

**高场强MRI 一站式评估
不同方法治疗肿瘤疗效**

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不同方法治疗肿瘤的疗效 **如何评估** ?

肿瘤治疗疗效
MRI 一站式 评估

评估方式
MRI 平扫结合多时相
动态增强扫描
DWI MRS

评估方式

治疗前后 MRI 对比

影像诊断基本模式



- 平扫 DWI 和动态增强

MRI 腹部基本扫描方式

- 平扫：横轴面 脂肪抑制 FSE T2WI
不同部位 加扫冠状和矢状面 T2WI
T1WI*（同反相位图像） DWI
预扫 3D LAVA
选用：冠状面FIESTA 或者 SSFSE
- 动态增强扫描： 3D LAVA

MRI 腹部基本扫描方式

- DWI： 1.5 T b=500-800
3.0 T b=800-1000
- 动态增强扫描
层厚一般 3-5毫米
少数情况下 6-8毫米

MRI 对比剂的选用

- Gd-DTPA 细胞外间隙非特异性
- MultiHance (莫迪司) 双重特异性
- 肝肾功能轻度异常: 10 ml 莫迪司

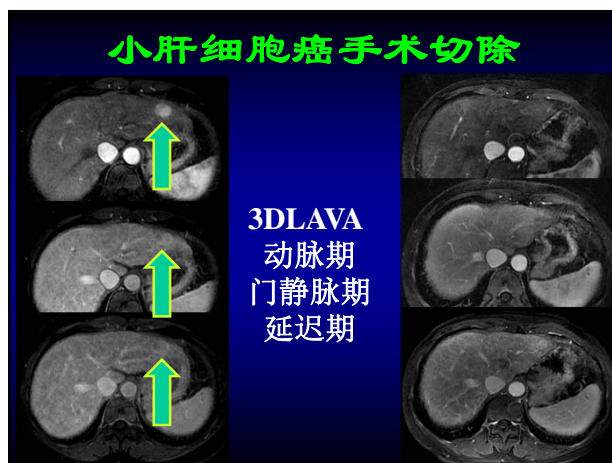
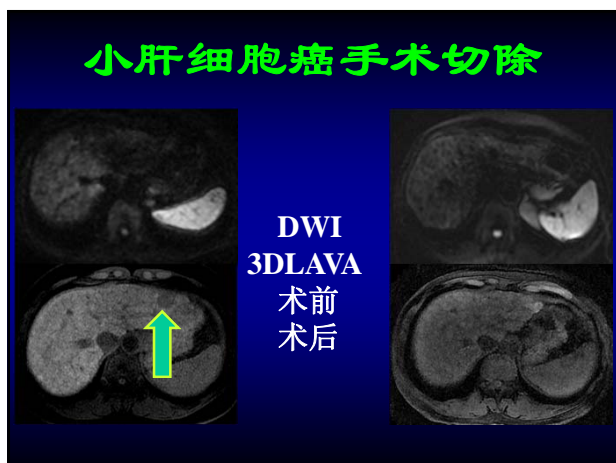
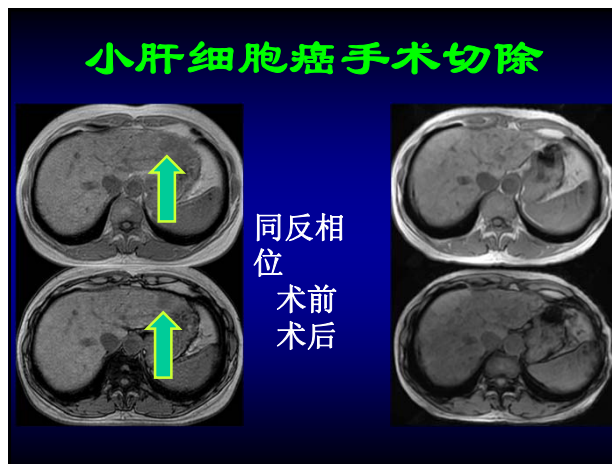
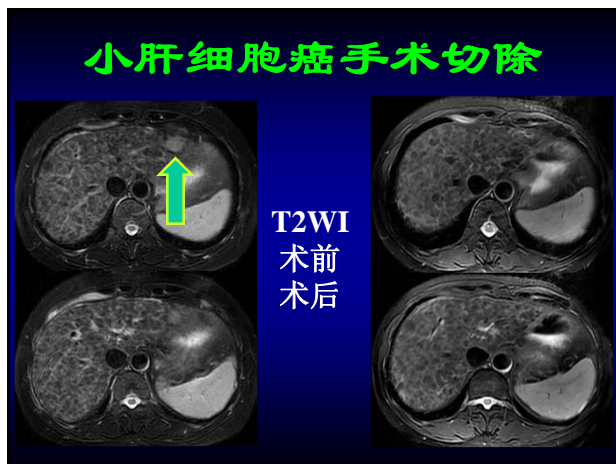
3.0 T MRI

- **动脉期多时相扫描** (采用标准剂量的对比剂后, 屏气13-22秒可获得2-3个动脉时相)

手术切除治疗肿瘤

病例简介

- 女, 53岁, 乙肝病史20多年, B超发现肝左叶结节



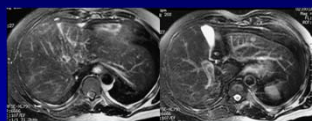
影像诊断

手术疗效好

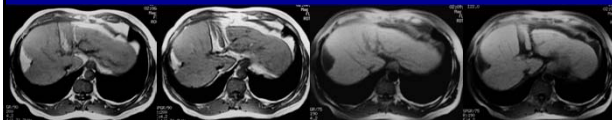
病例简介

- 男，56岁，肝右叶肝细胞癌术后超声发现肝内结节

肝细胞癌术后复发？残存？



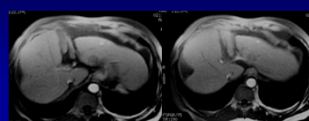
T2WI



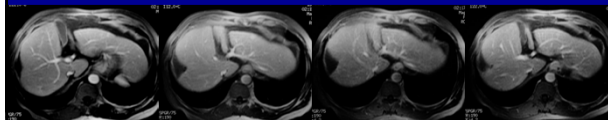
T1WI*

T1WI* + FS

肝细胞癌术后复发？残存？



T2WI

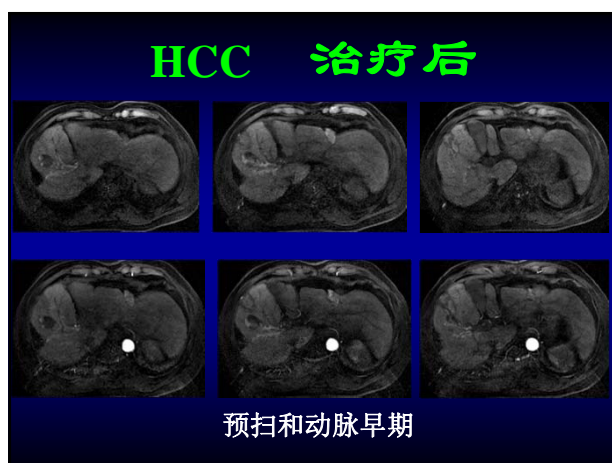
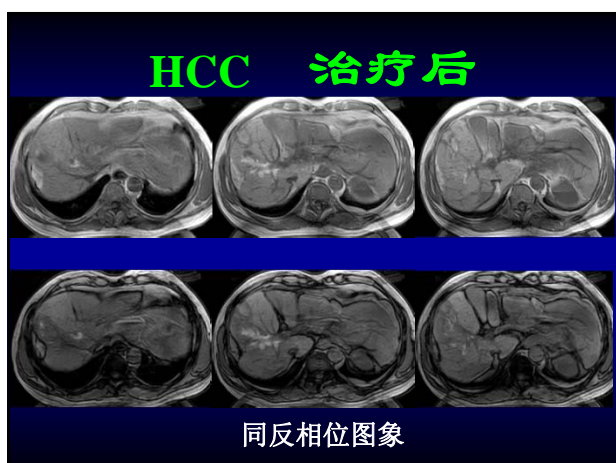
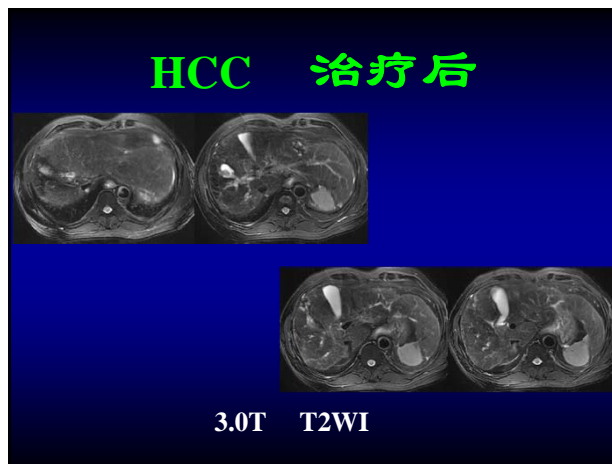


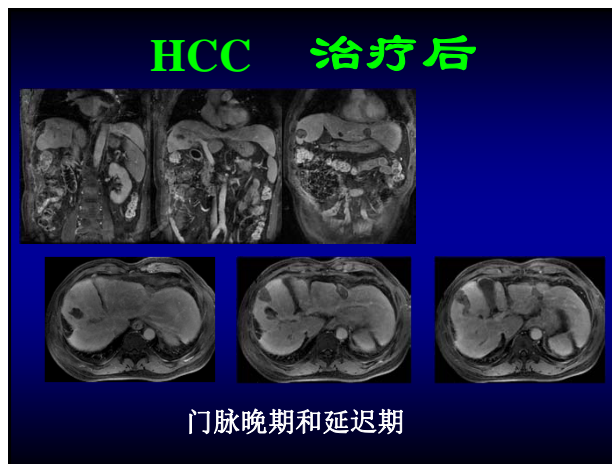
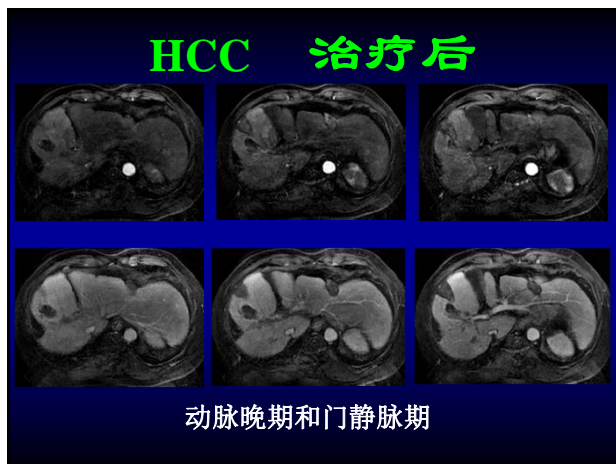
T1WI*

T1WI* + FS

影像诊断

- 肝右叶肝细胞癌术后局部未见残存。肝左叶新出现癌灶（超声引导下活检证实为肝细胞癌）





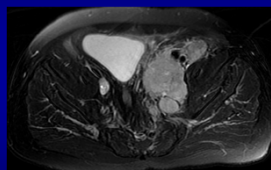
影像诊断

综合治疗后疗效好

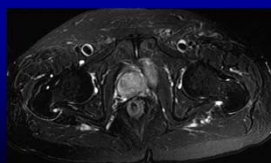
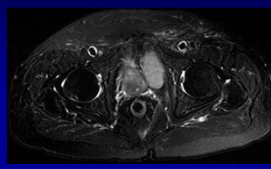
病例简介

- 男，67岁，B超发现前列腺病变伴盆腔结节块影

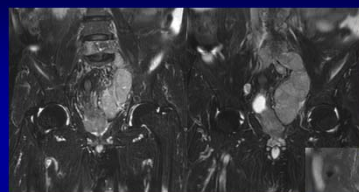
盆腔病变？



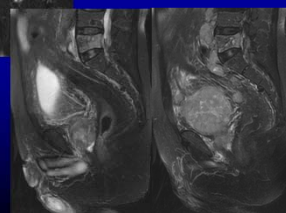
T2WI



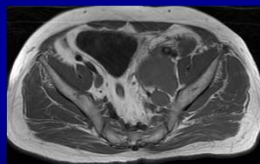
盆腔病变？



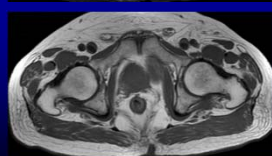
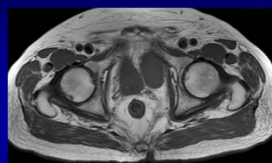
T2WI



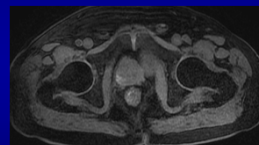
盆腔病变？



T1WI



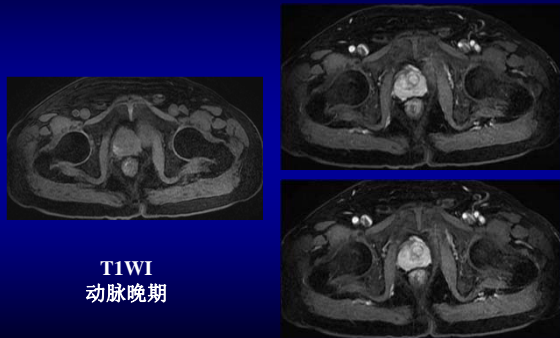
盆腔病变？



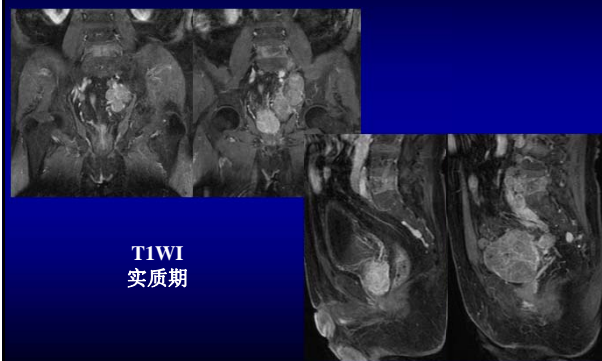
T1WI
动脉早期



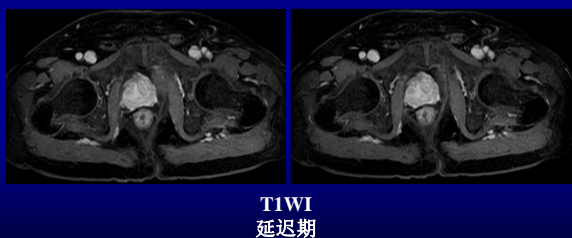
盆腔病变？



盆腔病变？



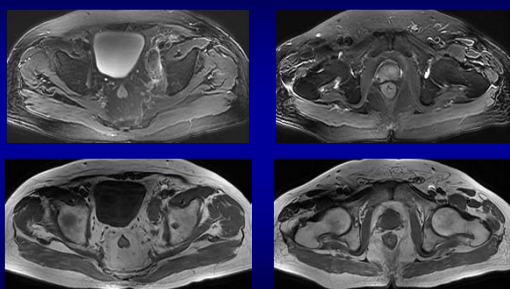
盆腔病变？



影像诊断

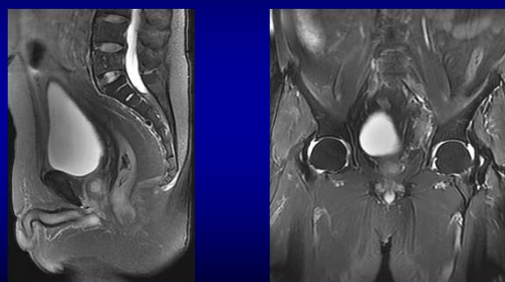
前列腺外周带弥漫异常信号伴盆腔广泛淋巴结增大及腰椎破坏，符合前列腺癌淋巴结和骨转移表现

双侧睾丸切除后复查



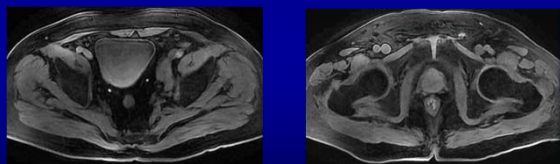
T2WI T1WI

双侧睾丸切除后复查



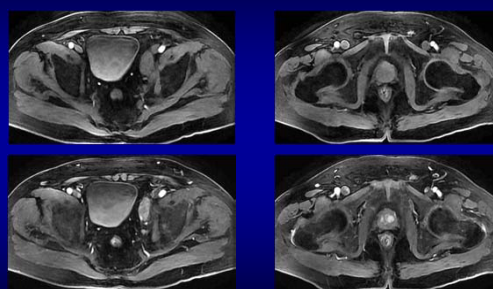
T2WI

双侧睾丸切除后复查



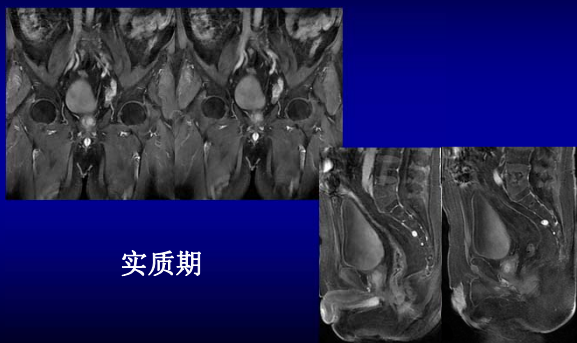
T1WI

双侧睾丸切除后复查

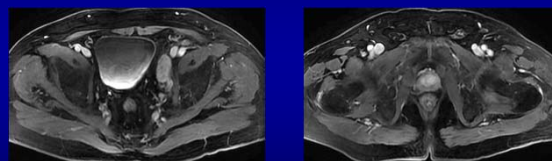


动脉期

双侧睾丸切除后复查



双侧睾丸切除后复查



影像诊断

疗效好

非手术方法治疗肿瘤

不同介入方法治疗
放疗、药物治疗和其他

经肝动脉栓塞化疗

(TACE: Transcatheter Arterial Chemoembolization)

- 原理：多血供肝细胞癌和转移瘤的血供主要来源于肝动脉，肿瘤的血供较周围正常肝实质丰富，细胞毒性药物优先释放到肿瘤细胞，导致肿瘤细胞死亡，控制肿瘤生长

经肝动脉栓塞化疗

(TACE: Transcatheter Arterial Chemoembolization)

- 主要用于治疗多血供肝细胞癌、转移瘤及其他恶性肿瘤
- TACE 对少血供肝细胞癌、转移瘤及其他少血供恶性肿瘤的疗效欠佳

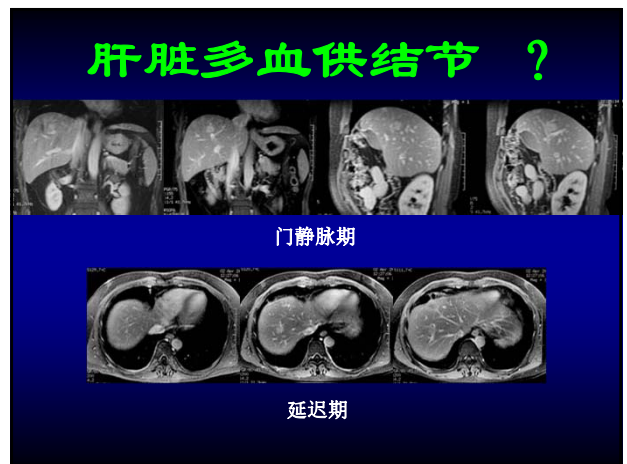
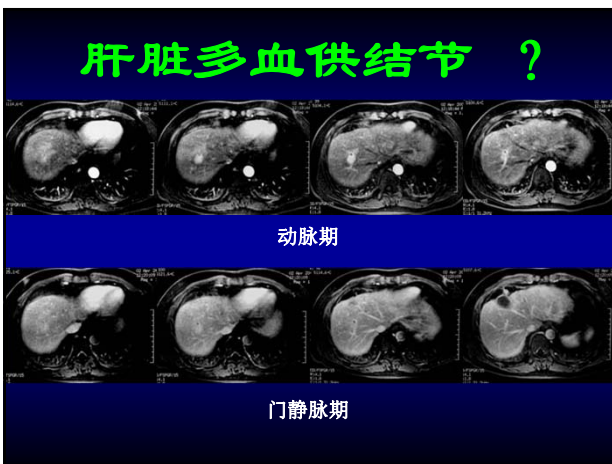
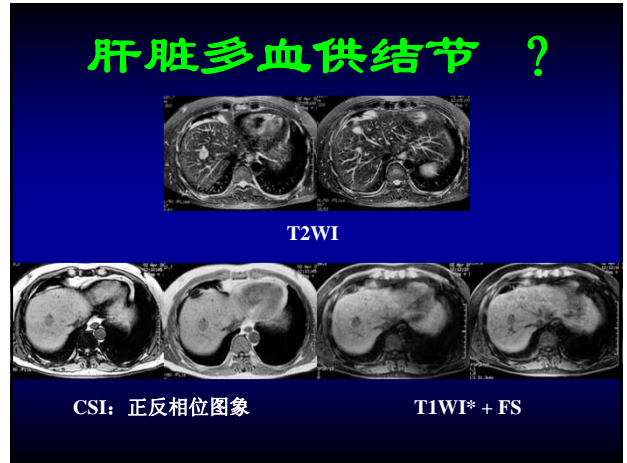
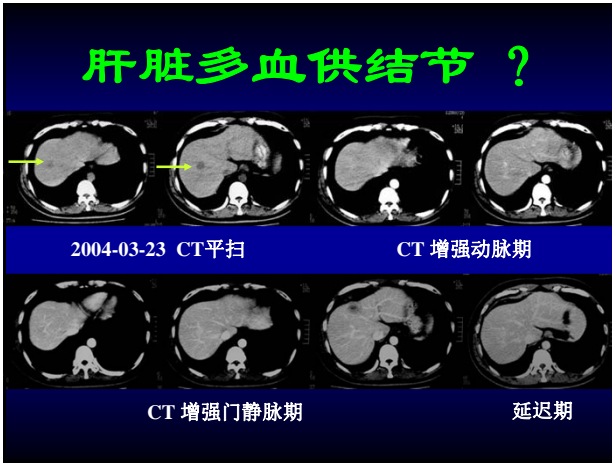
病例简介

- 男，41岁，乙型肝炎病史多年。AFP 未见异常
- 超声查体发现肝内结节

肝脏多血供结节？



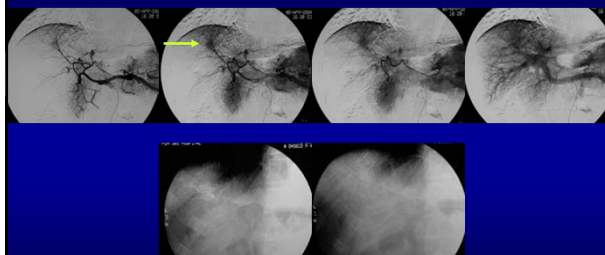
2004-03-10 B超表现



病例简介

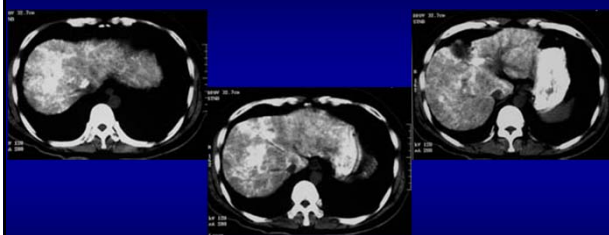
- 活检前影像诊断：肝右叶前上段多血供小肝细胞癌
- 超声引导下活检病理诊断肝细胞癌

SHCC TACE 治疗



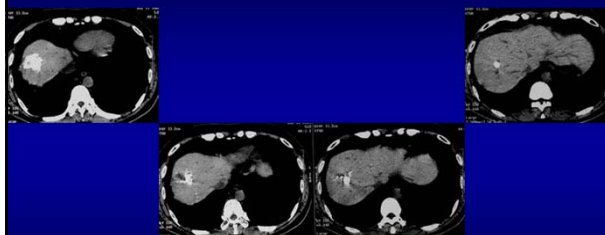
2004-04-5 DSA和TACE 治疗

SHCC TACE 治疗

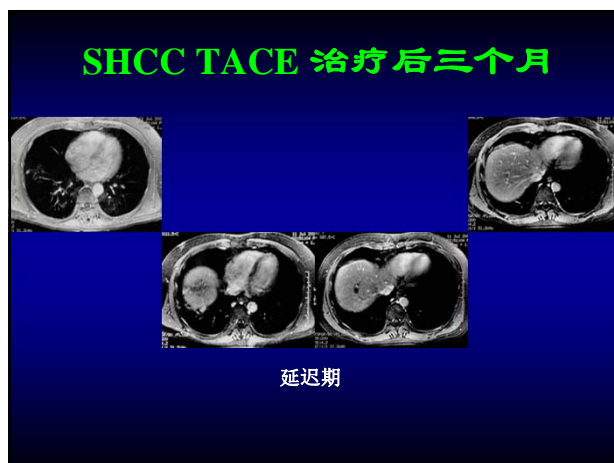
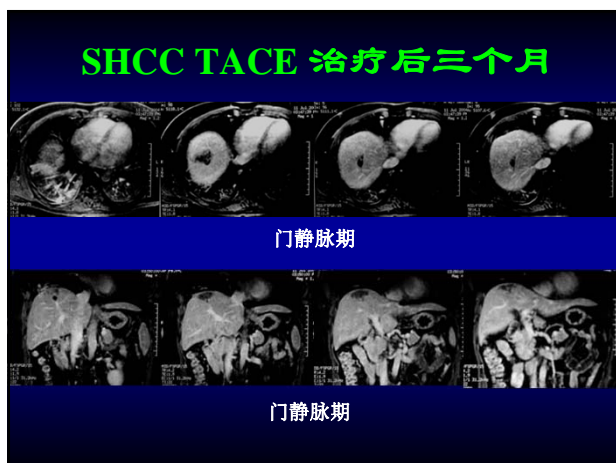
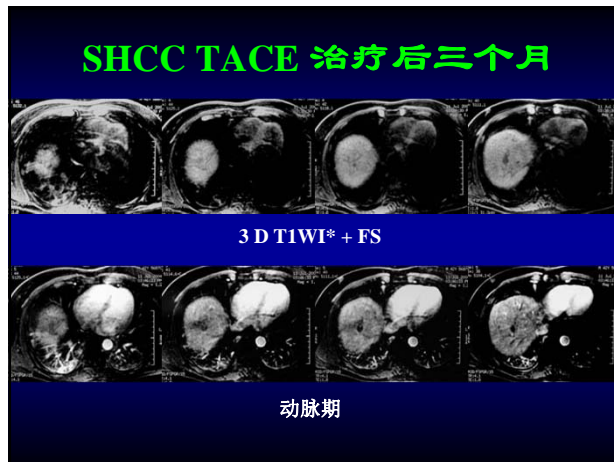
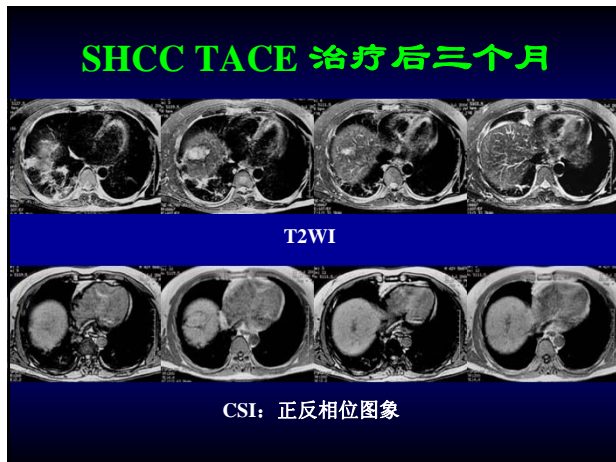


2004-04-9 TACE 治疗后 CT 平扫

SHCC TACE 治疗



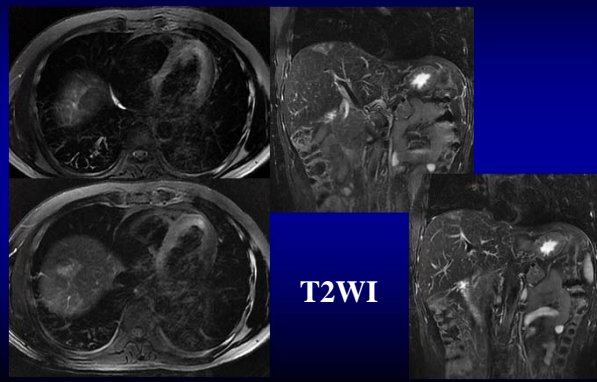
2004-07-11 TACE 治疗后三个月 CT 平扫



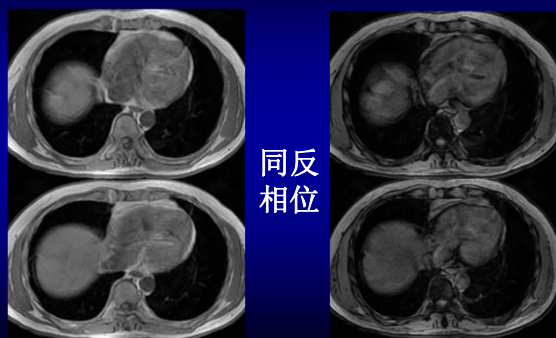
结 论

- 肝右叶前上段小肝细胞癌TACE 治疗后肿瘤局部灭活彻底，未见新发病灶！

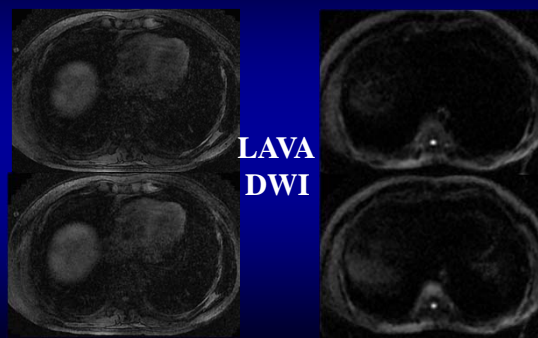
SHCC TACE 治疗后 5 年



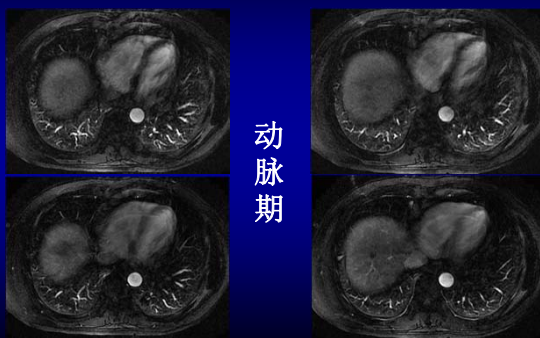
SHCC TACE 治疗后 5 年



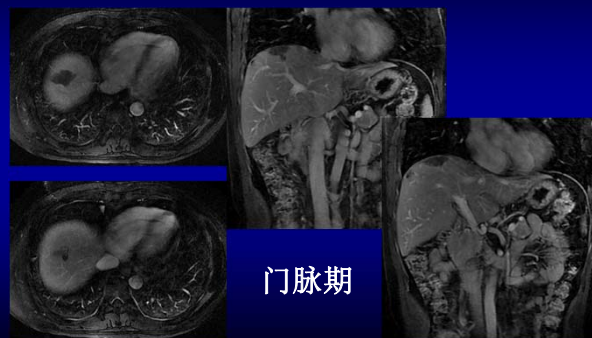
SHCC TACE 治疗后 5 年



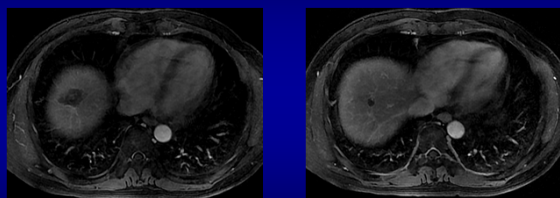
SHCC TACE 治疗后 5 年



SHCC TACE 治疗后 5 年

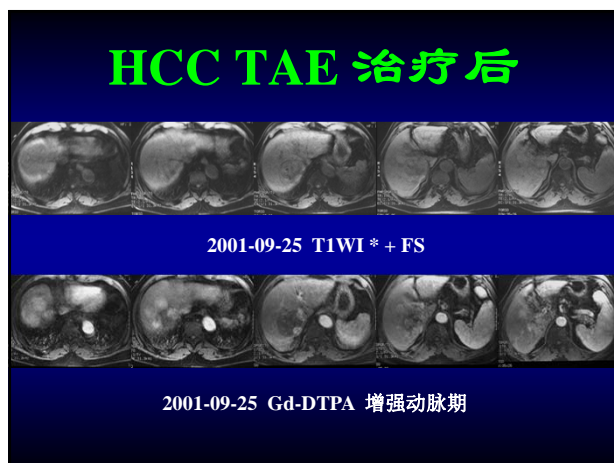
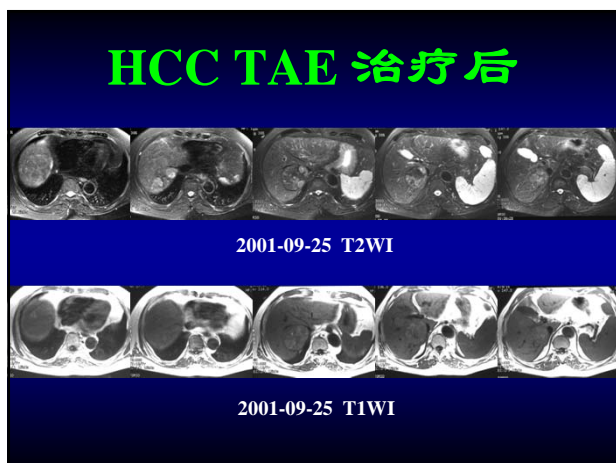
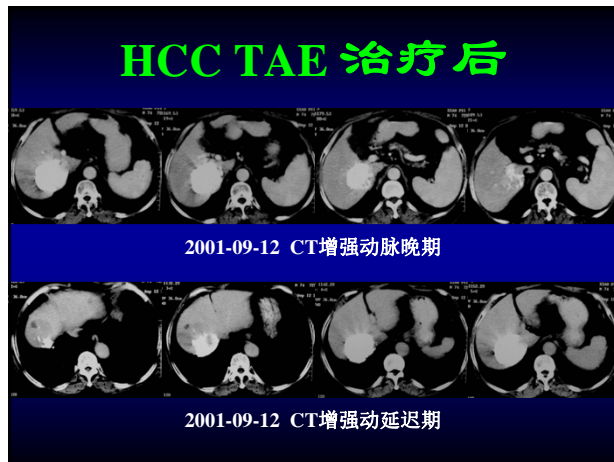
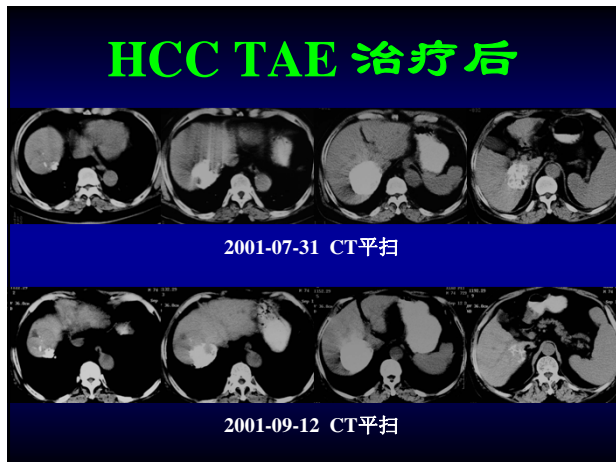


SHCC TACE 治疗后 5 年

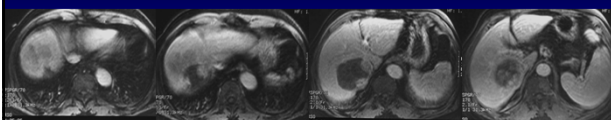


结 论

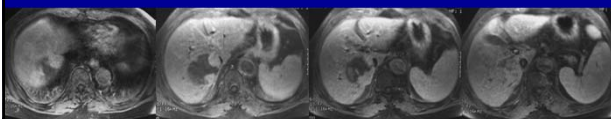
- 肝右叶前上段小肝细胞癌TACE 治疗后肿瘤局部灭活彻底，未见新发病灶！



HCC TAE 治疗后



2001-09-25 Gd-DTPA 增强门脉期



2001-09-25 Gd-DTPA 增强延迟期

高场强 MRI

准确评估碘油内部
部肿瘤的死活

酒精、冷冻、射频和微波

(Alcohol Injection, Cryotherapy, Radiofrequency, Microwave)

- 原理：上述方法通过局部非特异性细胞毒性作用于肝恶性肿瘤从而达到灭活肿瘤的作用，治疗后在靶区立刻产生一个明显的凝固坏死腔，周围存在炎性反应

酒精、冷冻、射频和微波

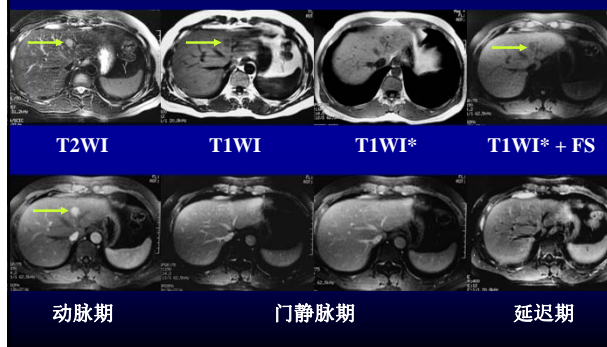
(Alcohol Injection, Cryotherapy, Radiofrequency, Microwave)

- 适应症：主要用于最大径小于 5cm 肝恶性肿瘤的治疗

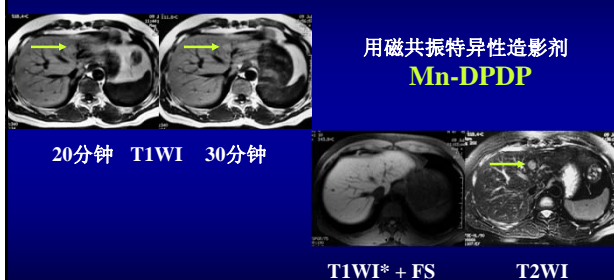
病例简介

- 男，47岁，发现乙型肝炎2年。AFP未见异常
- 超声查体发现肝内结节

肝细胞癌 ?



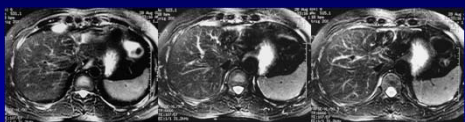
肝细胞癌 ?



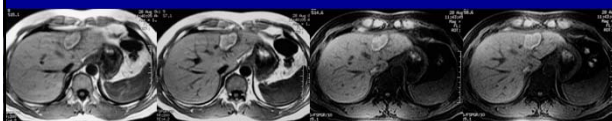
影像诊断

- 超声引导下活检前诊断为多血供小肝细胞癌
- 病理诊断：肝细胞癌

肝细胞癌微波治疗后一个月



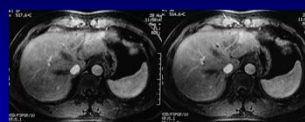
T2WI



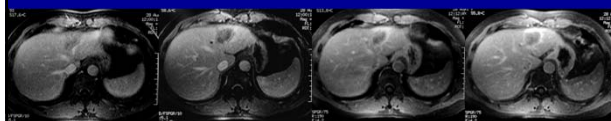
T1WI

T1WI* + FS

肝细胞癌微波治疗后一个月



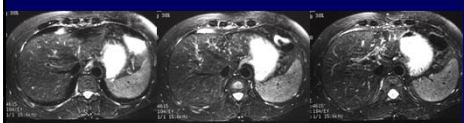
动脉期



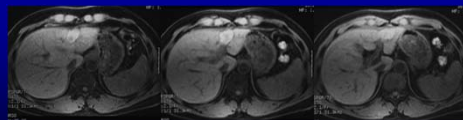
门静脉期

延迟期

肝细胞癌微波治疗后六个月

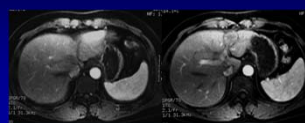


T2WI

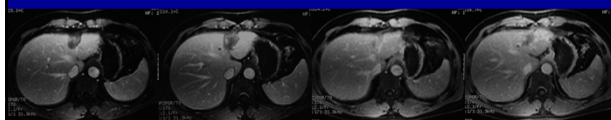


T1WI* + FS

肝细胞癌微波治疗后六个月



动脉期



门静脉期

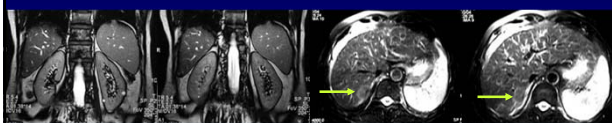
延迟期

微波治疗后肿瘤局部
坏死显著，未见残存
和复发征象

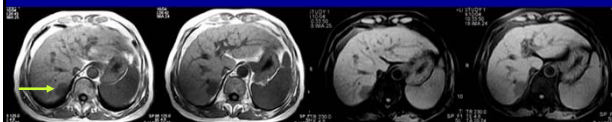
病例简介

- 男，73岁，乙型肝炎多年。AFP 未见异常
- 超声查体发现肝内结节

肝细胞癌 ?



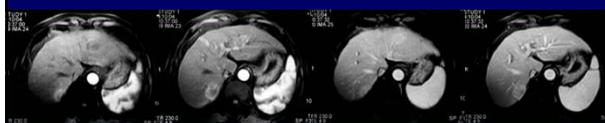
2004-04-10 T2WI



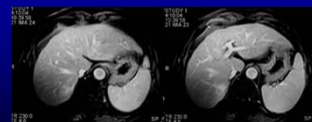
T1WI

T1WI* + FS

肝细胞癌 ?

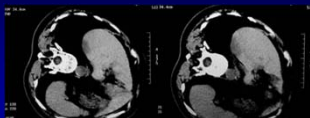


动脉期和门静脉期

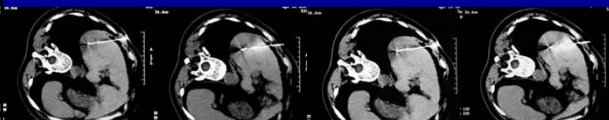


延迟期

CT 引导下活检



2001-04-15 CT平扫

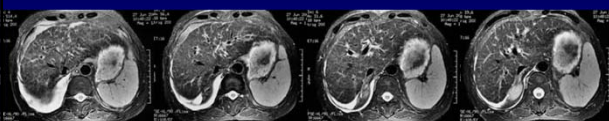


2004-04-15 CT引导下活检

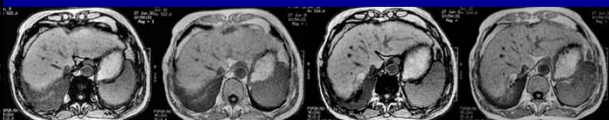
诊 断

- 影像诊断：肝右叶后上段多血供肝细胞癌
- CT 引导下活检后病理诊断：肝细胞癌

肝细胞癌射频治疗一个月后复查

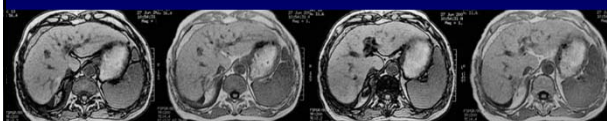


2004-06-27 T2WI

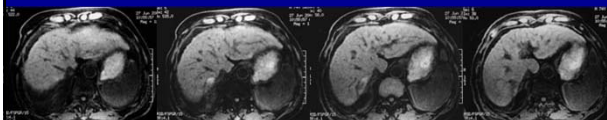


CSI: 正反相位图象

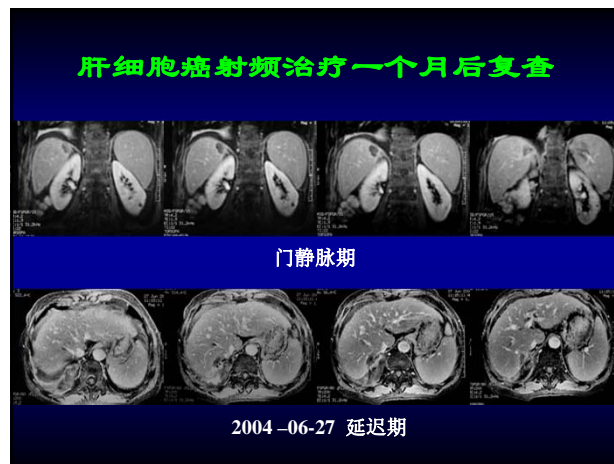
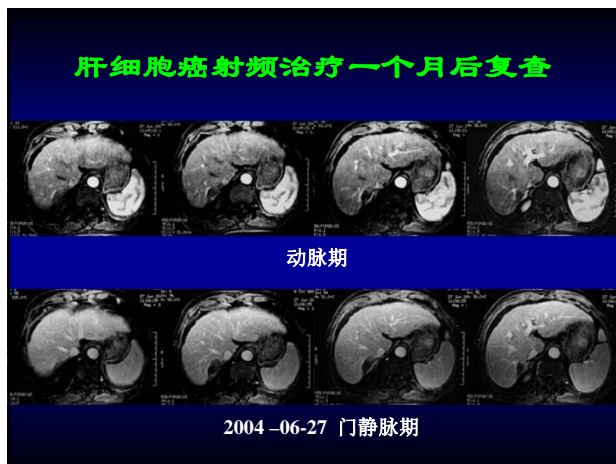
肝细胞癌射频治疗一个月后复查



CSI: 正反相位图象



2004-06-27 T1WI* + FS

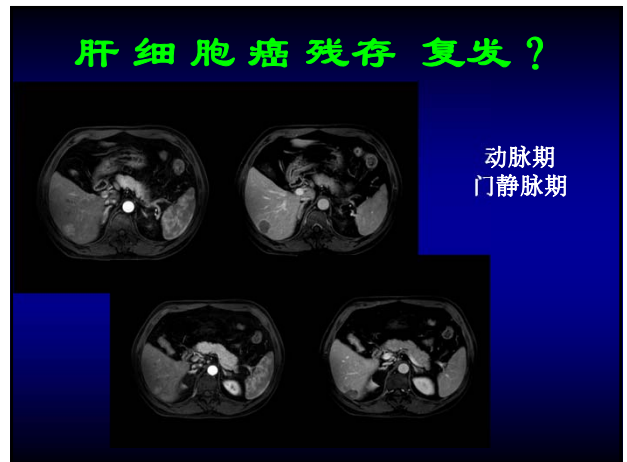
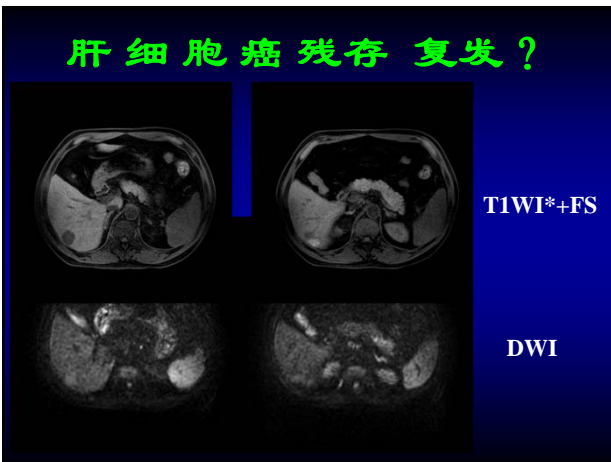
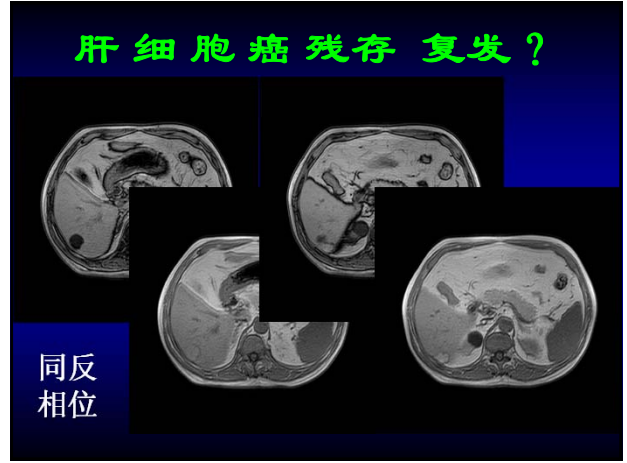
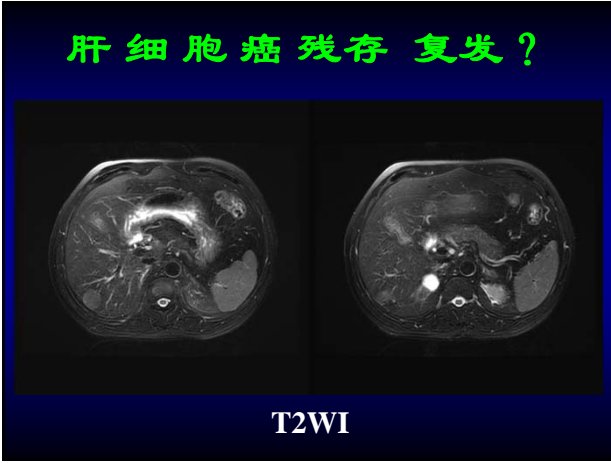


结 论

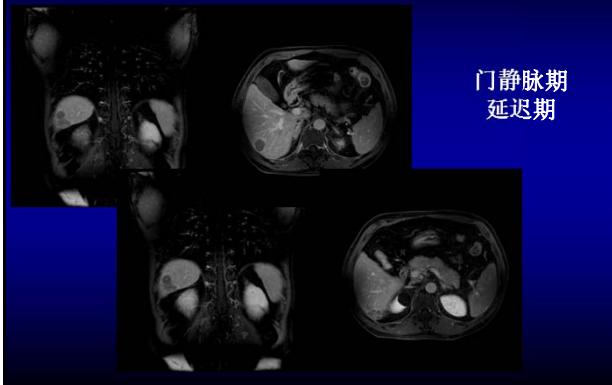
- 肝右叶后上段多血供肝细胞癌射频治疗后，肿瘤局部灭活彻底，未见新病灶

病例简介

- 男，51岁，乙型肝炎病史多年。AFP未见异常
- 肝癌射频治疗后复查



肝细胞癌残存 复发?



诊断

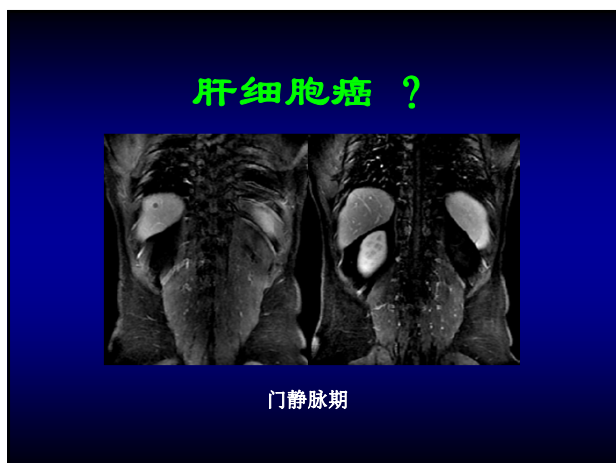
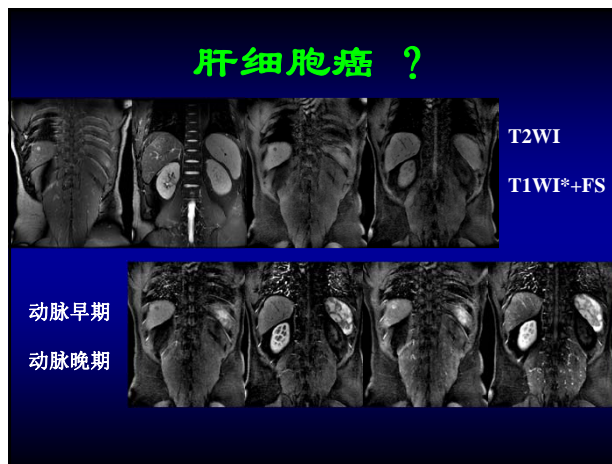
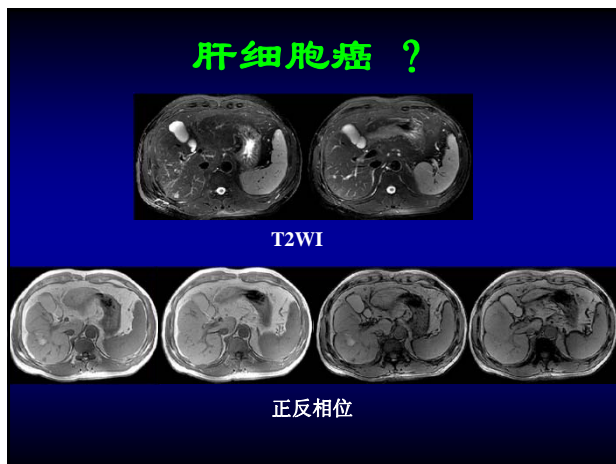
- 影像诊断：HCC 射频治疗后改变，治疗病变凝固坏死显著，肝内出现含丰富脂质多血供肿块，考虑：新癌灶

病理诊断

- 活检：肝细胞癌（大部分为透明细胞癌）

病例简介

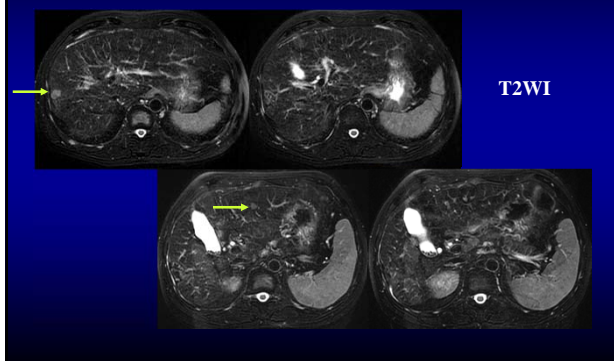
- 50岁男性，HCC 射频治疗后6月，超声检查发现肝内实性结节



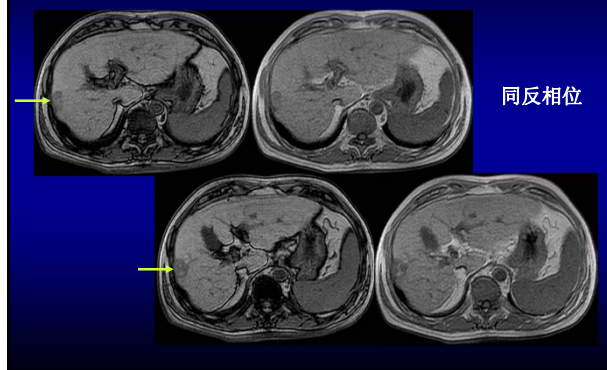
诊 断

- 影像诊断：HCC 治疗后改变，肝内出现多灶多血供结节，考虑：新出现癌灶

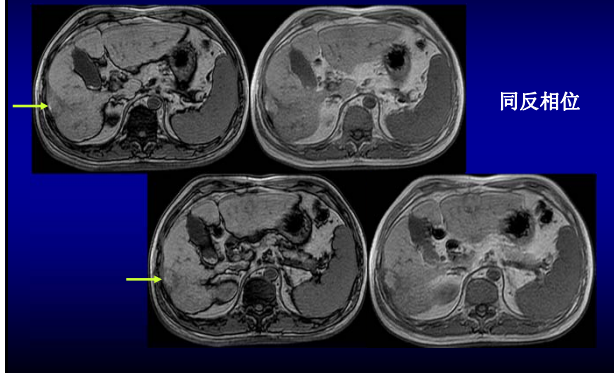
肝细胞癌治疗后复查



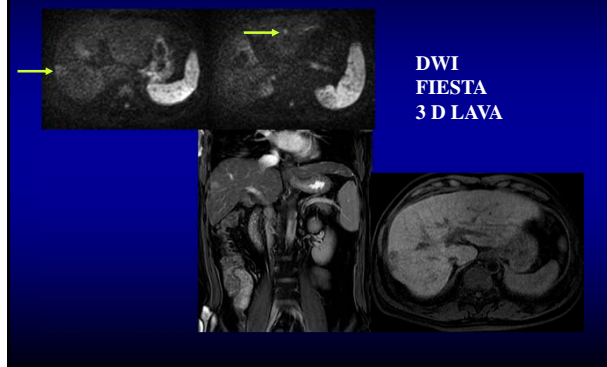
肝细胞癌治疗后复查



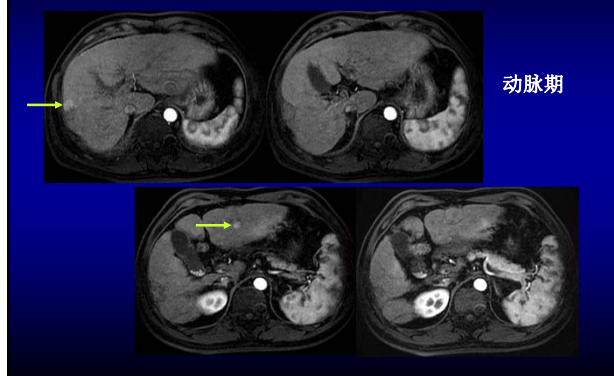
肝细胞癌治疗后复查



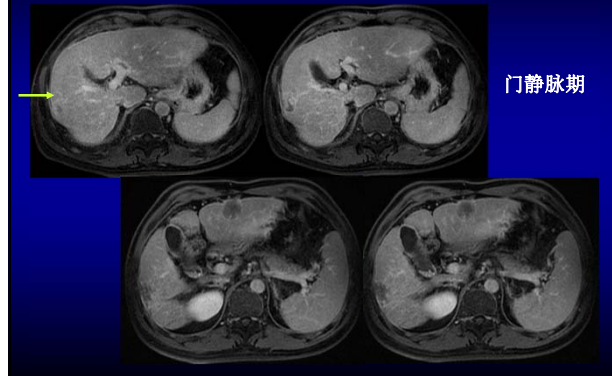
肝细胞癌治疗后复查



肝细胞癌治疗后复查



肝细胞癌治疗后复查



影像诊断

- 肝左右叶肝细胞癌治疗后凝固坏死显著, 左右叶新出现多个多血供癌灶

高强度聚焦超声

(HIFU: High Intensity Focused Ultrasound)

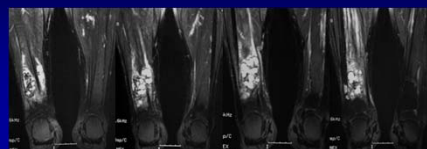
- 原理: 利用超声波的生物学效应, 通过一定技术手段将体外发射的声波聚焦于体内病变组织, 由于聚焦部位强大的能量沉积, 组织内的温度瞬间可达 65° 以上, 导致靶区组织出现瞬间凝固坏死, 从而达到局部灭活肿瘤

高强度聚焦超声 (HIFU: High Intensity Focused Ultrasound)

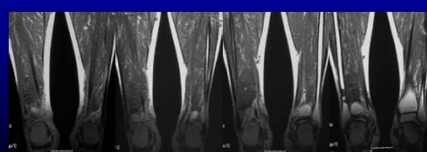
- HIFU: 是一种非侵袭性技术, 是现代工程技术和医学相结合的产物
- 临床上应用 HIFU 来治疗肝脏恶性肿瘤国内外还处在起步阶段

滑膜肉瘤

2001-08-06 化疗后、HIFU治疗前



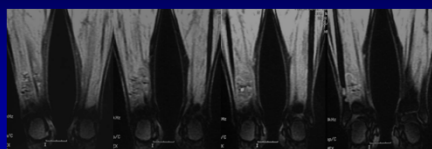
T2WI



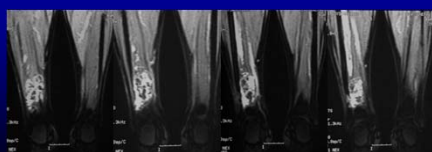
T1WI

滑膜肉瘤

2001-08-06 化疗后、HIFU治疗前



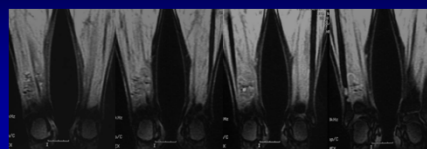
T1WI* + FS



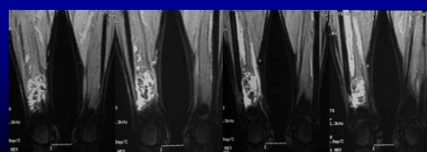
Gd-DTPA 增强动脉期

滑膜肉瘤

2001-08-06 化疗后、HIFU治疗前



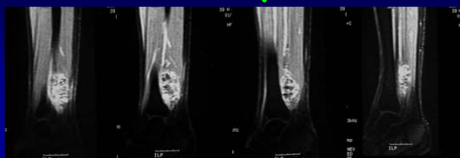
T1WI* + FS



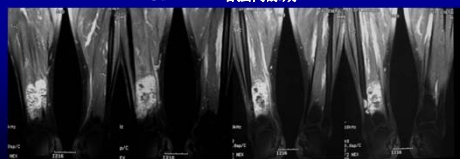
Gd-DTPA 增强动脉期

滑膜肉瘤

2001-08-06 化疗后、HIFU治疗前



Gd-DTPA 增强门脉期

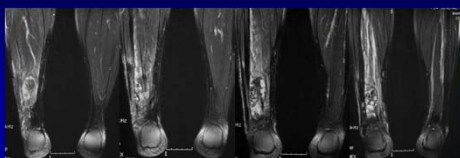


Gd-DTPA 增强延迟期

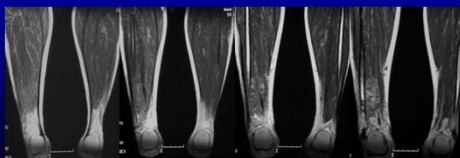
化疗后、HIFU治疗前肿瘤存活而且血供丰富

滑膜肉瘤

2001-09-13 HIFU治疗后18天



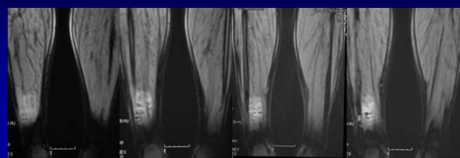
T2WI



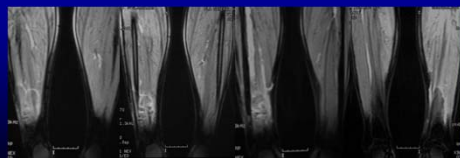
T1WI

滑膜肉瘤

2001-09-13 HIFU治疗后18天



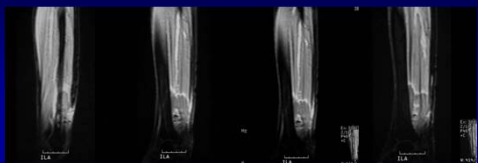
T1WI * + FS



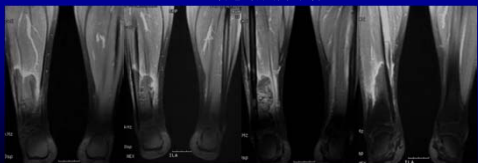
Gd-DTPA 动态增强动脉期

滑膜肉瘤

2001-09-13 HIFU 治疗后 18 天



Gd-DTPA 动态增强门脉期



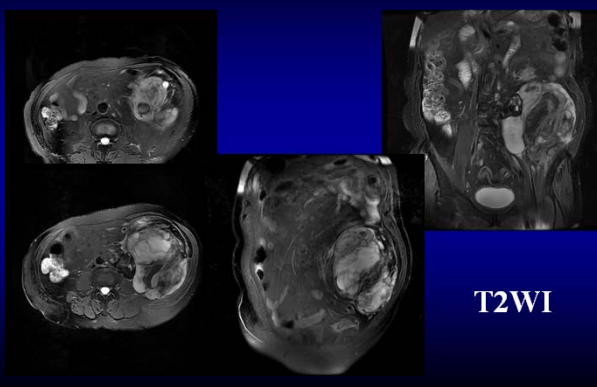
Gd-DTPA 动态增强延迟期

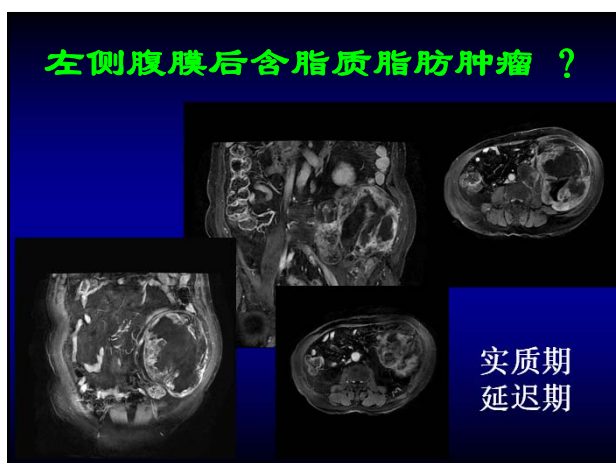
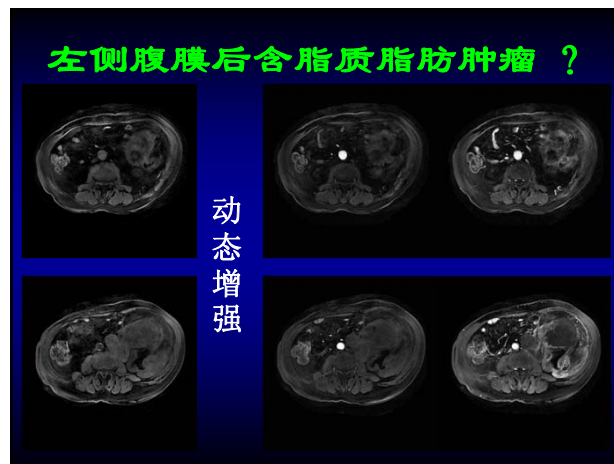
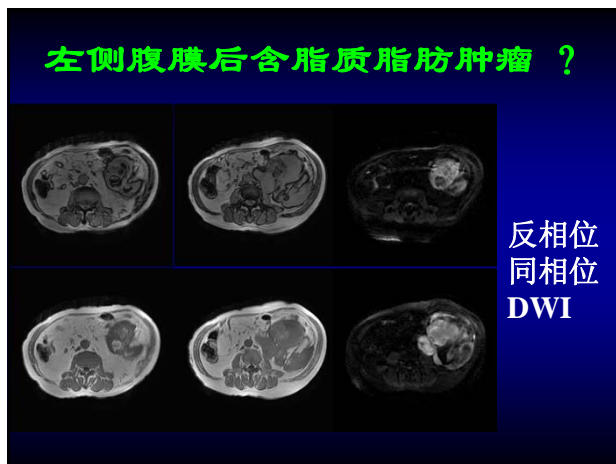
HIFU 治疗后肿瘤血供显著减少、坏死明显

病例简介

- 男，78岁，查体发现左侧腹膜后巨大肿块

左侧腹膜后含脂质脂肪肿瘤？





活检前诊断

- 左侧腹膜后含丰富脂质脂肪肿瘤，恶性，以脂肪肉瘤可能性大

病理诊断

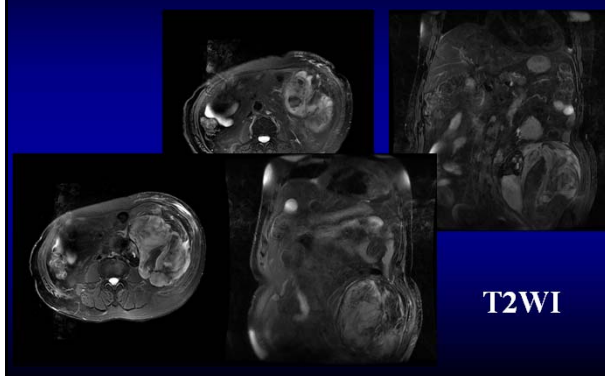
梭形细胞肿瘤伴坏死及粘液变性，局部肿瘤细胞有轻度异型性，结合免疫组化，考虑：孤立性纤维性肿瘤可能性大

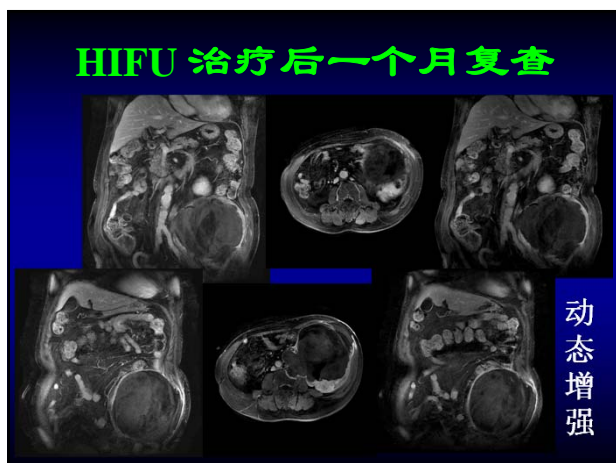
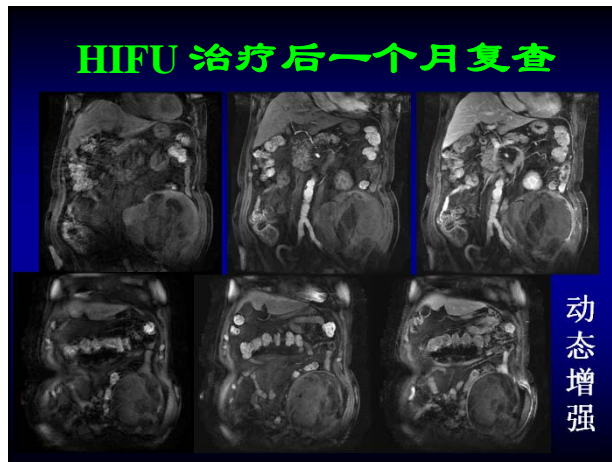
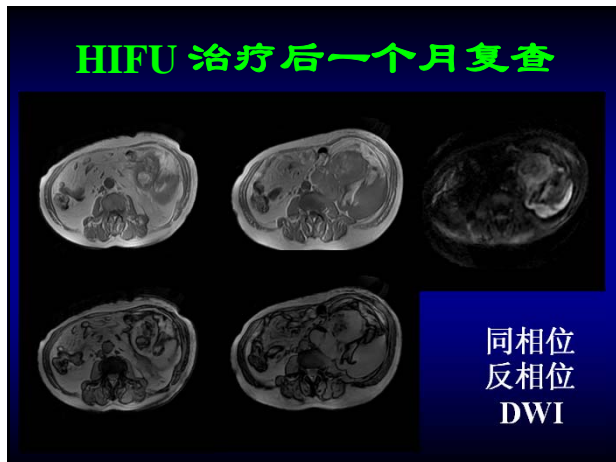
结合 MRI 大量脂质脂肪
与活检病理所见

脂肪肉瘤

选择 HIFU 治疗后复查

HIFU 治疗后一个月复查

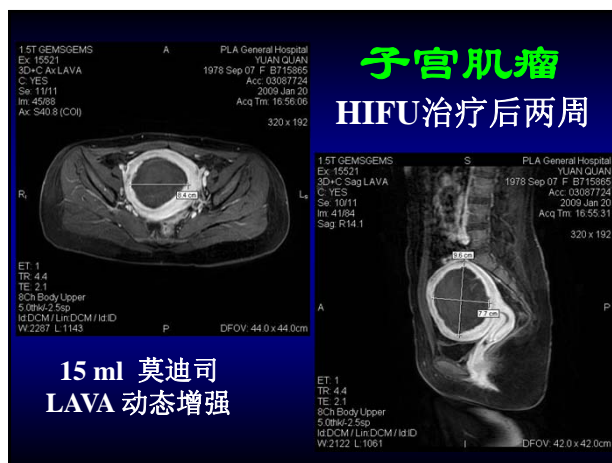
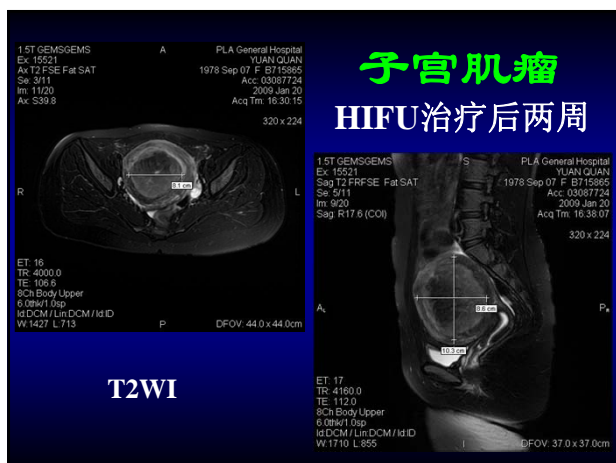
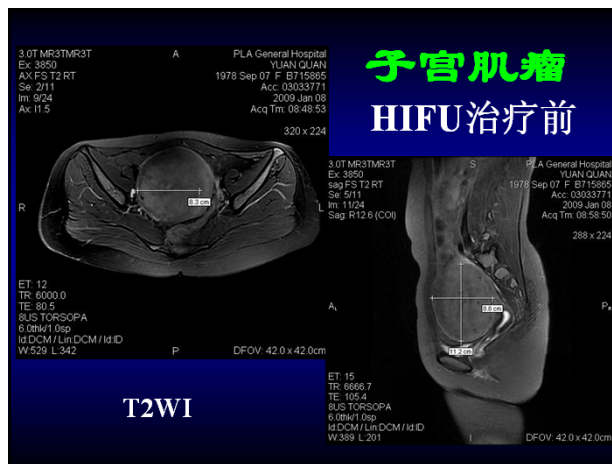


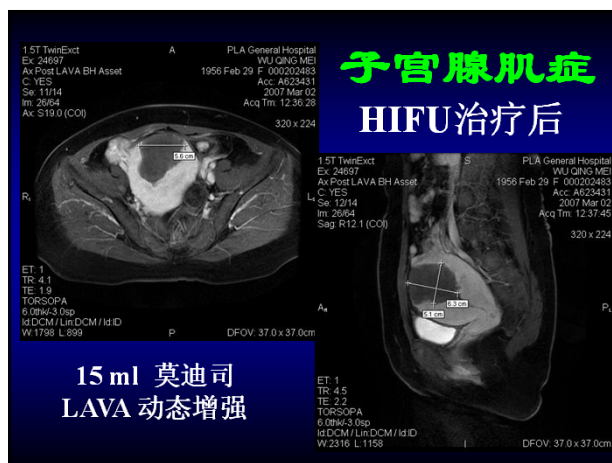
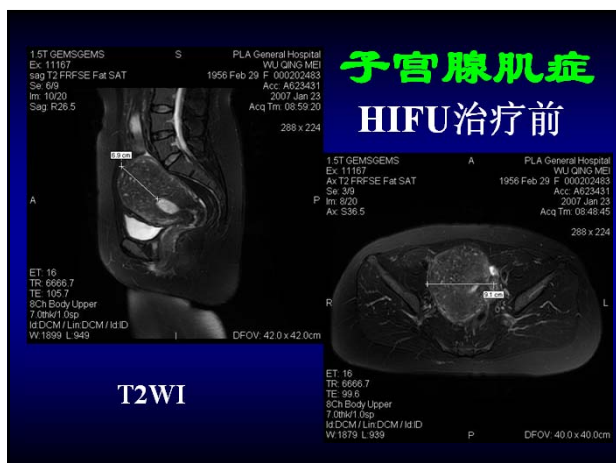
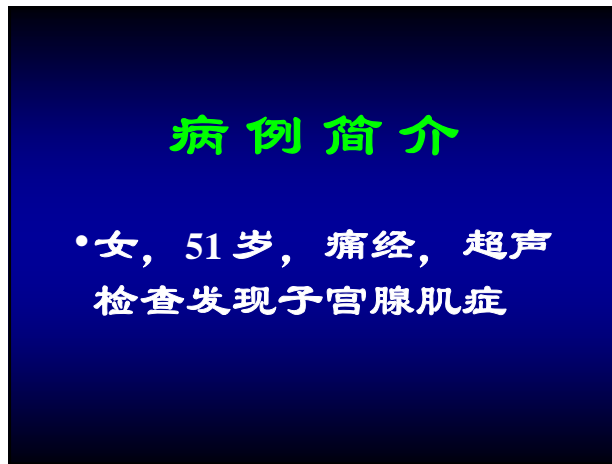
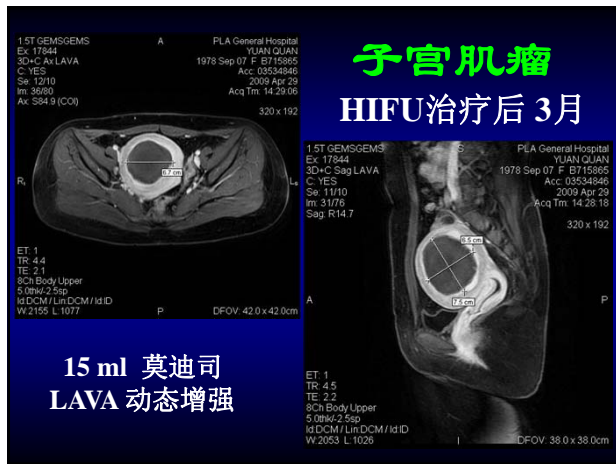


HIFU 治疗后
肿瘤血供减少、大部分坏死明显、少部分存活

病例简介

女，31岁，痛经，超声
查体发现巨大子宫肌瘤





高场强 MRI

一站式评估

**不同方法治疗肿瘤
的疗效!!!**

放疗疗效评估

一般在3个月后

谢 谢 !