RADIOLOGIA DE INTERVENÇÃO

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Clínica Universitária de Radiologia-CHUC
Dir: Prof. Doutor F. Caseiro-Alves

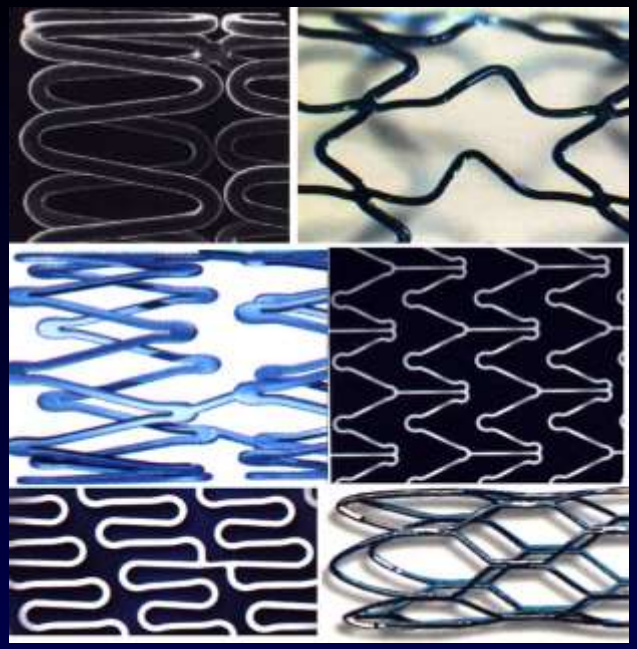
COIMBRA 2012/2013

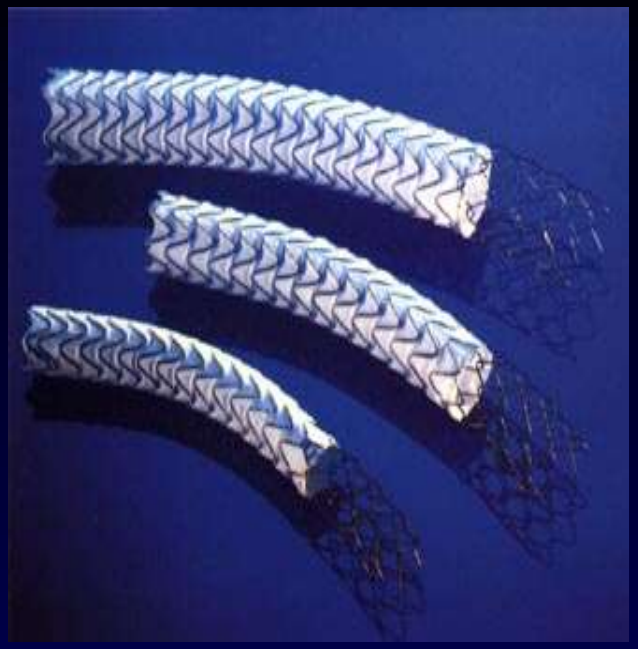
RADIOLOGIA DE INTERVENÇÃO

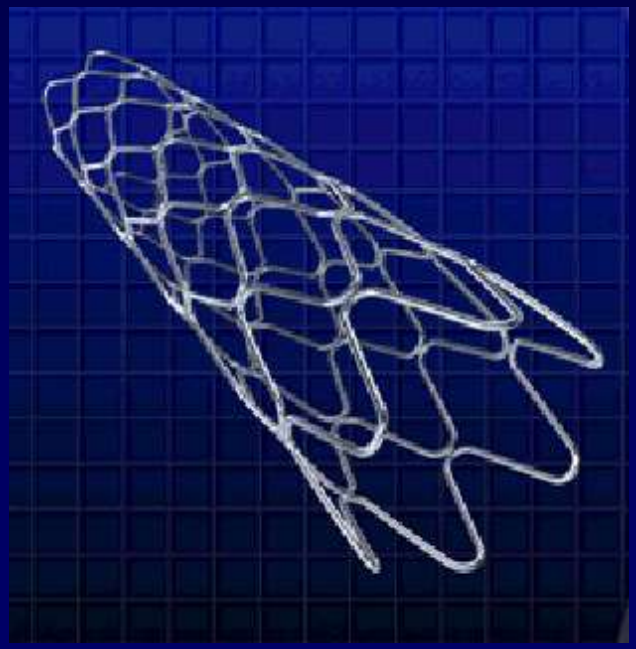
Conjunto de técnicas micro-invasivas de diagnóstico e de terapêutica com elevado rendimento e extremamente eficazes, guiadas pela imagem (radioscopia, ecografia, tc, rm, etc.).

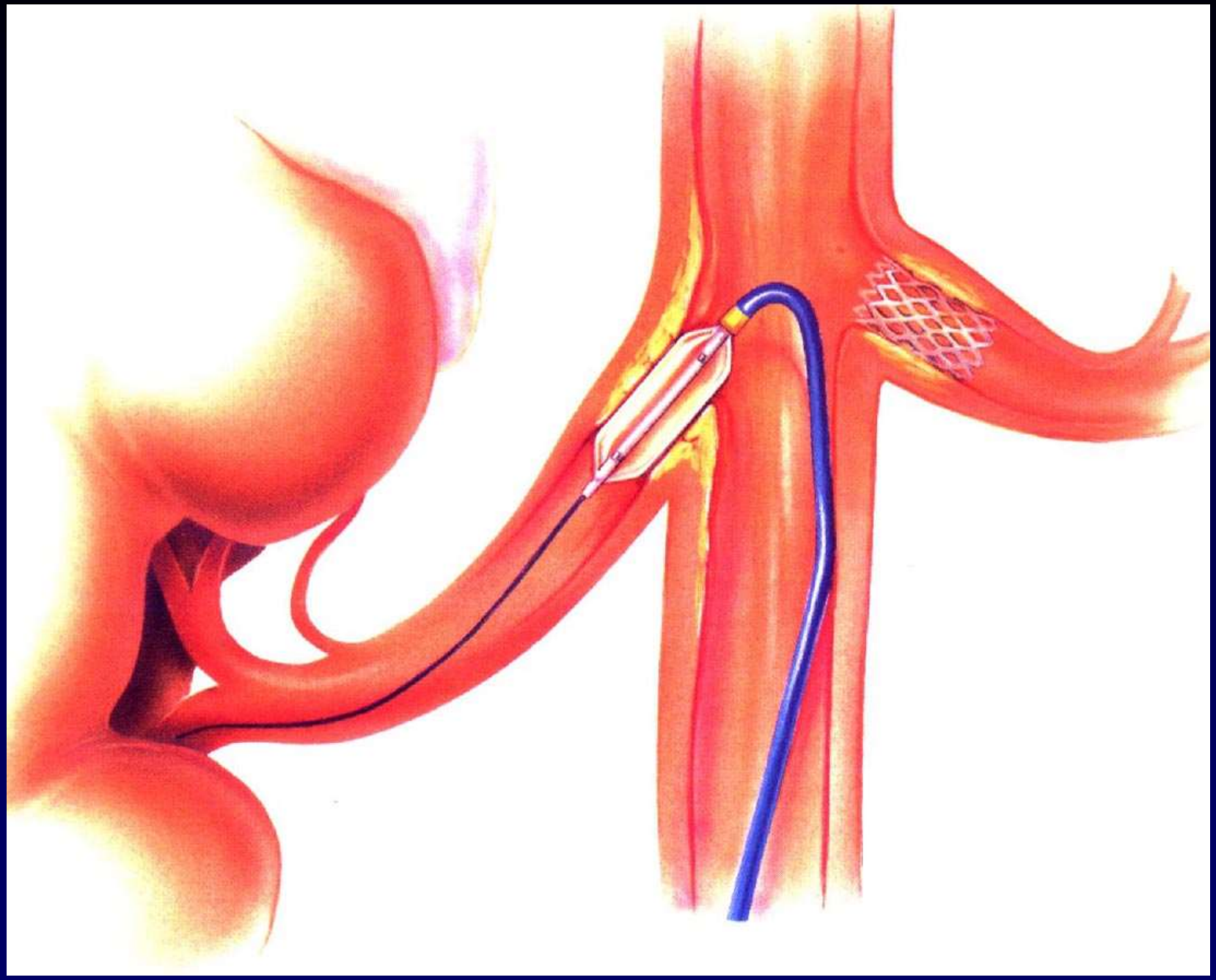
Intervenção

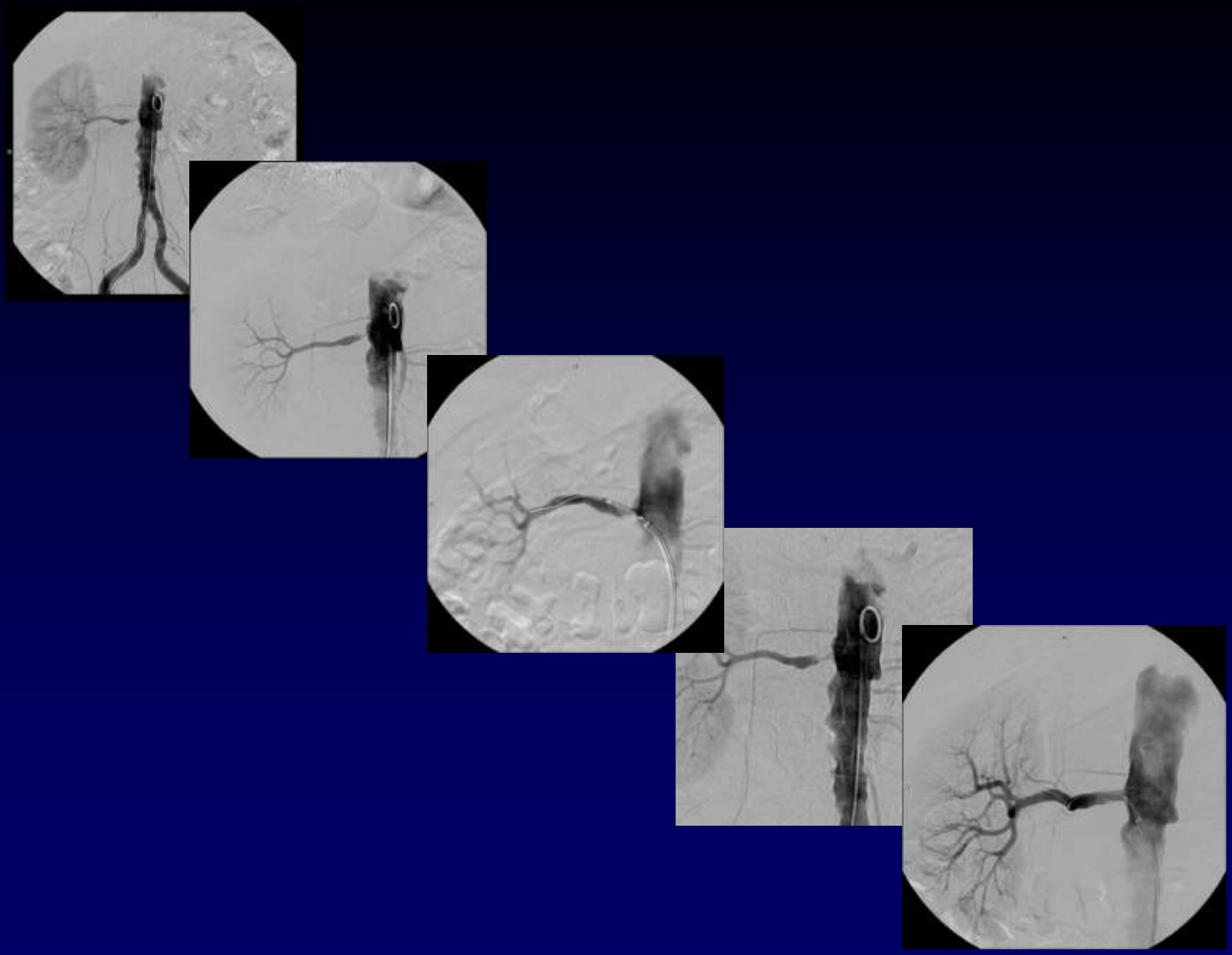
Vascular

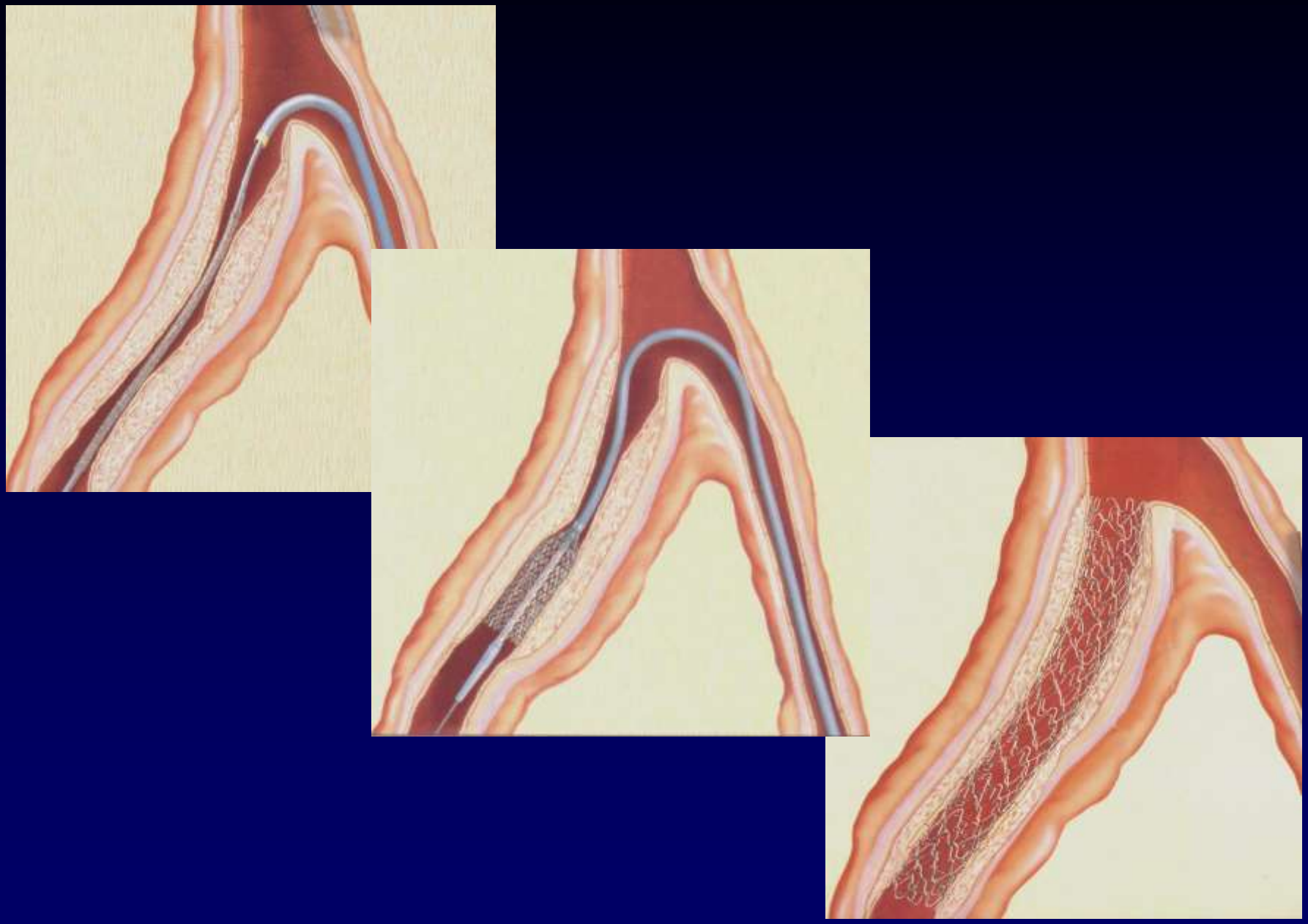


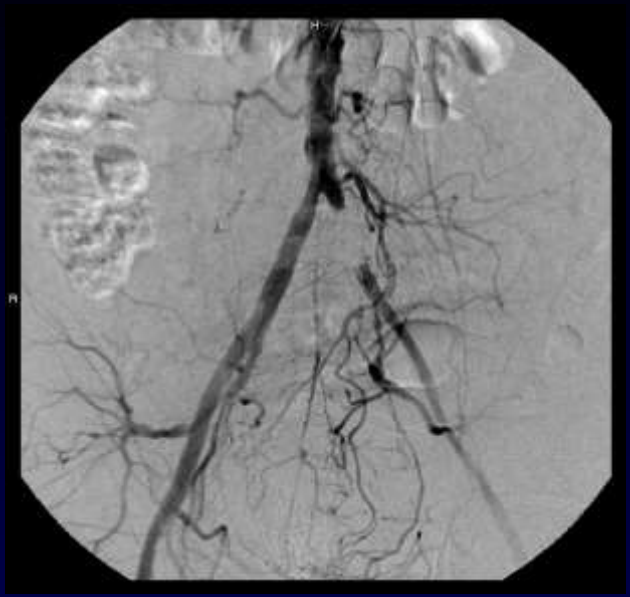


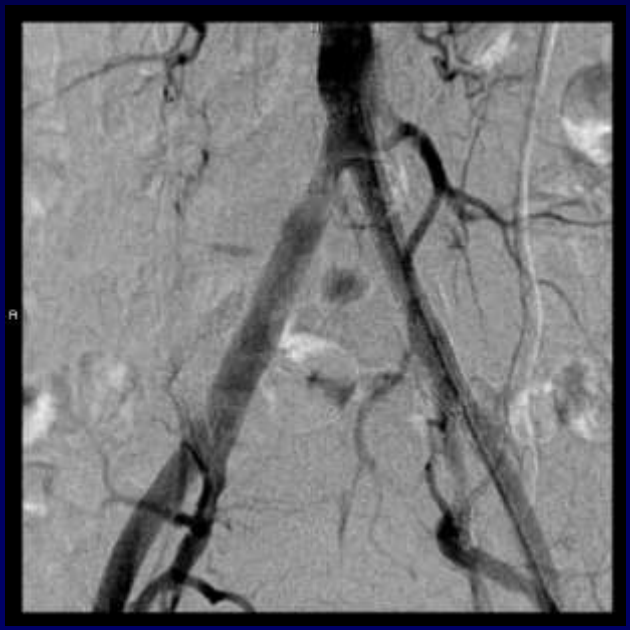


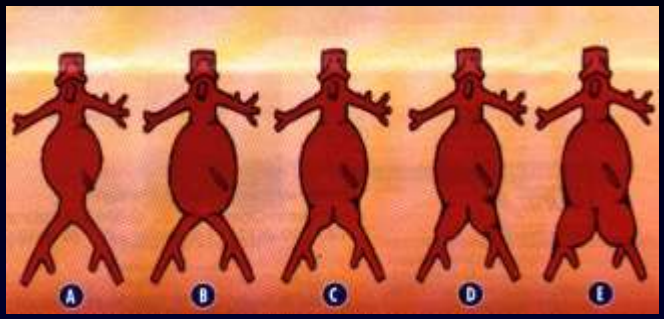








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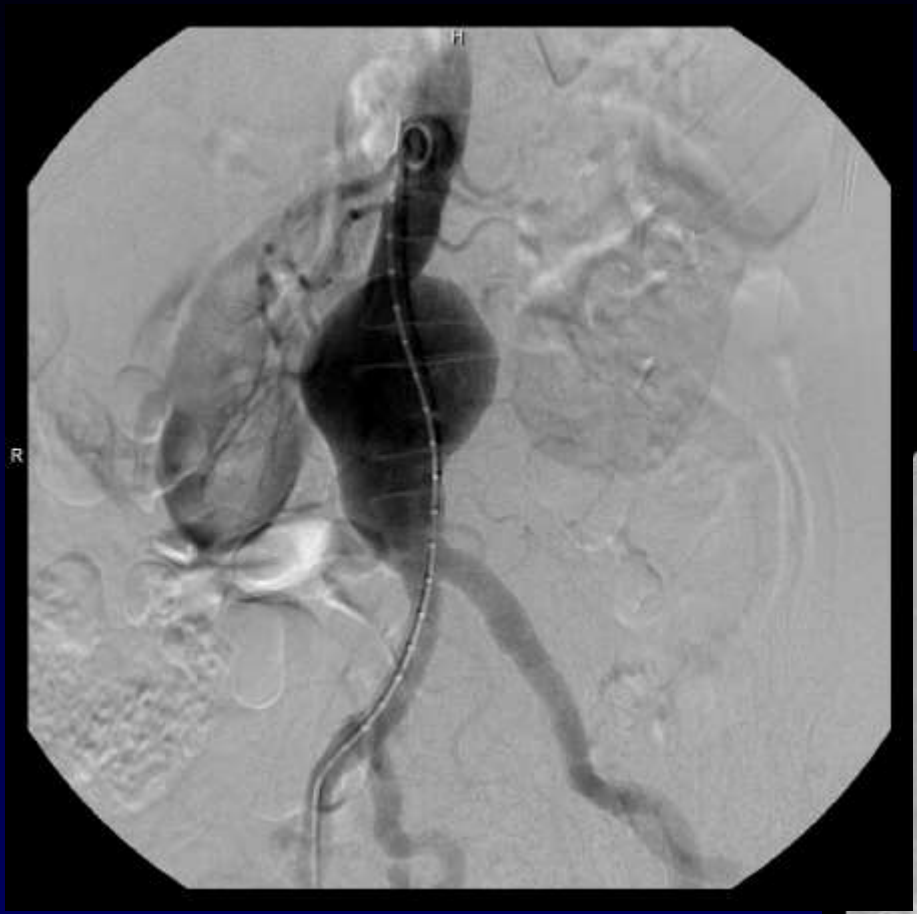
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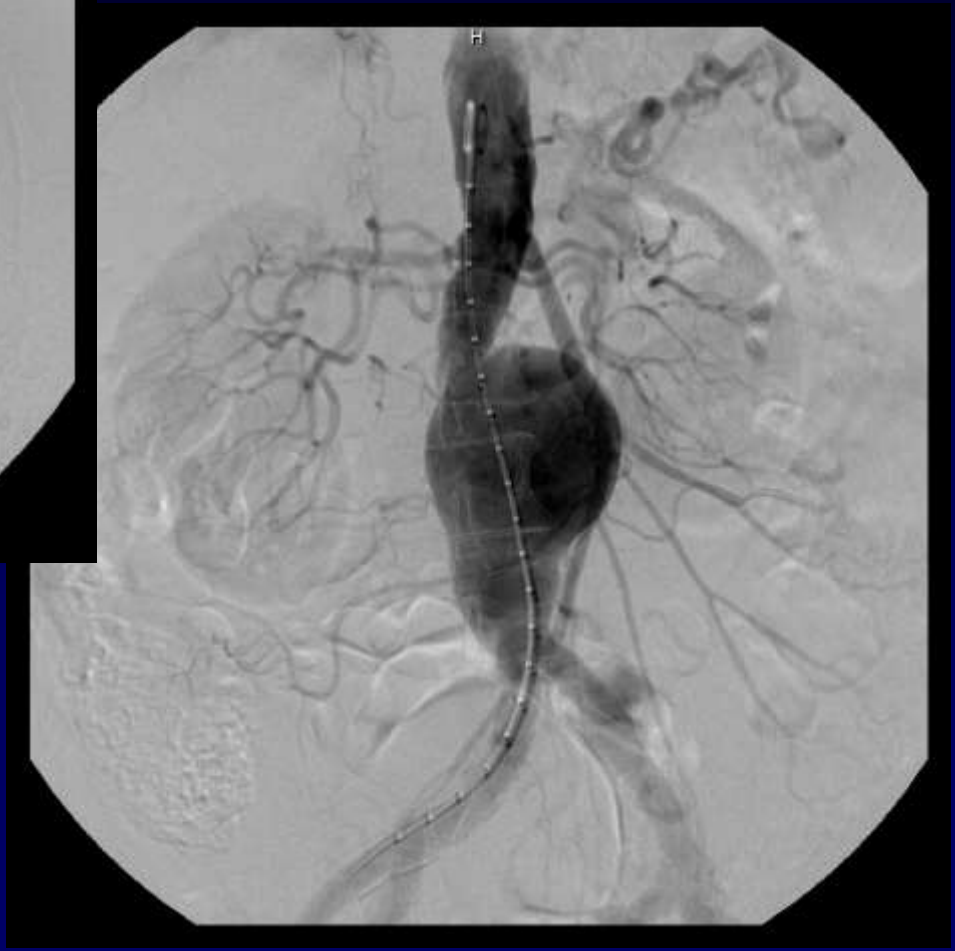
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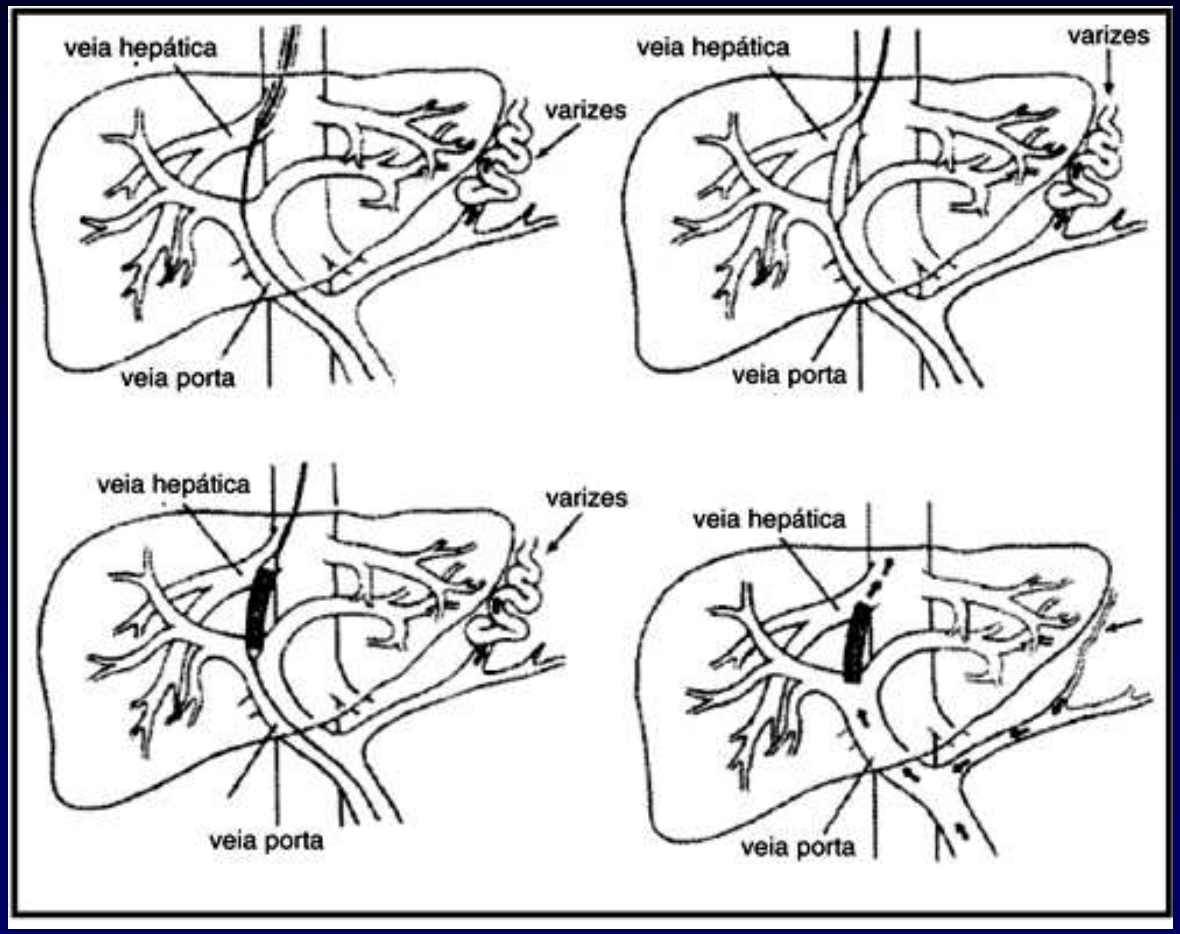
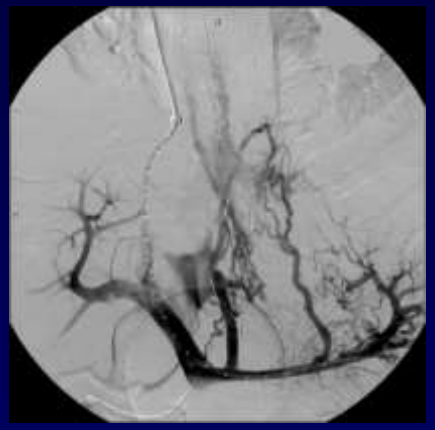
TIPS- Transjugular Portosystemic Shunt



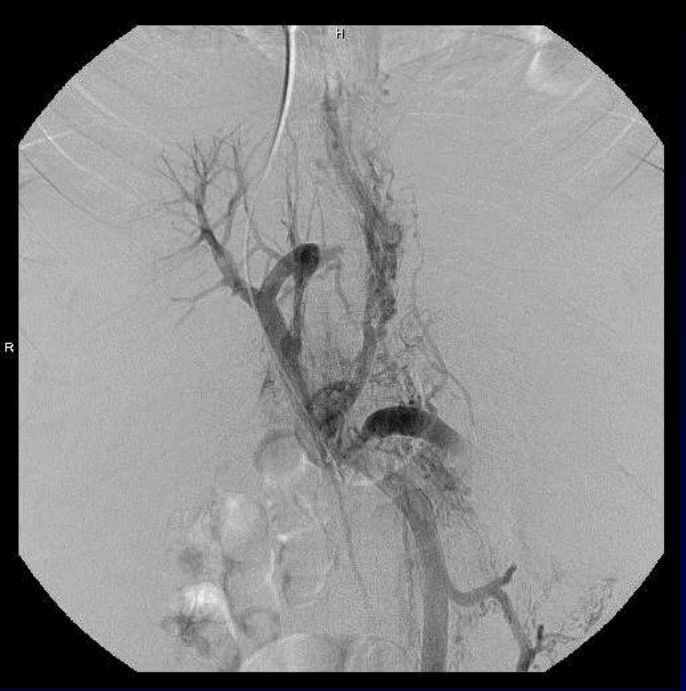
TIPS- Transjugular Portosystemic Shunt

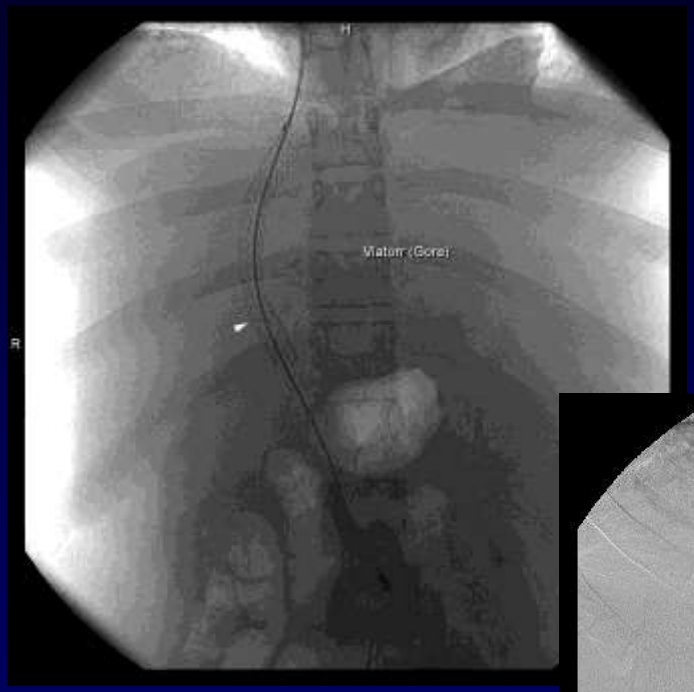
- Ascite de origem hepática, não controlada com terapêutica médica
- "Ponte" para transplante
- Hemorragia recidivante por varizes esofágicas

TIPS- Transjugular Portosystemic Shunt



TIPS- Transjugular Portosystemic Shunt





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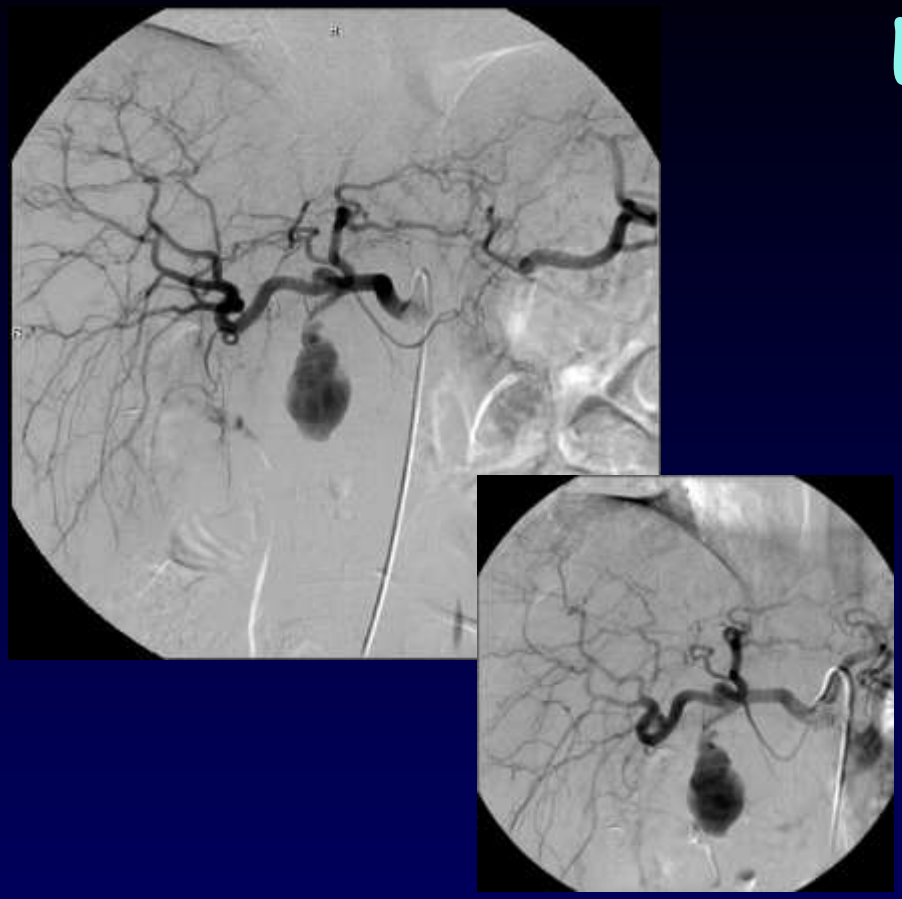

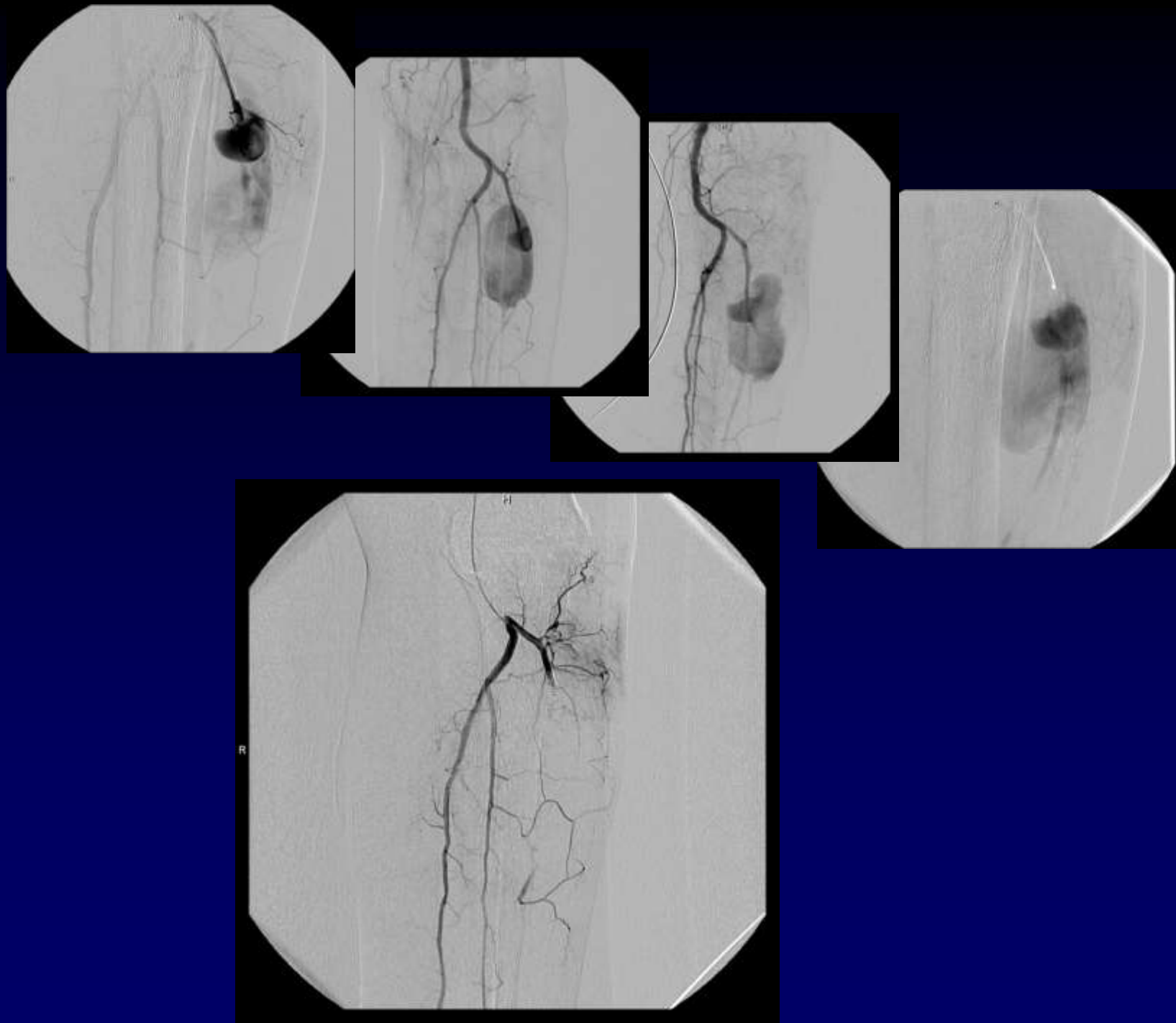
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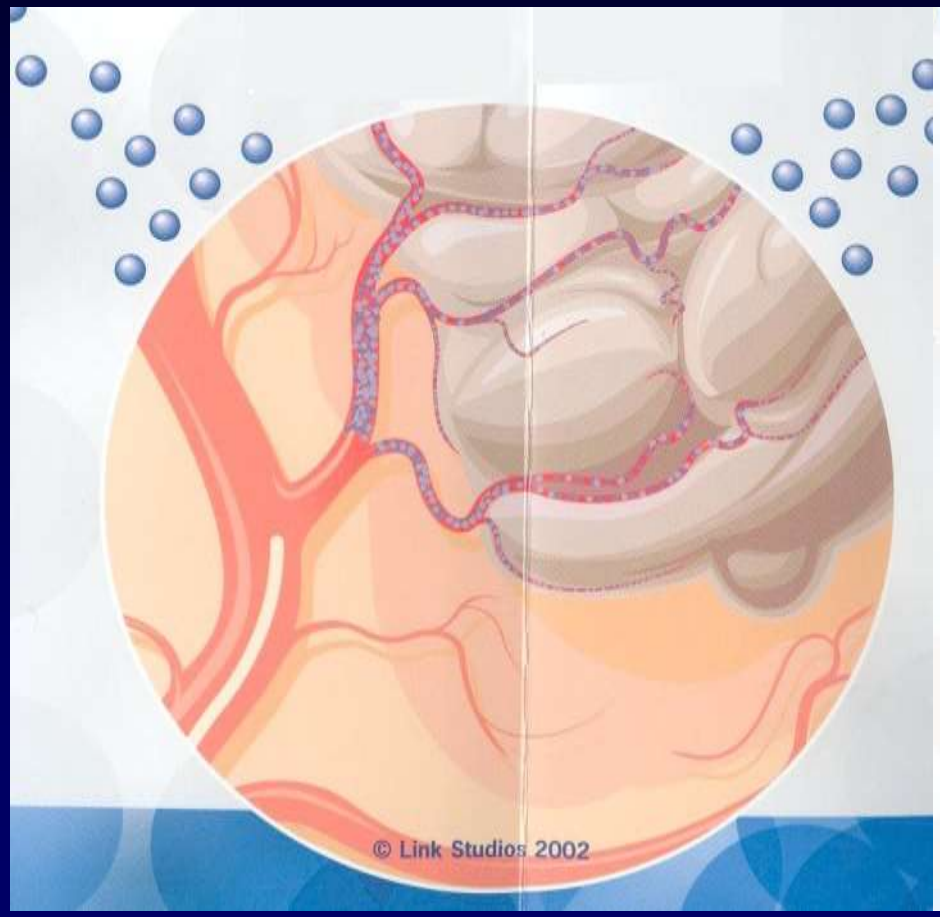
Quimio-Embolização

Quimio-Embolização



Intervenção

Não-Vascular

Punção-biópsia

- Dirigida por:
- Tac
- Ecografia
- RM

Técnica de Biópsia

Técnica de Biópsia

Técnica de Biópsia

Técnica de Biópsia

Lipoma Atípico

Técnica de Biópsia

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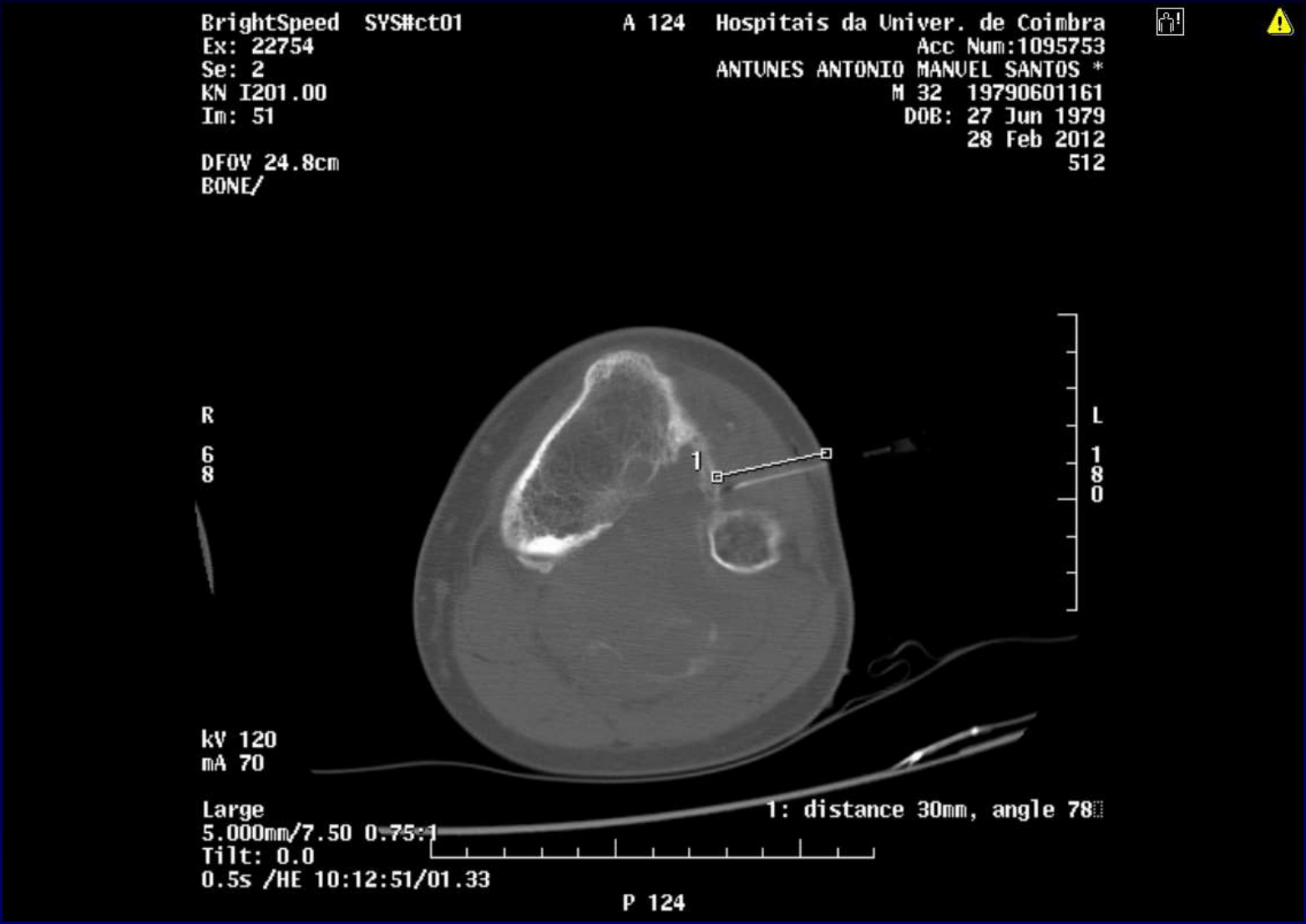
Técnica de Biópsia

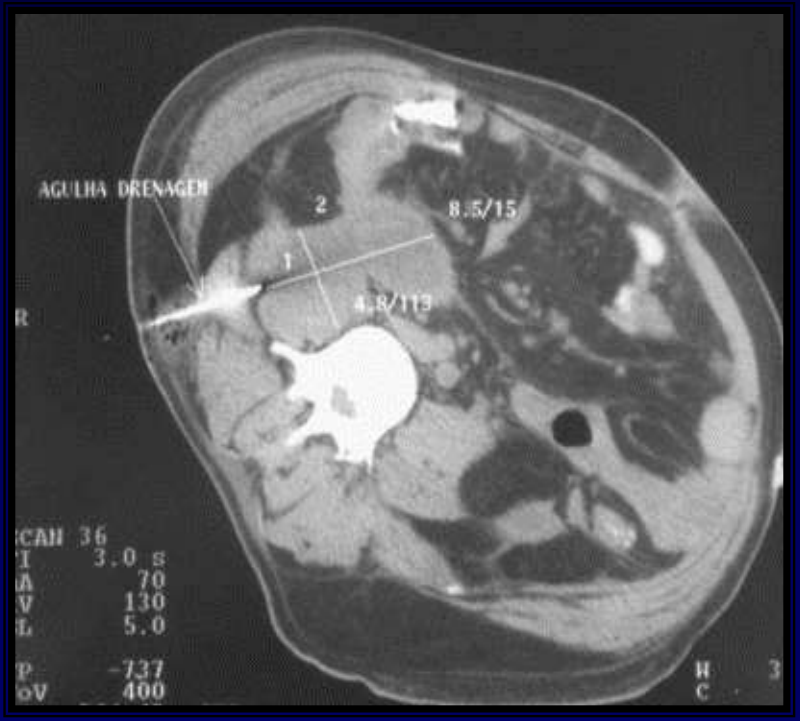


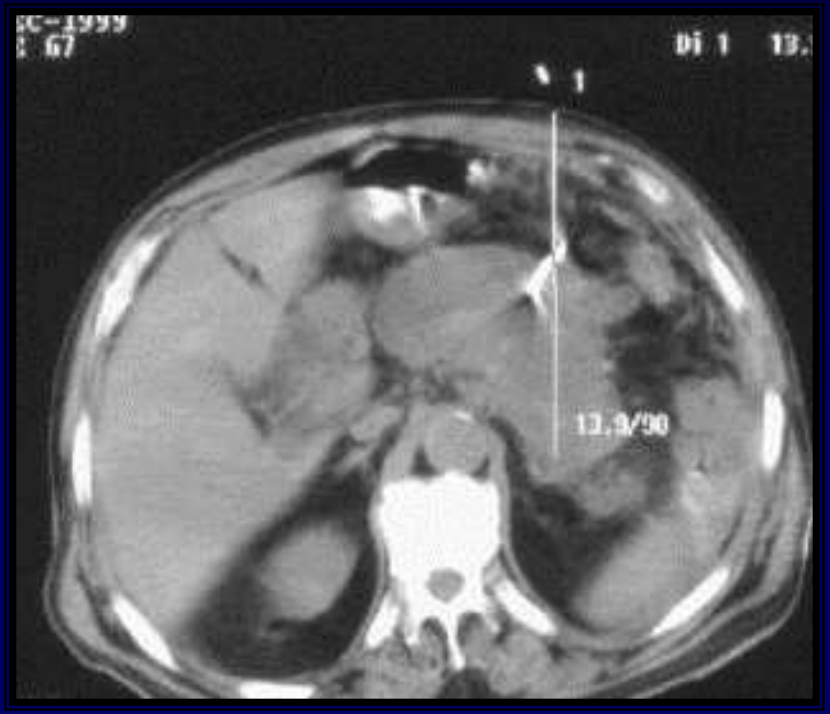
Técnica de Drenagem Percutânea

- Assépsia local
- Anestesia com lidocaína do trajecto

Técnica de Drenagem Percutânea

- **Colocação do dreno**





Resultados
Caso 1

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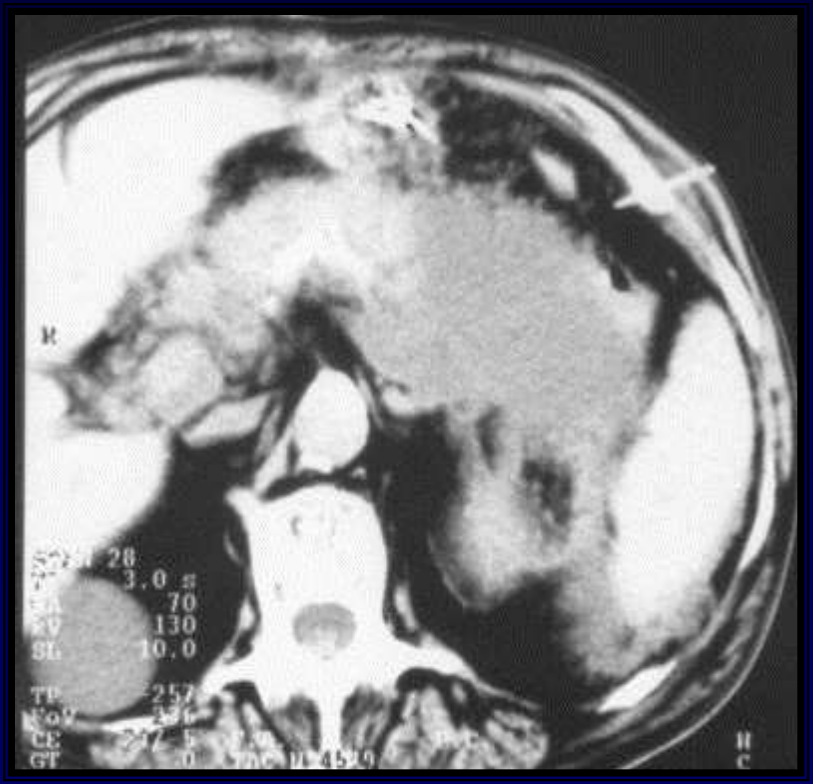

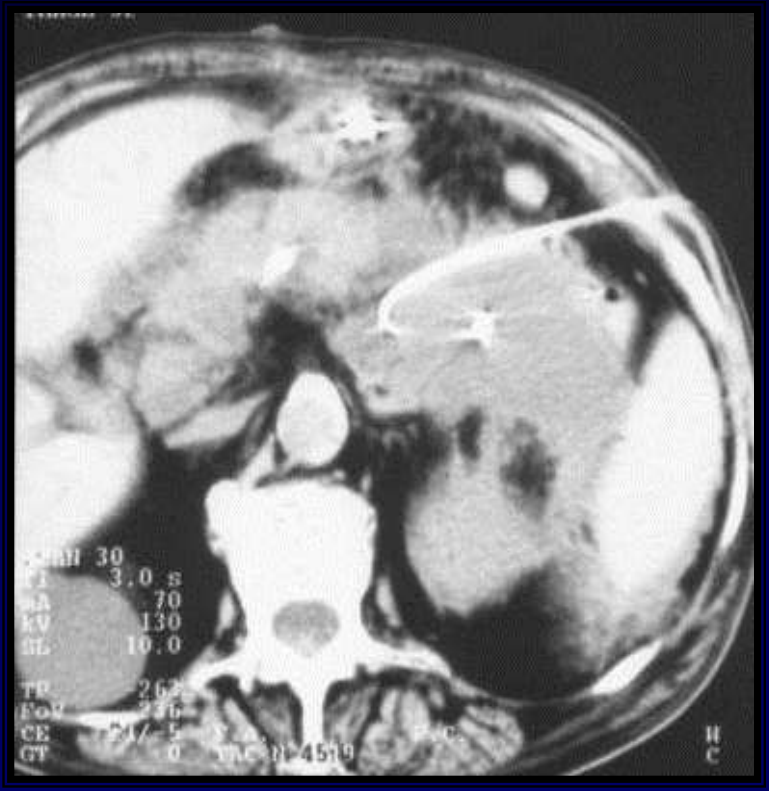

Resultados
Caso 1

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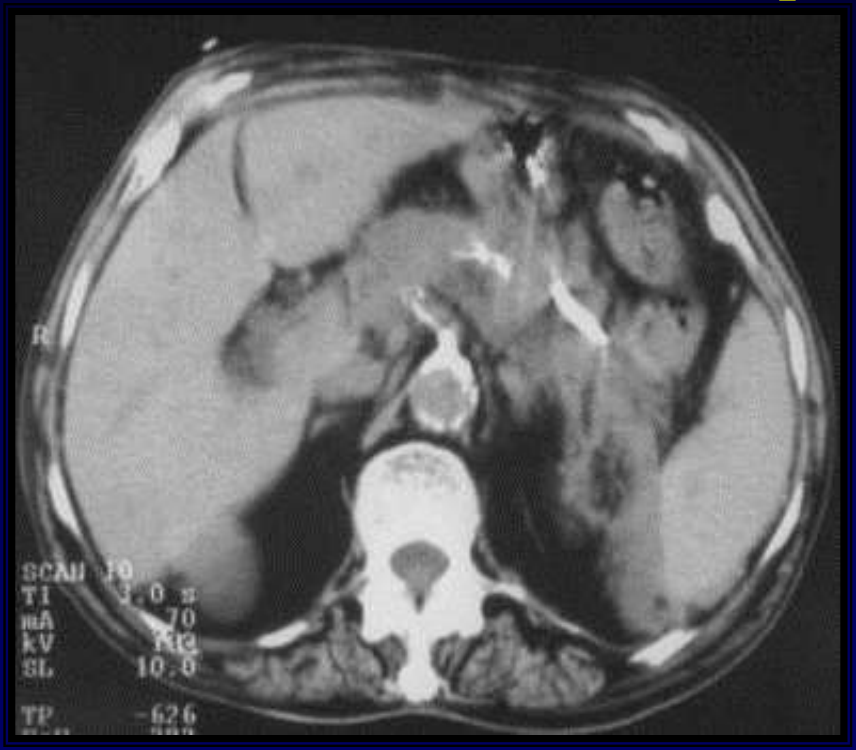

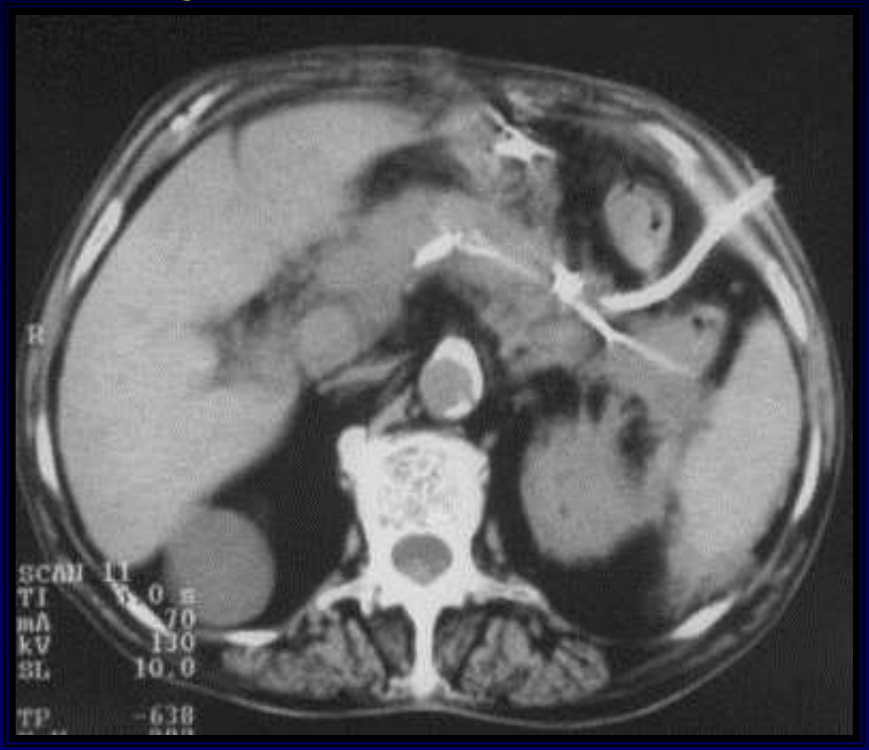

Resultados
Caso 1

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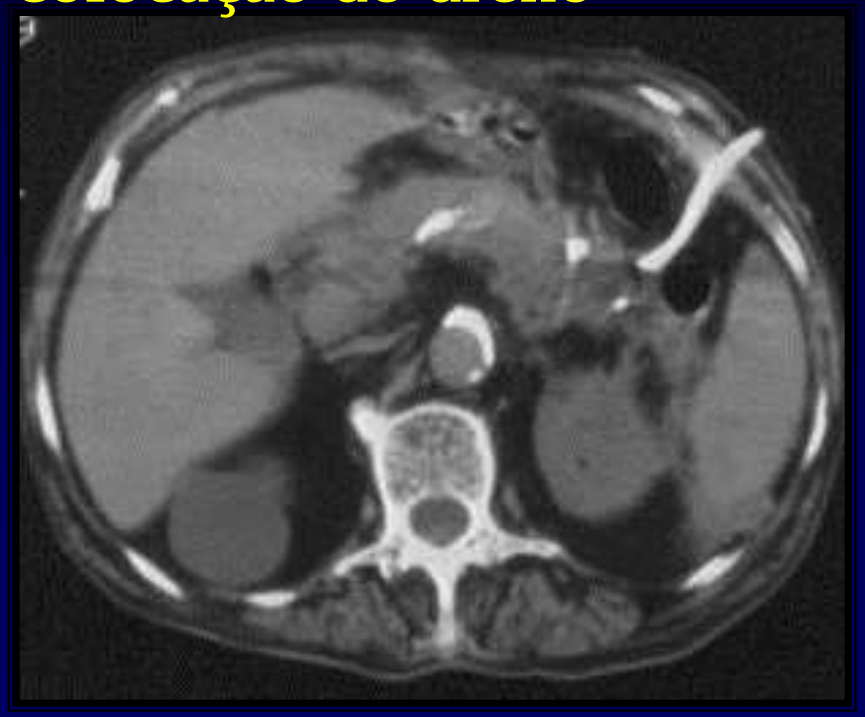

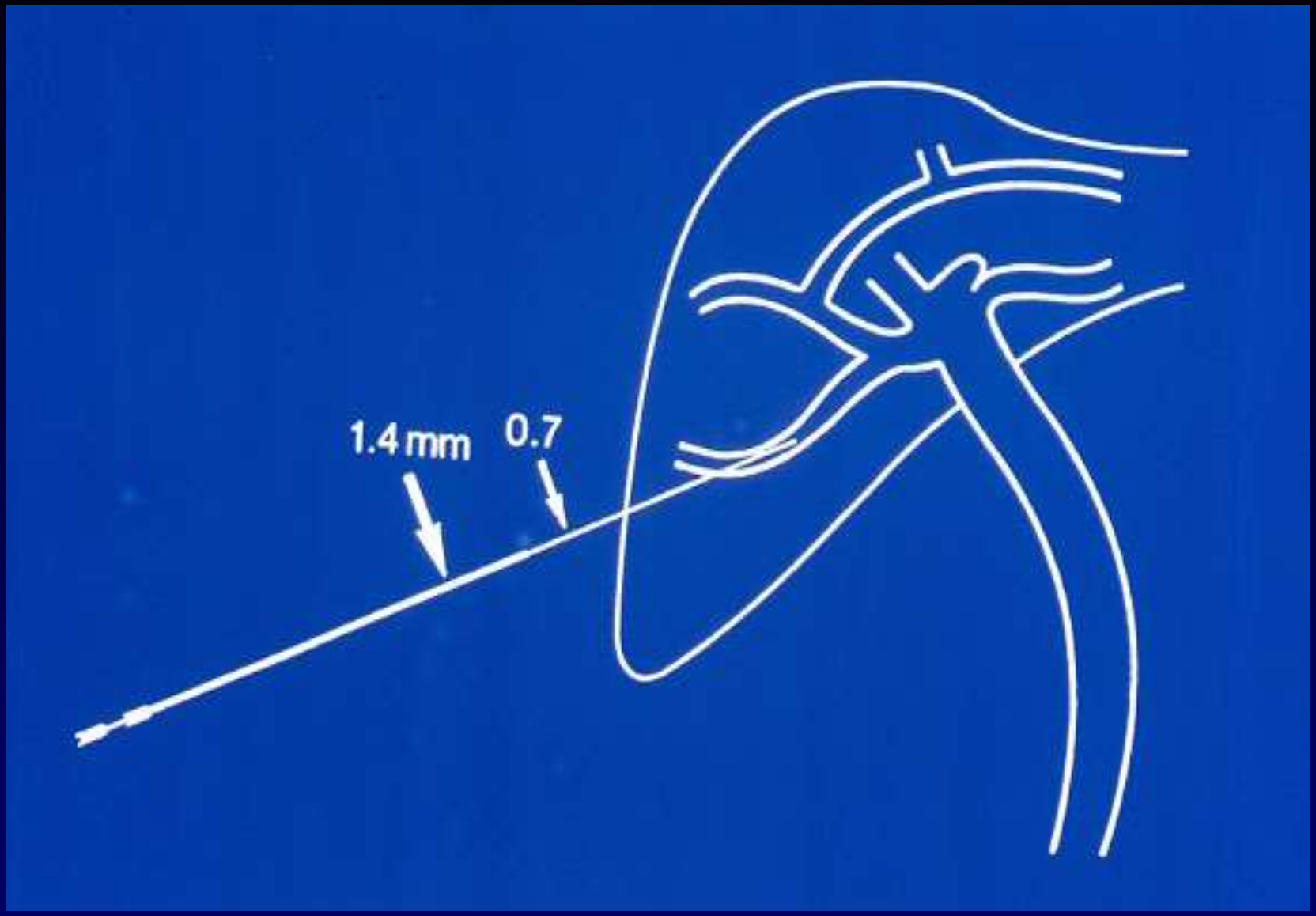
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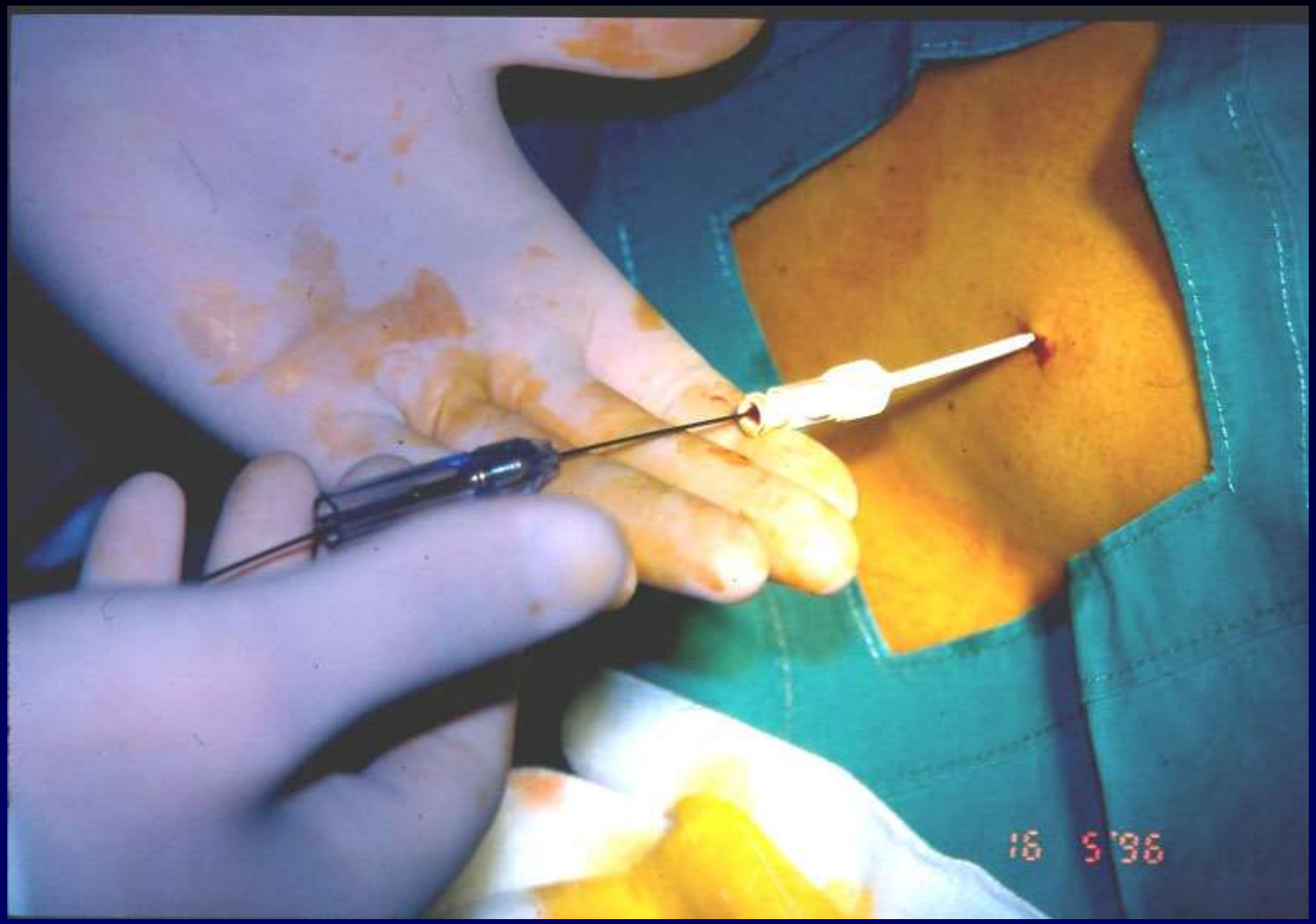
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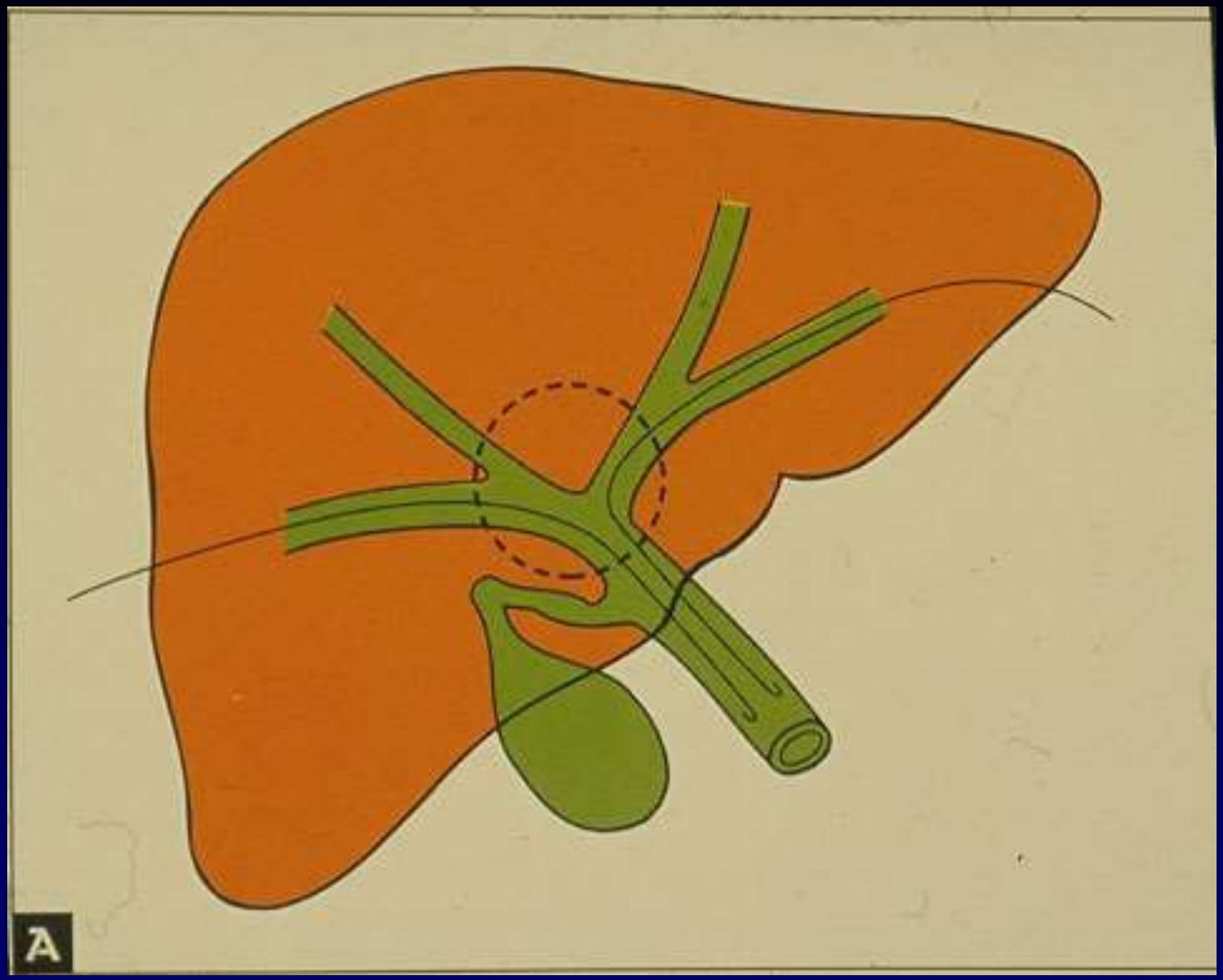
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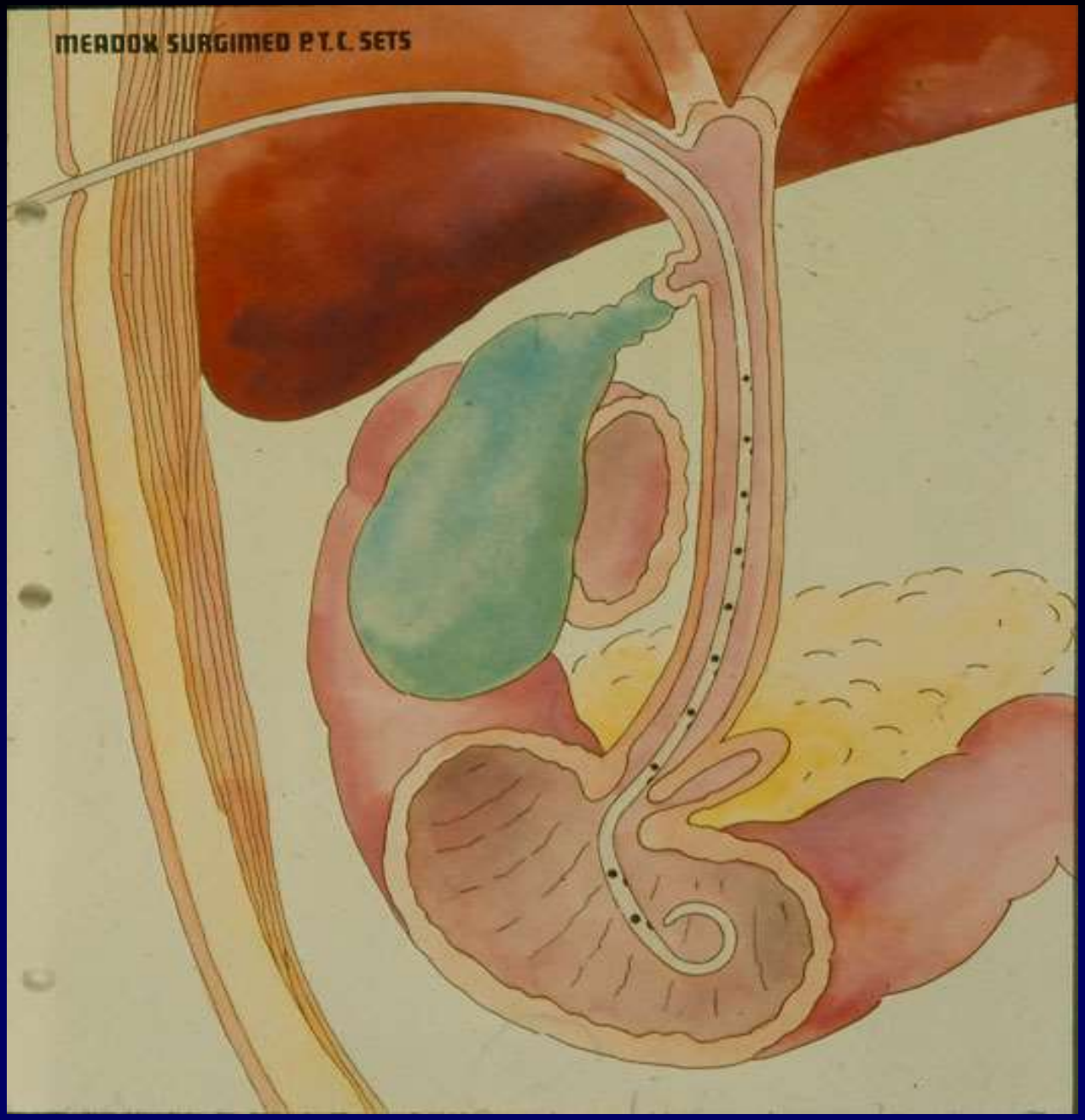
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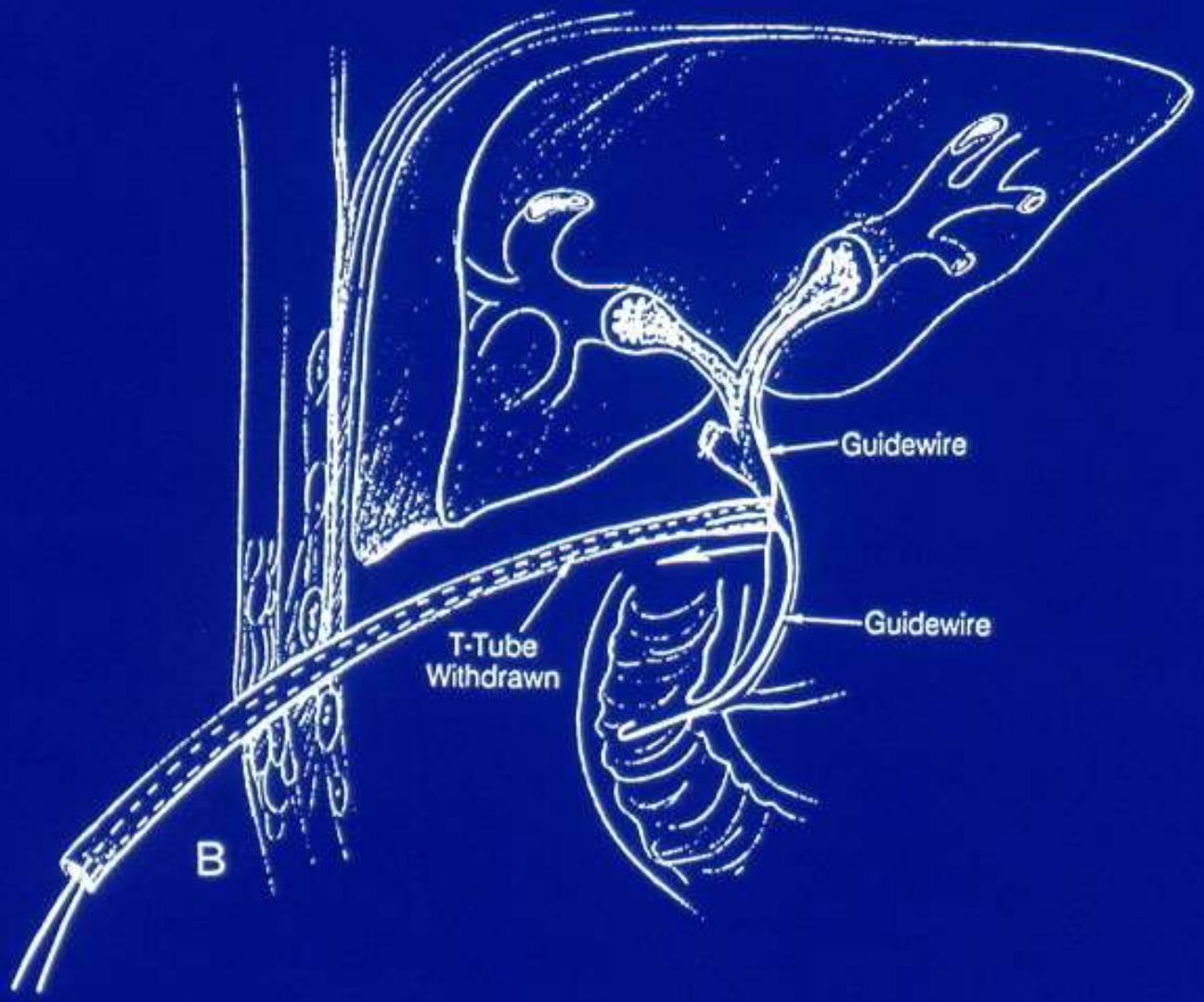
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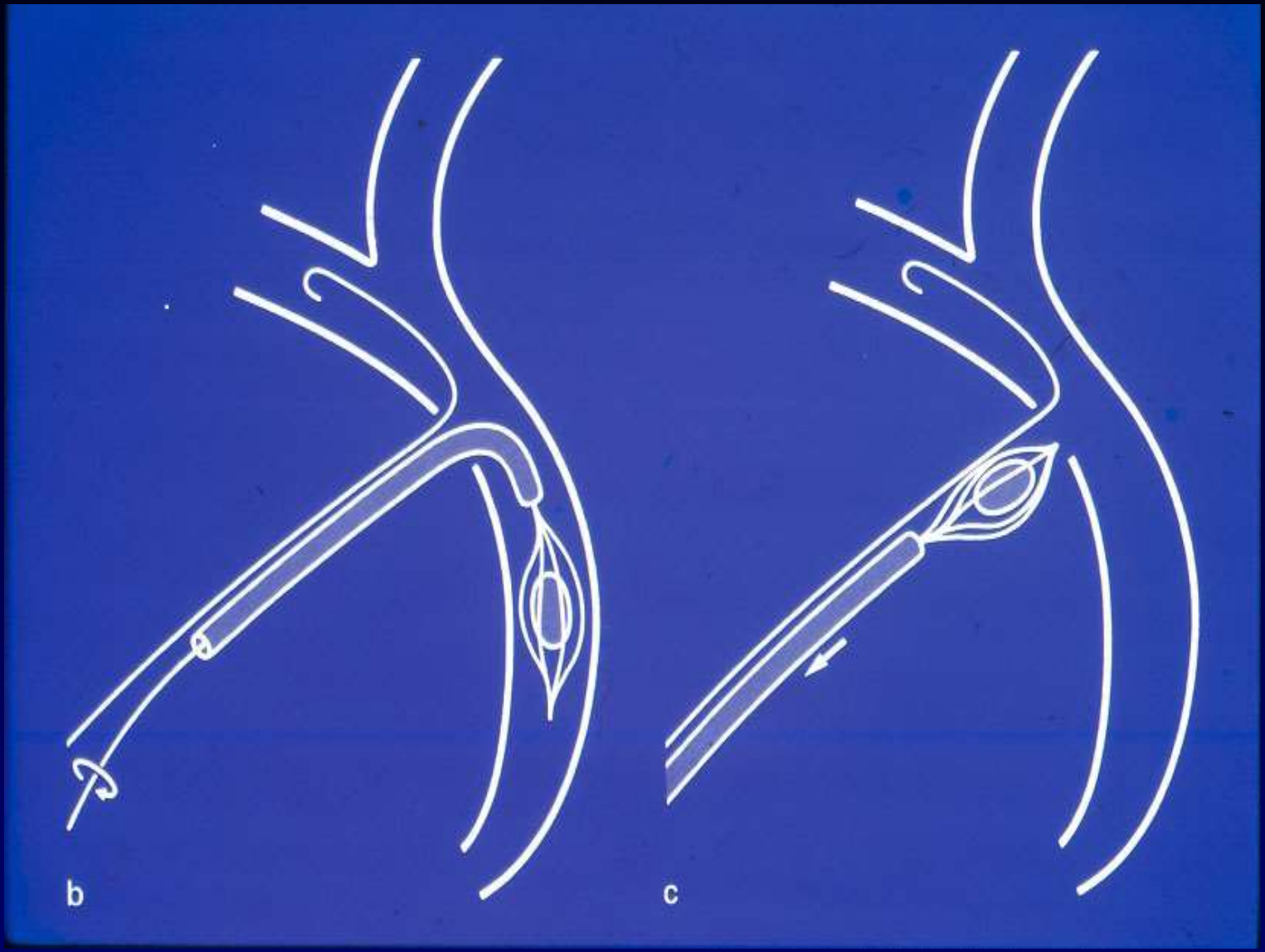
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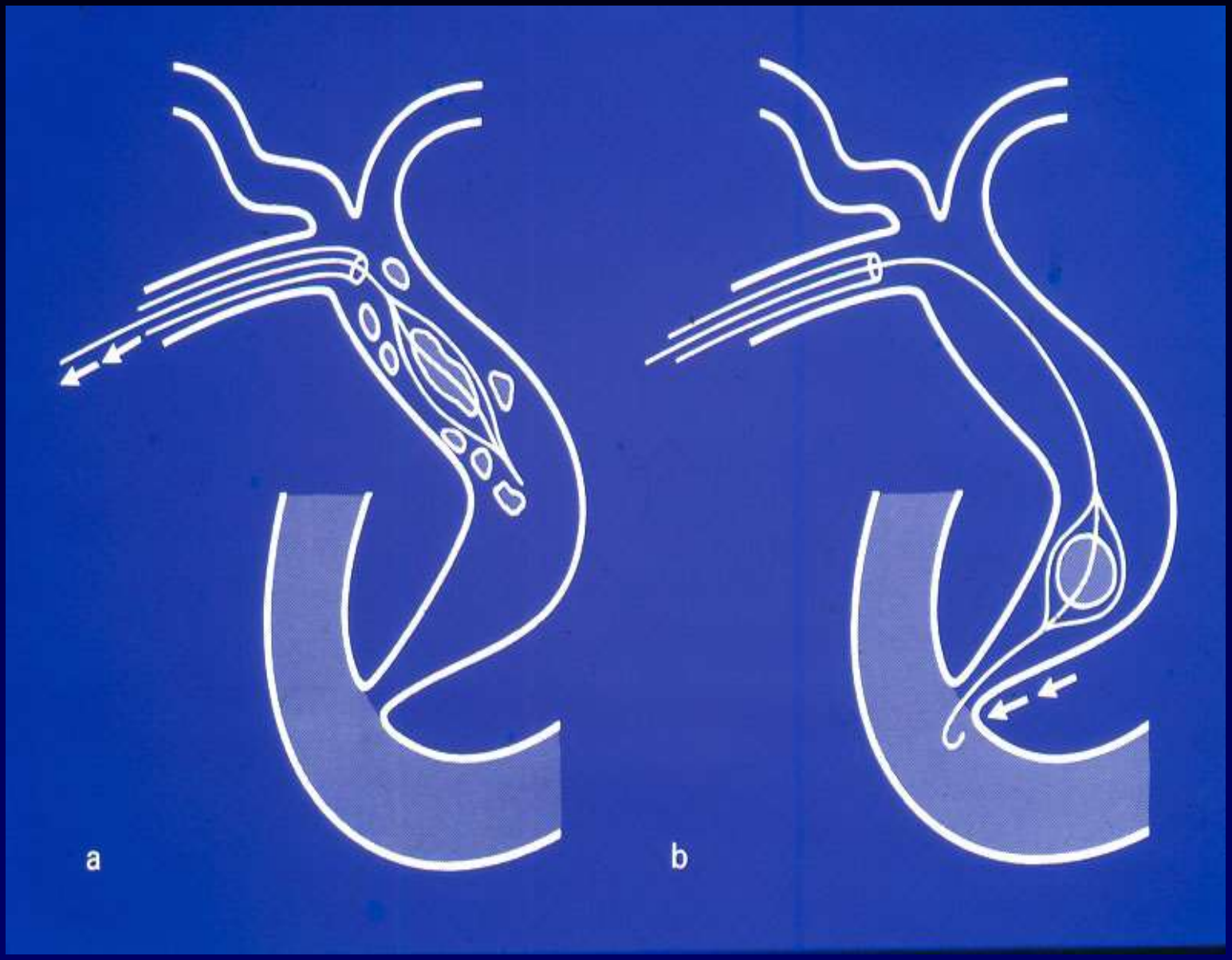
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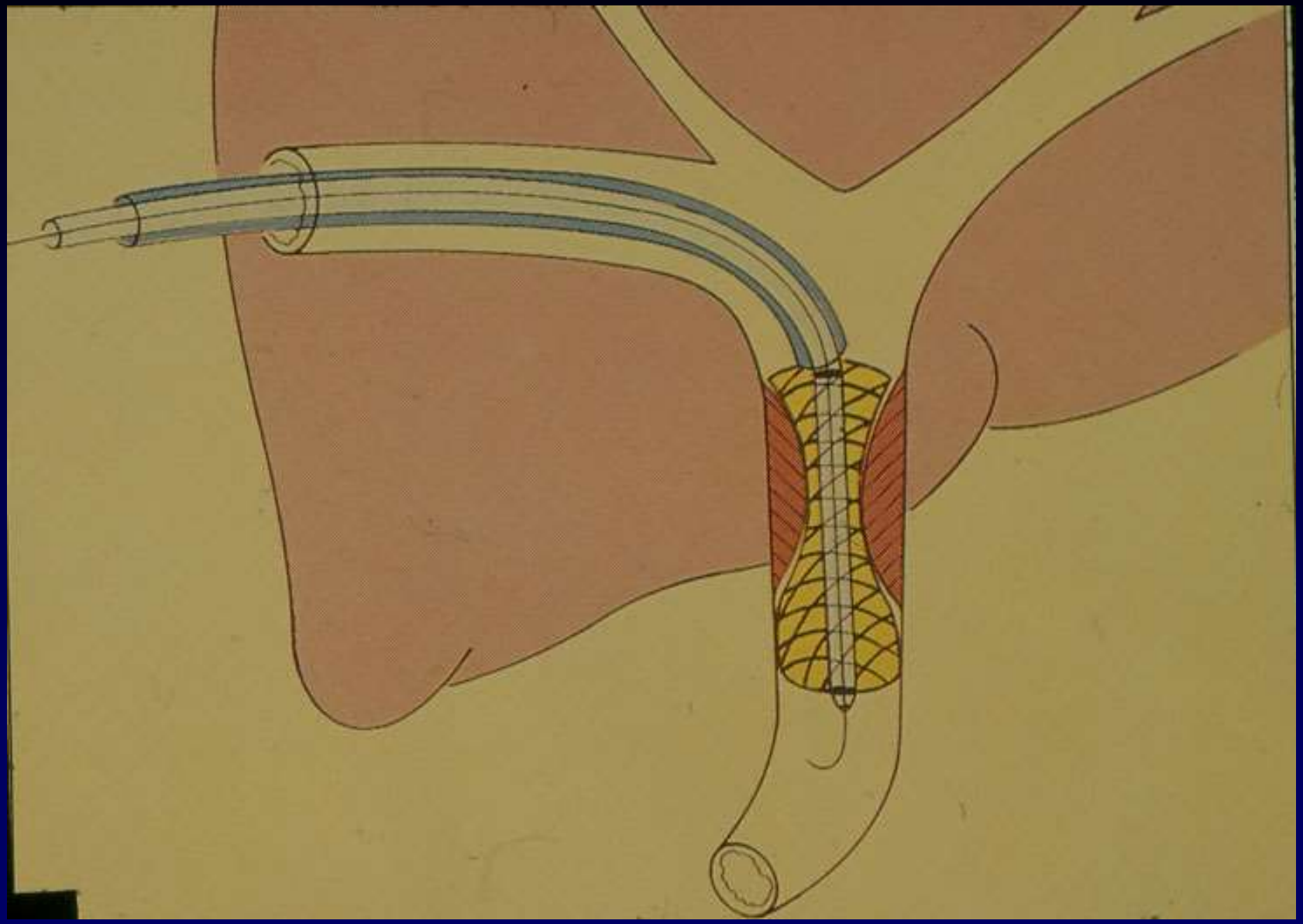

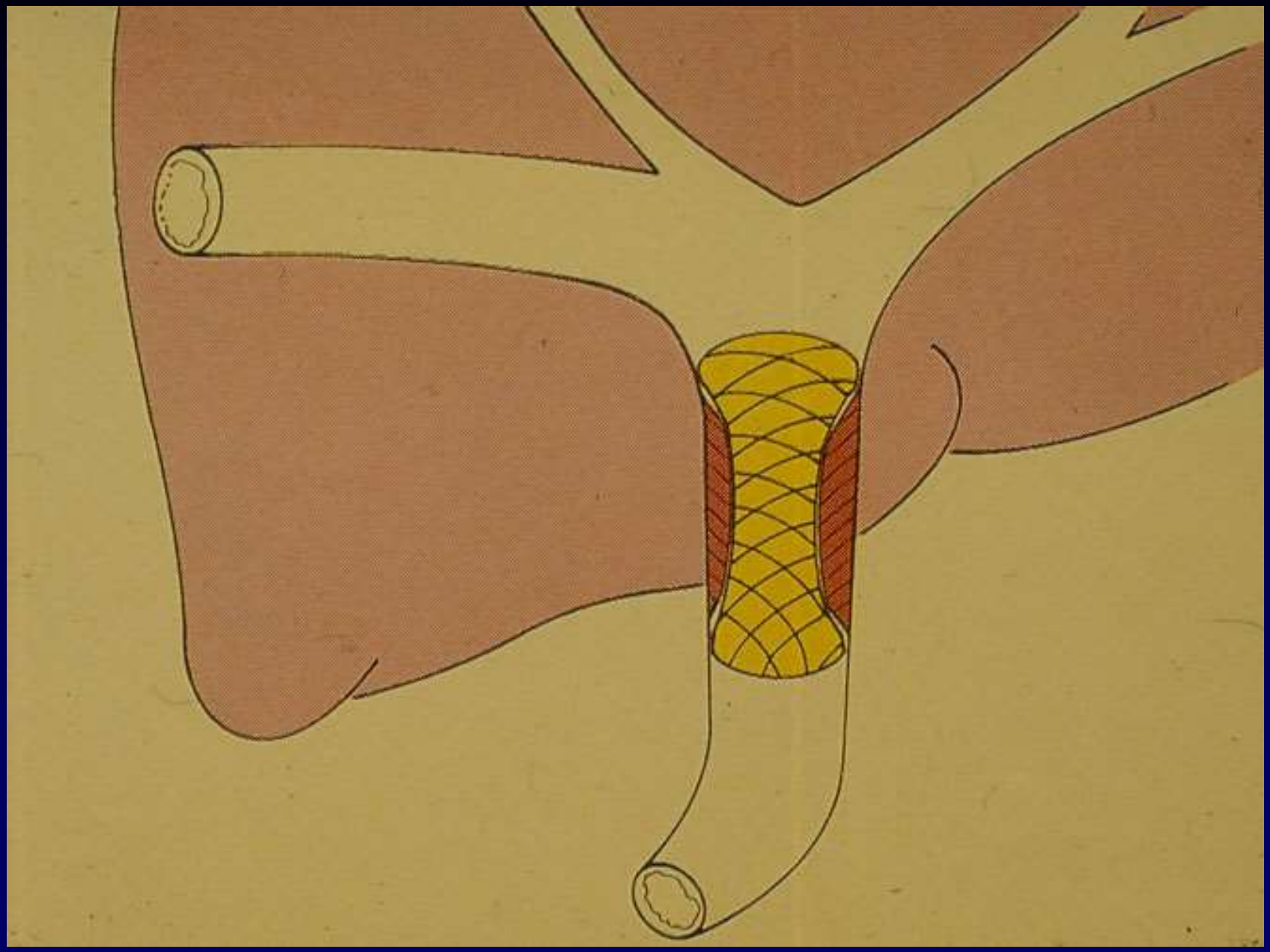

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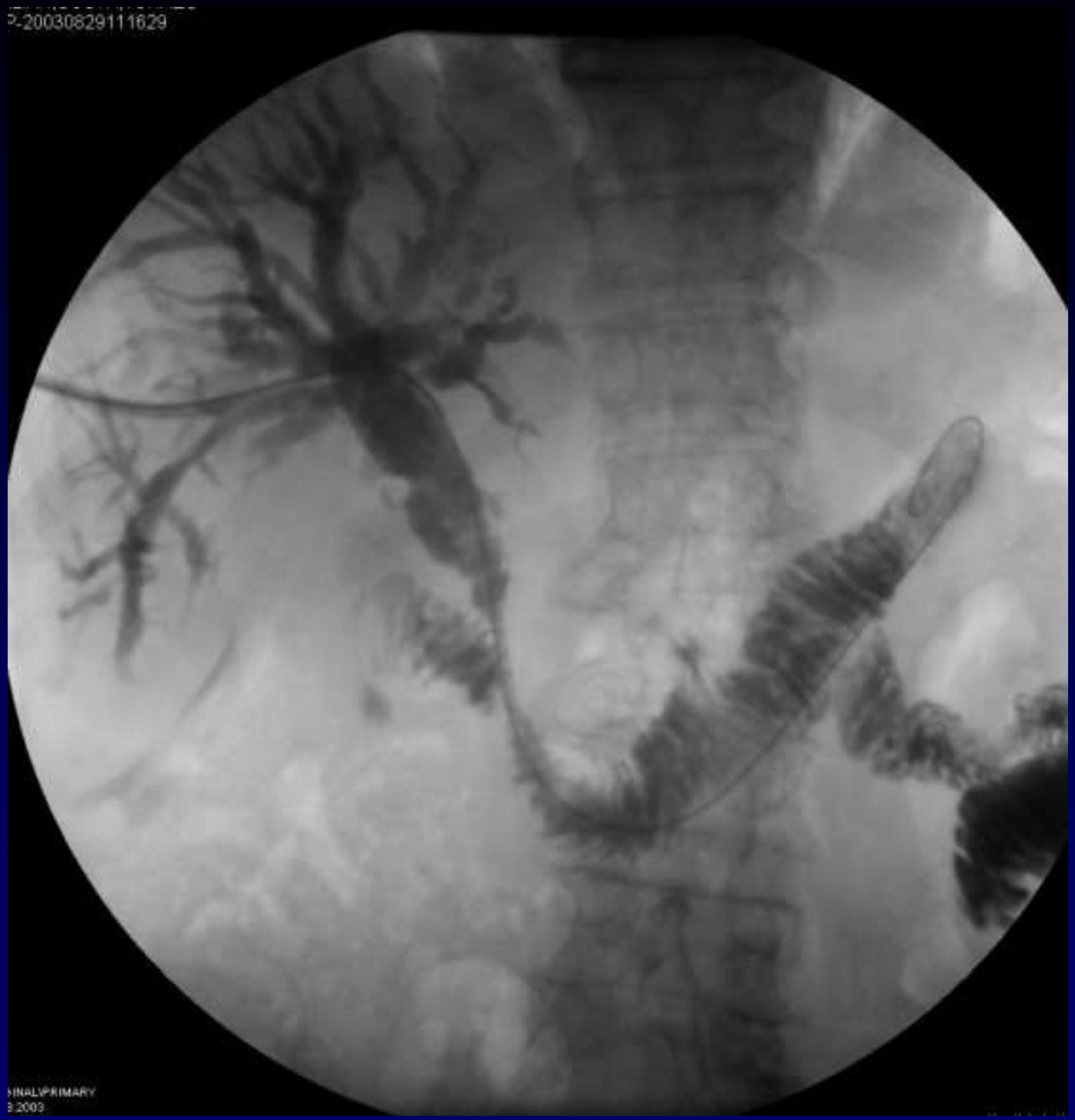
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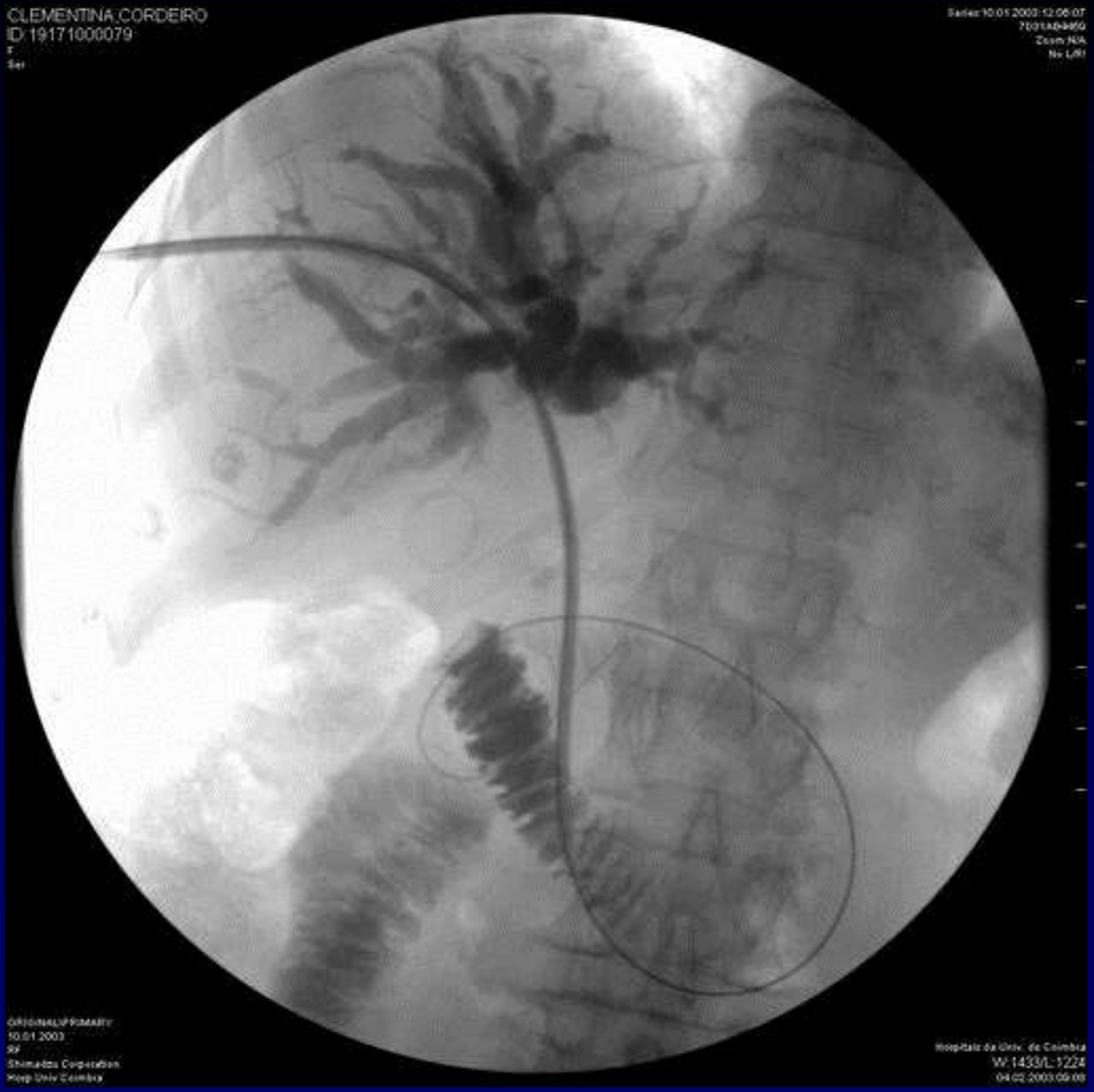
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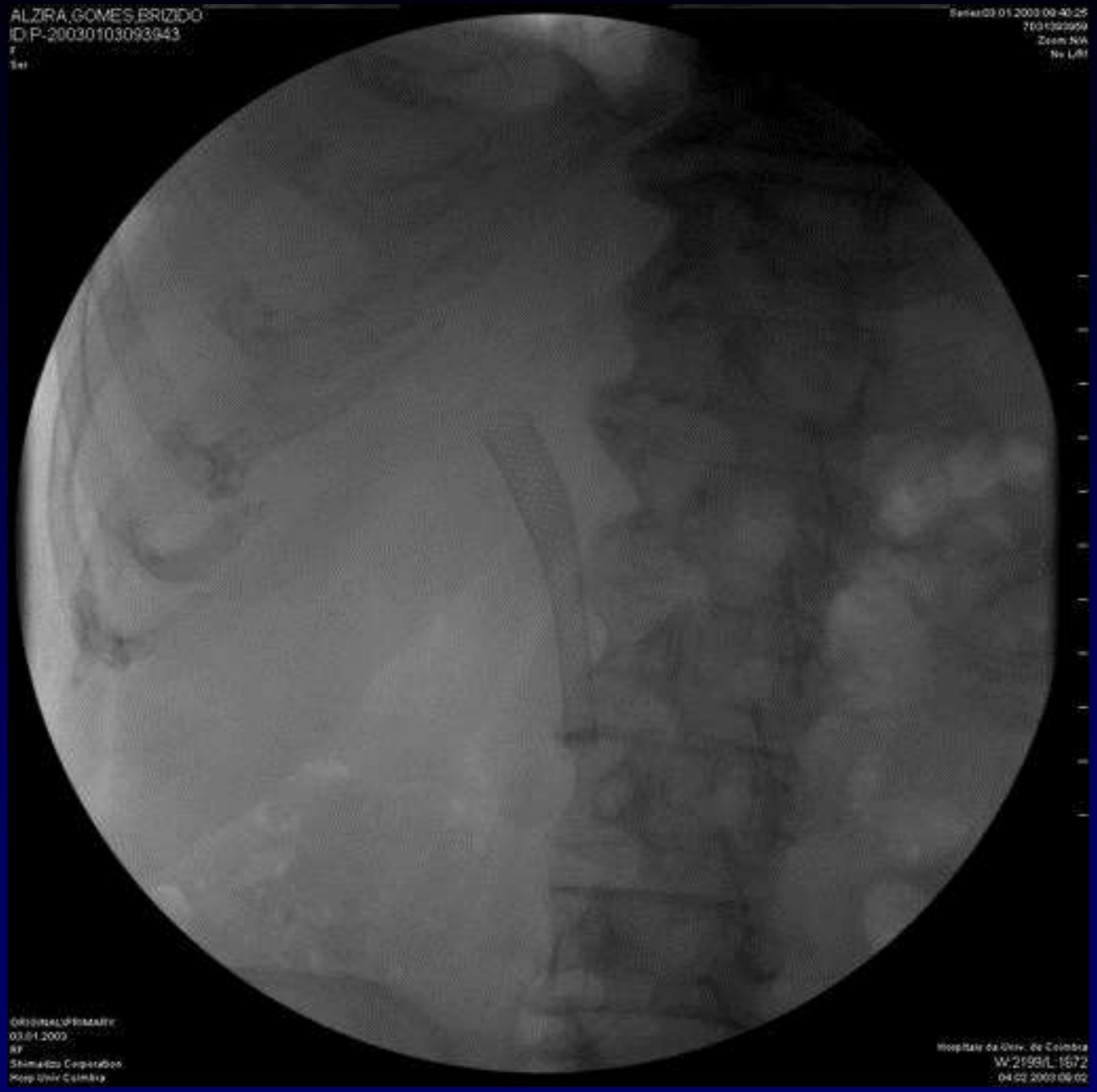
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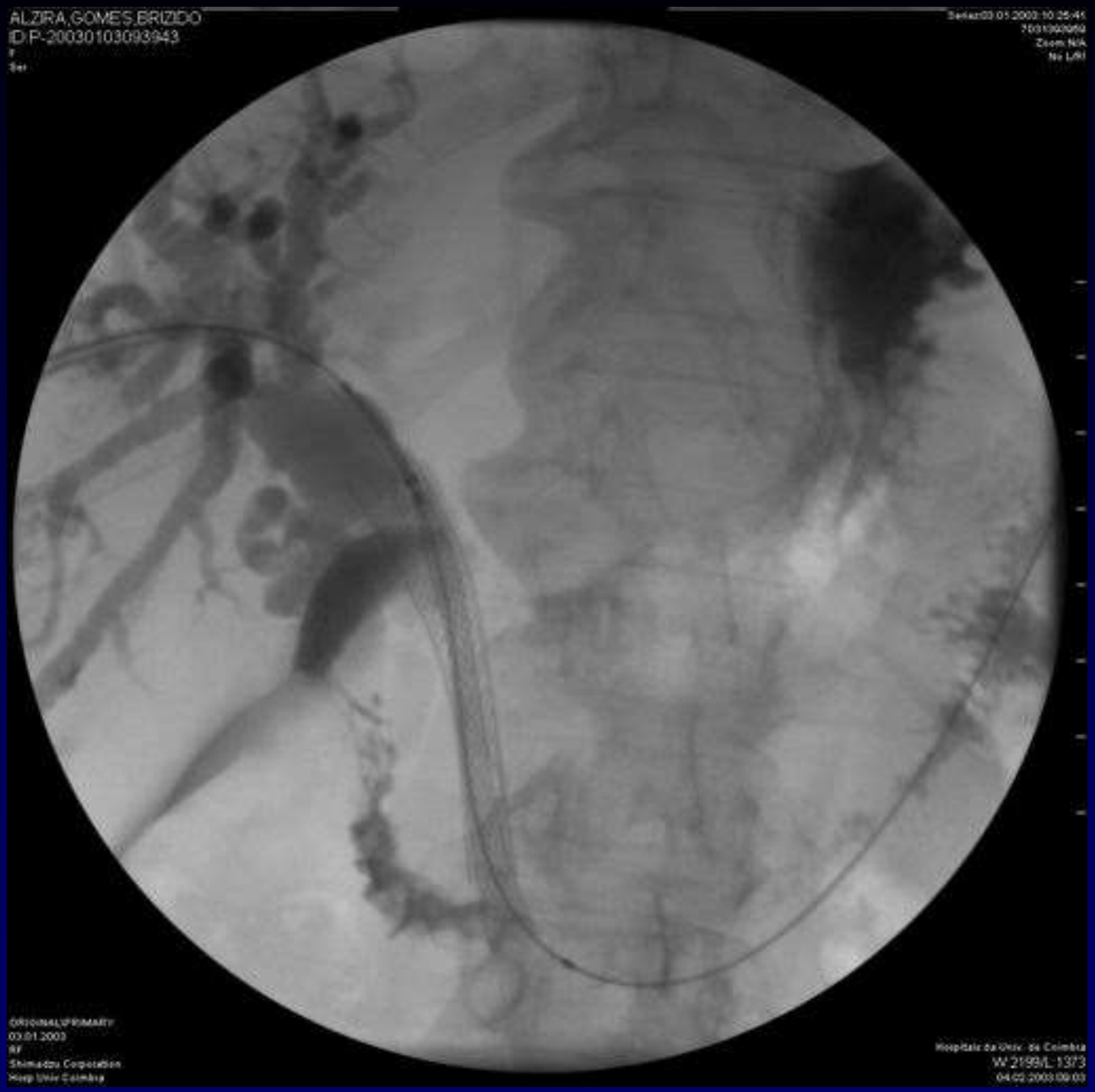
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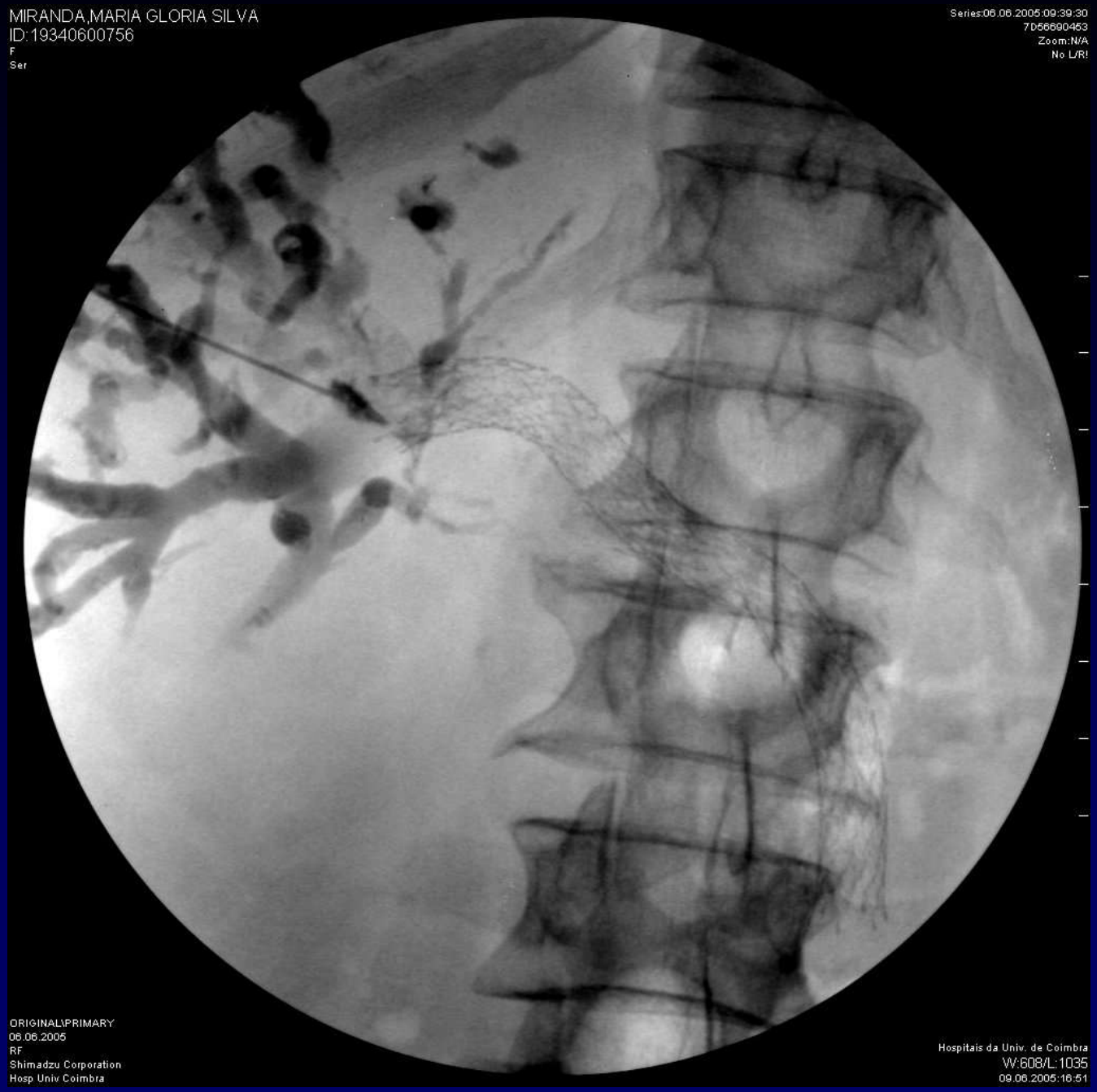
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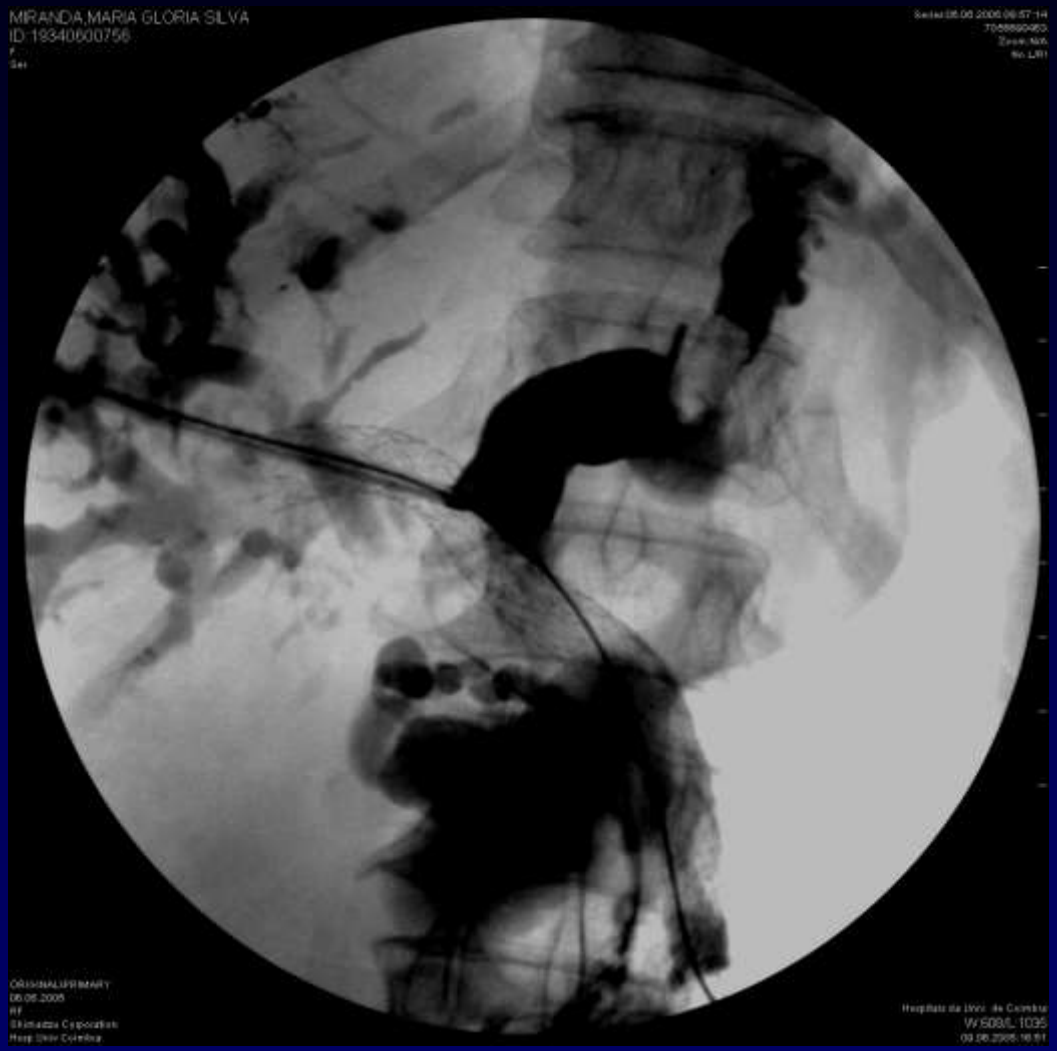
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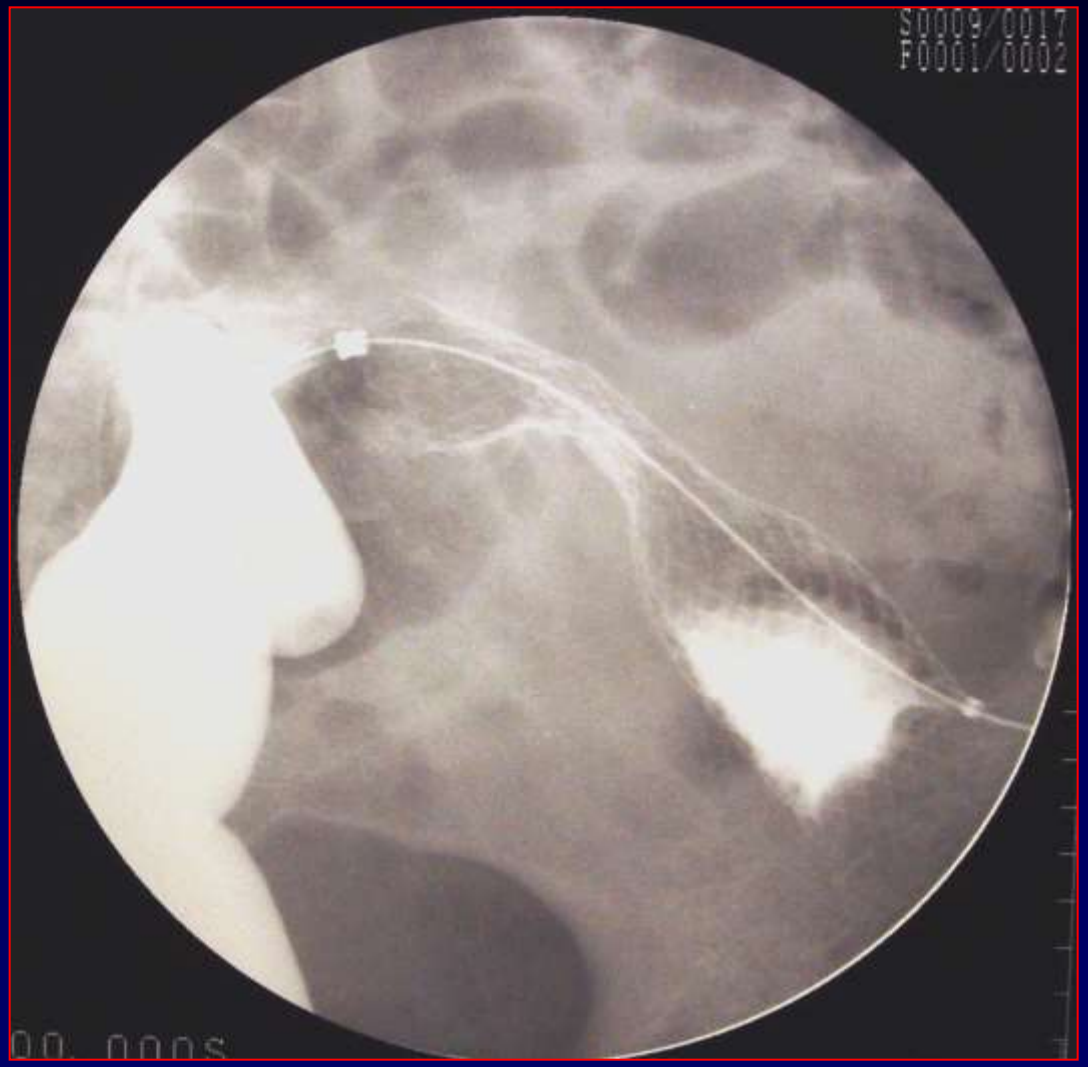
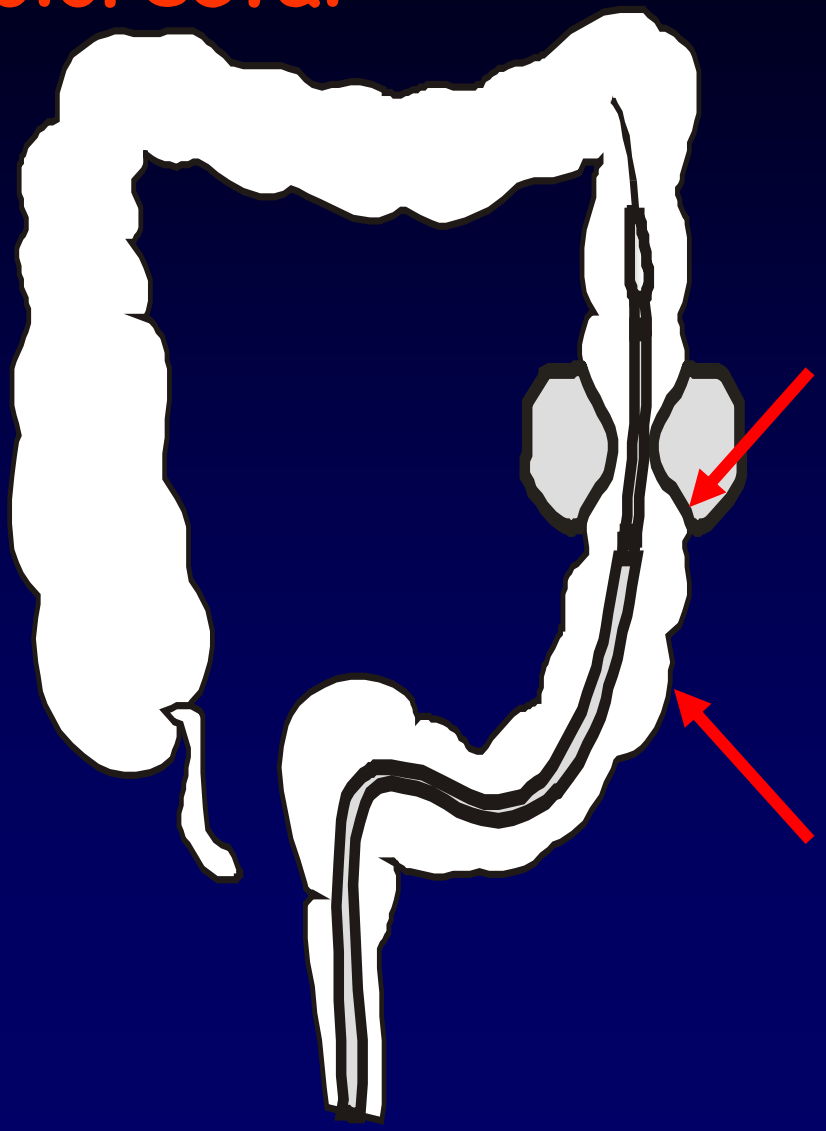
Endoprótese metálica auto-expansiva na oclusão colorectal maligna



Endoprótese metálica auto-expansiva na oclusão colorectal maligna

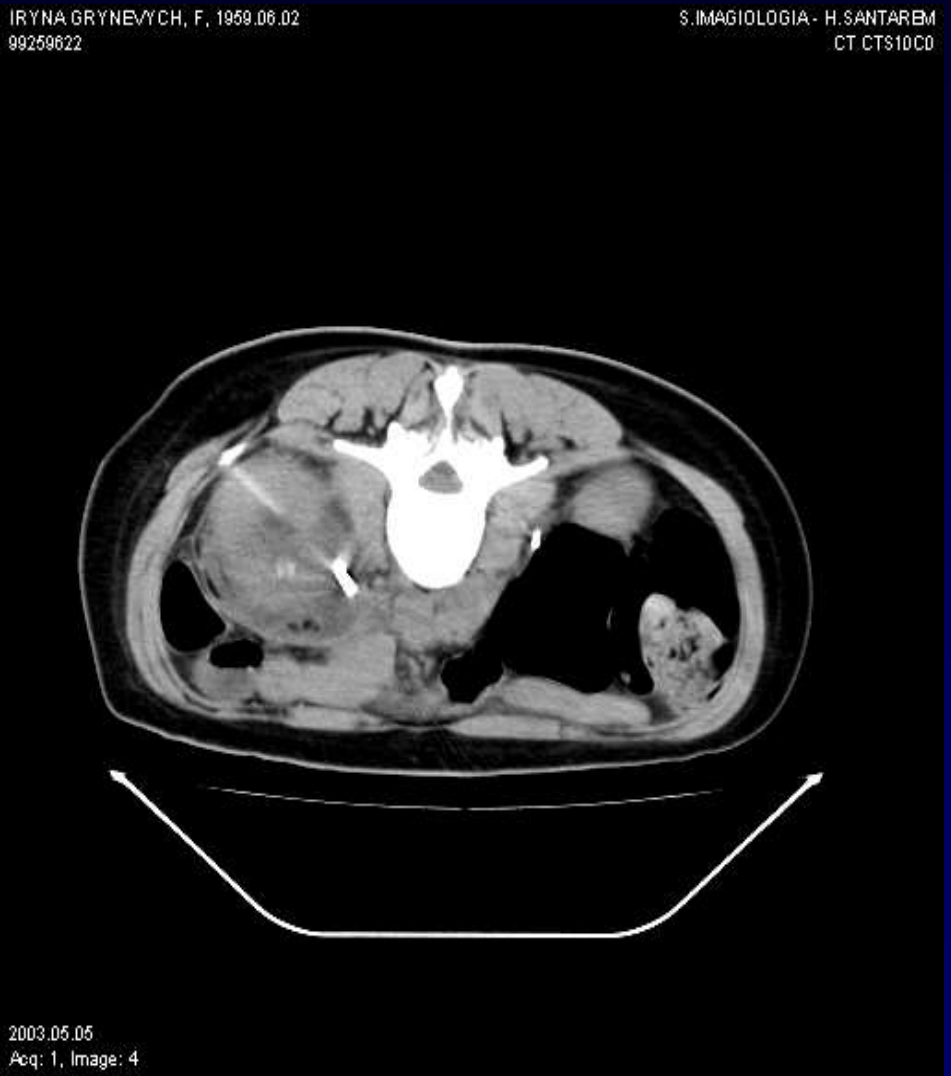


Técnica:

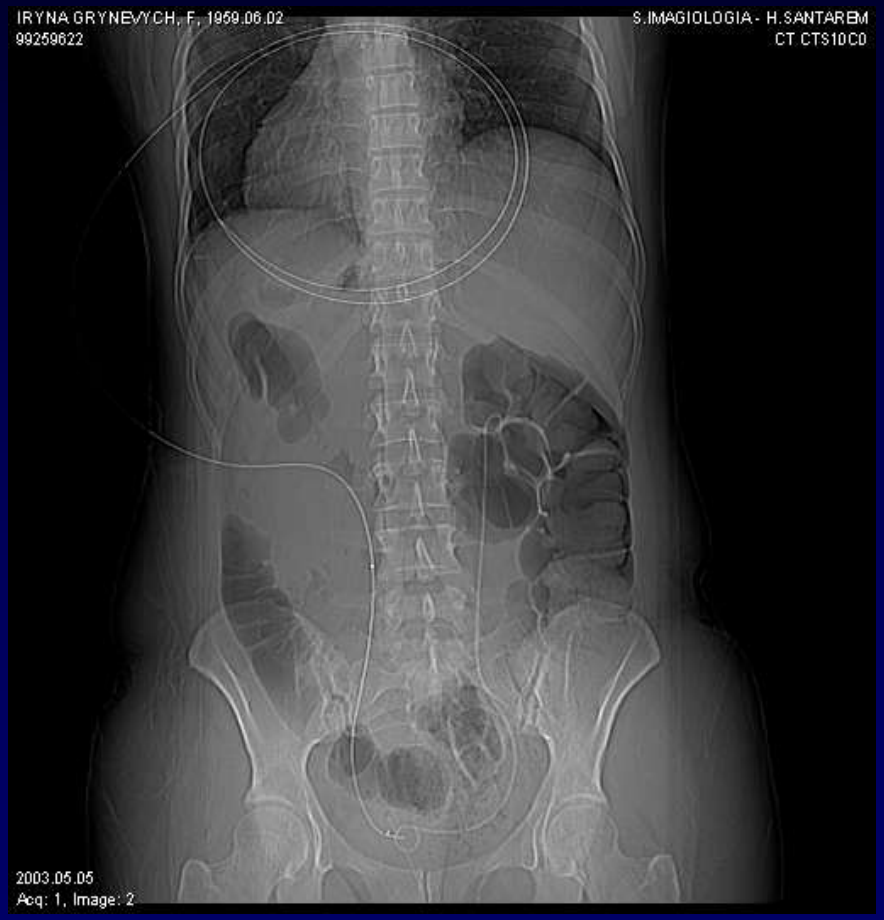
- os anéis marcadores proximal e distal são posicionados nos respectivos bordos do tumor

Nefrostomias dirigidas por TC

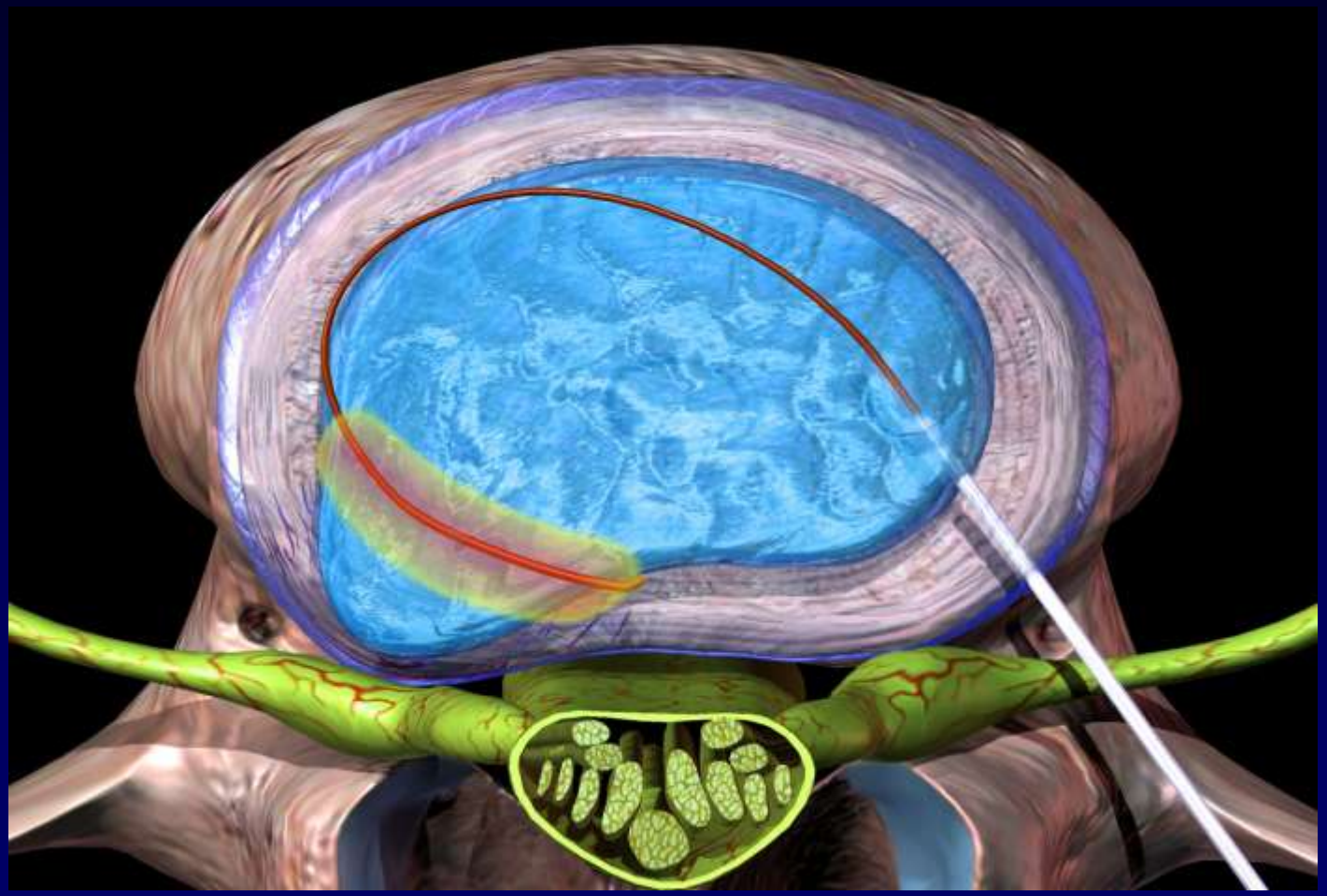
Nefrostomias dirigidas por TC



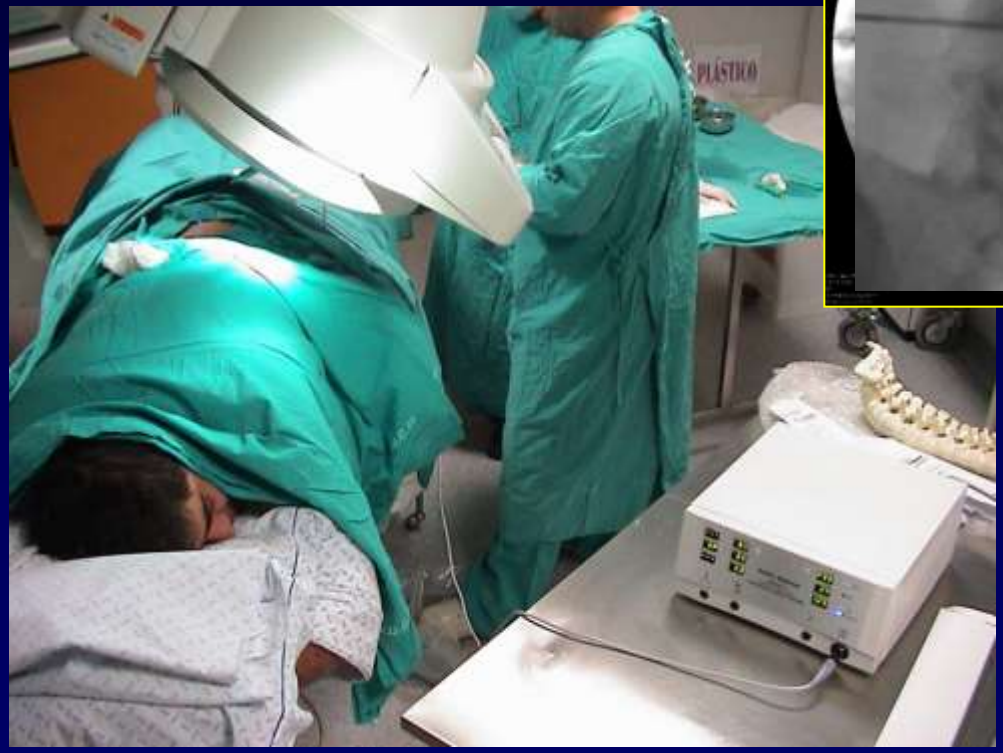
Nefrostomias dirigidas por TC

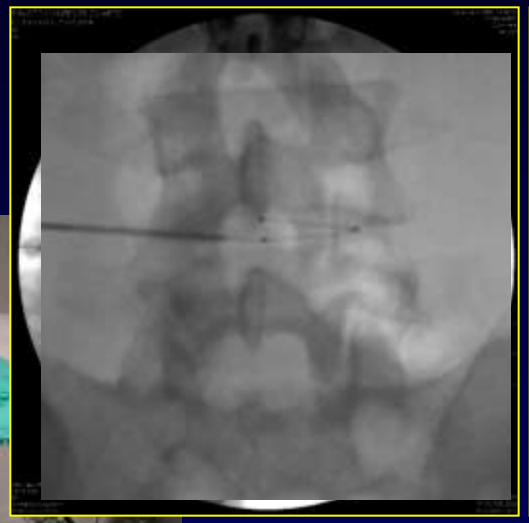


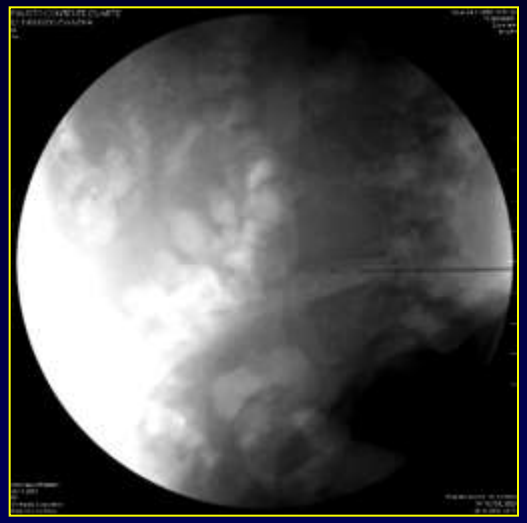
Electro-Termoterapia Intra-discal



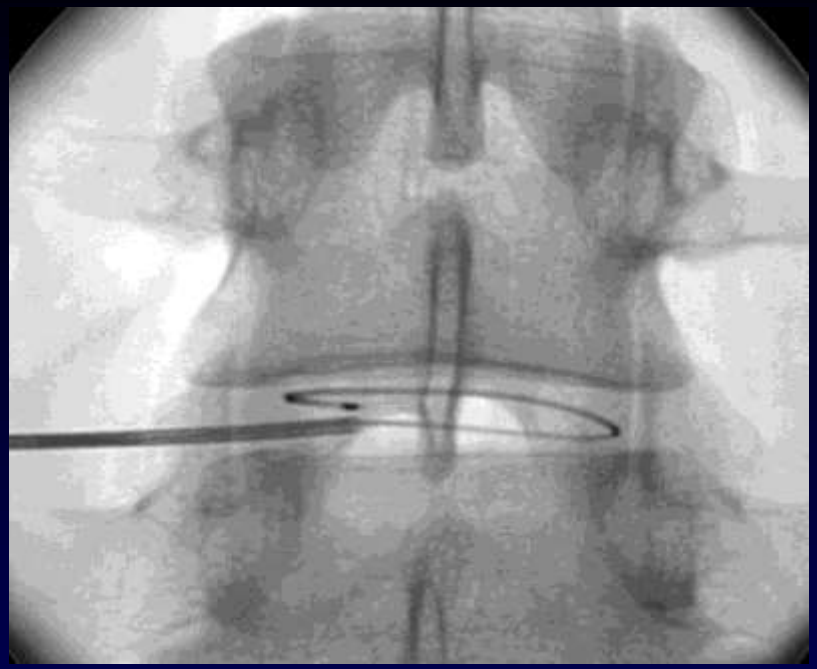
Electro-termoterapia intra-discal

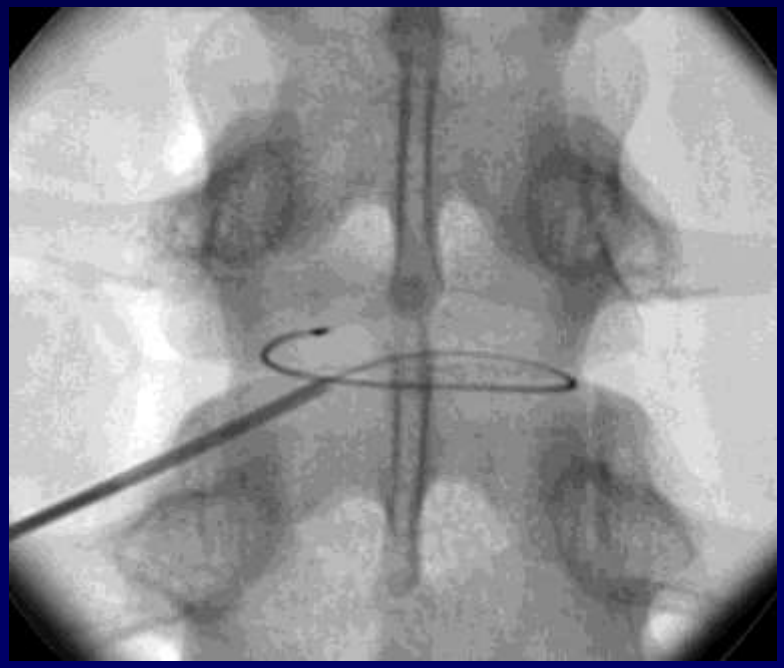






Electro-Termoterapia Intra-discal





Termo-ablação por RF

Termo-ablação por RF

Mecanismo de acção

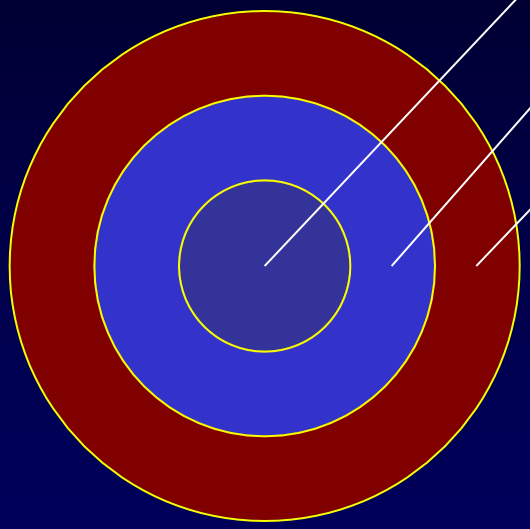
O gerador de RF é ligado a um eléctrodo que é inserido no corpo humano, em lesão a tratar.

O corpo humano é assim integrado num circuito eléctrico (corrente alterna de 460 kHz) depois de aplicados eléctrodos de retorno também ligados ao gerador.

A ponta(s) não isolada(s) do eléctrodo concentra sob a forma de radiofrequência na área tumoral, a energia causando por agitação molecular intra-celular a elevação da temperatura local (50-100°C) causando por fricção, dano celular irreversível.

Coagulação proteica e necrose celular

Técnica

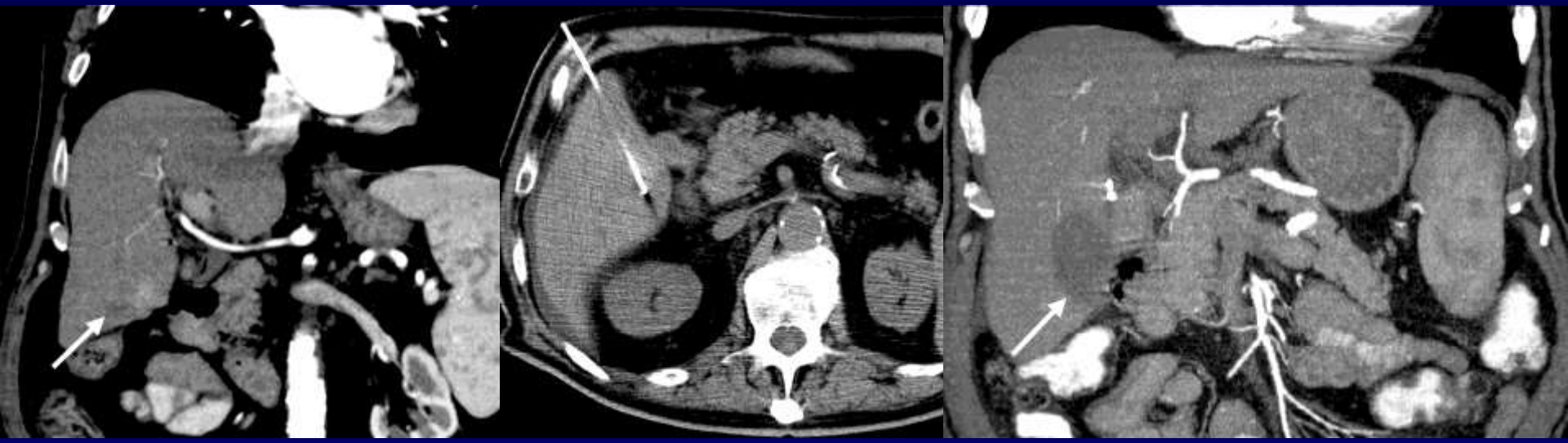


Objectivo:

Destruição neoplásica, incluindo uma margem circunferencial de segurança com 5-10mm de espessura

Técnica

O procedimento deve incluir a ablação de uma margem de 1cm de tecido hepático normal em torno do tumor (a mesma margem recomendada para a maioria das ressecções cirúrgicas).



Técnica

Vantagens da punção guiada por TC

Detecção e Localização da lesão independentemente do biotipo ou de interposição gasosa

Determinação da extensão da lesão

Selecção do plano mais adequado ao posicionamento do eléctrodo com selecção do trajecto mais apropriado

Relação da lesão com as estruturas anexas

Posicionamento do paciente adaptado à localização da lesão

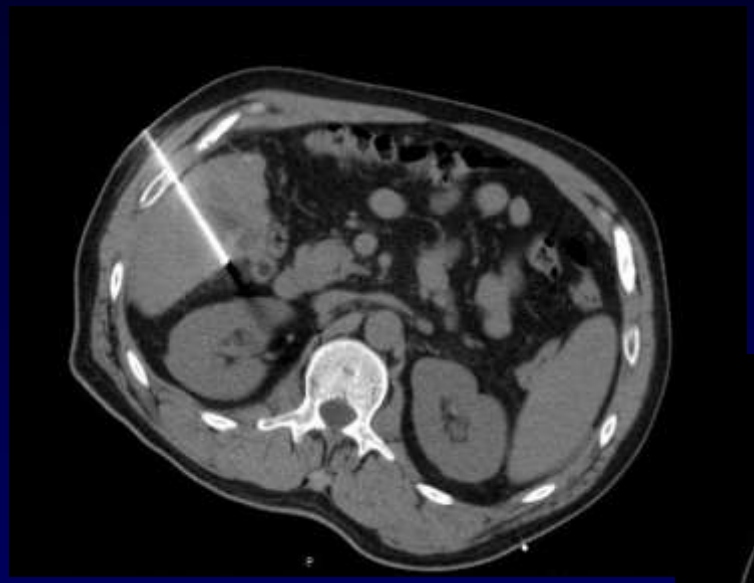
Técnica

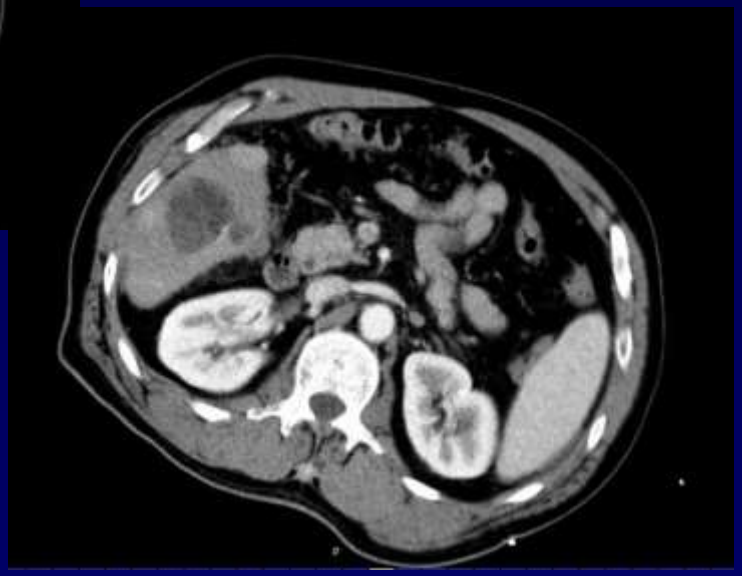
Na radiologia de intervenção utiliza-se a via percutânea guiada por imagem (US/TC) para inserir um eléctrodo-agulha com uma haste isolada e uma ponta não isolada que é introduzida no tumor.

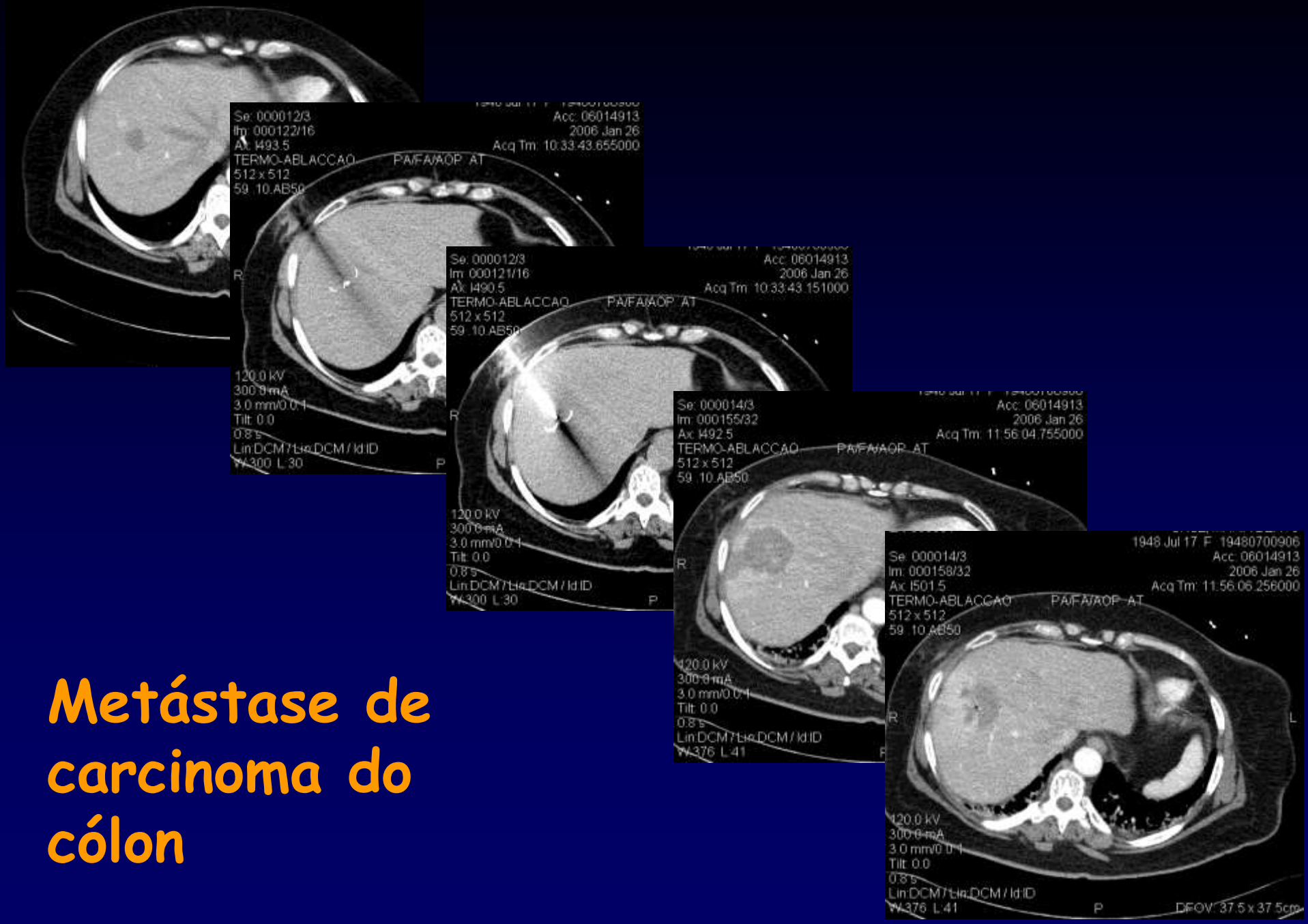
A ablação por RF pode ser realizada no bloco operatório, sob visão directa, guiada por laparoscopia ou por ecografia per-operatória (manobra de Pringle).

Em alguns casos a ablação por RF é praticada conjuntamente com a hepatectomia parcial.

CHC multifocal

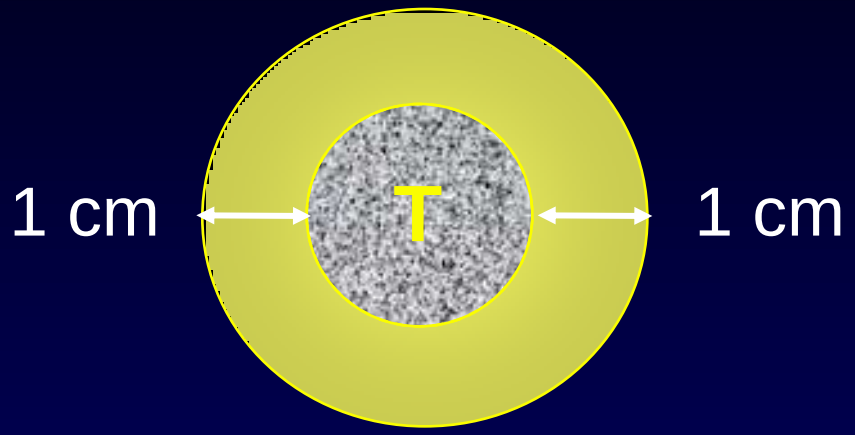


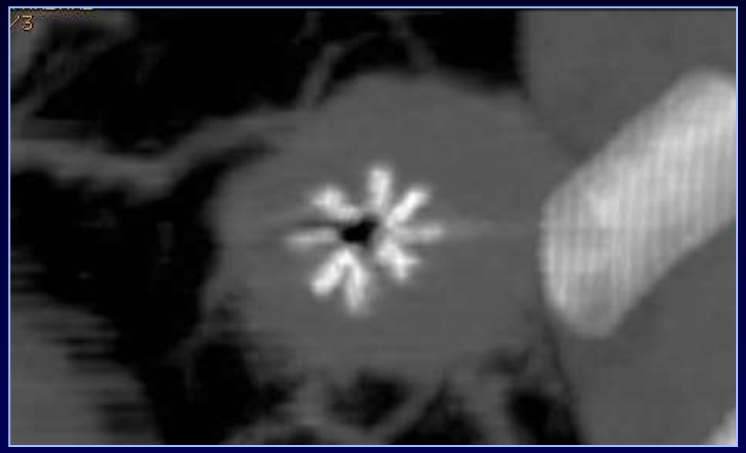


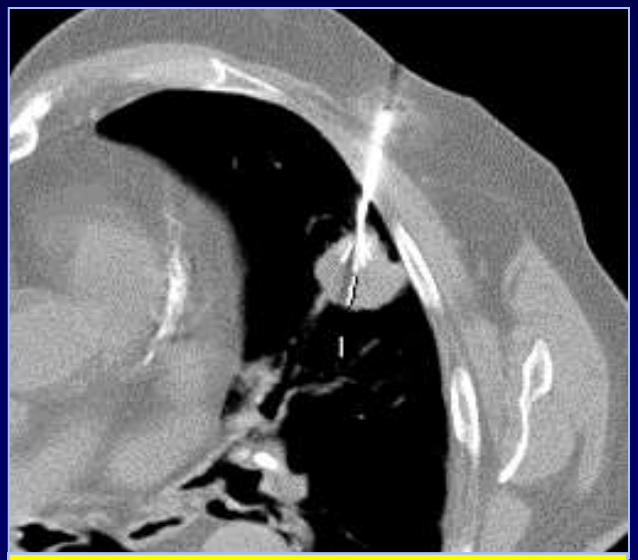


Metástase de carcinoma do cólon

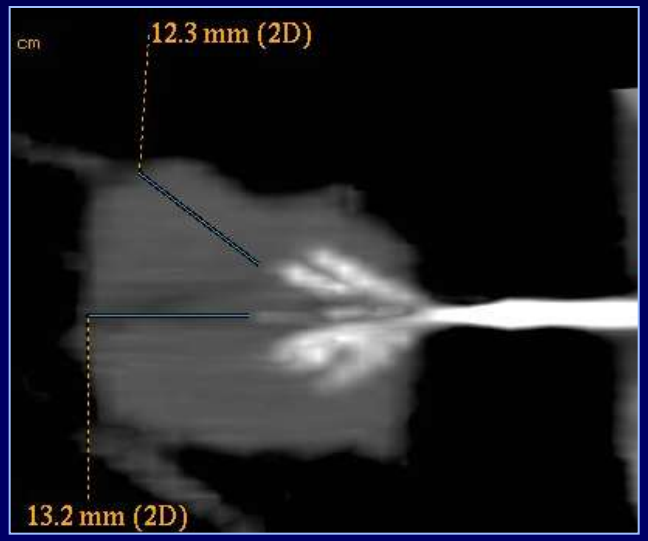
Técnica de Punção



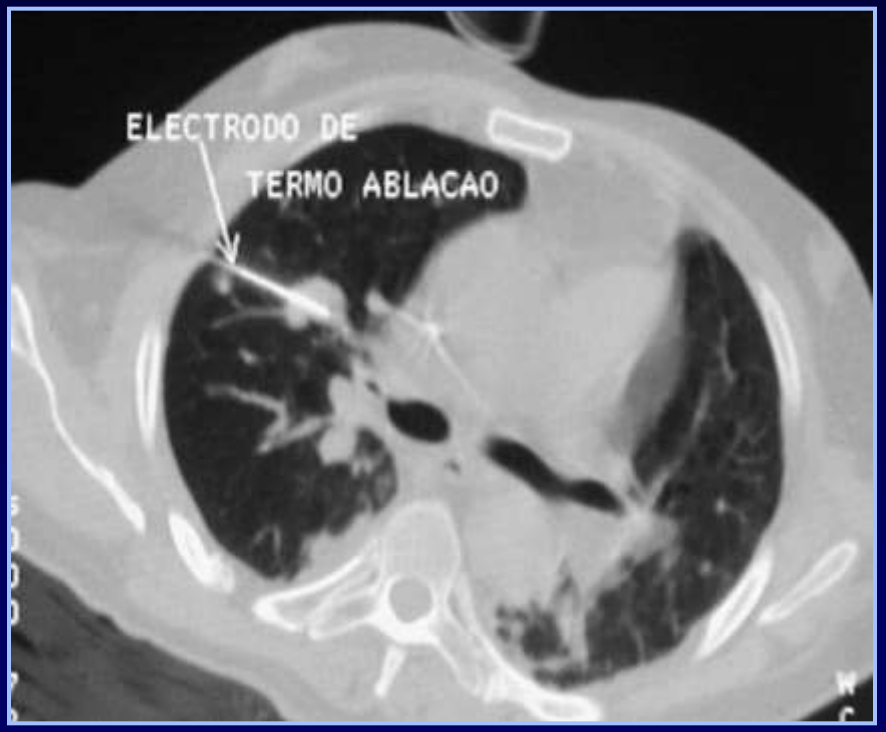




Distância: 0.8 cm

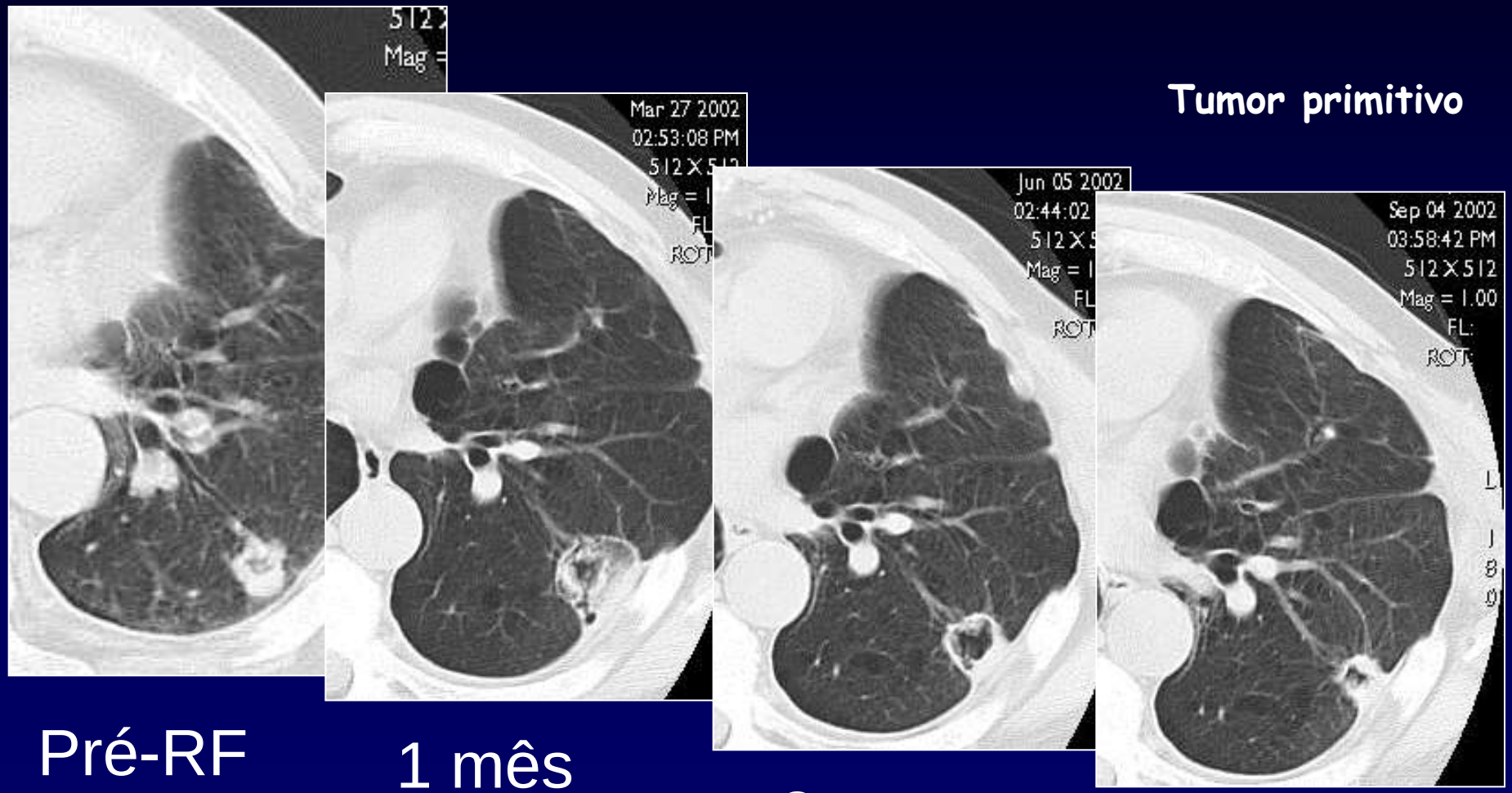


Técnica Punção



Termo-ablação por Radiofrequência

Tumor primitivo



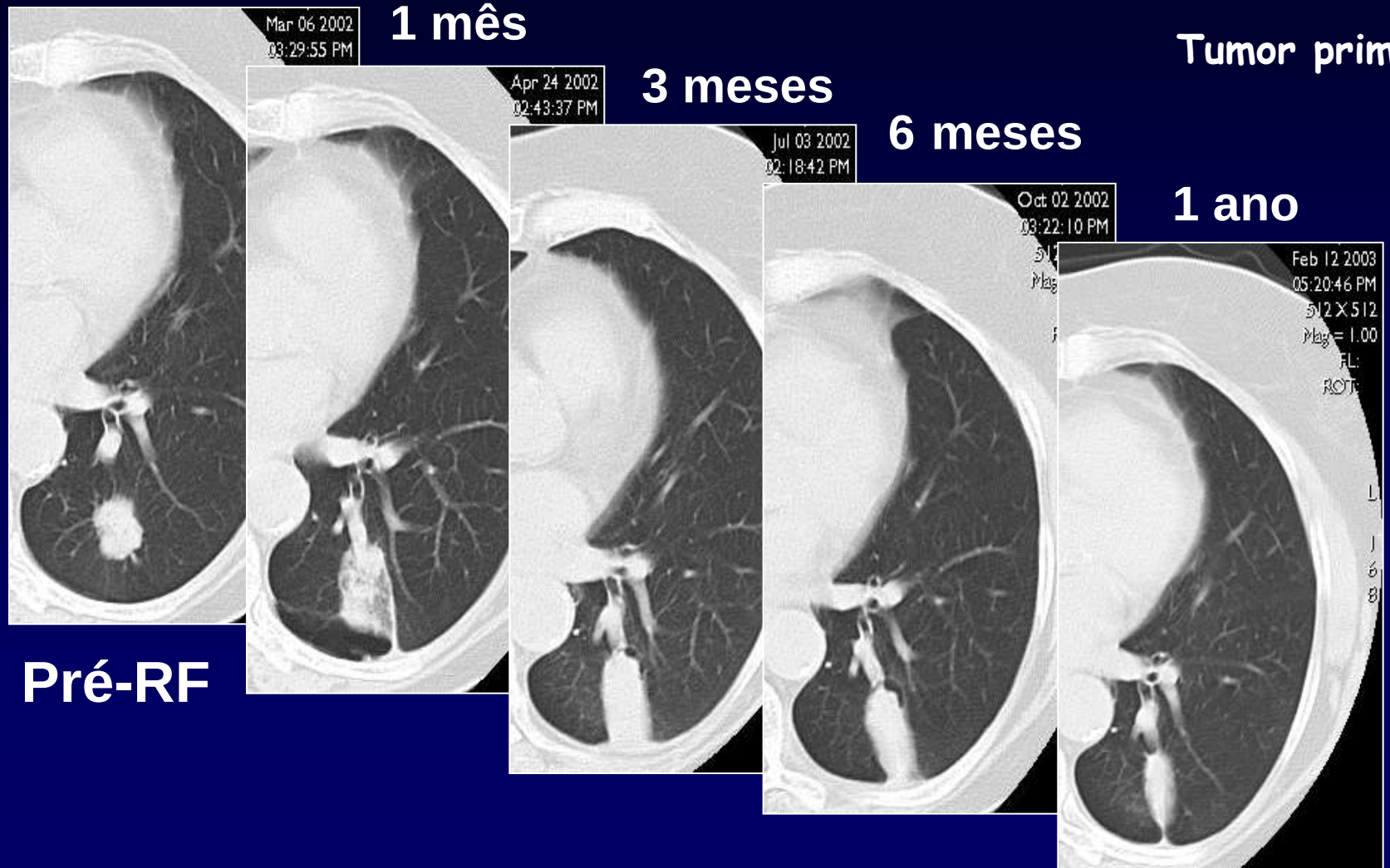
Pré-RF

1 mês

3 meses

6 meses

Termo-ablação por Radiofrequência



Pré-RF

1 mês

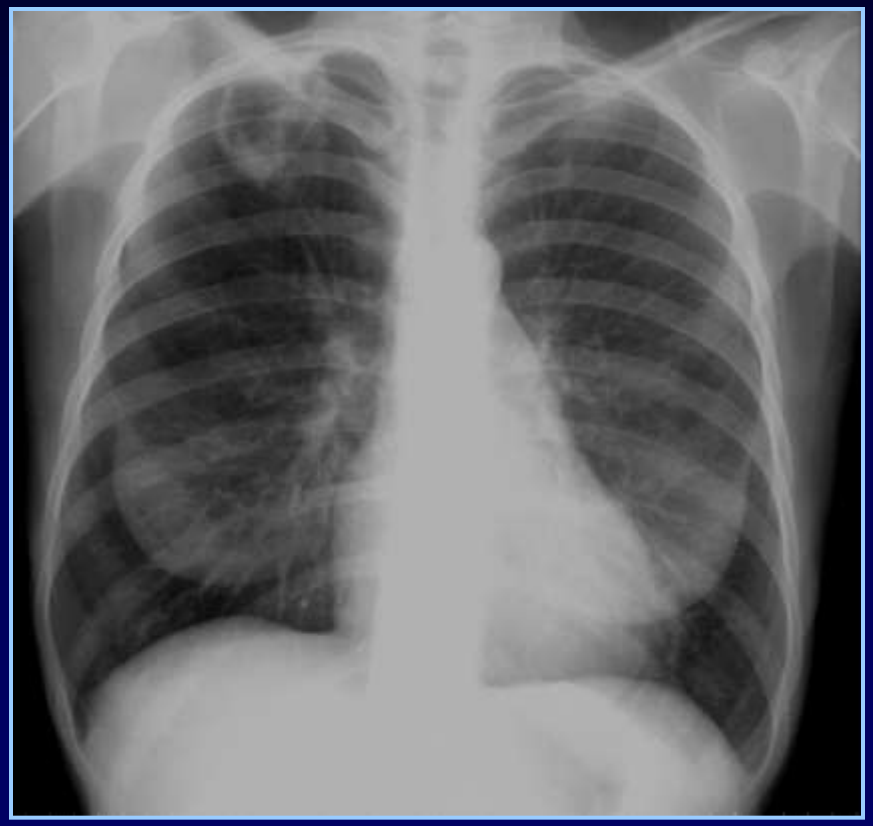
3 meses

6 meses

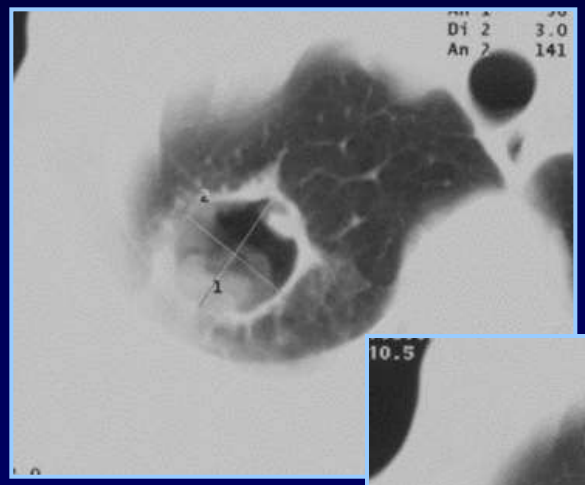
1 ano

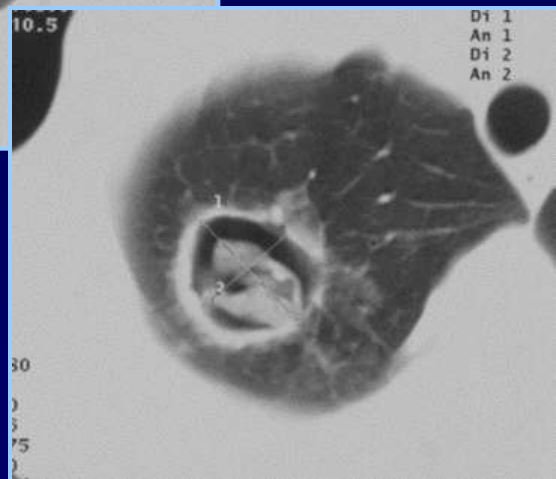
Tumor primitivo

Termo-ablação por Radiofrequência

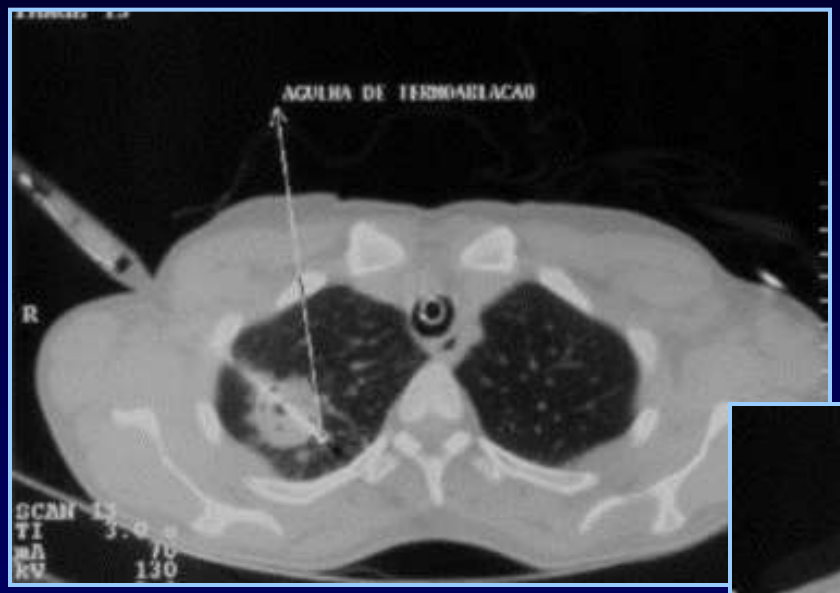


Aspergiloma





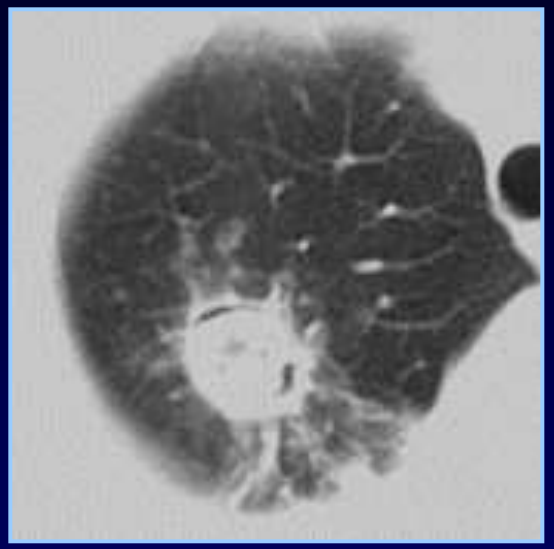
Termo-ablação por Radiofrequência



Aspergiloma

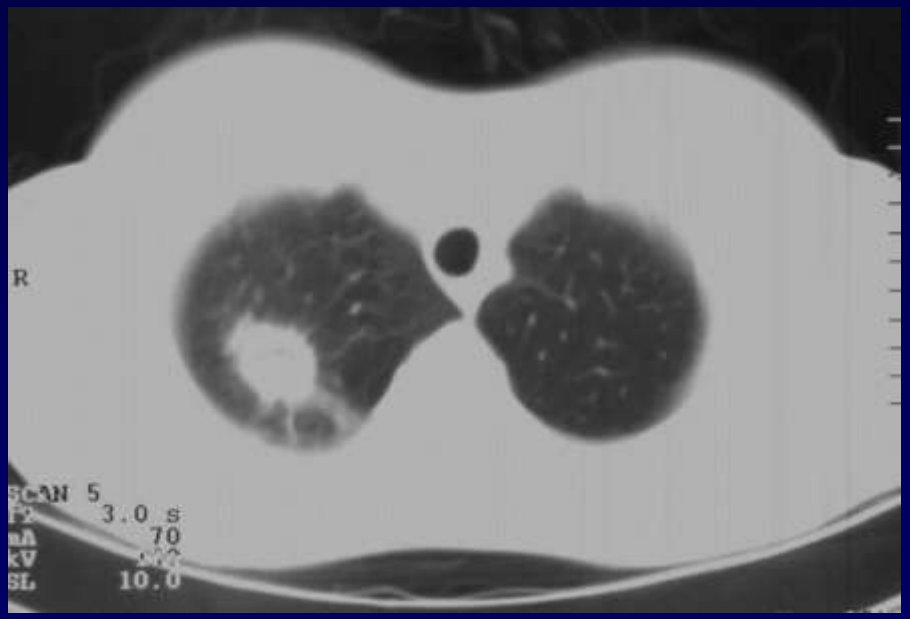
Termo-ablação por Radiofrequência

Aspergiloma



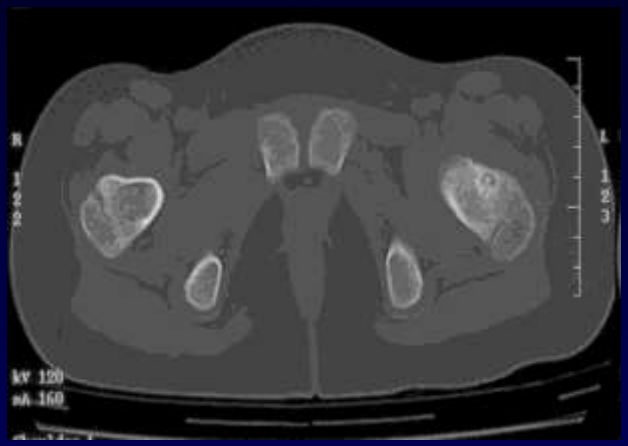
2 meses após RF

4 meses após RF

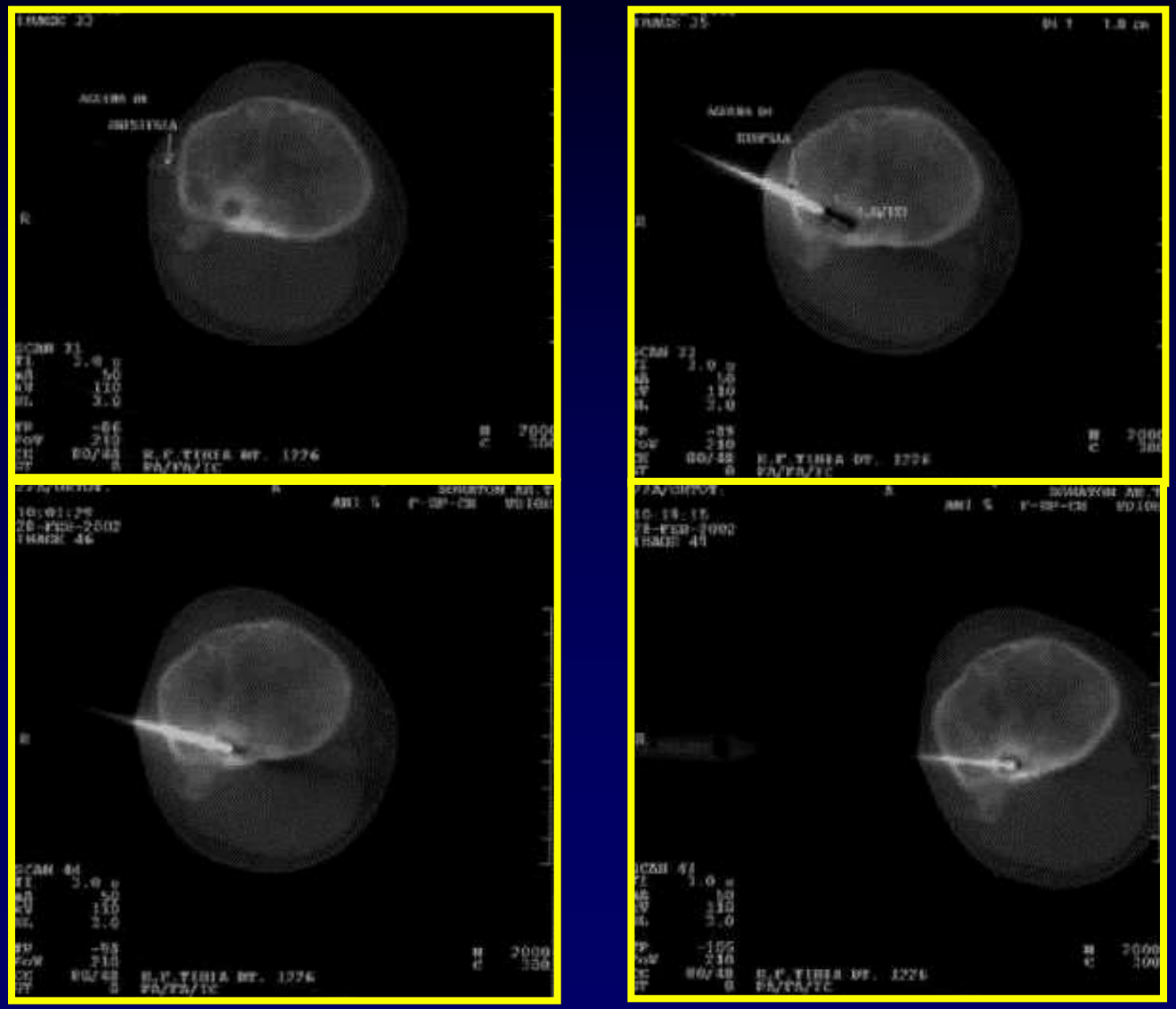


Termo-ablação óssea

Termo-ablação óssea

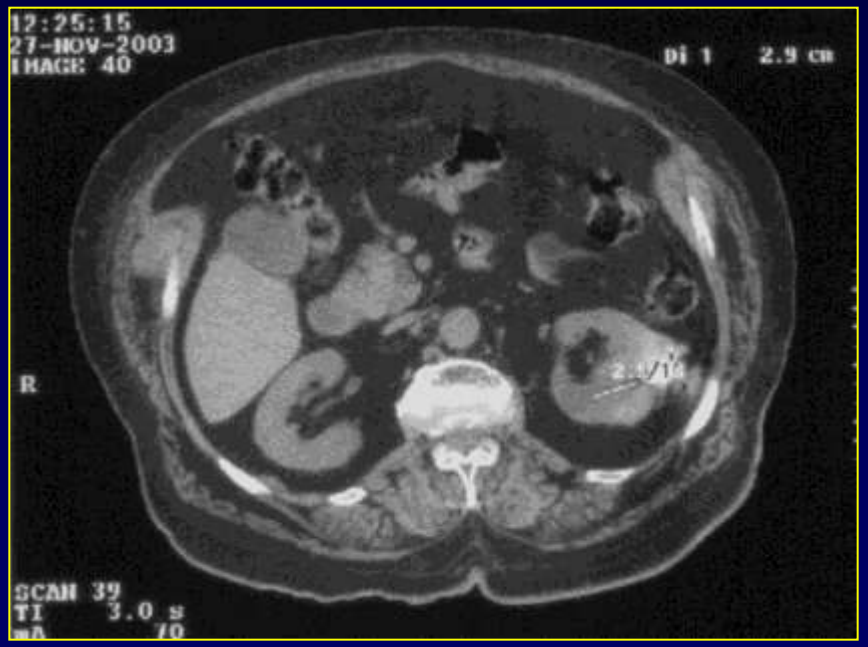


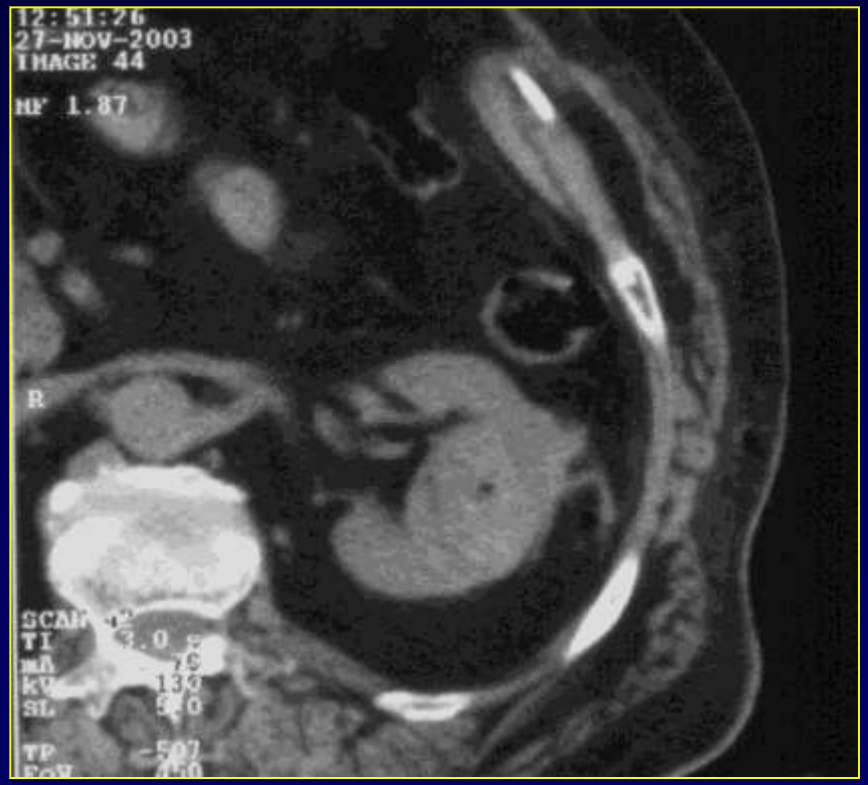
Osteoma Osteoide



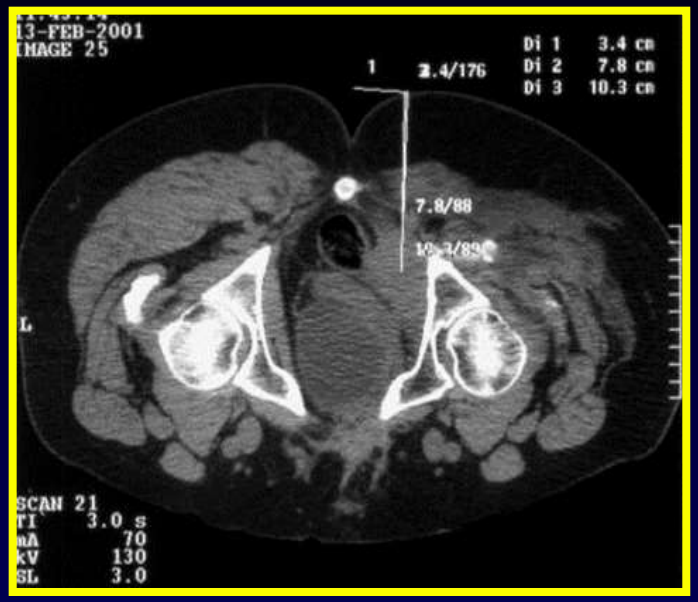
Termo-ablação Renal

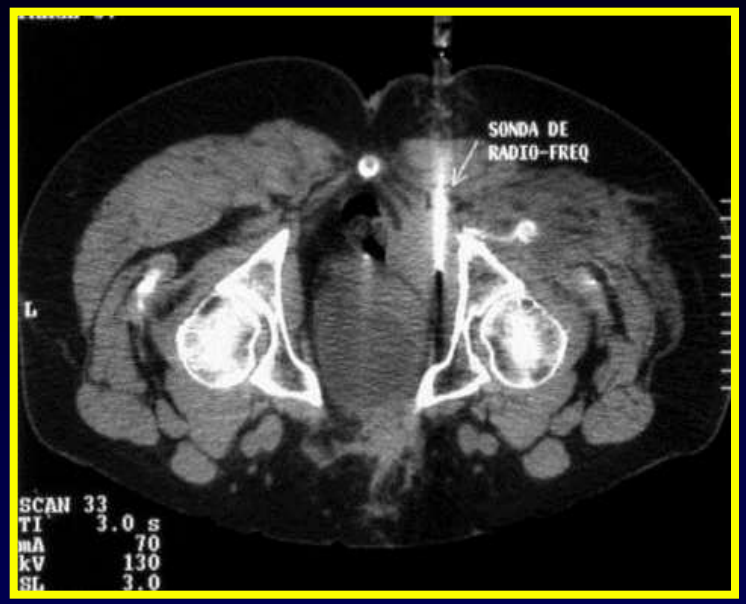
Doente do sexo feminino de 78 anos sem indicação cirúrgica por comorbilidade (obesa, pCO_2 de 56 e pO_2 de 60)

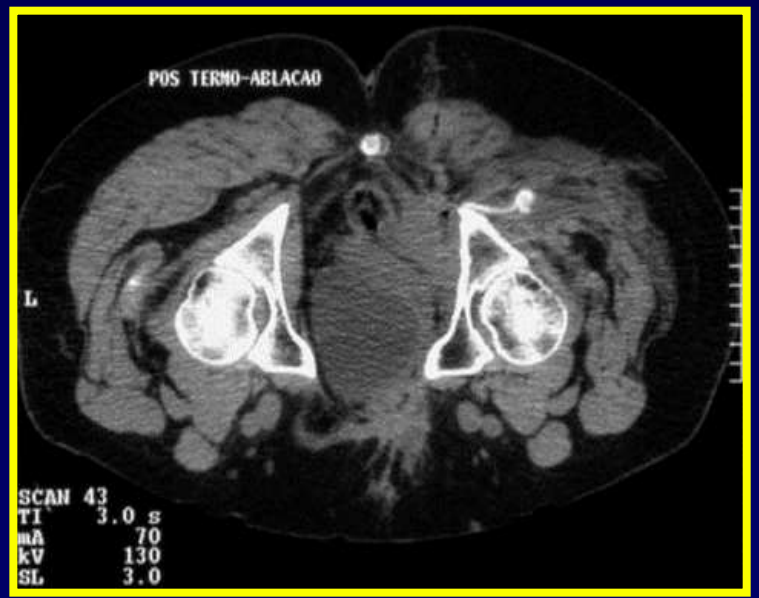




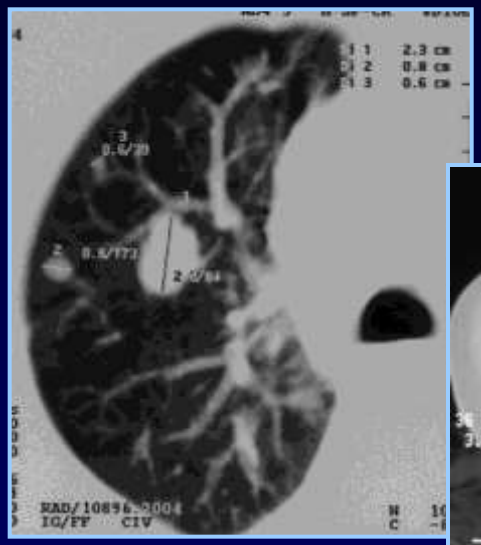
Tecidos Moles







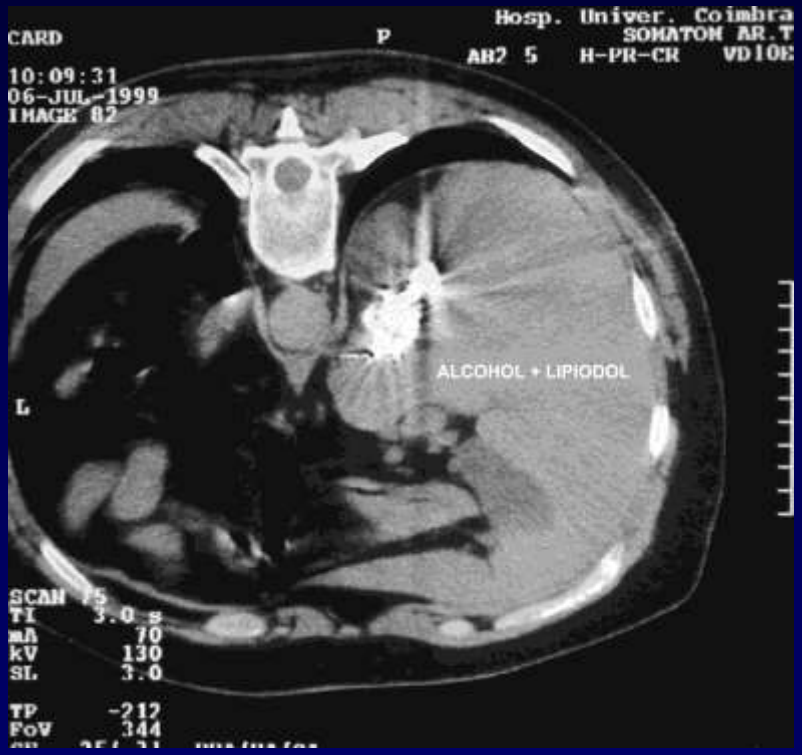
Termo-ablação por Radiofrequência



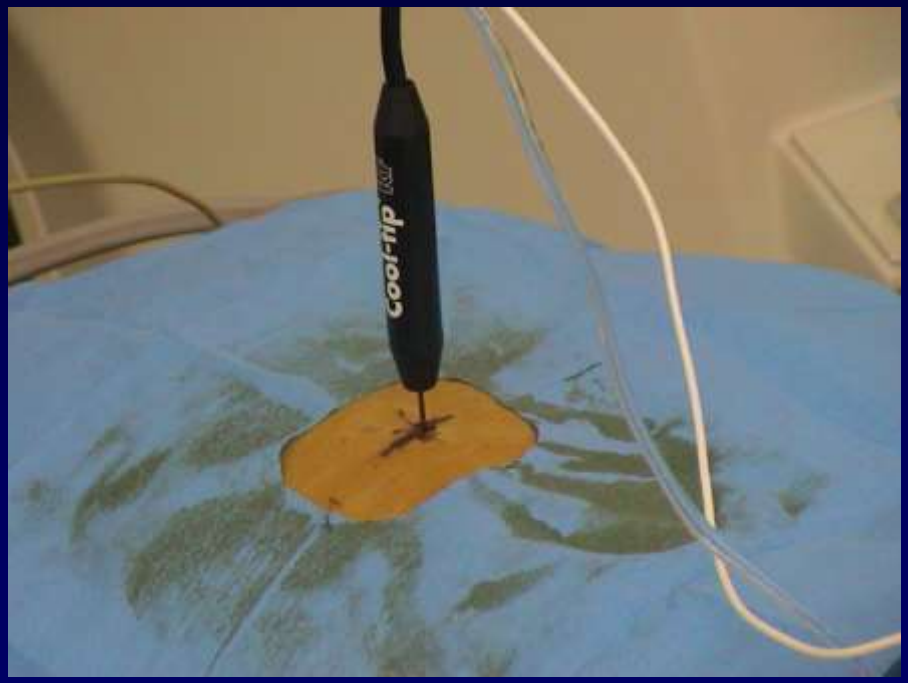
Metástase

1 semana após RF

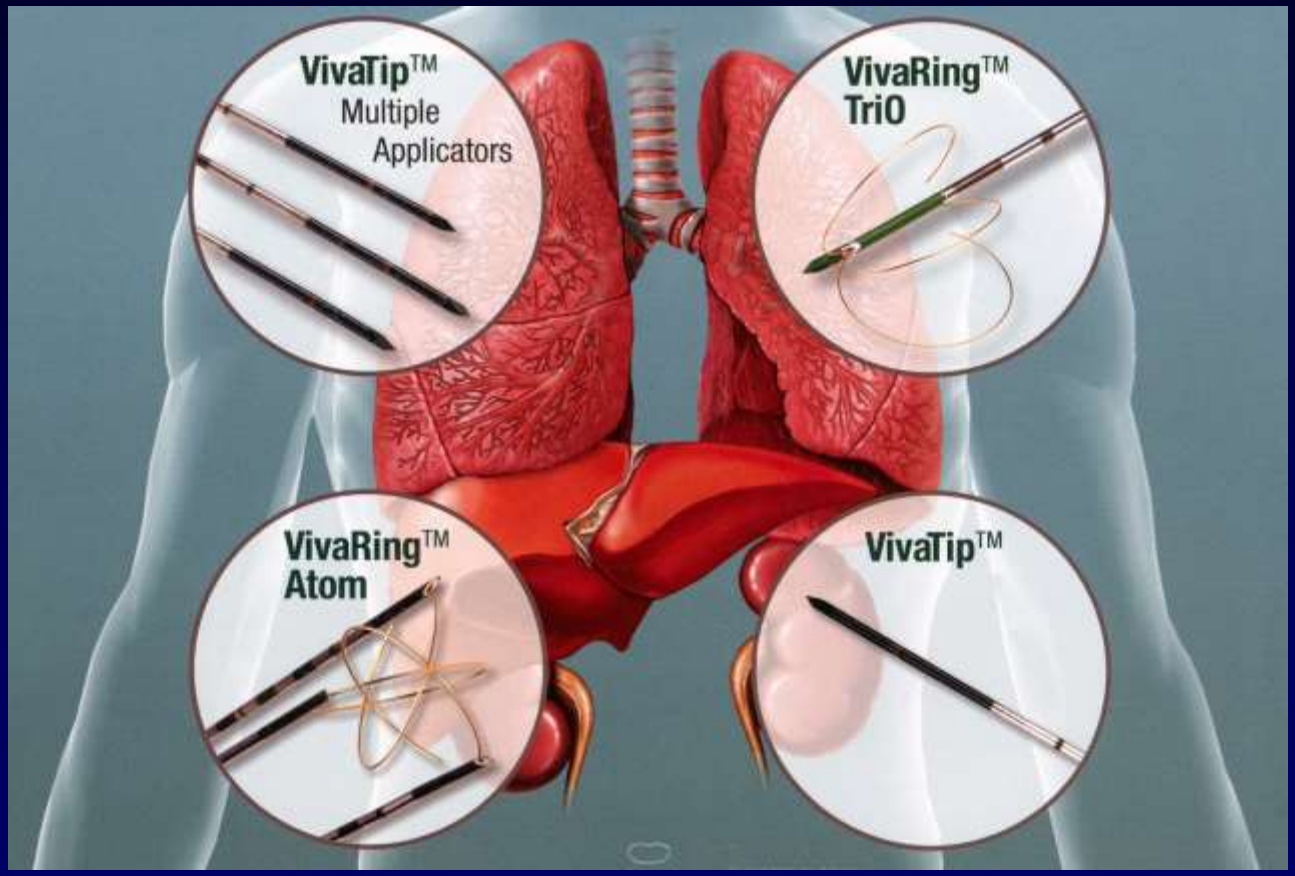
Percutaneous ethanol injection (PEI)

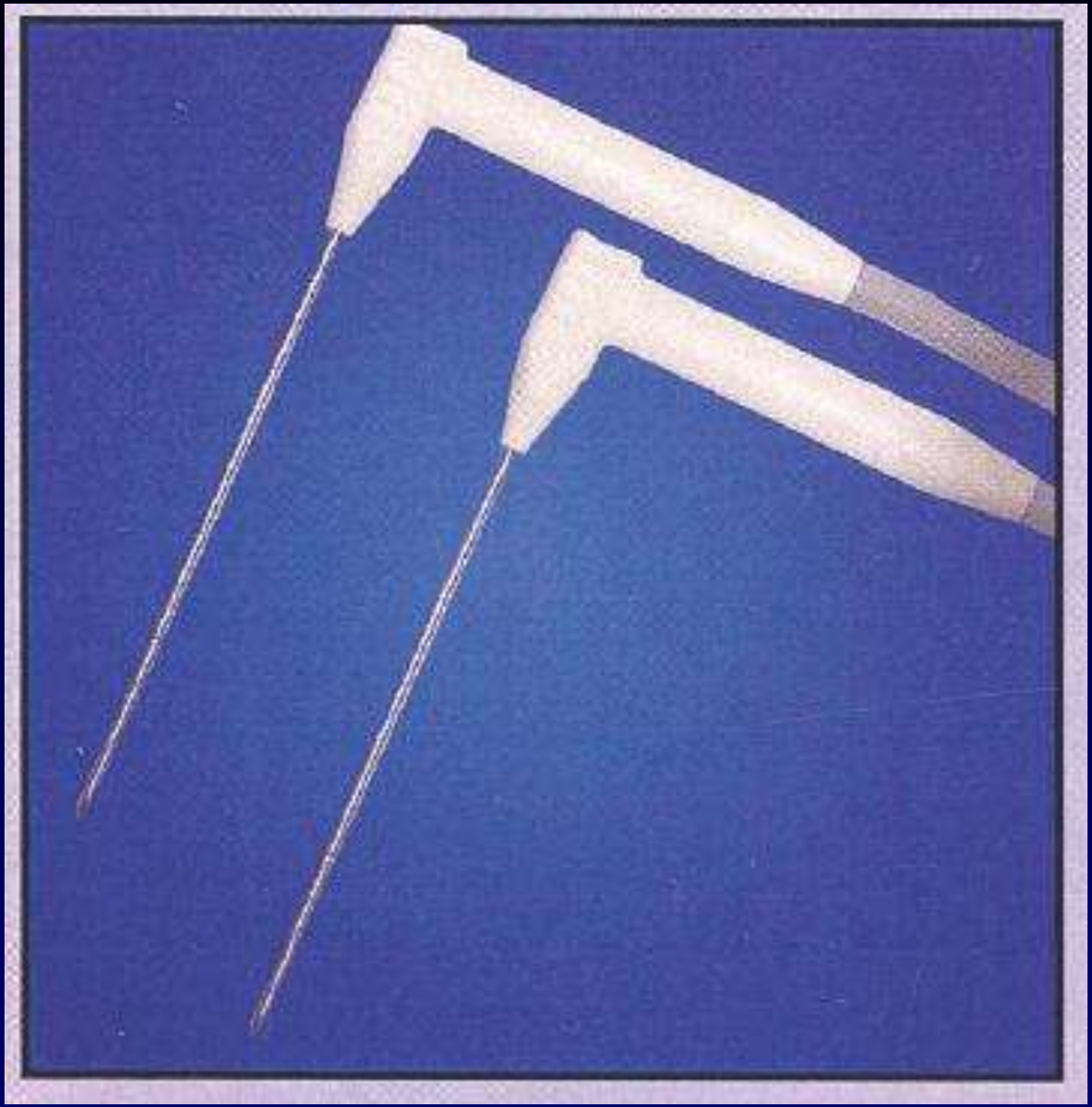


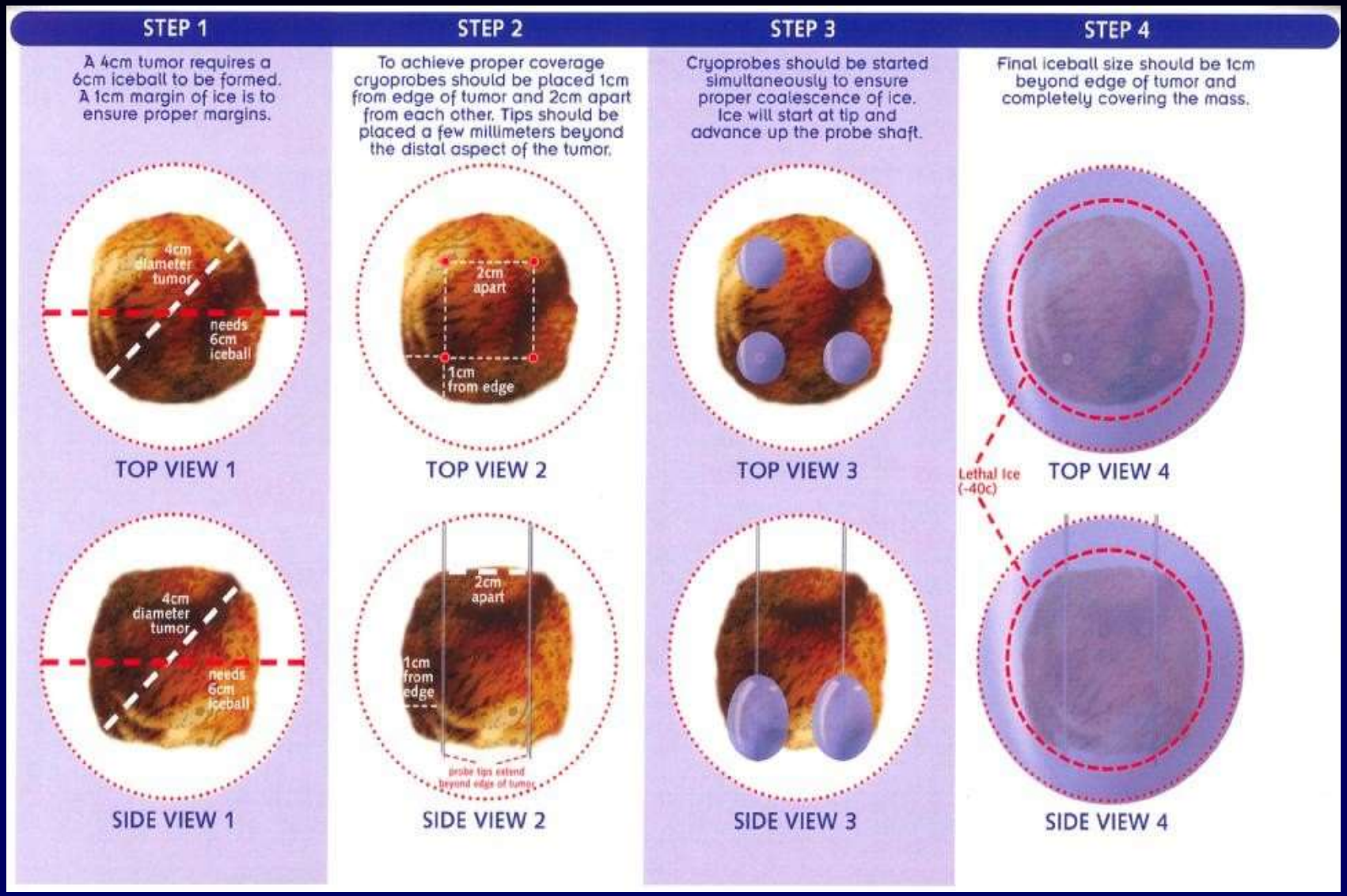
RFTA



RFTA

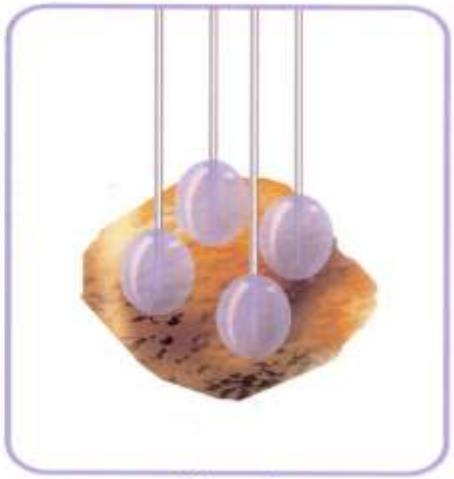

VivaTip™
Multiple
Applicators
VivaRing™
TriO
VivaRing™
Atom
VivaTip™




STEP 1
A 4cm tumor requires a 6cm iceball to be formed. A 1cm margin of ice is to ensure proper margins.
4cm diameter tumor
needs 6cm iceball
TOP VIEW 1
4cm diameter tumor
needs 6cm iceball
SIDE VIEW 1
STEP 2
To achieve proper coverage cryoprobes should be placed 1cm from edge of tumor and 2cm apart from each other. Tips should be placed a few millimeters beyond the distal aspect of the tumor.
2cm apart
1cm from edge
TOP VIEW 2
2cm apart
1cm from edge
probe tips extend beyond edge of tumor
SIDE VIEW 2
STEP 3
Cryoprobes should be started simultaneously to ensure proper coalescence of ice. Ice will start at tip and advance up the probe shaft.
TOP VIEW 3
SIDE VIEW 3
STEP 4
Final iceball size should be 1cm beyond edge of tumor and completely covering the mass.
Lethal Ice (-40c)
TOP VIEW 4
SIDE VIEW 4

Tumor Treated With 4 Probes

Step 1 :
Insert probes.



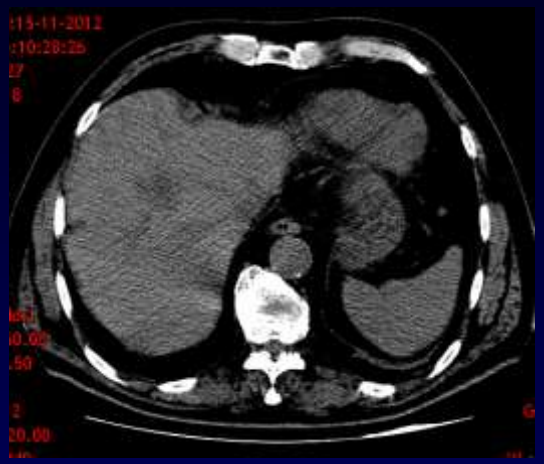
Step 2:
Begin freezing.

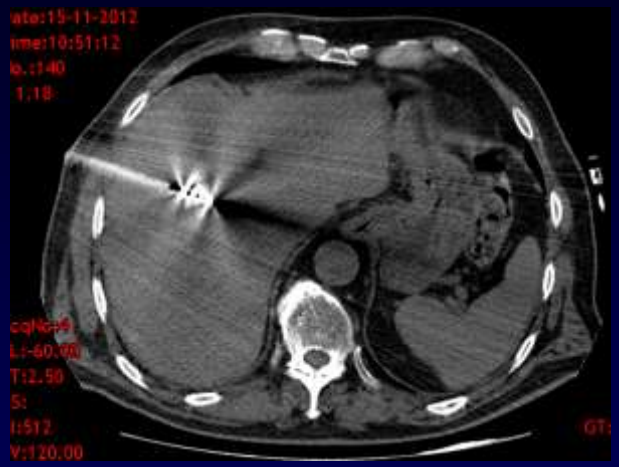
Step 3:
Ice begins to coalesce.

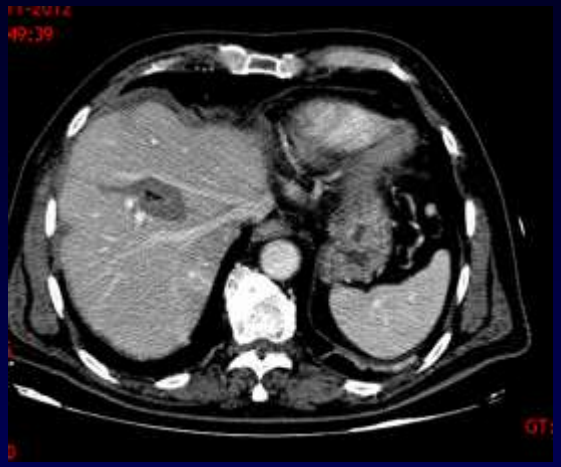
Step 4:
Ice reaches maximum size.
Approx. 10 minutes.

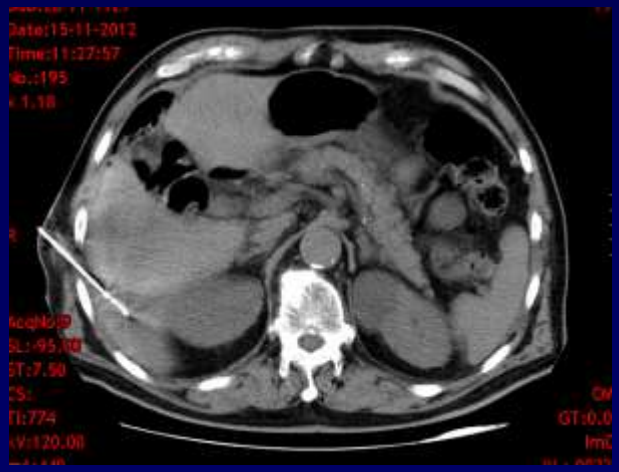
Imagiologia de Intervenção no tratamento do Carcinoma Hepatocelular

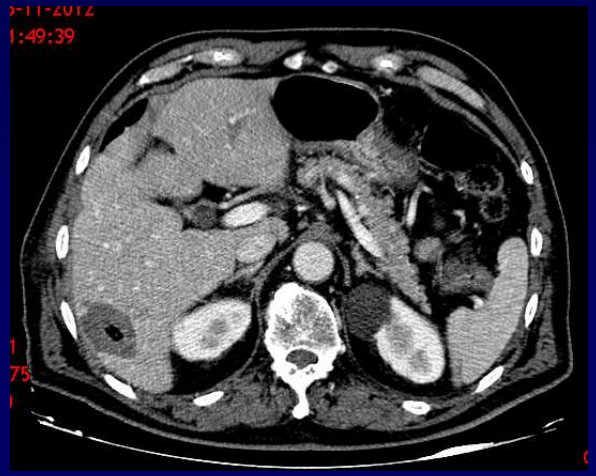
Termoablação: MW











MWA - Vantagens (Teóricas)

Maior zona de destruição tumoral

Maior e mais constante a temperatura na lesão

Mais rápida

Possibilidade de vários eléctrodos/várias lesões

Perda de calor provocada pelos vasos é menor