BMI-based diagnostic approaches don't fully capture its complexity



"Obesity diagnosis should go beyond BMI alone"

THE ADIPOSITY-BASED CHRONIC DISEASE (ABCD) MODEL



Anthropometric Component:

Body fat distribution (waist-to-height ratio, WtHR) is a stronger indicator of cardiometabolic disease



Clinical Component:

Evaluates health effects of dysfunctional or excess adipose tissue



Inclusion of Lower BMI Group:

People with BMI 25–30 kg/m² and increased abdominal fat are already at increased risk

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COMPOSICIÓ CORPORAL: DISTRIBUCIÓ DEL GREIX



Distribució greix abd



OBESITY
Reviews

WORLD
OBESITY

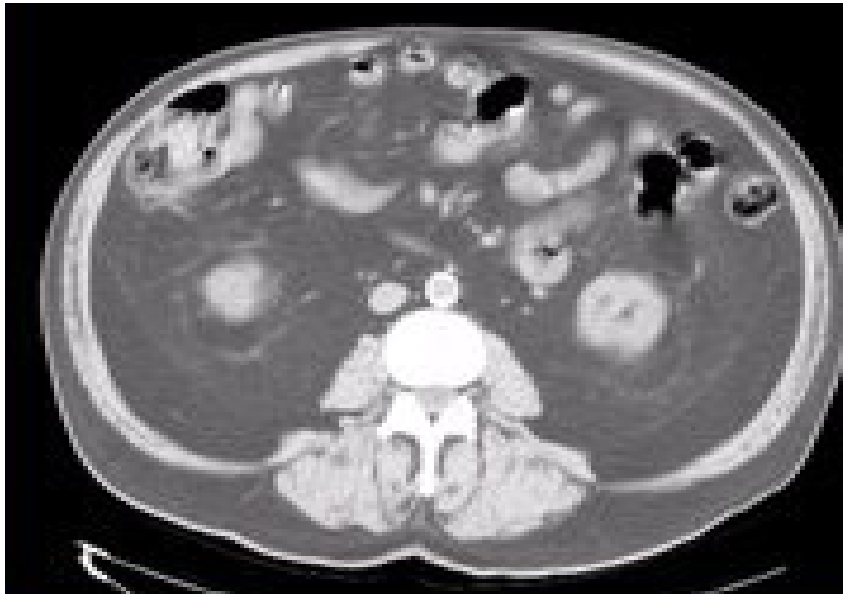
Waist-to-height ratio is a better screening tool than waist circumference and BMI for adult cardiometabolic risk factors: systematic review and meta-analysis

M. Ashwell, P. Gunn, S. Gibson

ICT > 0,5



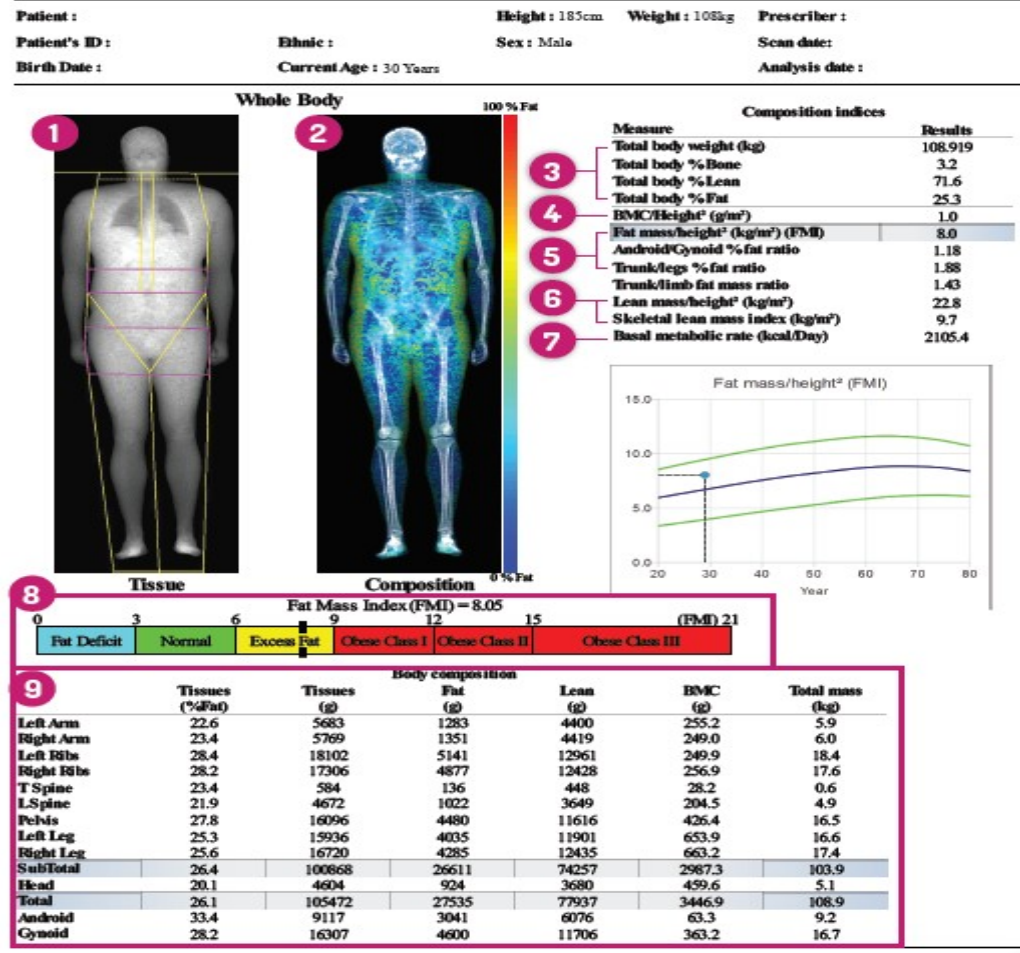
TAC



Greix intraabdominal



Greix subcutani

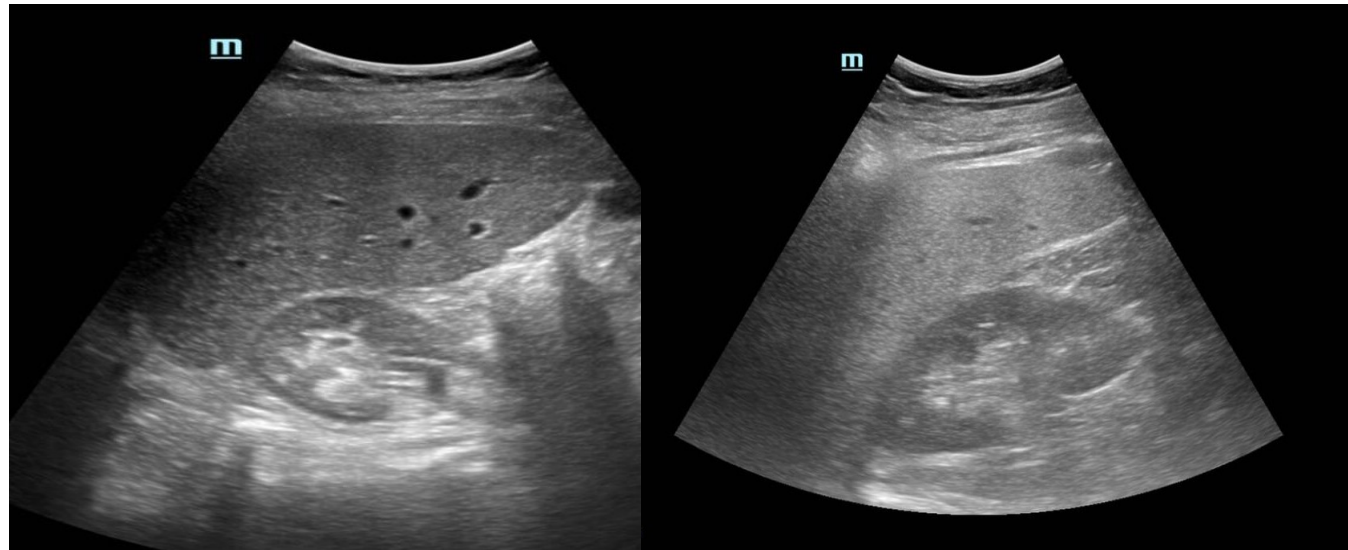


DEXA-SCAN (DENSITOMETRIA)





COMPOSICIÓ CORPORAL PER ECOGRAFIA



- Menor cost
- No irradia
- Facilitat d'ús (nutricionista/infermeria)
- Estratificació per capes del greix abdominal



Caracterització diferents capes de greix abdominal

Subcutani superficial

Subcutani profund

Preperitoneal

Omental

Perirenal

Received: 28 May 2020

Revised: 27 August 2020

Accepted: 1 September 2020

DOI: 10.1002/osp4.453

ORIGINAL ARTICLE

Obesity Science and Practice
Open Access

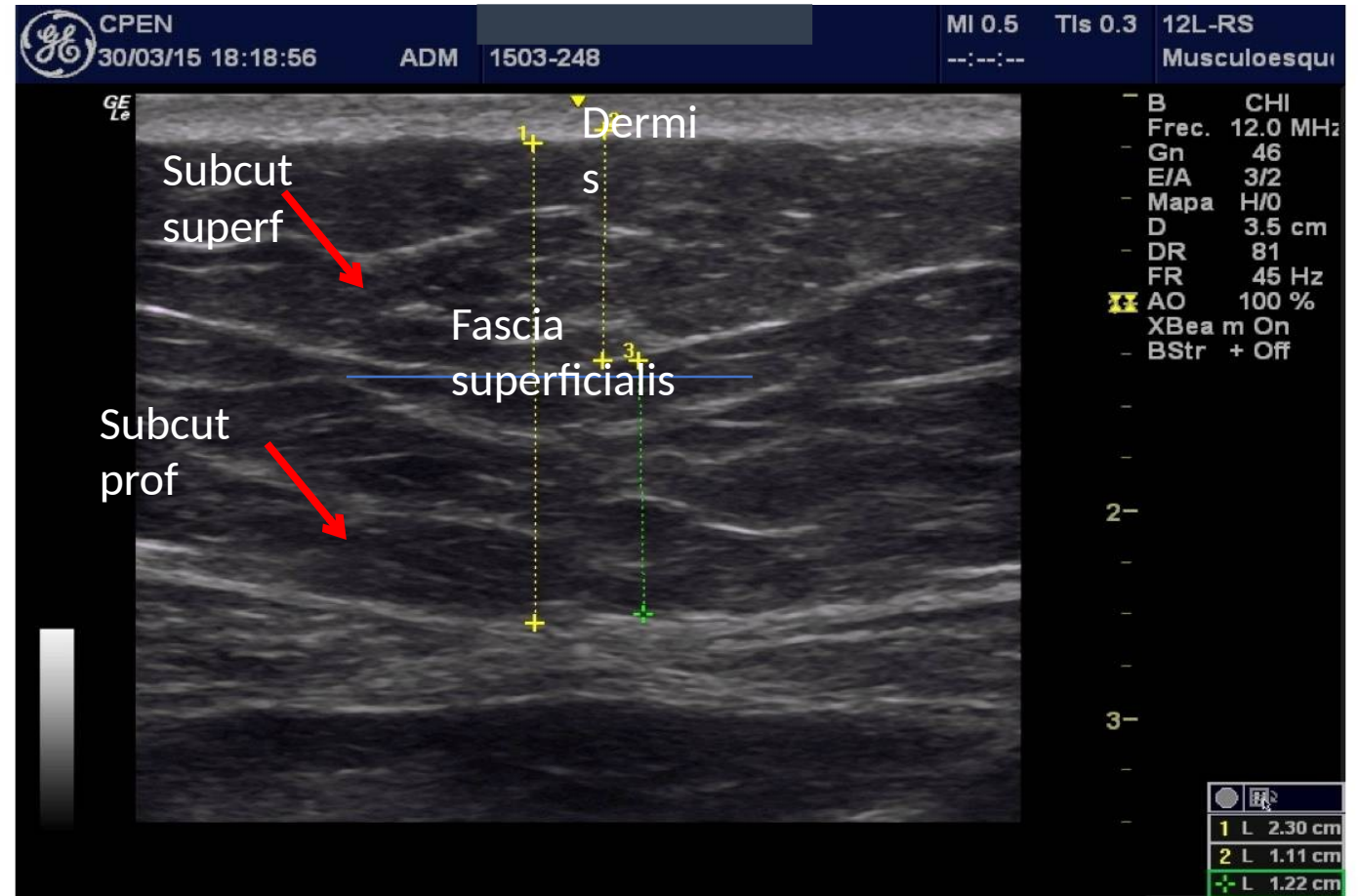
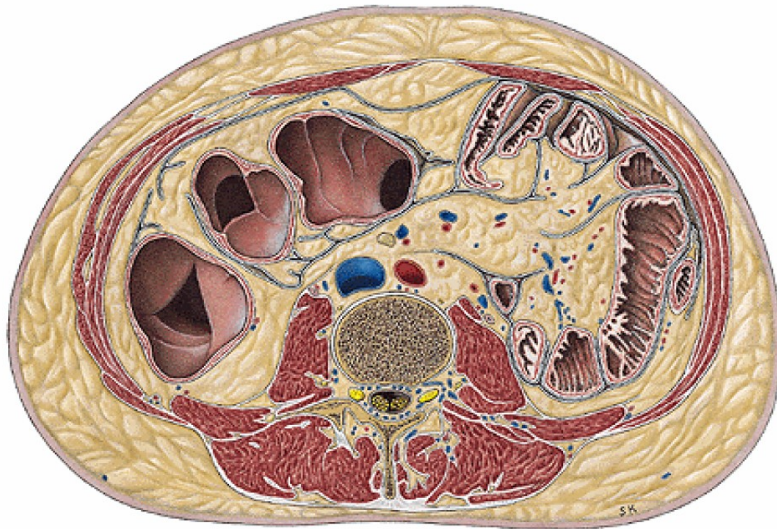
WILEY

Ultrasound measures of abdominal fat layers correlate with metabolic syndrome features in patients with obesity

Guillem Cuatrecasas^{1,2} | Francisco de Cabo³ | Maria Josep Coves¹ |
Ioana Patrascioiu¹ | Gerardo Aguilar¹ | Sonia March¹ | Mariona Balfegó^{1,2} |
Clara Bretxa^{1,2} | Marta Calbo¹ | Gabriel Cuatrecasas¹ | Gloria Aranda¹ |
Aida Orois¹ | Isabel Bové³ | Elena Munoz-Marron^{2,4} | Pilar García-Lorda²



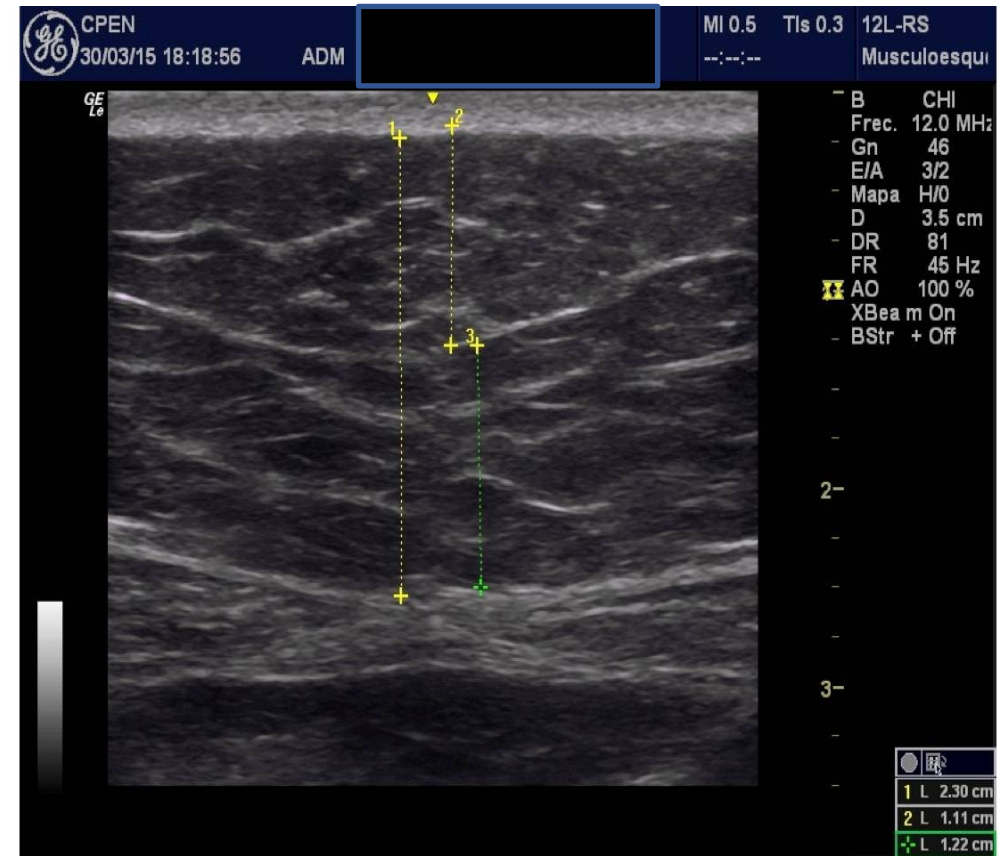
Estratificació del teixit adipós subcutani





Teixit celular subcutani

- Superficial:
 - Barrera defensiva
 - Protector (adiponectina)
- Profund
 - Citoquines Pro-inflamatories
 - Fibrosi adipocitària
 - Preadipocits
 - TA brú
- Paniculopatia i Lipedema





Alteracions del TAS superficial: paniculopaties





Original Article

Phlebology

Ultrasound criteria for lipedema diagnosis

Alexandre Campos Moraes Amato^{1,2} ,
Dumitriu Zunino Saucedo², Keller da Silva Santos² and

Phlebology
0(0) 1–8
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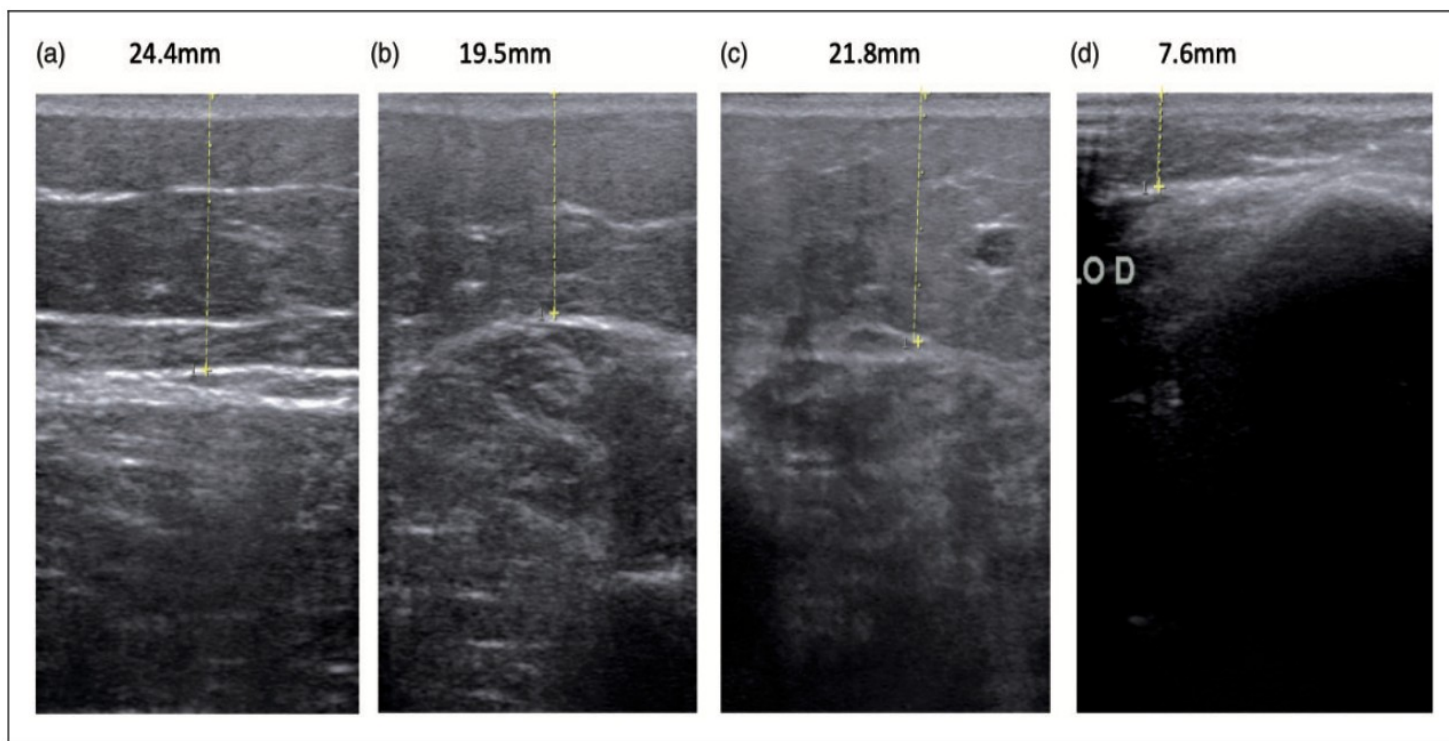
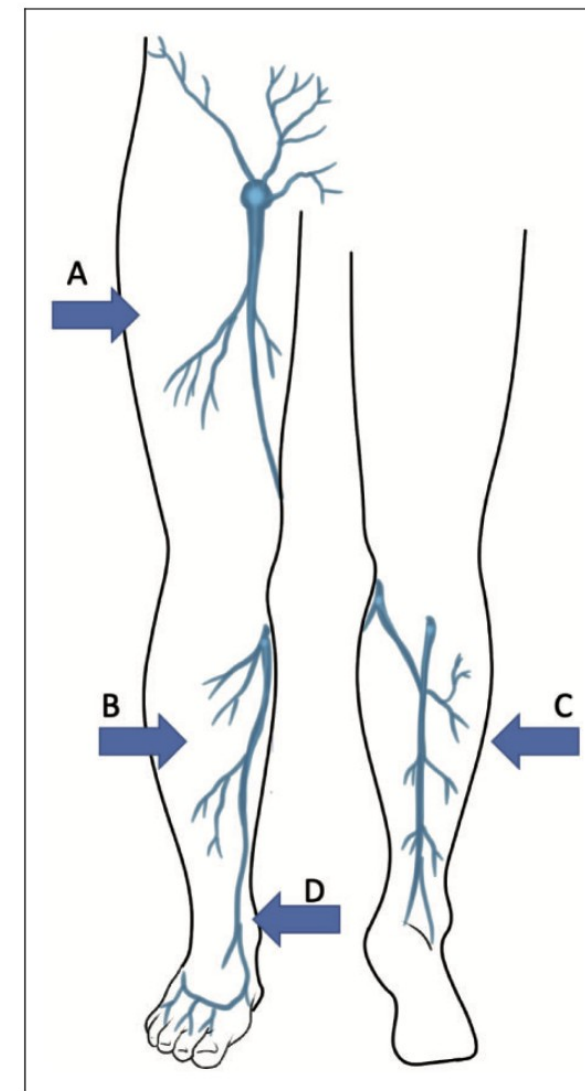
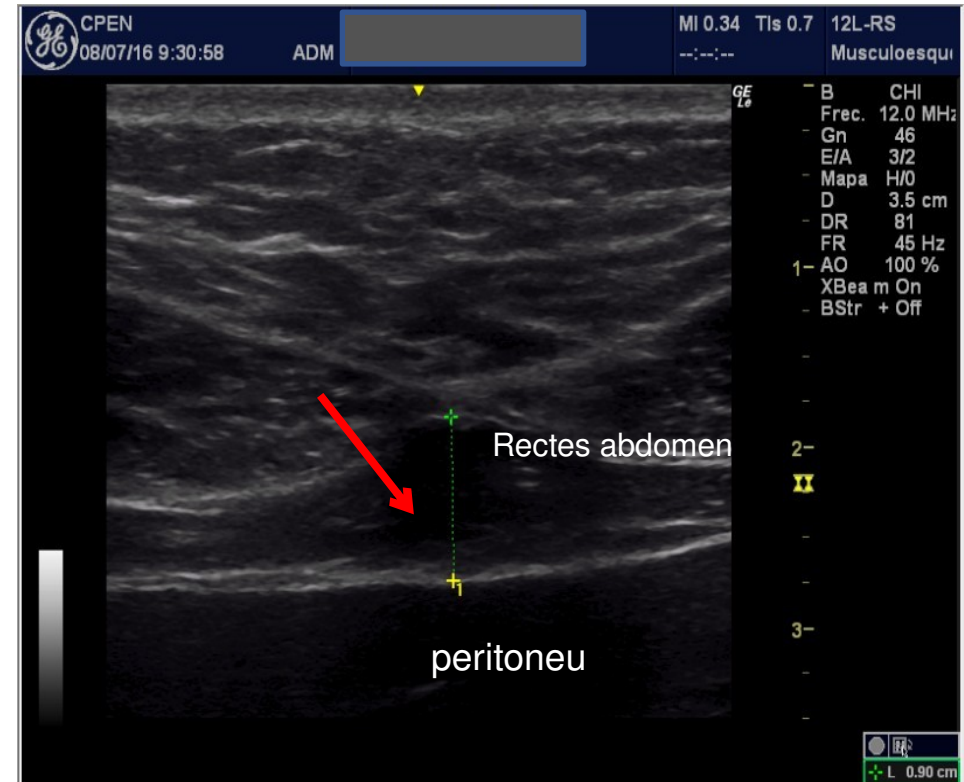
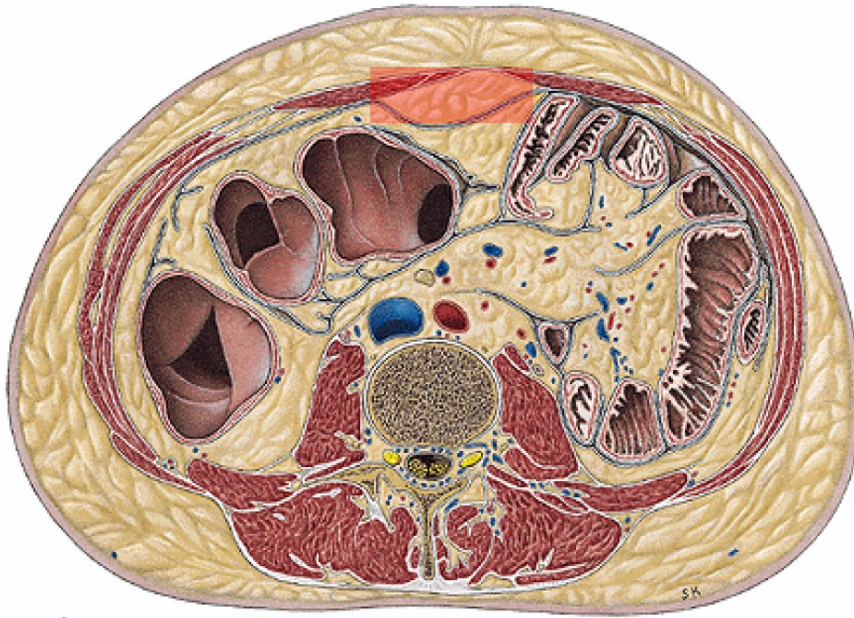



Figure 2. Ultrasound measurements with digital skin and subcutaneous ruler in a patient with clinically diagnosed lipedema. (a) Right thigh; (b) right lateral leg; (c) right pretibial; (d) right malleolus.





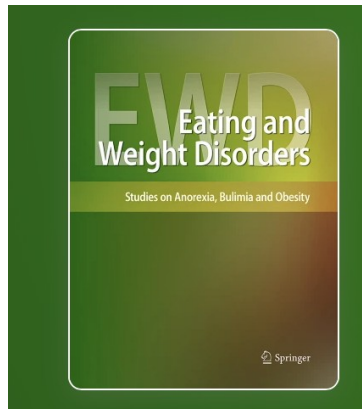
Greix pre-peritoneal



xifoide
s

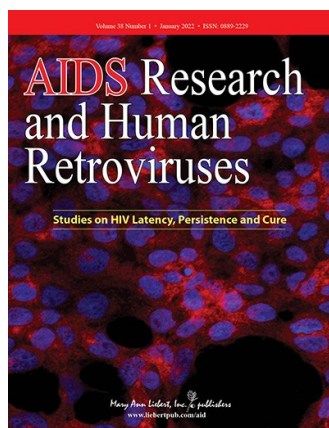
L4=DEXA

pelvi



Ultrasound, anthropometry and bioimpedance: a comparison in predicting fat deposition in non-alcoholic fatty liver disease

Nicola Vitturi , Marta Soattin, Fabio De Stefano, Daniela Vianello, Alberto Zambon, Mario Plebani & Luca Busetto

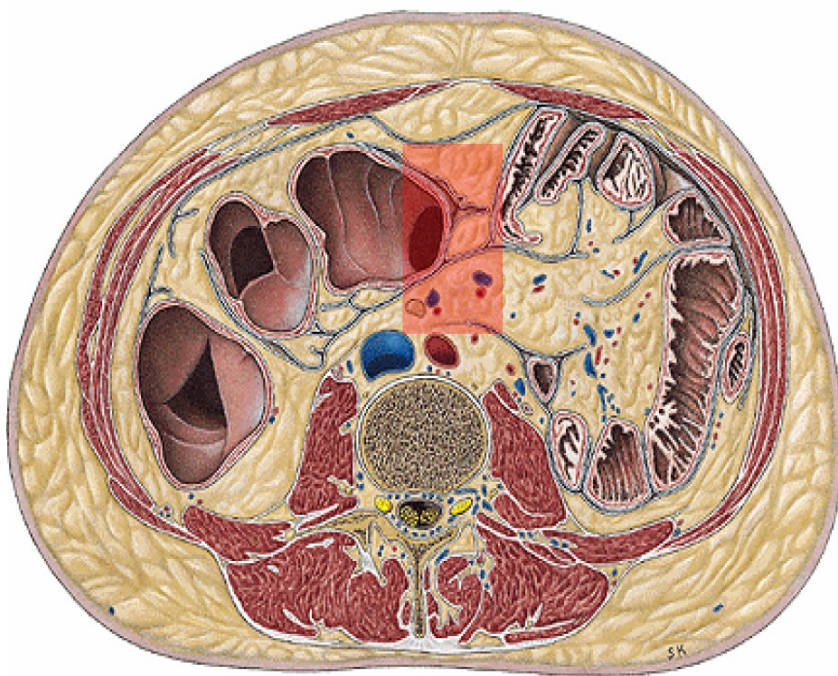


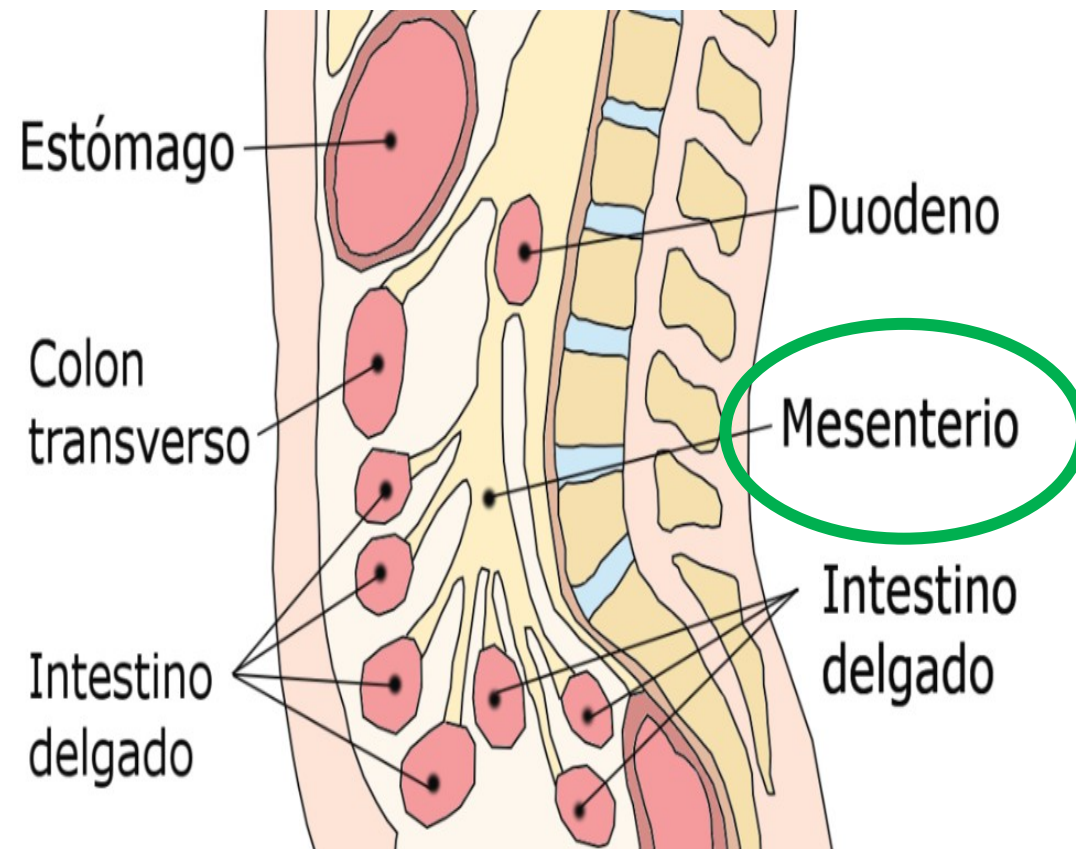
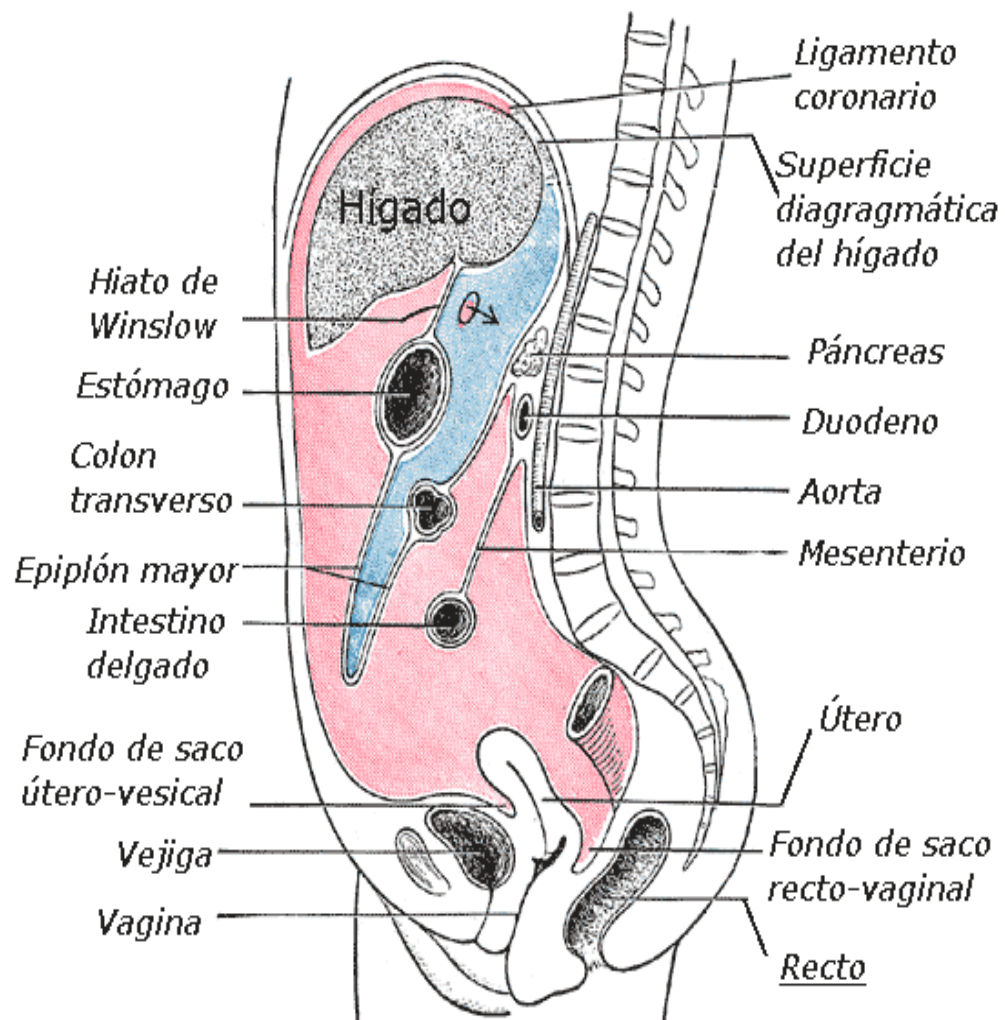
Ultrasound-Based Assessment of Preperitoneal Fat as a Surrogate Marker of Cardiovascular Risk: Comparative Study Between People Living with HIV and Controls

Anna Bonjoch^{1,*}, Francisco de Cabo^{2,3,*}, Jordi Puig¹, Núria Perez-Alvarez^{1,4}, Patricia Echeverria¹, Bonaventura Clotet^{1,5,6}, Guillem Cuatrecasas^{3,7} and Eugènia Negredo^{1,5}



Intraperitoneal: greix omental







CORRELACIONS LIPIDS I GLUCOSA/ GREIX OMENTAL

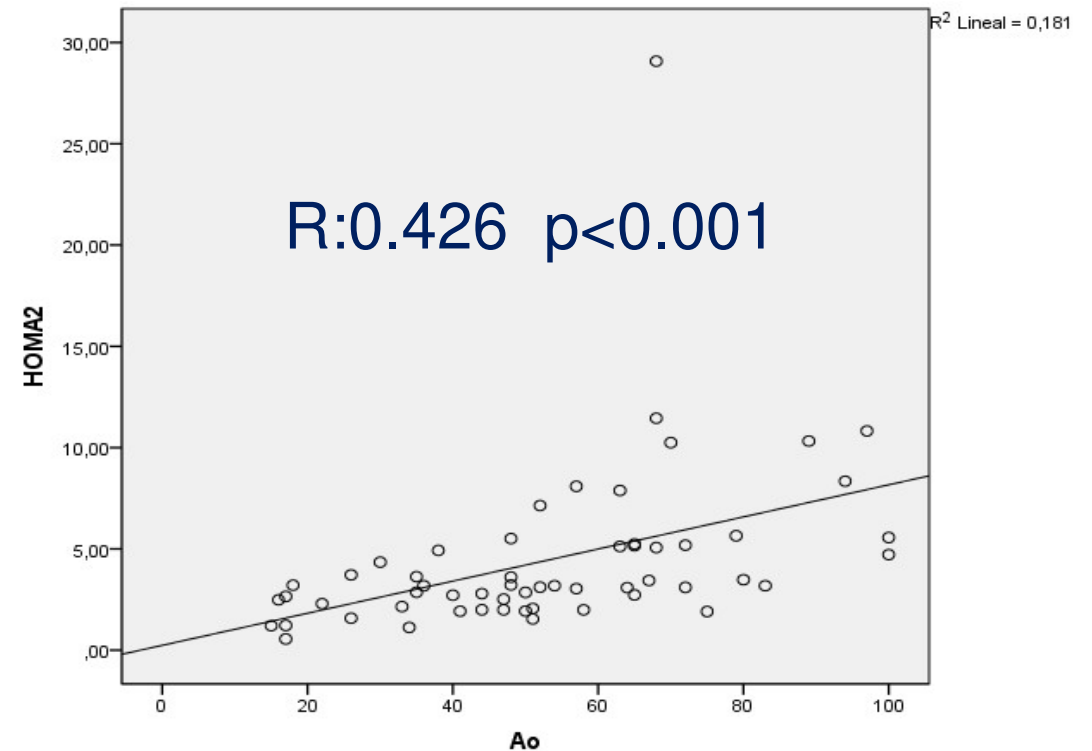
Received: 28 May 2020 | Revised: 27 August 2020 | Accepted: 1 September 2020
DOI: 10.1002/osp4.453

ORIGINAL ARTICLE

Obesity Science and Practice WILEY

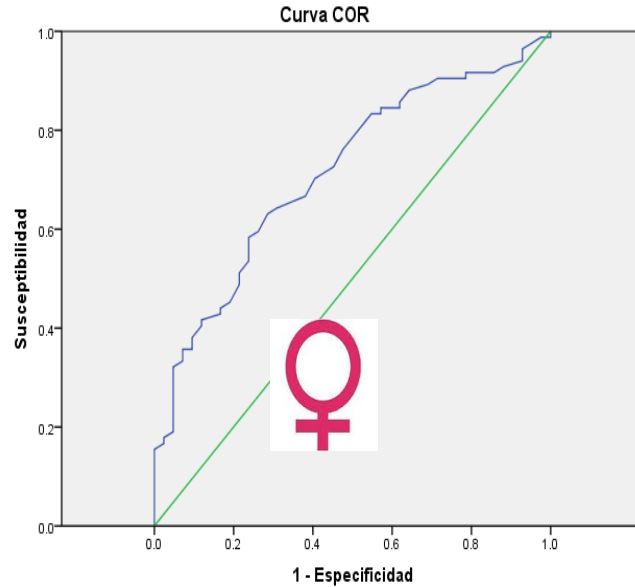
Ultrasound measures of abdominal fat layers correlate with metabolic syndrome features in patients with obesity

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Clara Bretxa^{1,2} | Marta Calbo¹ | Gabriel Cuatrecasas¹ | Gloria Aranda¹ |
Aida Orois¹ | Isabel Bové³ | Elena Munoz-Marron^{2,4} | Pilar García-Lorda²





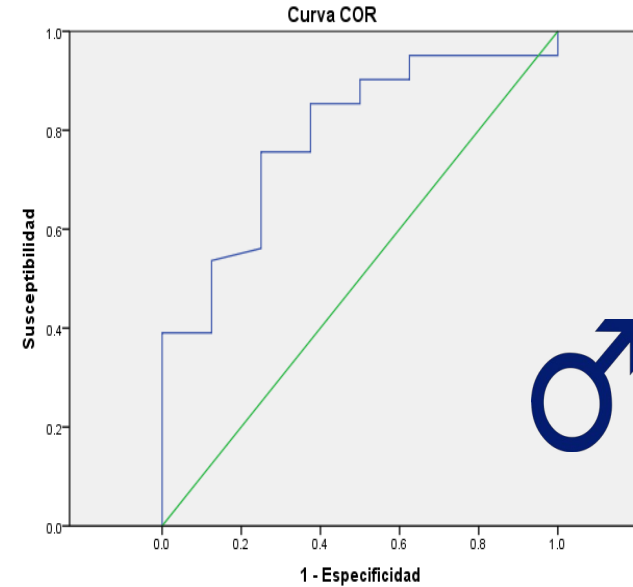
GREIX OMENTAL I RISC DE SM



Los segmentos diagonales son producidos por los empates.

AUC: 0,715, $p < 0.001$

37mm: S: 73% y E: 55%



Los segmentos diagonales son producidos por los empates.

AUC: 0,788, $p < 0.011$

54 mm: S: 85% y E: 63%

Cuatrecasas G, de Cabo F, Coves MJ, Patrascioiu I, Aguilar G, March S, Balfegó M, Bretxa C, Calbo M, Cuatrecasas G, Aranda G, Orois A, Bové I, Munoz-Marron E, García-Lorda P. Ultrasound measures of abdominal fat layers correlate with metabolic syndrome features in patients with obesity. *Obes Sci Pract.* 2020 Oct 8;6(6):660-667

Variació del greix omental després de 6 mesos amb GLP1

Obesity Facts

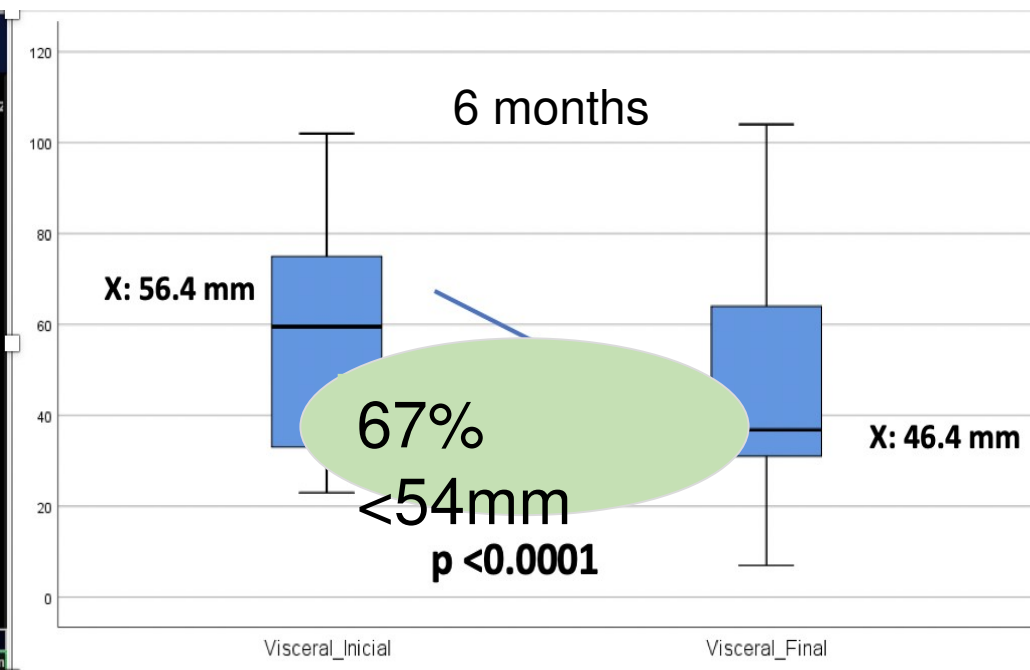
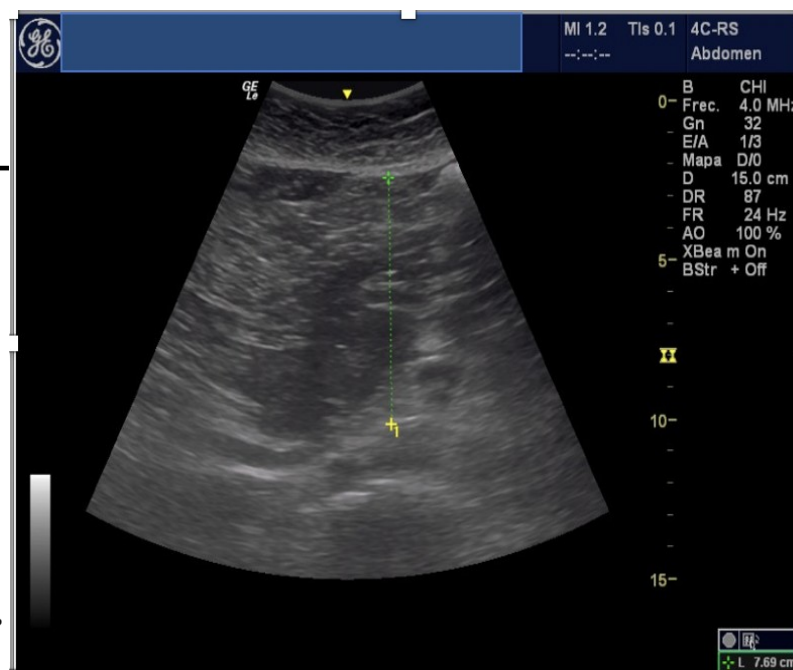
Research Article

Obes Facts 2024;17:347–354
DOI: 10.1159/000538996

Effect of Liraglutide in Different Abdominal Fat Layers Measured by Ultrasound: The Importance of Perirenal Fat Reduction

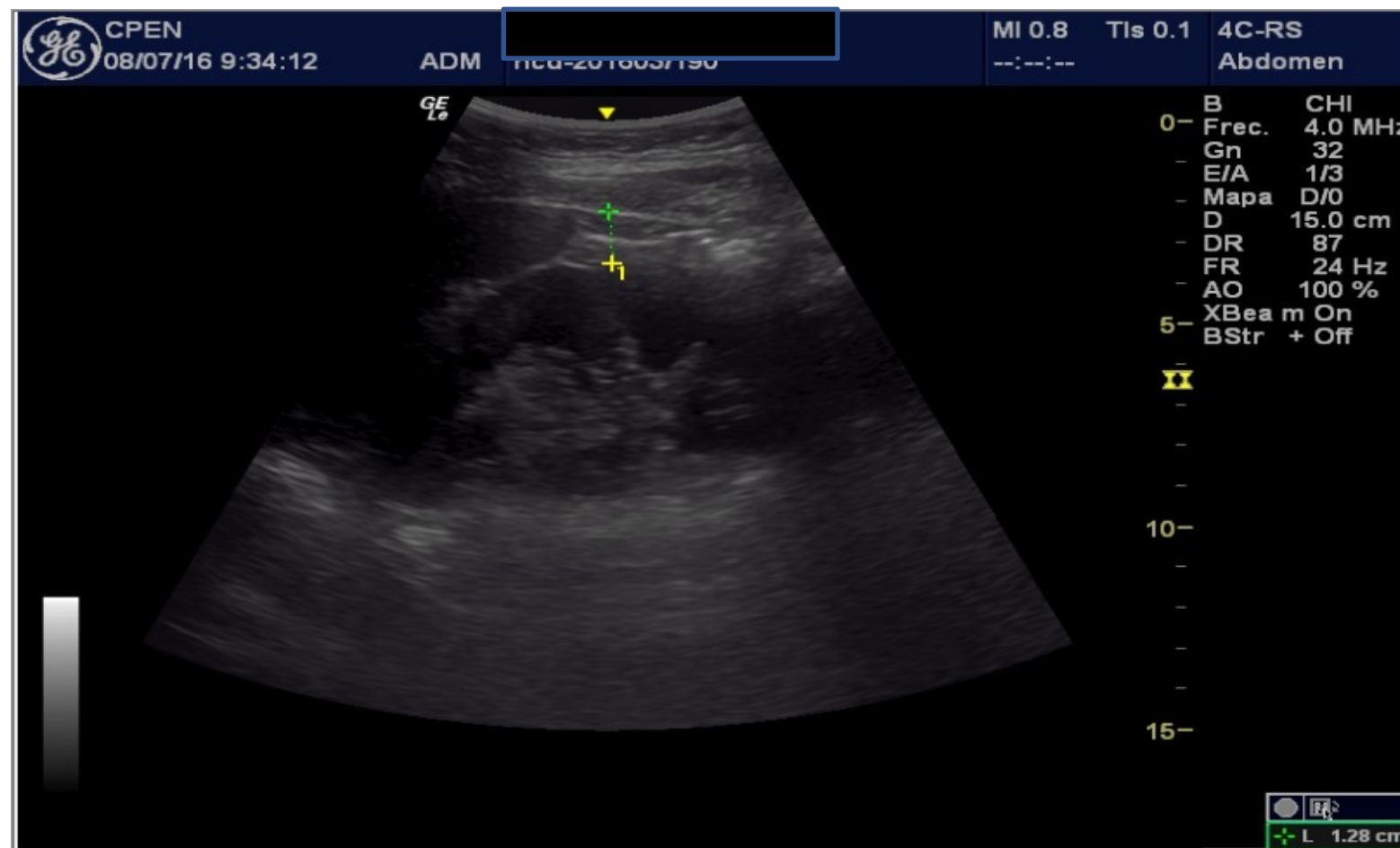
Guillem Cuatrecasas^{a, b, c} Marta Calbo^{b, c} Olga Rossell^{b, c} Laia Dachs^{b, c}
Gerardo Aguilar-Soler^{b, c} Maria-José Coves^{b, c} Ioana Patrascioiu^{b, c}
Camila Eugenia Benito^{b, c} Sonia March^{b, c} Mariona Balfegó^{a, b, c}
Gabriel Cuatrecasas^{b, c, d} Silvana Di Gregorio^{b, c} Inaki Marina^{b, e}
Pilar Garcia-Lorda^f Elena Munoz-Marron^{a, f} Francisco De Cabo^g

^aFacultat Ciències Salut, Open University Catalonia (UOC), Barcelona, Spain; ^bObesity Unit, Clínica Sagrada Família, Barcelona, Spain; ^cCP endocrinologia SLP, Barcelona, Spain; ^dEAP Sarrià, Barcelona, Spain; ^eHospital Viladecans, Viladecans, Spain; ^fCognitive NeuroLab, Barcelona, Spain; ^gUltrasound Department, Institut Guirado for Radiology, Barcelona, Spain



Greix perirrenal (PRAT)

- Subcutani superficial
- Subcutani profund
- Preperitoneal
- Omental
- Perirrenal

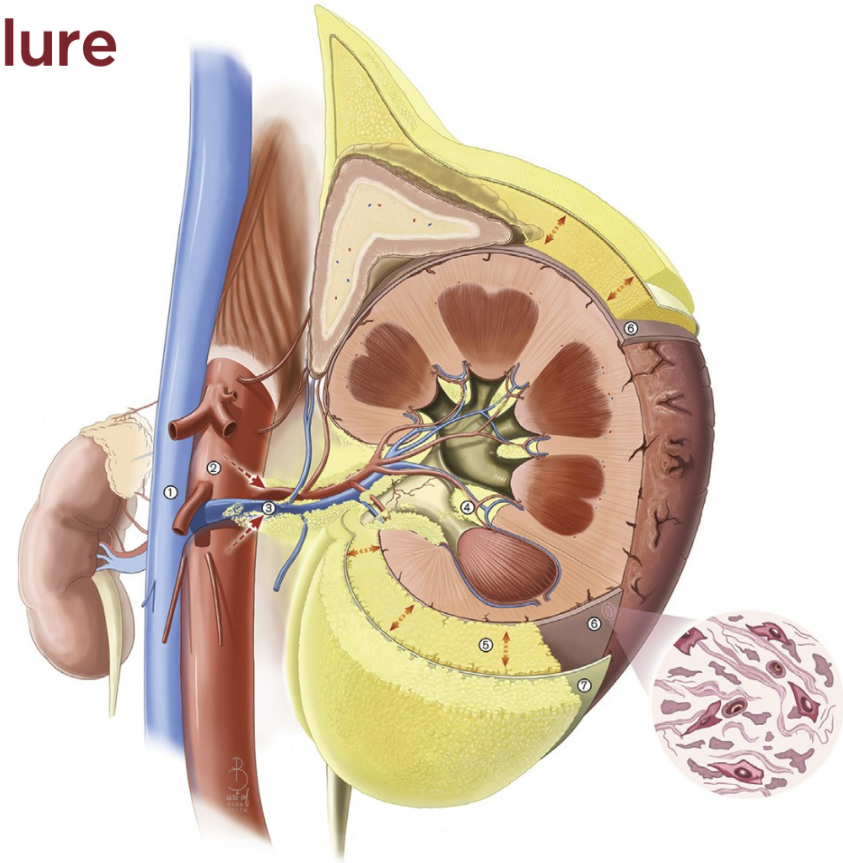
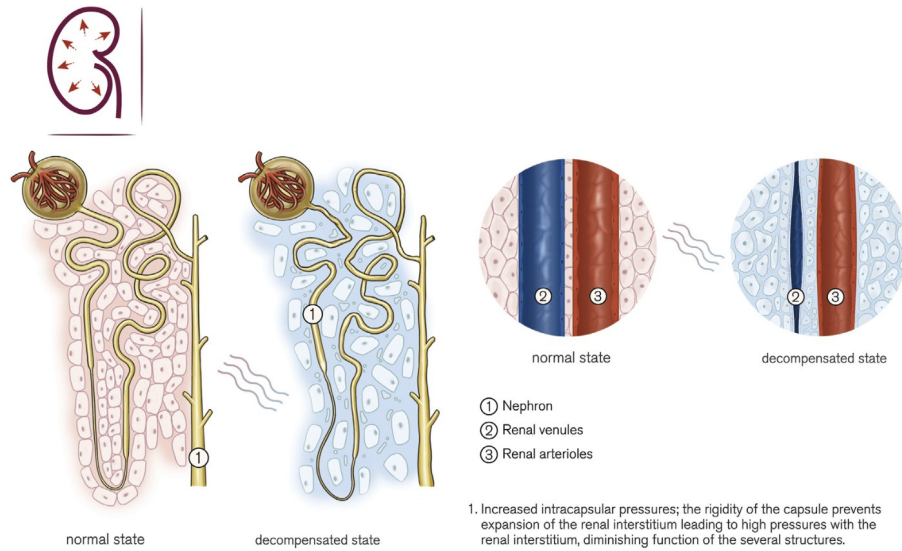




Renal Compression in Heart Failure

The Renal Tamponade Hypothesis

Boorsma, E.M. et al. J Am Coll Cardiol HF. 2022;10(3):175-183.

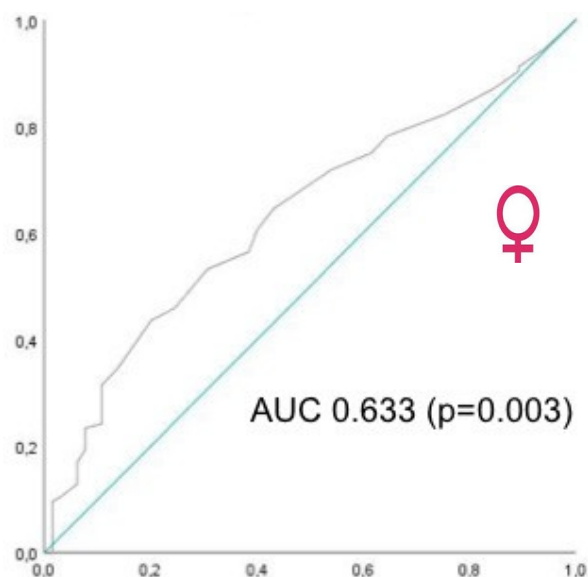


HTA

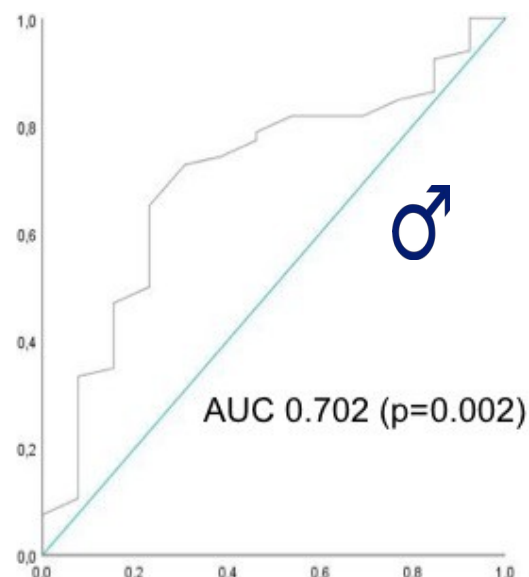
MAL+

ERC

Greix perirrenal i risc de SM



12,5mm (S 72% E 57%)



22,5mm (S 72% E 57%)

Received: 28 May 2020 | Revised: 27 August 2020 | Accepted: 1 September 2020

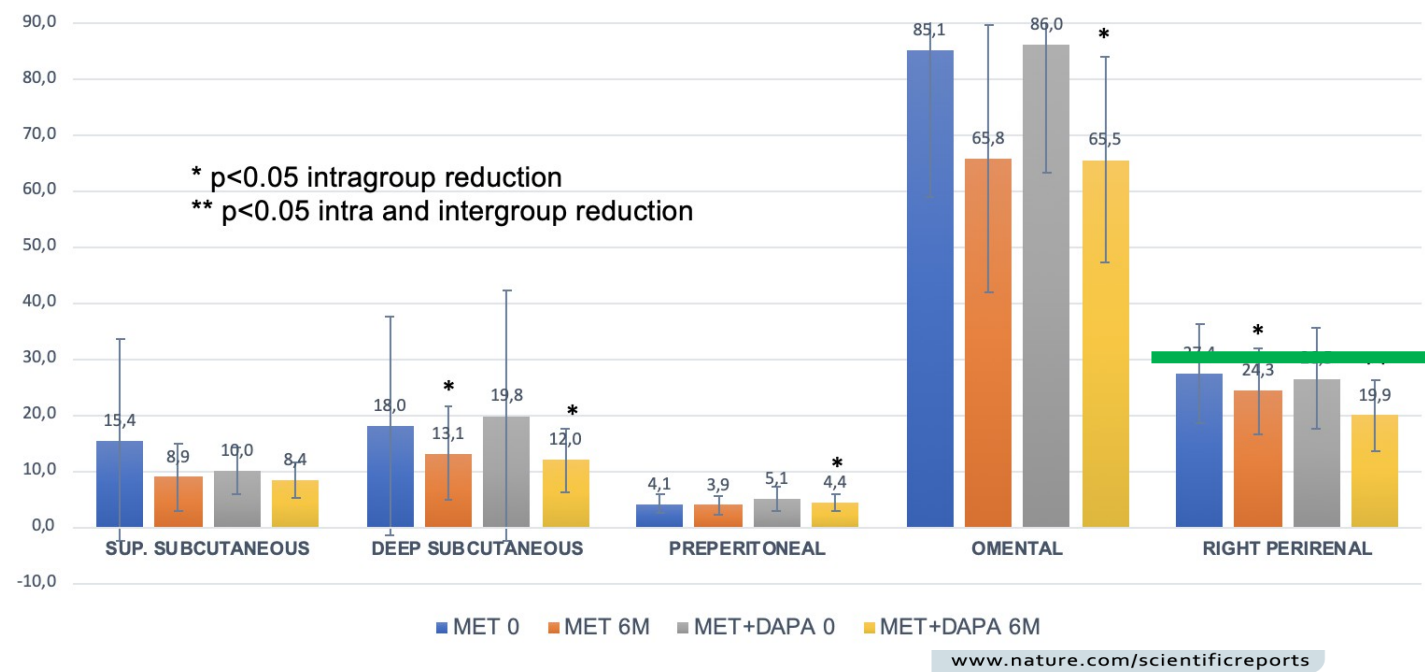
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ORIGINAL ARTICLE

Obesity Science and Practice WILEY

Ultrasound measures of abdominal fat layers correlate with metabolic syndrome features in patients with obesity

Guillem Cuatrecasas^{1,2} | Francisco de Cabo³ | Maria Josep Coves¹ |
Ioana Patrascioiu¹ | Gerardo Aguilar¹ | Sonia March¹ | Mariona Balfegó^{1,2} |
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Aida Orois¹ | Isabel Bové³ | Elena Munoz-Marron^{2,4} | Pilar García-Lorda²



scientific reports

OPEN

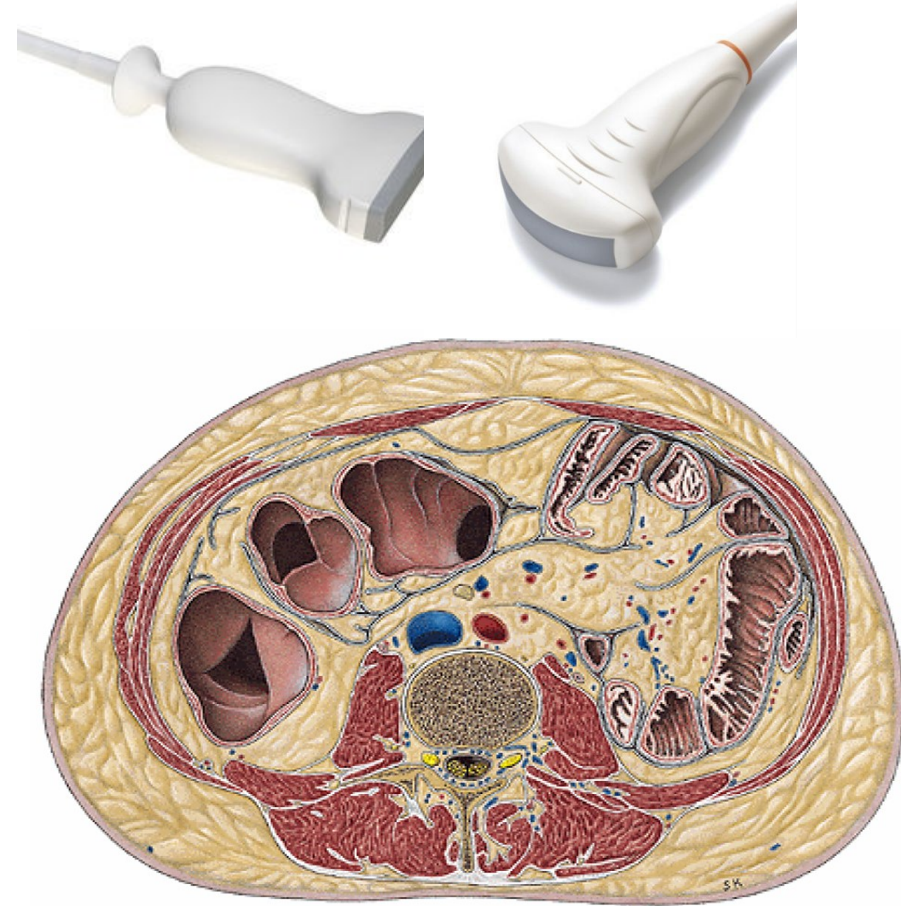
Dapagliflozin added to metformin reduces perirenal fat layer in type 2 diabetic patients with obesity

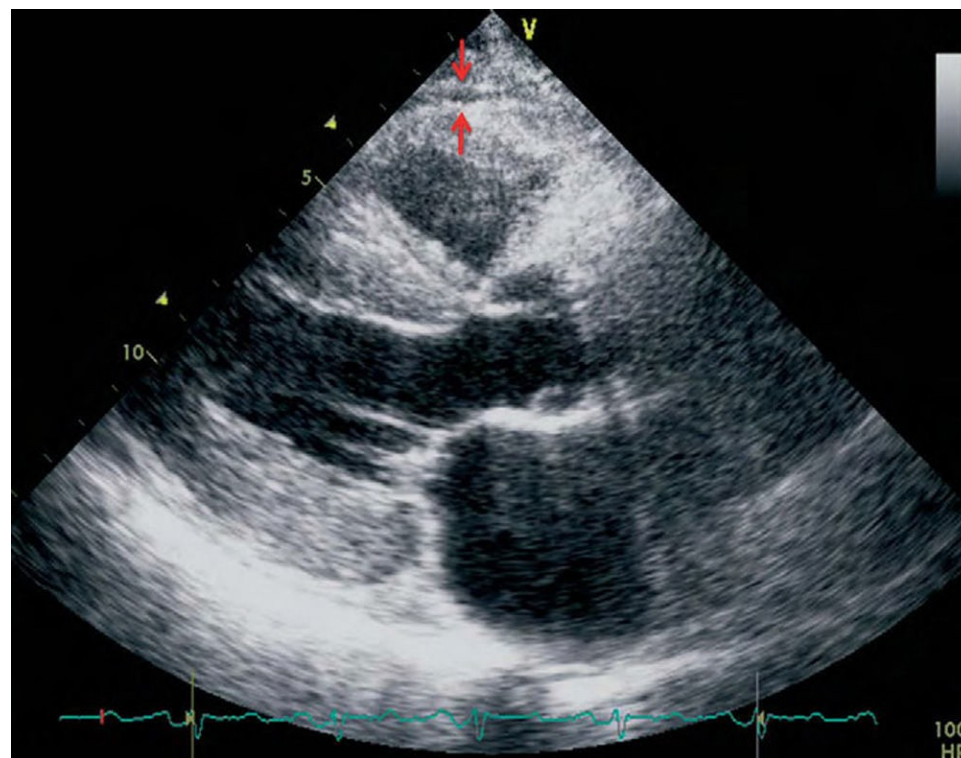
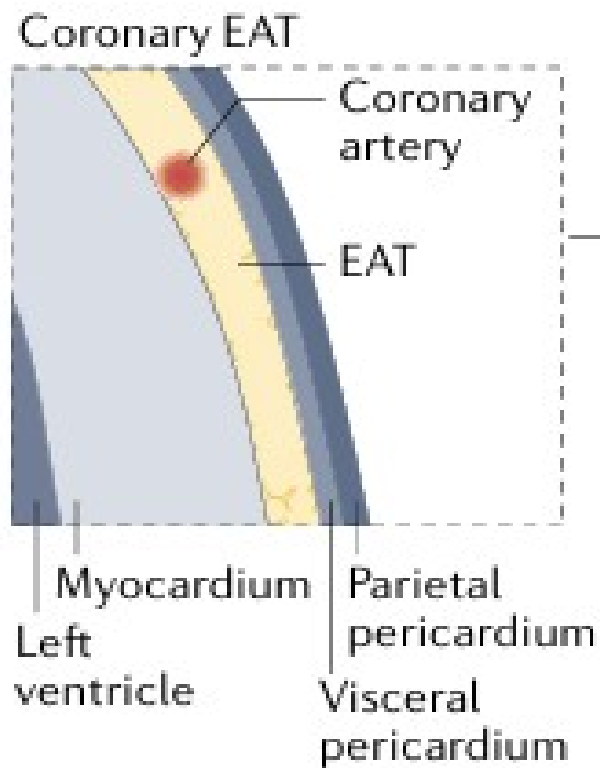
Guillem Cuatrecasas^{1,2,3,✉}, Francisco De Cabo⁴, M. José Coves^{1,2}, Ioana Patrascioiu^{1,2}, Gerardo Aguilar^{1,2}, Gabriel Cuatrecasas^{1,5}, Sonia March^{1,2}, Marta Calbo^{1,2}, Olga Rossell^{1,2}, Mariona Balfegó^{1,2}, Camila Benito^{1,2}, Silvana Di Gregorio^{1,2}, Pilar Garcia Lorda^{3,6} & Elena Muñoz^{3,6}



- Greix Subcutani
 - ✓ superficial (1)
 - ✓ profund (2)
- Greix Intra-abdominal (visceral)
 - ✓ Pre-peritoneal (3)
 - ✓ Omental+Mesentèric (Intraperitoneal) (4)
- Greix Retroperitoneal
 - ✓ Peri-renal (5)
 - ✓ Para-renal
- MASLD
- Greix Epicàrdic
- Valoració muscular

ECO-obesitat





Greix epicàrdic



Greix epicàrdic i Obesitat

- < 5mm → normal (0,8%) n=402
- 5-7mm → low (10,5%)
- 7-10mm → moderate (35,6%)
- >10 mm → severe. (53,1%)

frontiers | Frontiers in Endocrinology

TYPE Original Research
PUBLISHED 15 January 2026
DOI 10.3389/fendo.2025.1746253

Ultrasound evaluation of epicardial fat and *Eco-Obesity* body composition assessment

Silvana di Gregorio^{1,2*}, Eduardo Blanco^{2,3}, Marta Calbo^{1,4}, Olga Rossell^{1,4}, Laia Dachs^{1,4}, Júlia Bonet^{1,4}, Andrea Jover^{1,4}, Lidia Huanuco^{1,4}, Marcos Yañez², Irina Faja², Francisco de Cabo⁵ and Guillem Cuatrecasas^{1,4,6}

¹Grup CPEN Endocrinologia i Nutrició, Barcelona, Spain, ²Centre Mèdic Vic, Barcelona, Spain, ³Servicio Cardiología Hospital Teknon, Grupo Quiron Salud, Barcelona, Spain, ⁴Unidad Multidisciplinaria de Obesidad Hospital Teknon, Grupo Quiron Salud, Barcelona, Spain, ⁵Institut Guirado Radiología, Barcelona, Spain, ⁶Faculty Health Sciences, Open University Catalonia, Barcelona, Spain

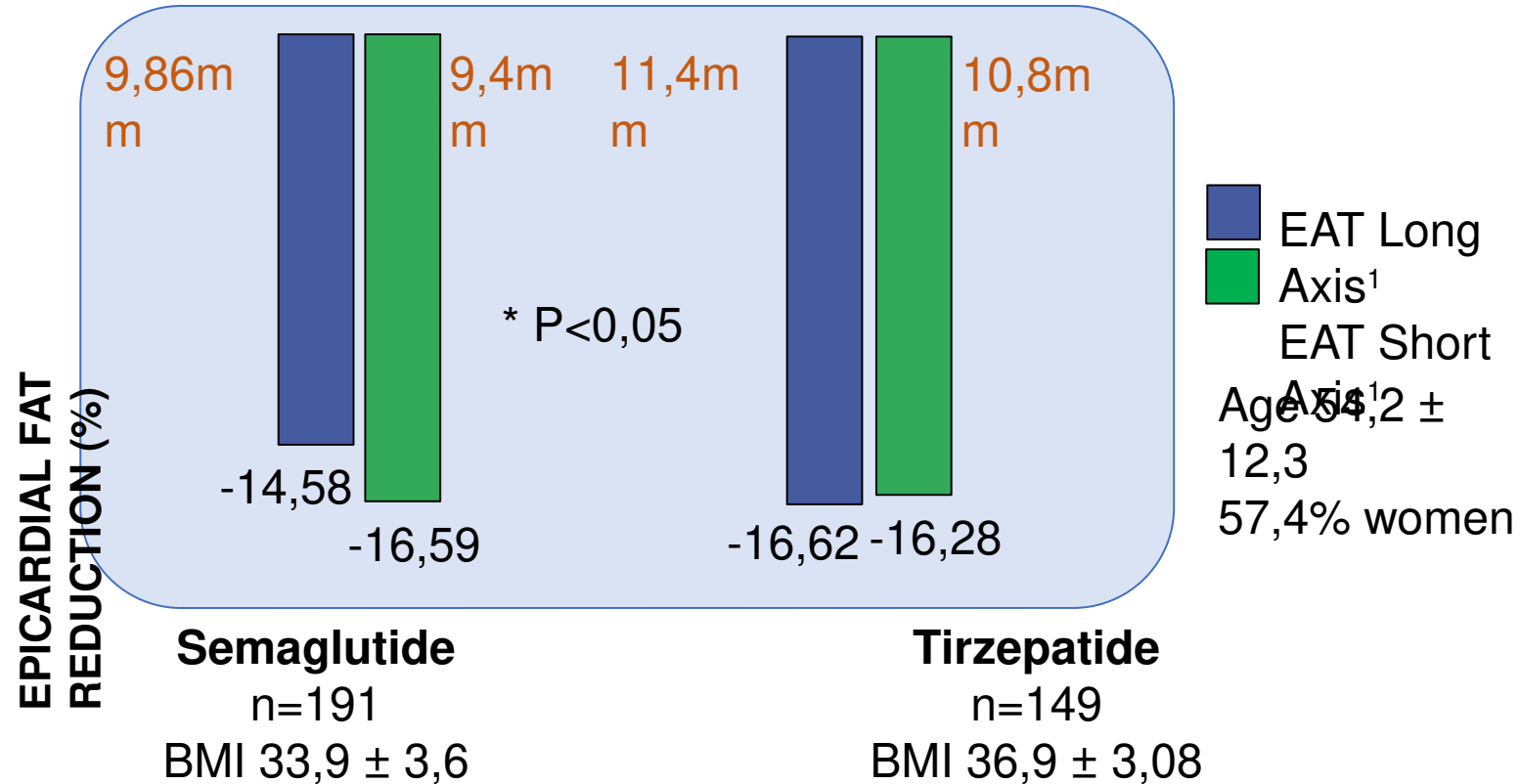
	EP. FAT SHORT AXIS		EP. FAT LONG AXIS		EP. FAT Post Card Recess	
TOTAL GROUP	4.0-16.8		4.0-17.8		3.0-18	
FEMALE*	9.6±2.35	P: 0.025	10.02±2.42	0.001	9.57±2.56	P: 0.012
MALE	10.71±2.85		11.54±2.10		10.85±2.8	

Sexual
dymorphism

* Not statistically significant difference was found between pre and post menopausal women

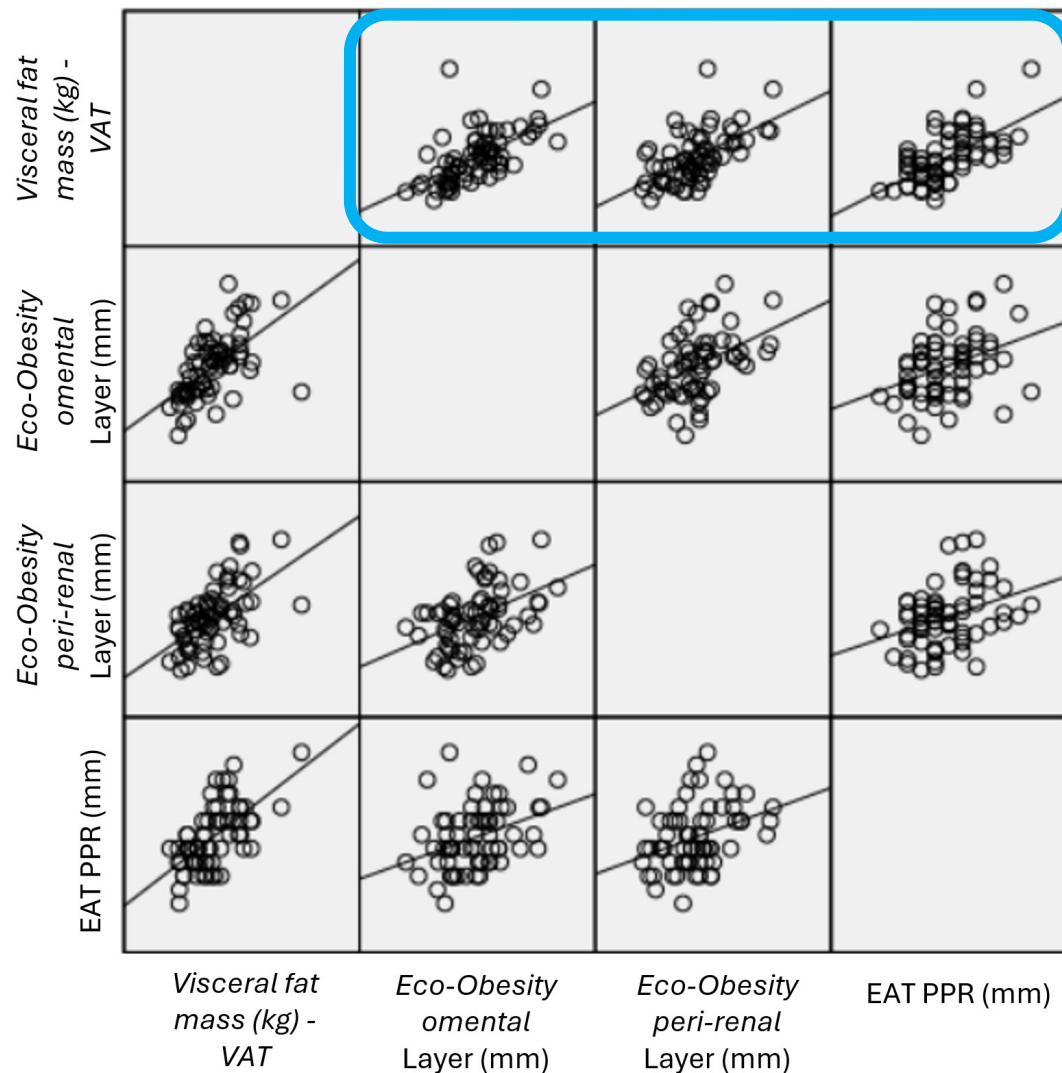


Epicardial measures
obtained
when 5% weight loss
was achieved



mean dosage: **0,56 ± 0,4 mg**
semaglutide: 10,2 +/-5,1 months*

3,6 ± 1,9 mg
tirzepatide 7,8 +/-2,9 months*



Correlacions Epicàrdic/ peri-renal/omental DEXA

frontiers | Frontiers in Endocrinology

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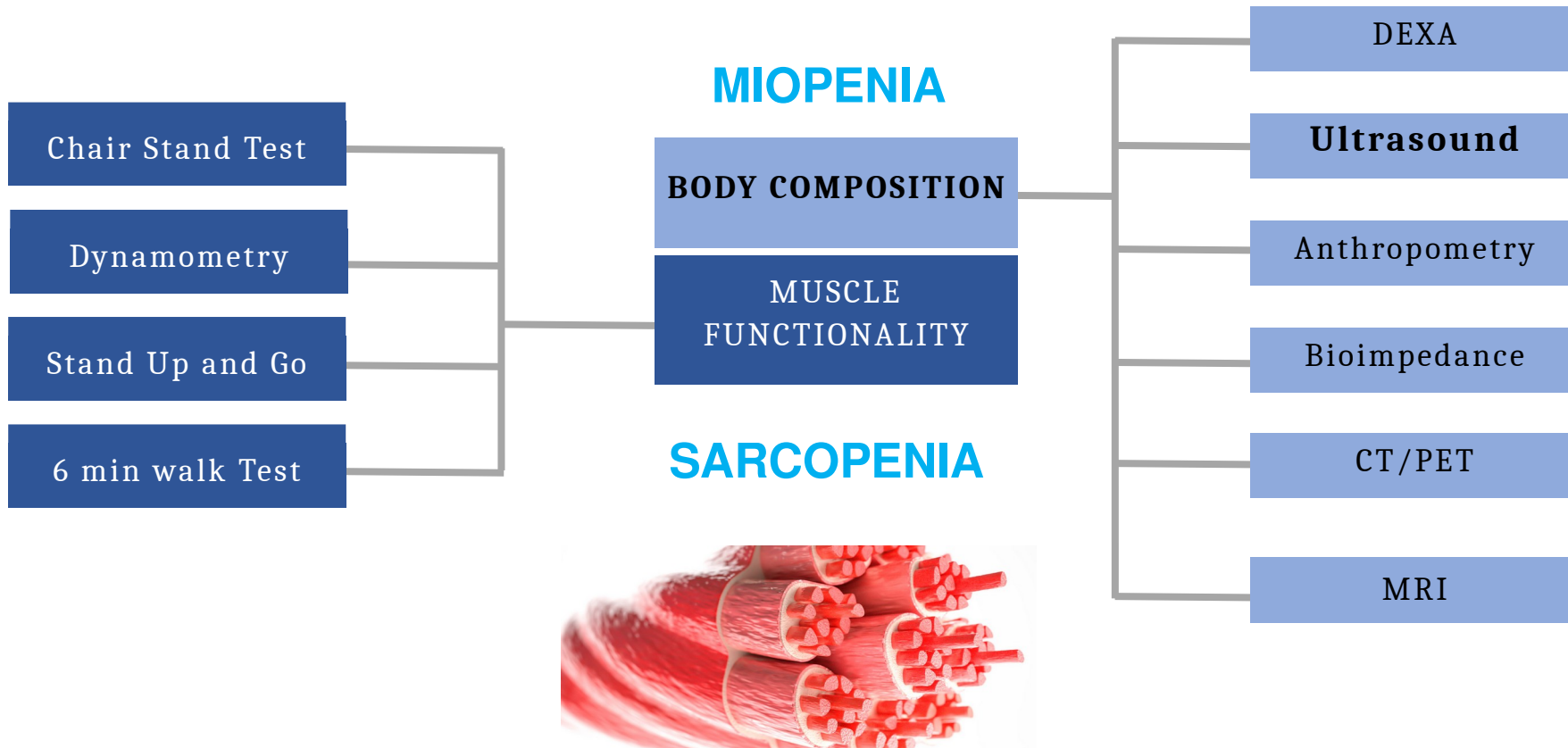
Ultrasound evaluation of epicardial fat and *Eco-Obesity* body composition assessment

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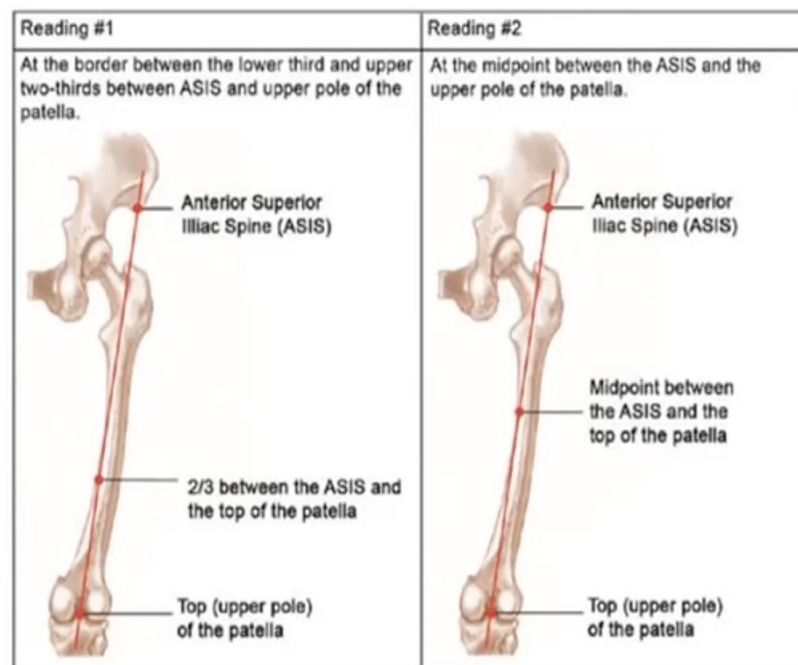


EVALUACIÓ MASSA MUSCULAR EN L'OBESITAT

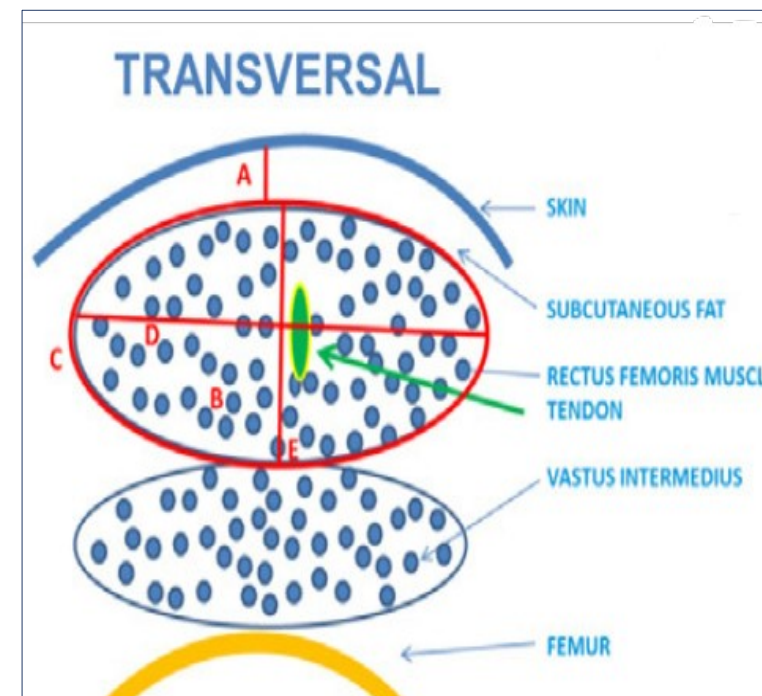


Estandarització. On medim?

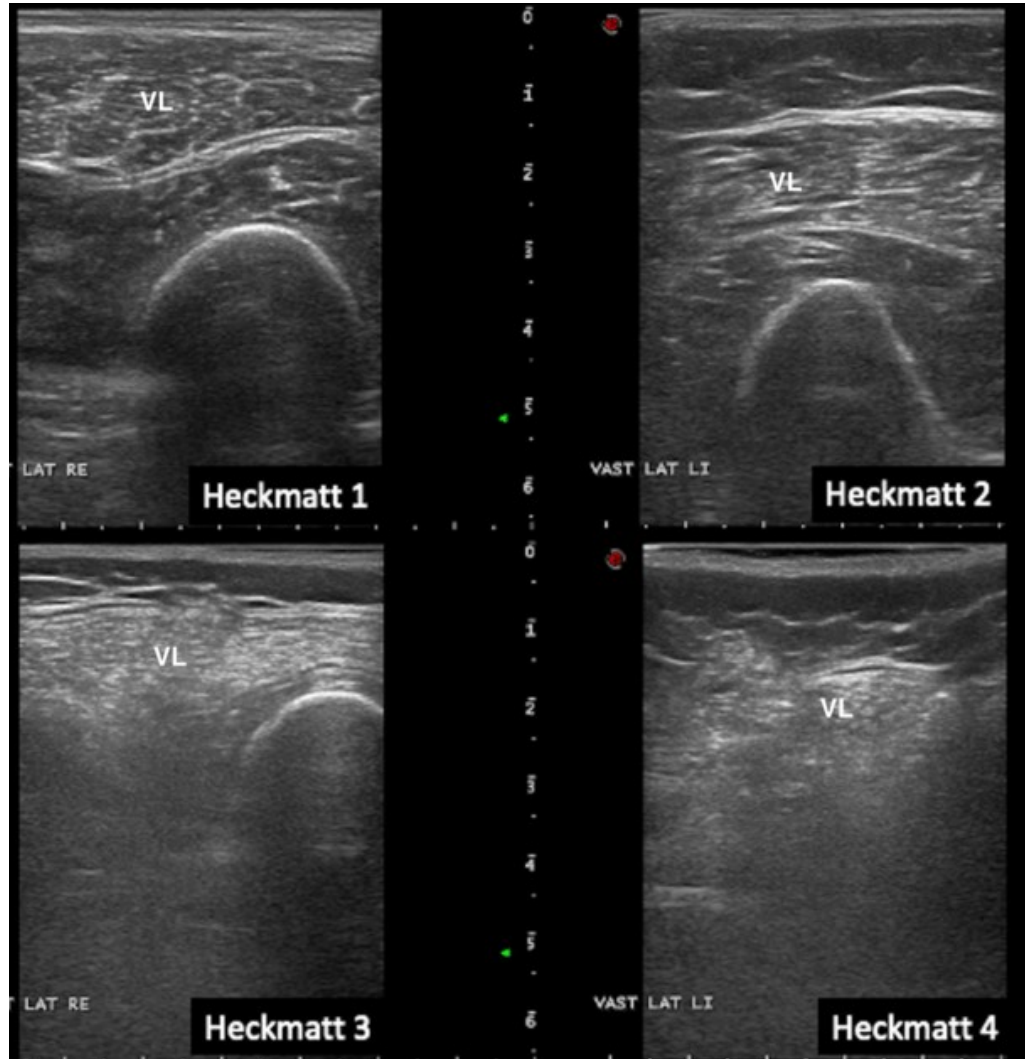
Rectus femoris quadriceps



Tillquist M, et al. *JPEN*. 2014 Sep;38(7):886-90
Pardo E, et al. *BMC Anesthesiology* 2018; 18:205-12

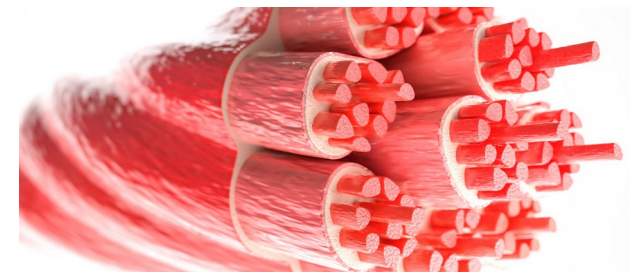


García-Almeida JM et al. *Endocrinol Diabetes Nutr.* doi:10.1016/j.endien.2022.11.010



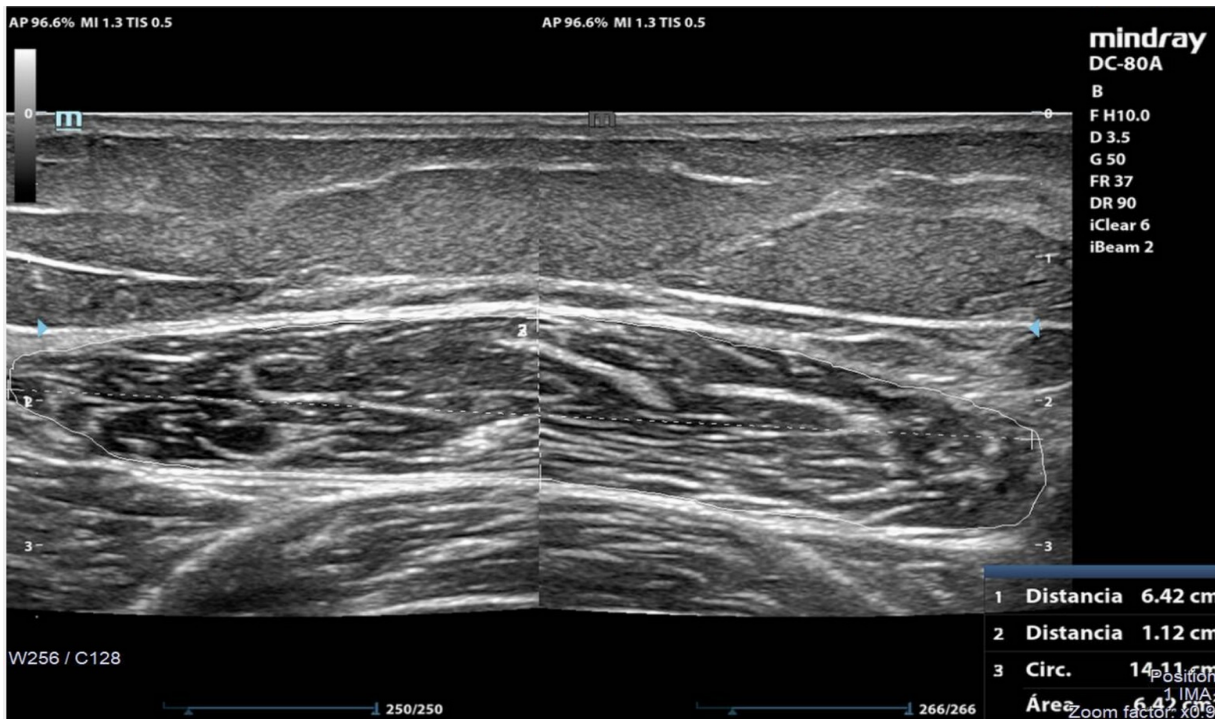
Valoració qualitativa risc sarcopenia (Heckmatt) (1)

- Ecogenicitat
- Edema
- Borrositat fèmur



Tillquist M, et al. JPEN. 2014 Sep;38(7):886-90
Pardo E, et al. BMC Anesthesiology 2018; 18:205-12

Valoració quantitativa del risc de sarcopenia (2)

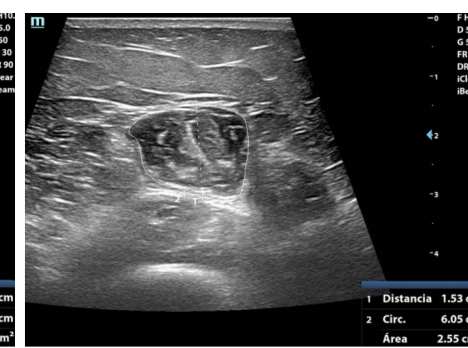
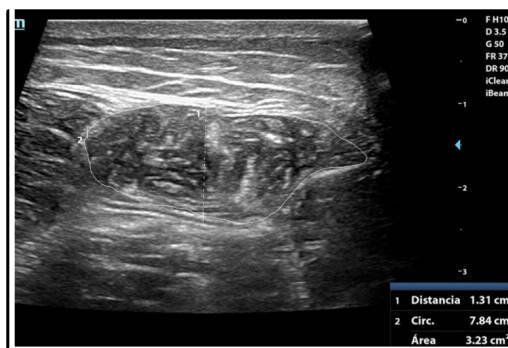
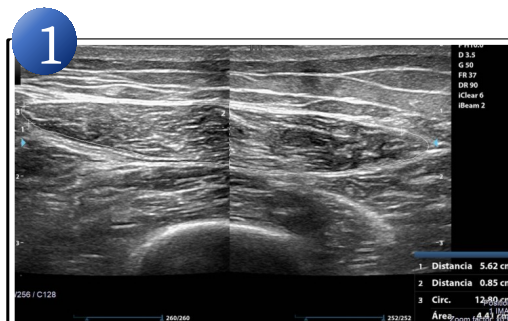


- Longitut horizontal (X)
($<4,01$ cm H y $<3,74$ cm M)
- Longitut vertical (Y)
($<0,97$ cm en H y $<0,86$ cm M)
- Ratio (X/Y)
($>4,63$ en H y $>4,95$ M)
- Superficie (àrea) Recte femoral
($<3,48$ cm² en H y $<2,97$ cm² M)

De Luis, Garcia-Almeida, Bellido et al. Ultrasound Cut-Off Values for Rectus Femoris for Detecting Sarcopenia in Patients with Nutritional Risk. *Nutrients* 2024, 16, 1552.



RELAXACIÓ



CONTRACCIÓ

II CONGRÉS D'ECOGRAFIA CLÍNICA EN ATENCIÓ PRIMÀRIA (ECOAP)

