



急性出血性脑卒中的诊疗进展

Diagnosis and treatment of acute hemorrhagic stroke

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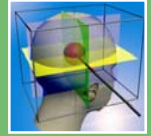


Stroke

JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Stroke
AssociationSM

A Division of American
Heart Association 



AHA/ASA Guideline

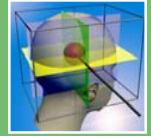
Guidelines for the Management of Spontaneous Intracerebral Hemorrhage

A Guideline for Healthcare Professionals From the American Heart
Association/American Stroke Association

脑出血是危害人类健康的常见病，多发病。具有发病急、病情重、变化快、死亡率和残废率高等点。

 Lewis B. Morgenstern, J. Claude Hemphill III, Craig Anderson, et al. Guidelines for the Management of Spontaneous Intracerebral Hemorrhage. Stroke. 2010;41:2108-2129.

高血压脑出血



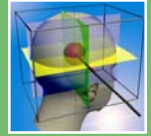
Hypertensive Intracerebral Hemorrhage (HICH)

HICH是一种急症，在高血压的情况下，发生脑实质内的出血。即由于高血压等致病因素导致脑血管病变而发生的脑内出血。

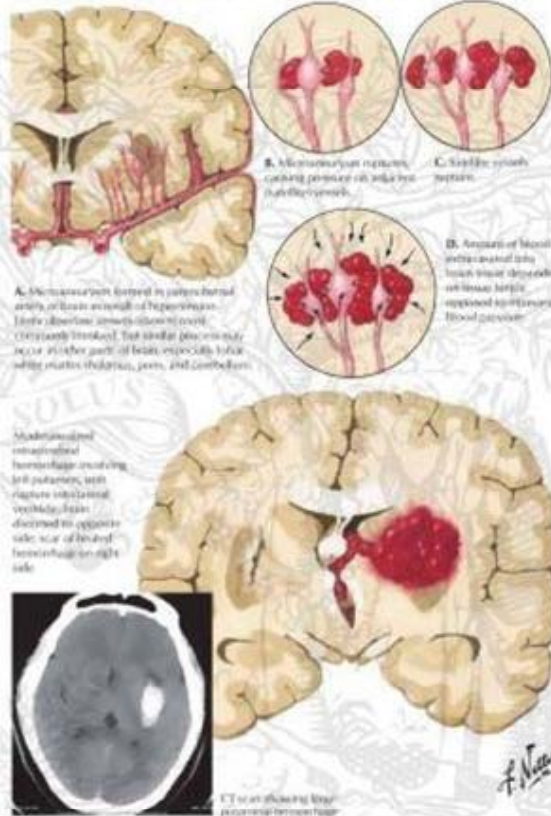
HICH的快速诊断和评估至关重要。



高血压脑出血的病理生理变化



Intracerebral Hemorrhage (Hypertensive): Pathogenesis

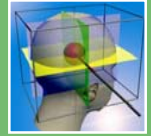


血块——物理性损伤
血肿代谢产物——化学性损伤
脑脊液循环障碍

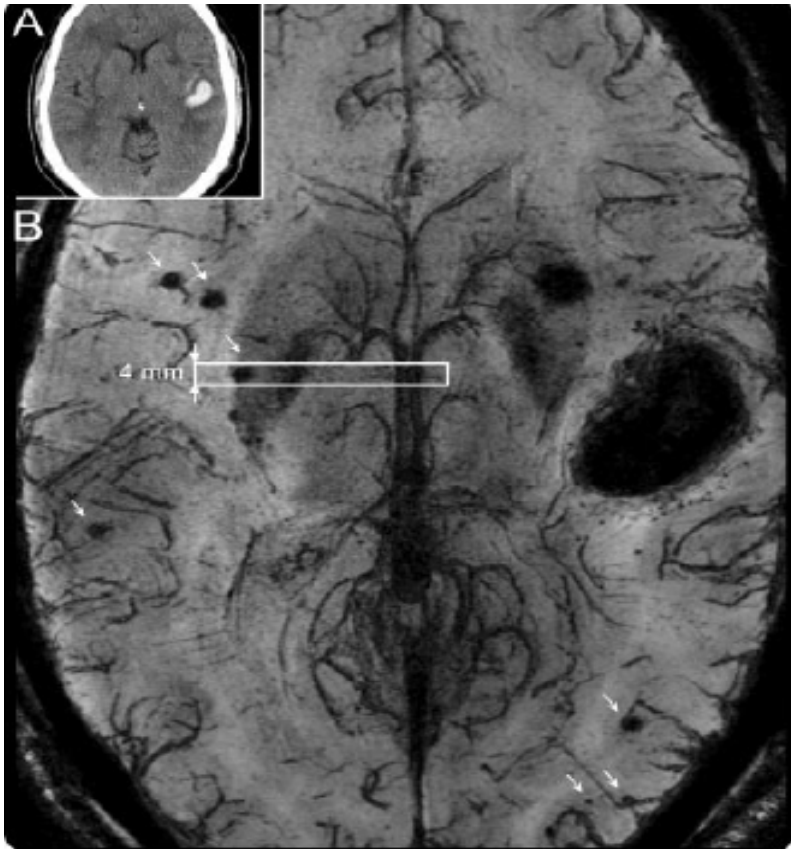
ELSEVIER



脑出血及多发微出血



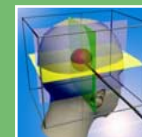
Intracerebral hemorrhage and multiple microbleeds



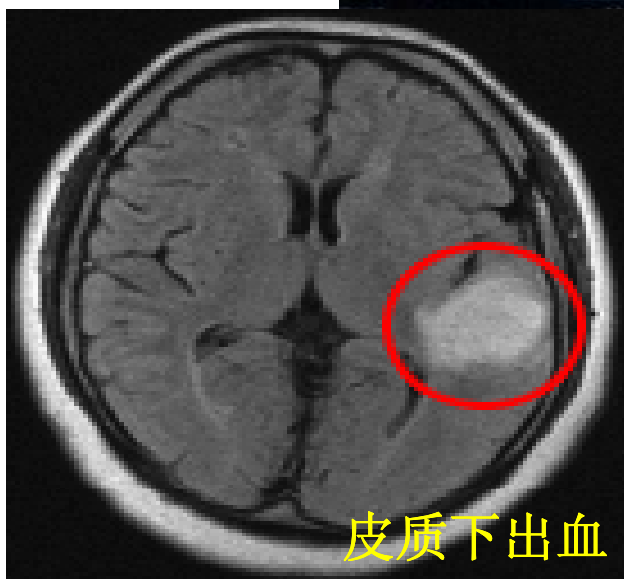
多发微出血可能是术后其他部位发生再出血的诱因。脑出血发生后，其他部位的微出血因血肿的机械压迫作用而停止出血，当血肿被移除后，微出血失去机械的压迫作用而继续出血。临床表现为再出血。

Multiple micro-bleeding may be the reason of rebleeding in other parts .After ICH the effect of mechanical press stop bleeding. When the hematoma was removed, micro-bleeding continue bleeding for the loss of mechanical pressure.

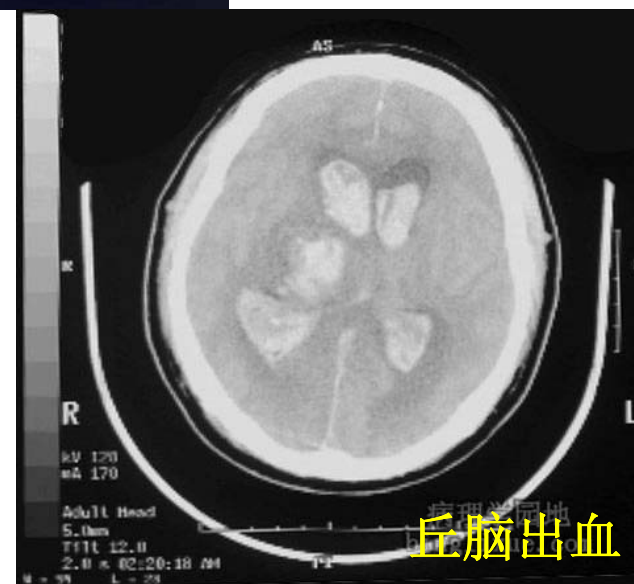
不同部位的脑出血



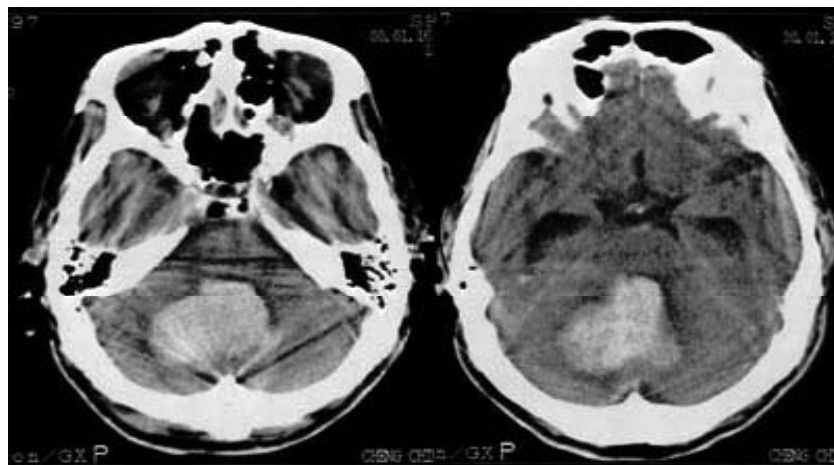
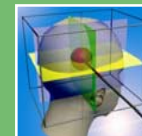
壳核出血



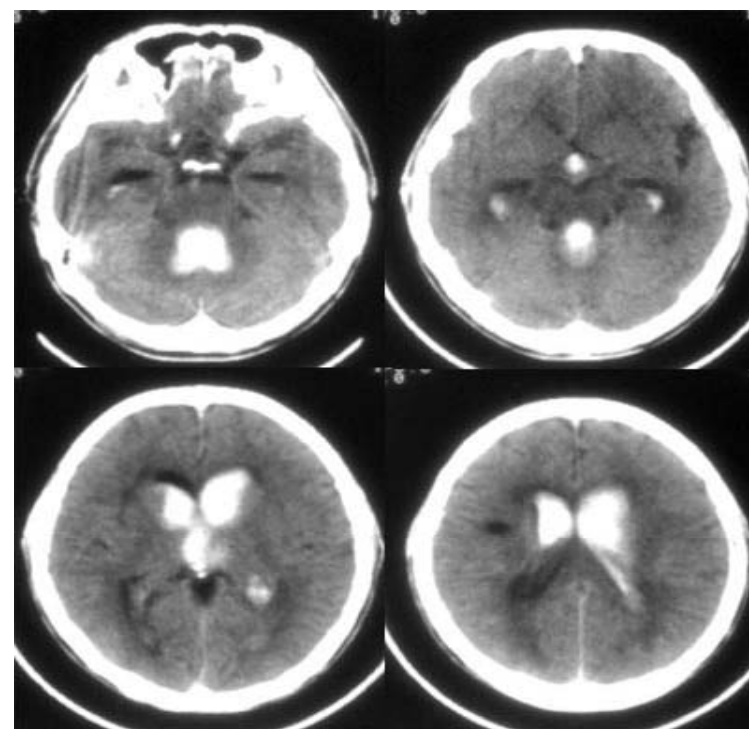
皮质下出血



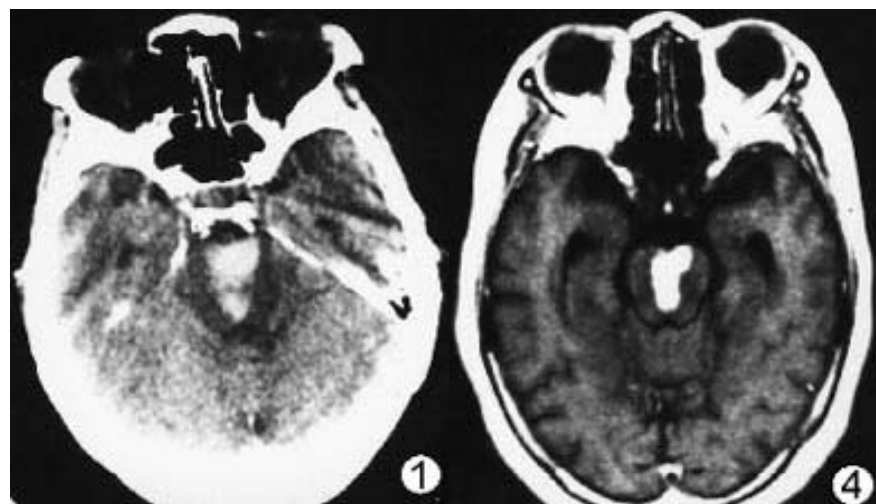
丘脑出血



小脑出血



脑室内出血



桥脑出血



手术方法

1.1 血肿清除+去骨瓣减压术—治疗脑出血



图1 术前
术后36 h

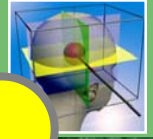


图2 术后36 h

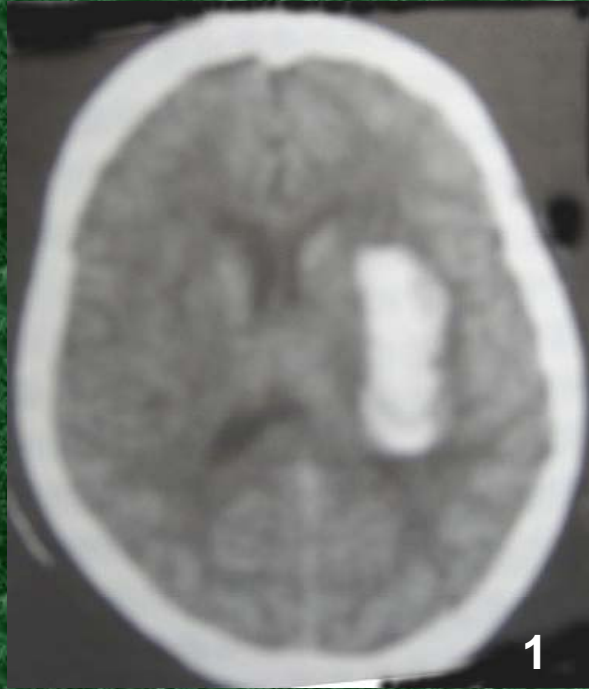


图3

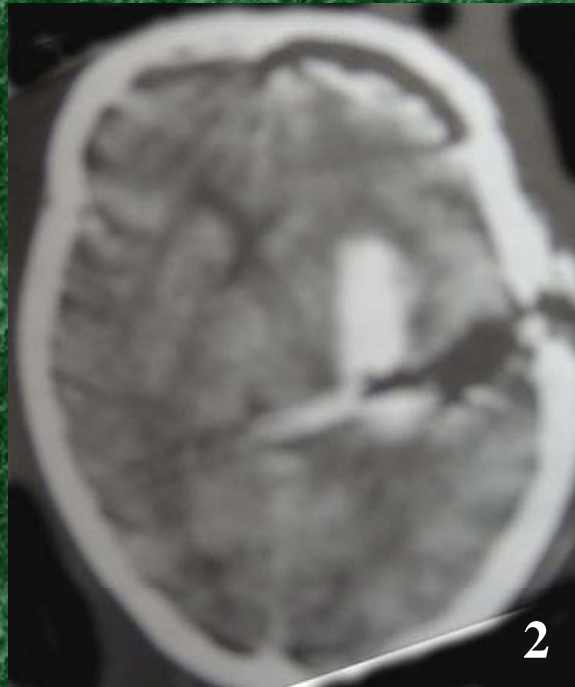
手术方法



1.2 小骨窗显微手术+引流术



1 术前脑CT;

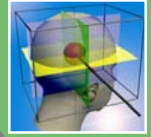


2 小骨窗显微手术后CT;

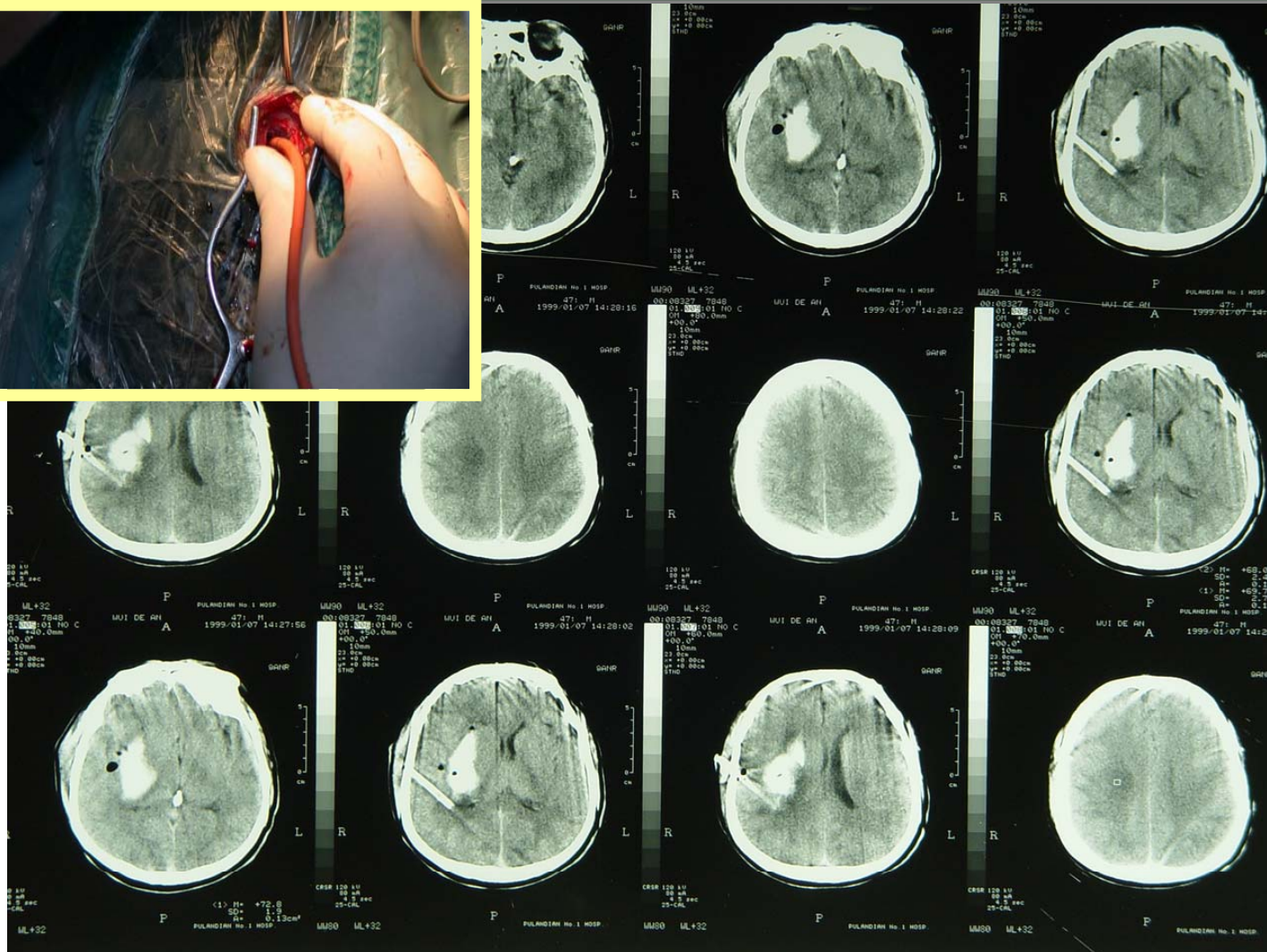
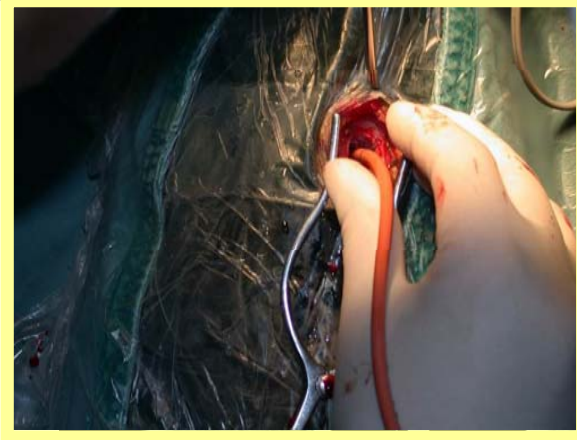


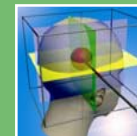
3 引流术中CT, 出血大部分被清除, 见引流管、小骨窗。

手术方法



3、锥颅或钻孔血肿吸引术





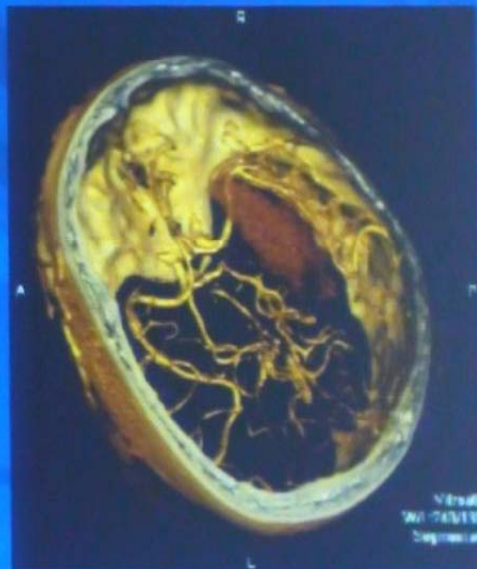
Brain Hemorrhage

Neil A. Martin, MD

Professor and Chair,
Department of Neurosurgery

Co-Director, UCLA Stroke
Center

ICCN, 2010



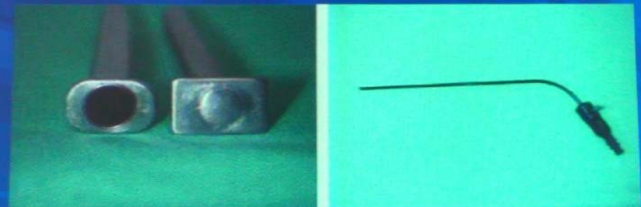
Neil Martin, MD



The Frazee Endoscope

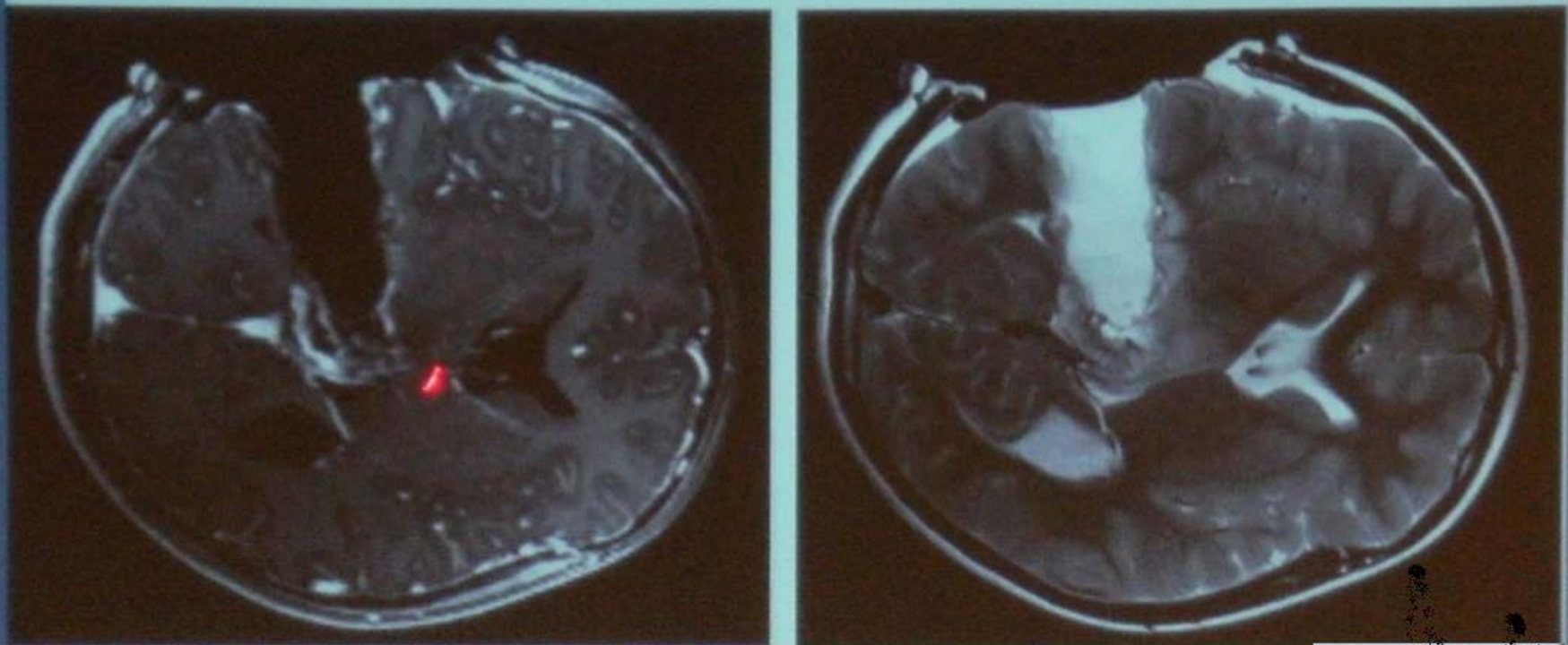


Endoscopic surgery for spontaneous basal ganglia hemorrhage: comparing endoscopic surgery, stereotactic aspiration, and craniotomy in noncomatose patients
Der-Yang Cho MD^a, Chun-Chung Chen MD^a, Cheng-Siu Chang MD^a,
Wen-Yuan Lee MD^a and Melain Tso MA^b *Surg Neurol*, 2005



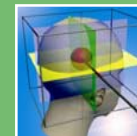
8 mm channel, monopolar suction, 4 mm endoscope with irrigation system

In-OP 1st scan



术中核磁共振

2464例自发性脑出血病例的外科治疗



一项来自中国大陆的多中心、单盲、随机对照研究
(赵继宗等)

目的: 比较三种不同的神经外科方法常规开颅治疗 (COC)、CT引导钻颅置管血肿抽吸术 (CTGA) 和微创外科血肿清除术 (KIA) 治疗自发性脑出血的效果。

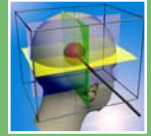
方法: 2001.9-2003.9; 中国大陆135家医院; 2464例患者; 单盲

结果: 术后1月和3月内的死亡率分别为19.3%和21.1%; GCS \leq 8分的患者术后3个月的死亡率(M3m)为GCS \geq 8分患者的3.5倍; COC组的M3m(24.6%)高于KHA(17.6%)和CTGA(20.6%); COC组的术后并发症发生率(29.9%)显著高于CTGA组(24.8%, P=0.015)

结论: 与COC相比, KHA和CTGA治疗高血压脑出血能带来更有利的结果, 更低的致死率和致残率



AHA/ASA Guideline (2010)

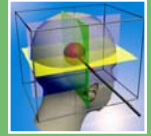


手术推荐意见:

1. 对于大多数ICH患者而言，手术的作用尚不确定。（II b C）
2. 小脑出血伴神经功能恶化、脑干受压和/或脑室梗阻致脑积水者应尽快手术清除血肿。（I B）（根据前版修订）不推荐以脑室引流作为该组患者的初始治疗。（III C）
3. 脑叶出血超过30ml且血肿距皮层表面1cm以内者，可考虑开颅清除幕上血肿。（II b B）（根据前版修订）
4. 把立体定向设备或内镜单用，或与溶栓药物联用，以微创的方式清除血肿，其效果尚不确定，目前正处于研究阶段。（II b B）
5. 尽管理论上来看有效，但是没有明确的证据表明超早期清除幕上血肿可以改善临床预后或降低死亡率。极早期开颅清除血肿可能增加再出血的风险，从而产生负面作用。（III B）



血肿清除术式



趋势

- 大骨瓣开颅血肿清除减压术 Craniotomy
- 小骨窗开颅锁孔手术 Keyhole operation
- 神经内镜微创手术 Endoscopic surgery
- 有框架立体定向血肿清除术
Frame stereotactic neurosurgery
- 无框架立体定向血肿清除术
Frameless stereotactic neurosurgery
- 简易立体定向术 Simplified stereotaxy

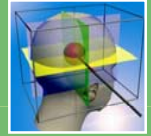
微创

方体定向血肿吸引术

Cuboid stereotactic aspiration of hematomas, CSA



方体定向血肿吸引术



Cuboid stereotactic aspiration of hematomas, CSA

理念
notion

定位精确(Positioning accuracy)
软性微创(Minimally Invasive)
功能恢复(Functional recovery)

特点
character

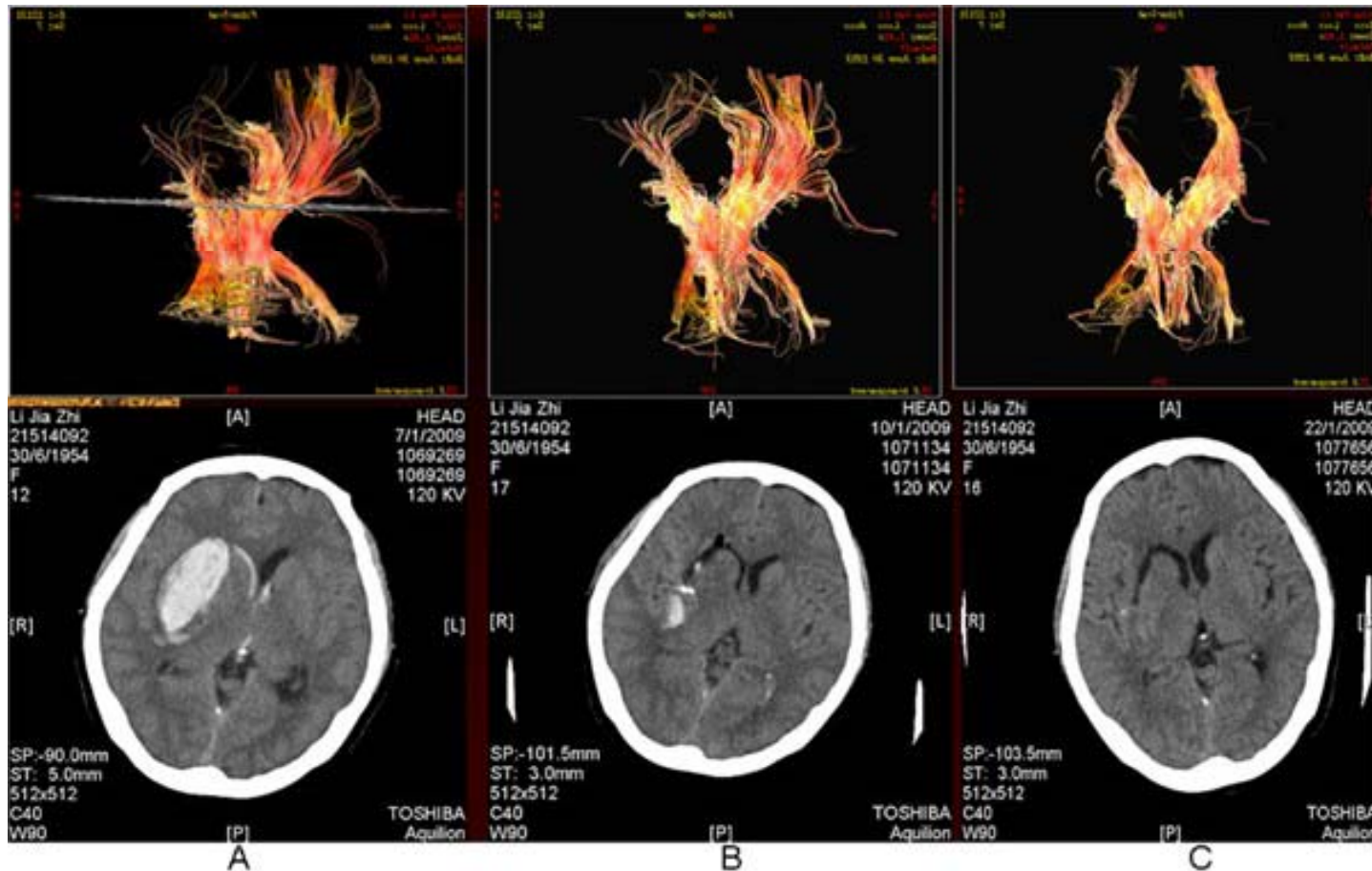
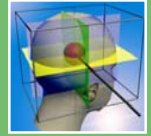
科学安全(Scientific & safety)
操作简便(Simply operate)
费用低廉(Functional recovery)

目标
target

急诊救治(Emergency Treatment)
CT 监测 (CT monitoring)
疗效显著(Significant effect)



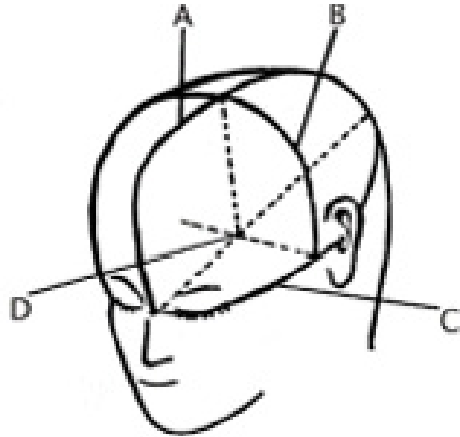
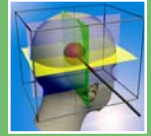
血肿清除



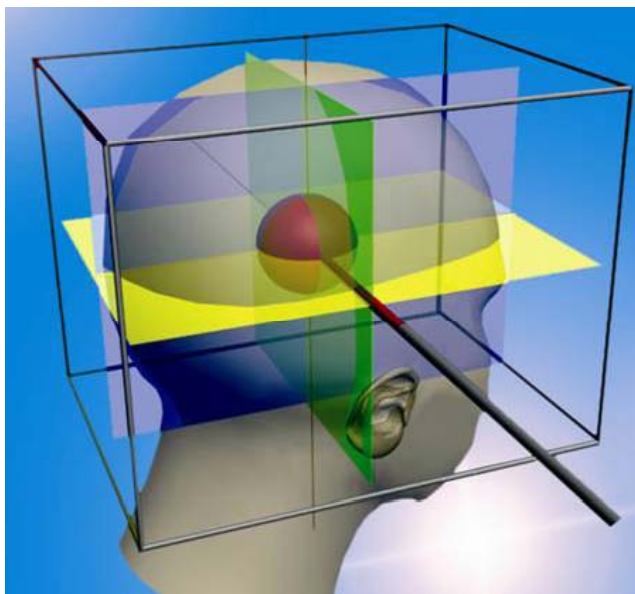
Guofeng Wu, Likun Wang, Zhen Hong, Yuanhong Mao and Xiaochun Hu. Effects of minimally invasive techniques for evaluation of hematoma in basal ganglia on cortical spinal tract from patients with spontaneous hemorrhage: observed by diffusion tensor imaging. *Neurological Research*.

定位原理

Positioning theory



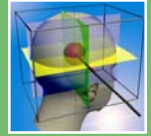
- A: Sagittal plane** 矢状面
- B: Coronal plane** 冠状面
- C: horizontal plane** 水平面
- D: Plane intersection** 三面交点



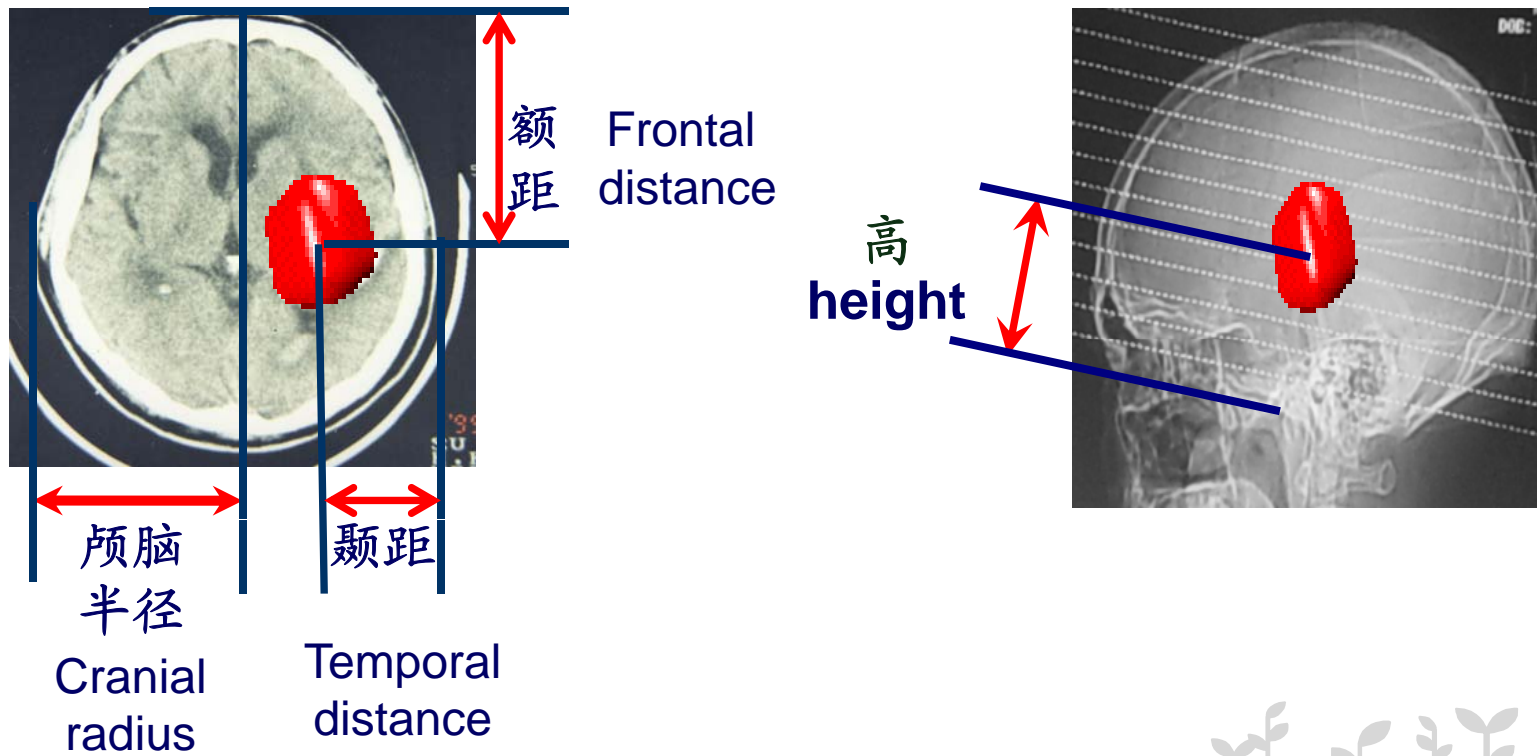
根据颅脑表面标志定位

- 以CT扫描的层面作为水平面
- 以颅脑前后正中面为矢状面
- 以定位尺确定颅脑的冠状面
- 在病人头皮上画出代表上述三个平面的头部立体投影曲线

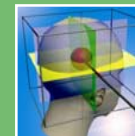
CSA---数据获取



one radius, three distances



手术器械



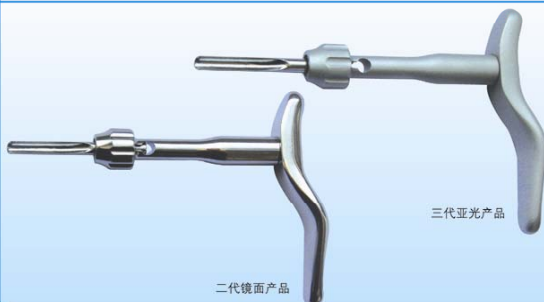
立体定位器 Stereotaxis counter bar



定向颅钻 Directional skull drill



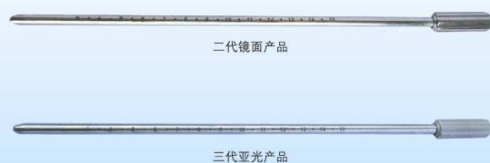
颅骨凹颅钻 Skull concave drill



颅骨锁孔器 Skull key-hole tool



颅骨探棒尺 Skull stick-ruler



一次性使用颅脑引流袋 Cranio-cerebral drainage pack

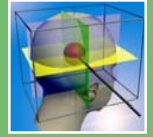


I 型一次性使用颅脑引流袋
I type cranio-cerebral drainage pack

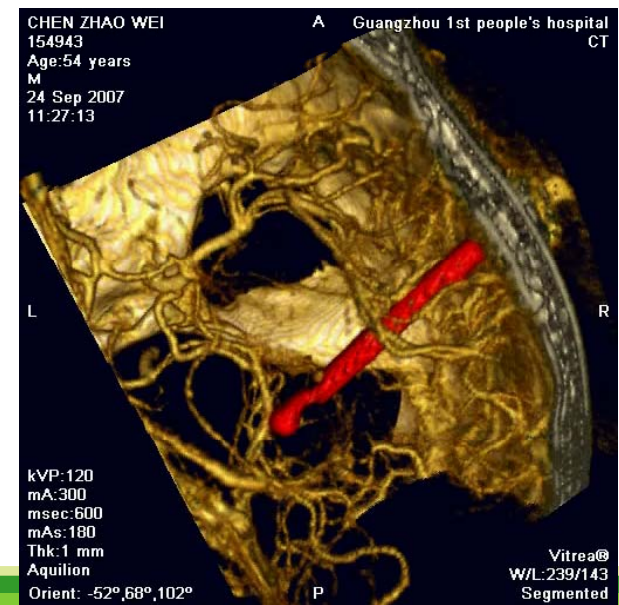
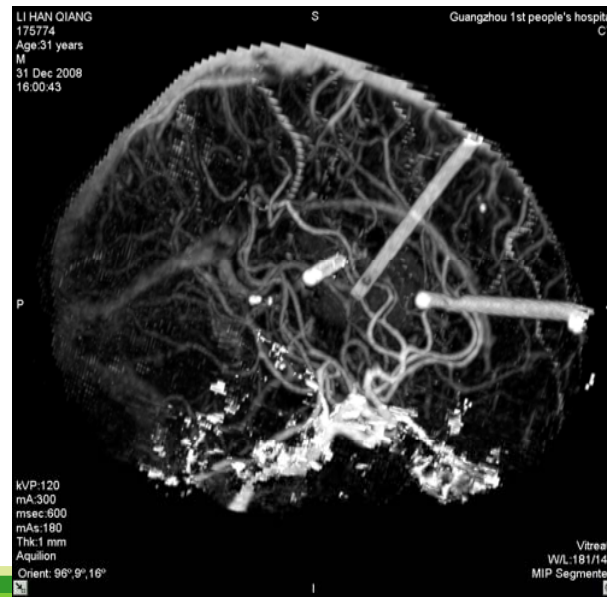
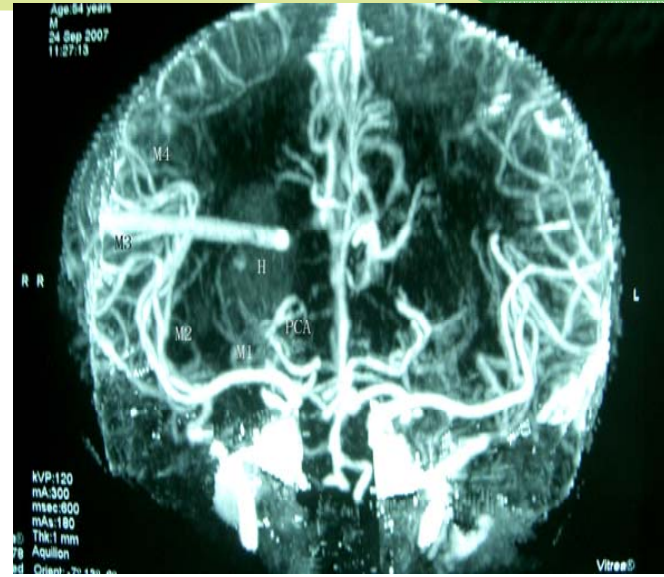
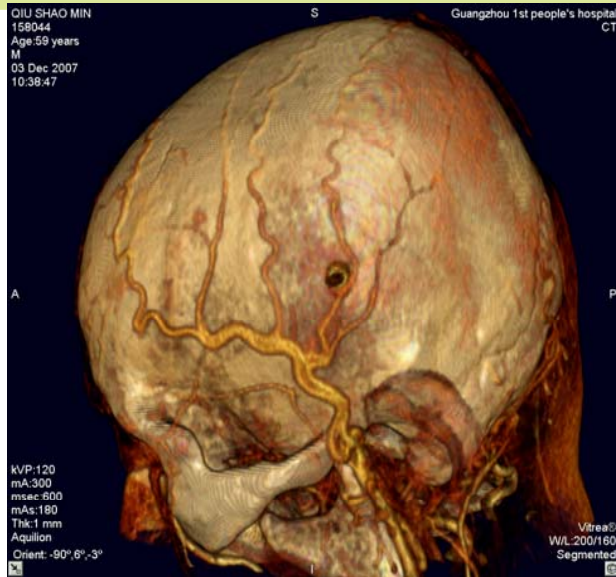
II 型一次性使用颅脑引流袋
II type cranio-cerebral drainage pack

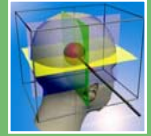


手术操作过程



CSA安全评估





Peri-catheter edema is slight

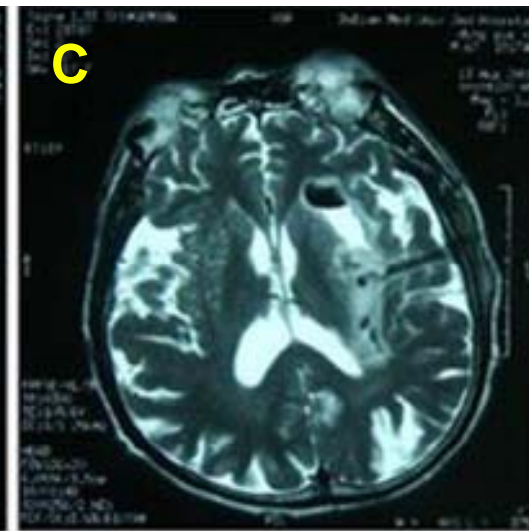
Mild brain injury



CT



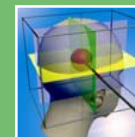
MRI T1



MRI T2



方体定向血肿吸引术与内科比较



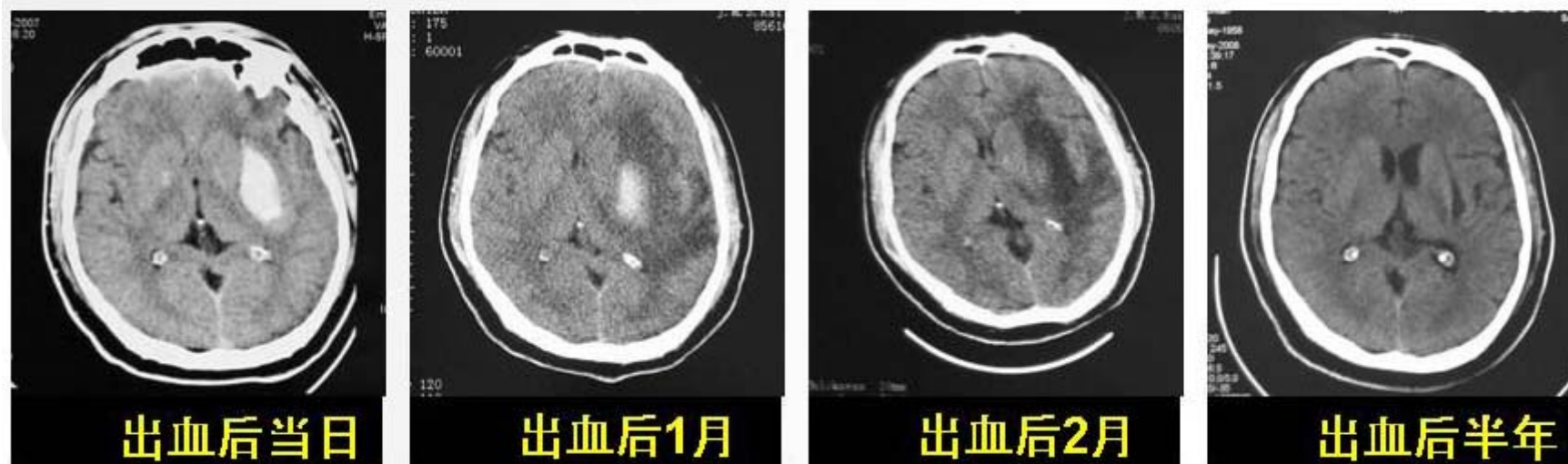
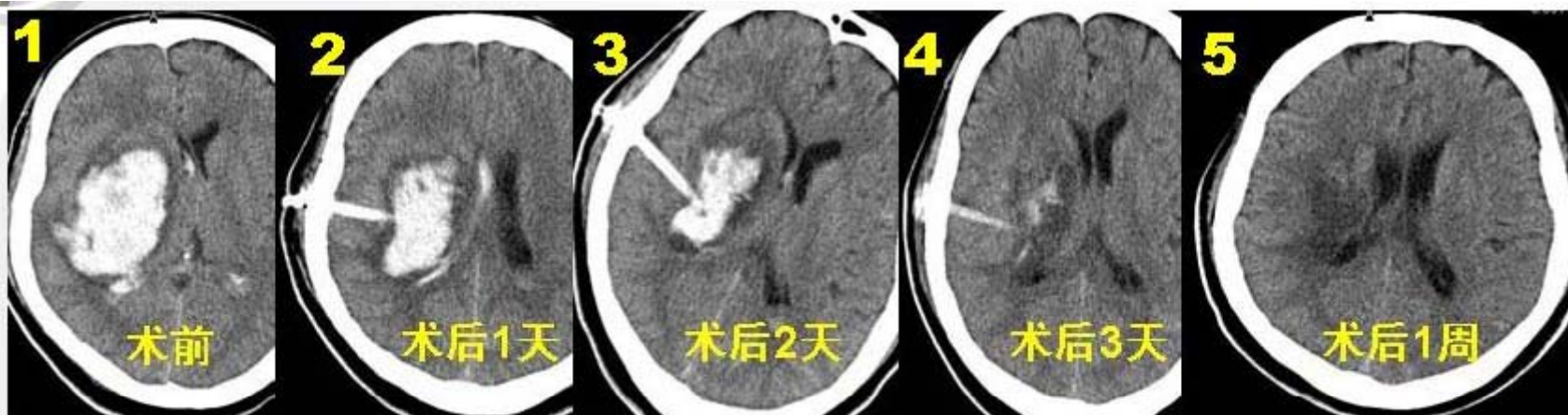
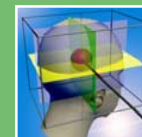
75例高血压少量脑出血(10~30ml), 随机分成方体定向血肿吸引术(微创组) 36例与内科保守治疗组(内科组) 39例

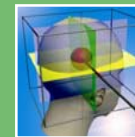
分组	住院天数(天)	住院费用(元)	血肿完全清除或吸收时间(天)	近期(1月)神经功能恢复优良率	远期(6月)神经功能恢复良好率
微创组	9.6	5136.3	3.8 ¹⁾	58%	50% ²⁾
内科组	23.6	11843.6	24	29%	16%

与内科组相比较: 1) $P < 0.05$; 2) $P < 0.01$

结论: 微创组比内科组明显缩短住院治疗时间, 功能恢复优良率高, 降低了死亡率, 临床费用减少。

骆锦标等.定向置管吸引术与内科保守治疗基底节区少量出血的疗效分析.南方医科大学学报, 2008,28(8): 1352-1357

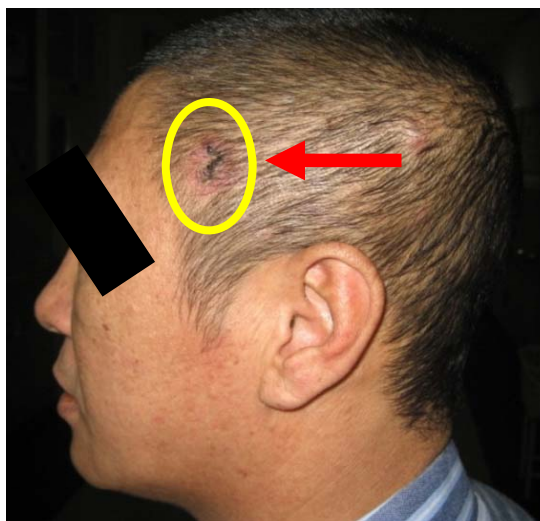




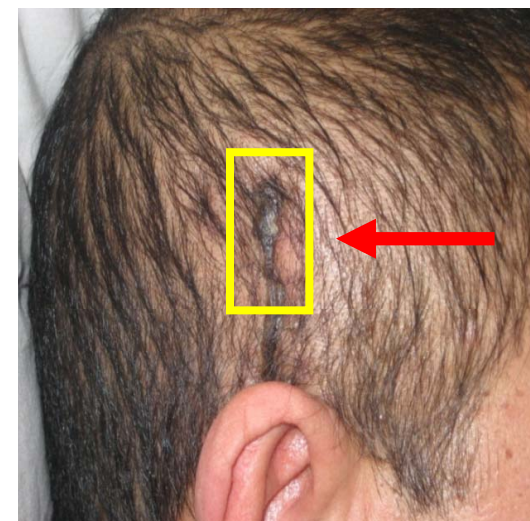
➤ 开颅去骨瓣
Craniotomy

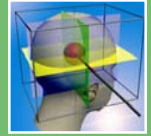


➤ 方体定向吸引术
CSA

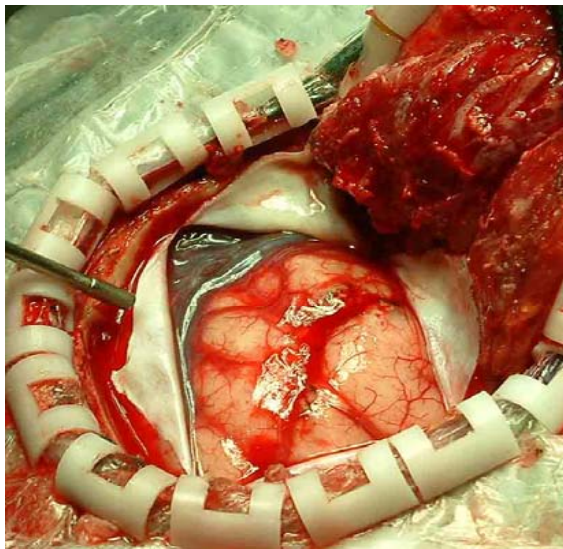


➤ 小骨窗锁孔手术
Keyhole operation

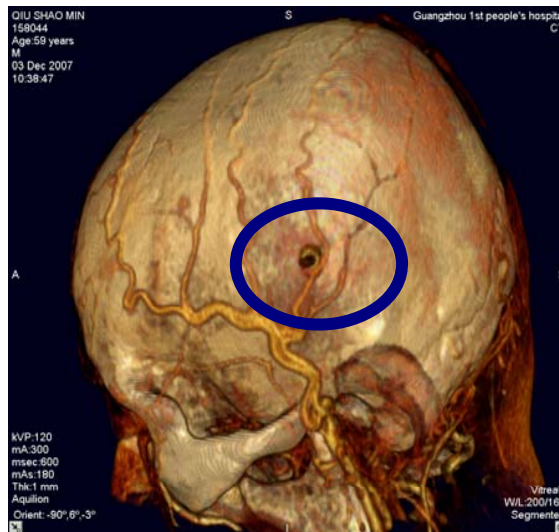




➤ 开颅去骨瓣 Craniotomy

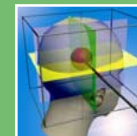


➤ 方体定向吸引术 CSA



➤ 小骨窗锁孔手术 Keyhole operation





开颅去骨瓣



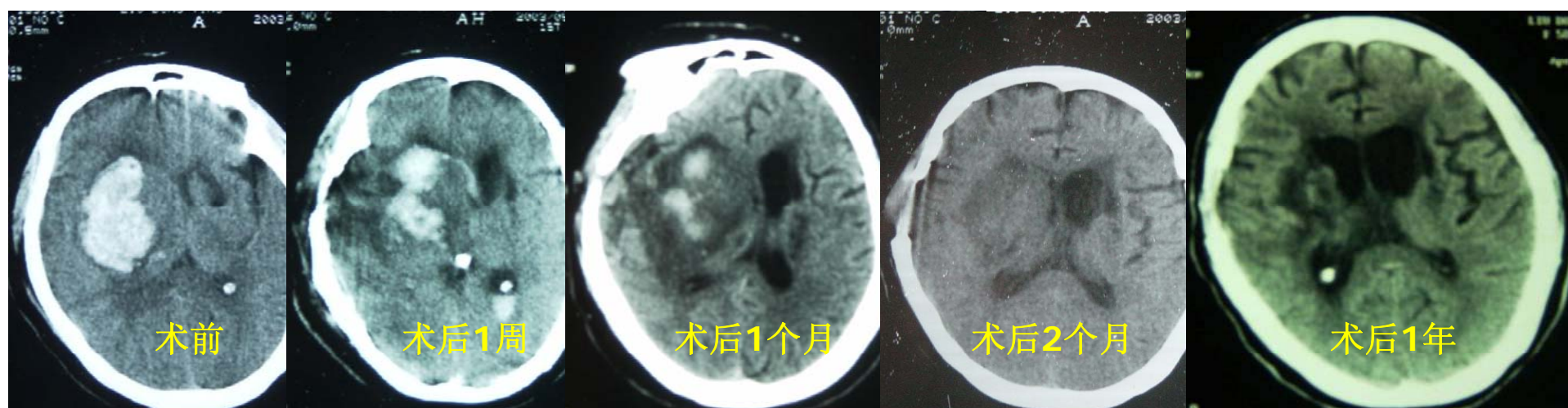
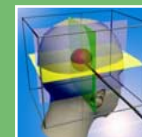
小骨窗入路



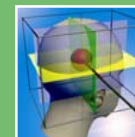
方体定向血肿吸引术



方体定向血肿吸引术与骨窗手术治疗脑出血的 CT动态观察比较



方体定向血肿吸引术与开颅术比较



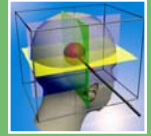
对136例高血压脑出血病例，根据GCS评分 (GCS < 8分)，
随机分成方体定向血肿吸引术组 (微创组) 和外科开颅术组 (开颅组)

分组	例数	近期(1个月) 优良率	远期(6个月) 良好率	死亡率 (30天)
微创组	66	58.5% ¹⁾	48.3% ²⁾	4.6%
开颅组	70	38.6%	26.8%	15.3%

与开颅组相比较: 1) P < 0.05; 2) P < 0.01

结论: 方体定向血肿吸引术较开颅手术能明显改善重、较重型高血压脑出血病人的预后，降低病人残死率。

病例介绍：丘脑出血(CT下)



术前画线定位
Line before operation



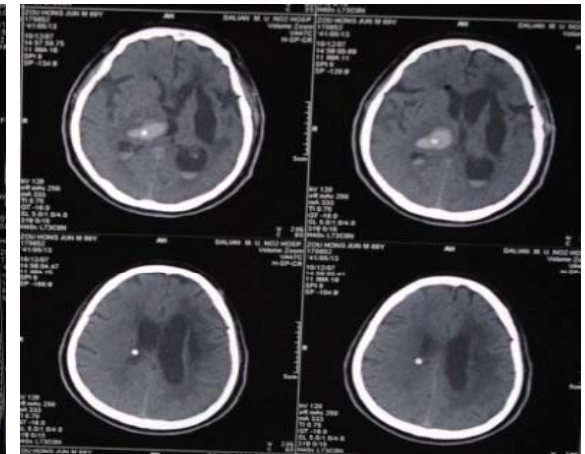
复查CT明确定位点
Clear Location



锁孔、校正
Inplant keyhole device
& correct the orientation

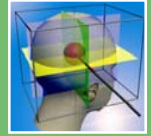


术中置管
Insert tube

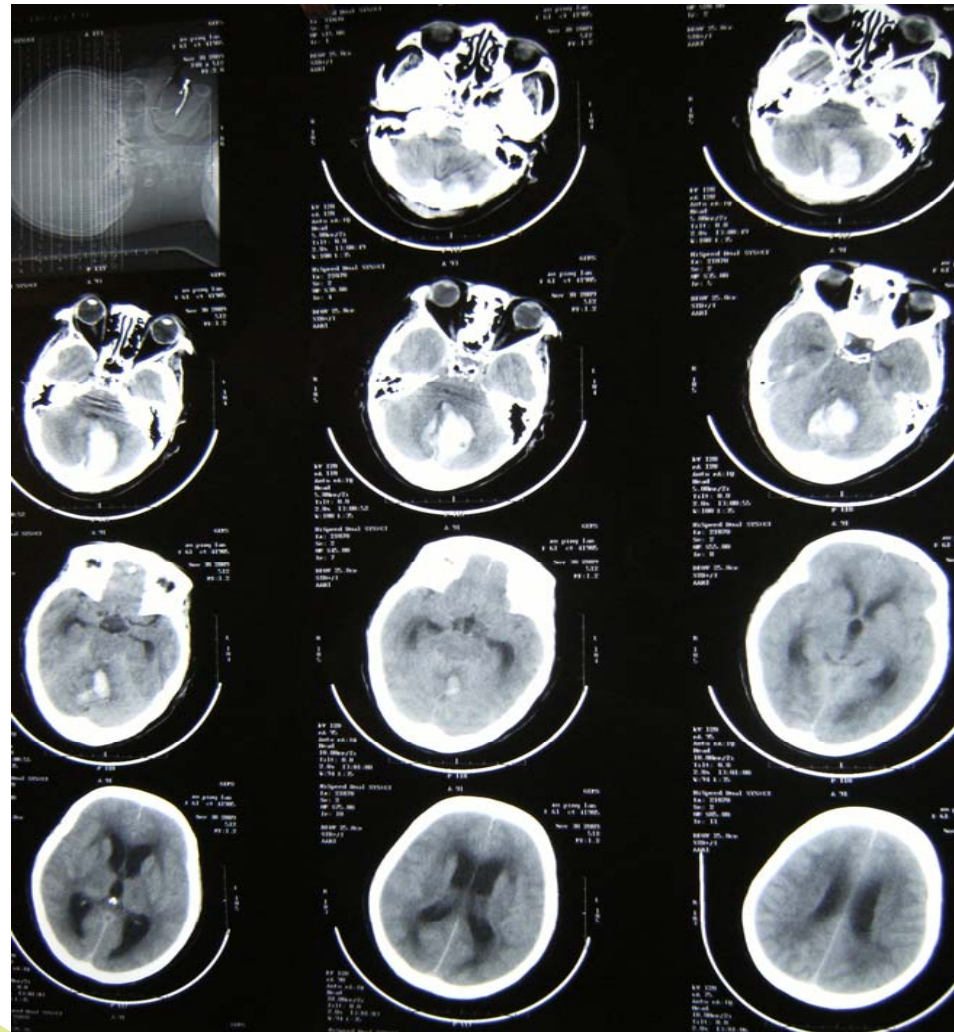


术中复查CT
Review CT

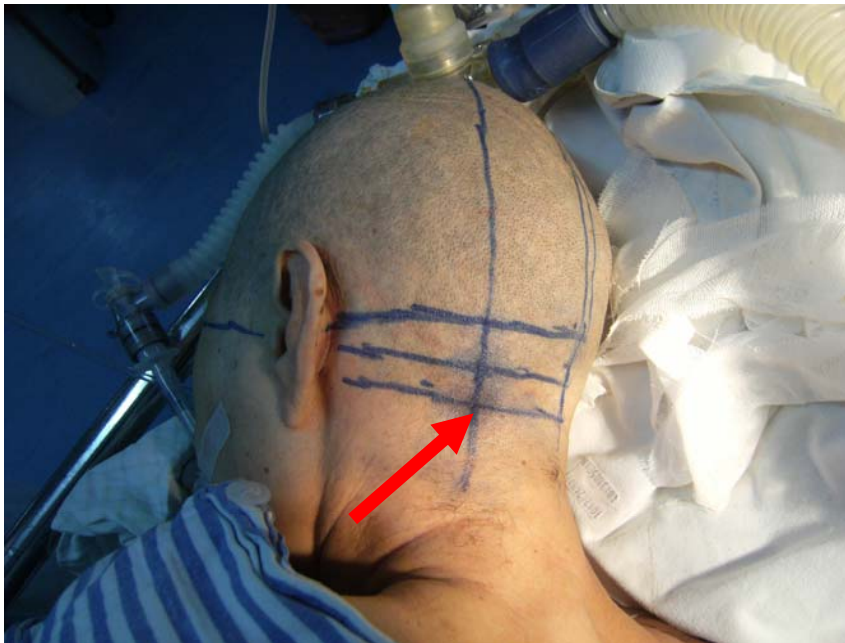
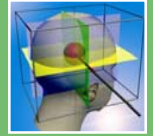
病例介绍：小脑出血



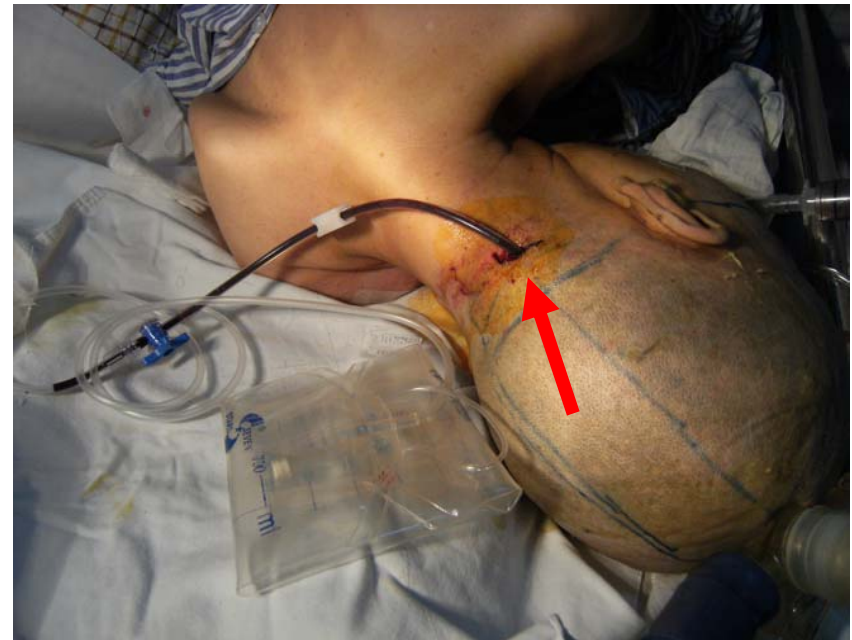
女性，60岁，突发头痛、呕吐伴神智不清一天。



病例介绍：小脑出血



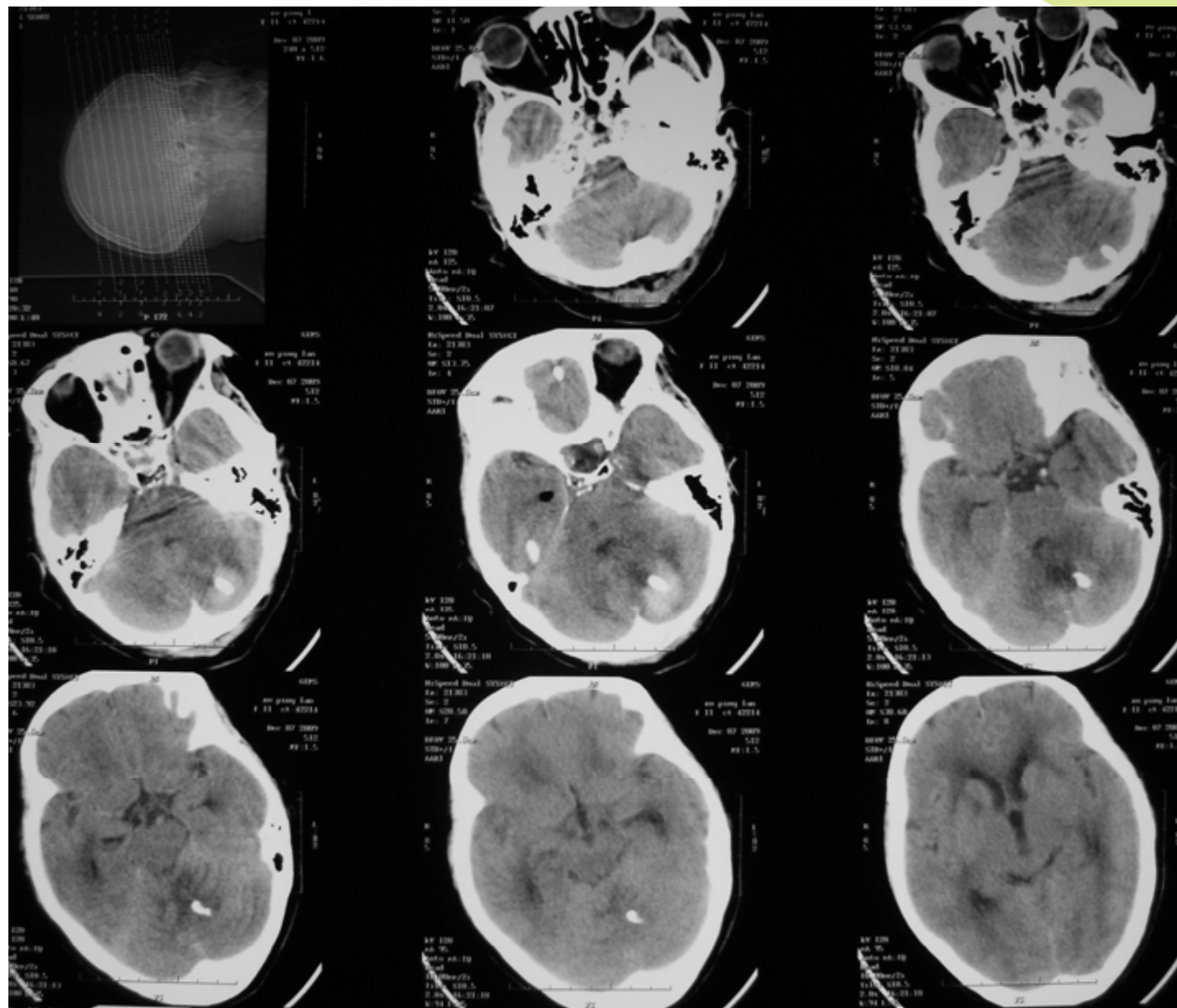
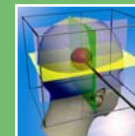
术前方体定位



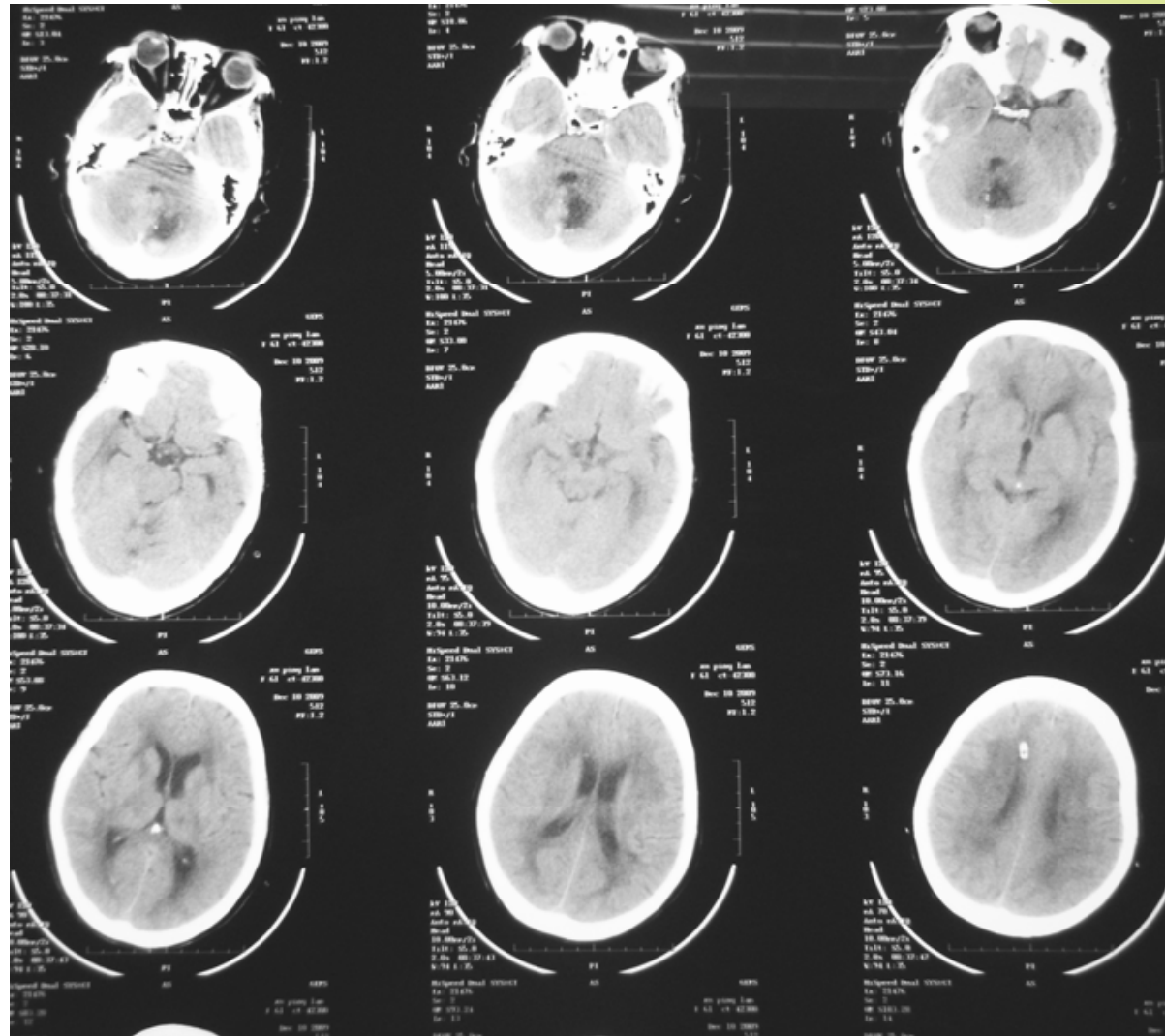
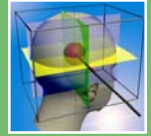
小脑出血置管引流



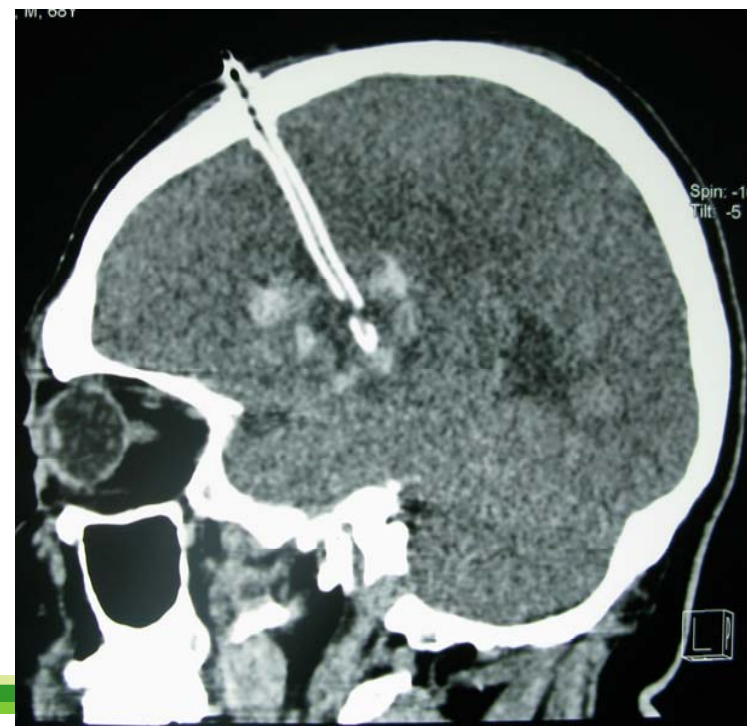
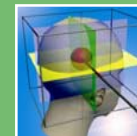
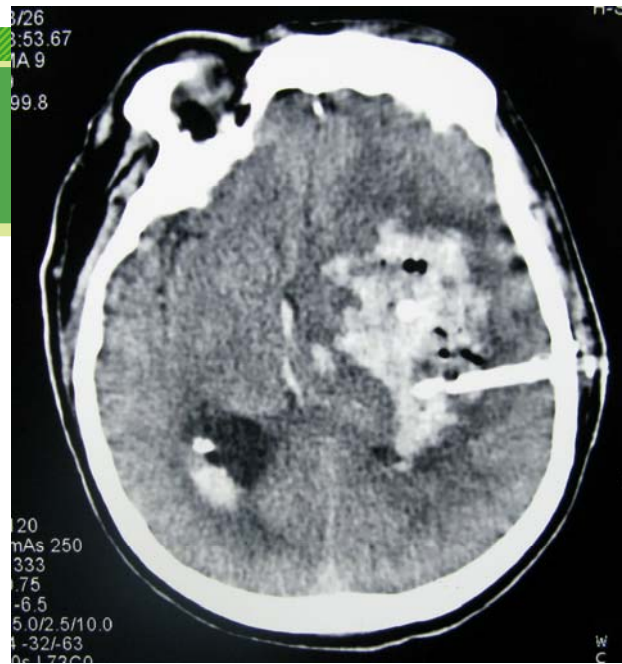
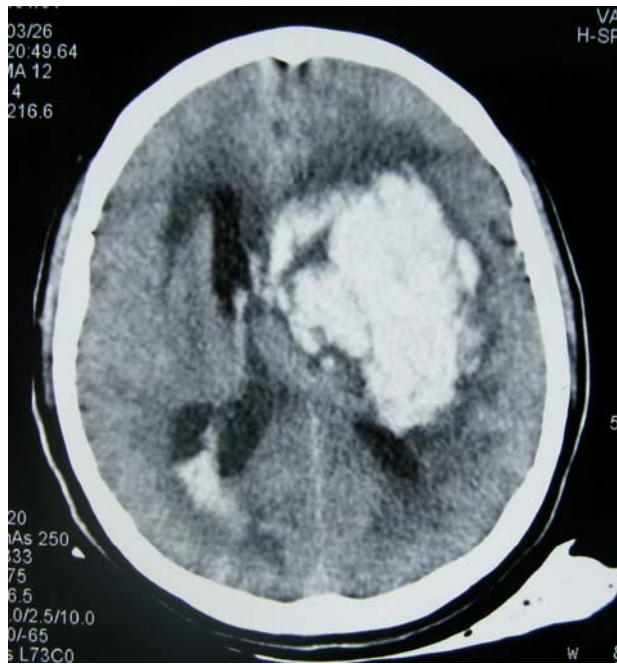
病例介绍：小脑出血术后



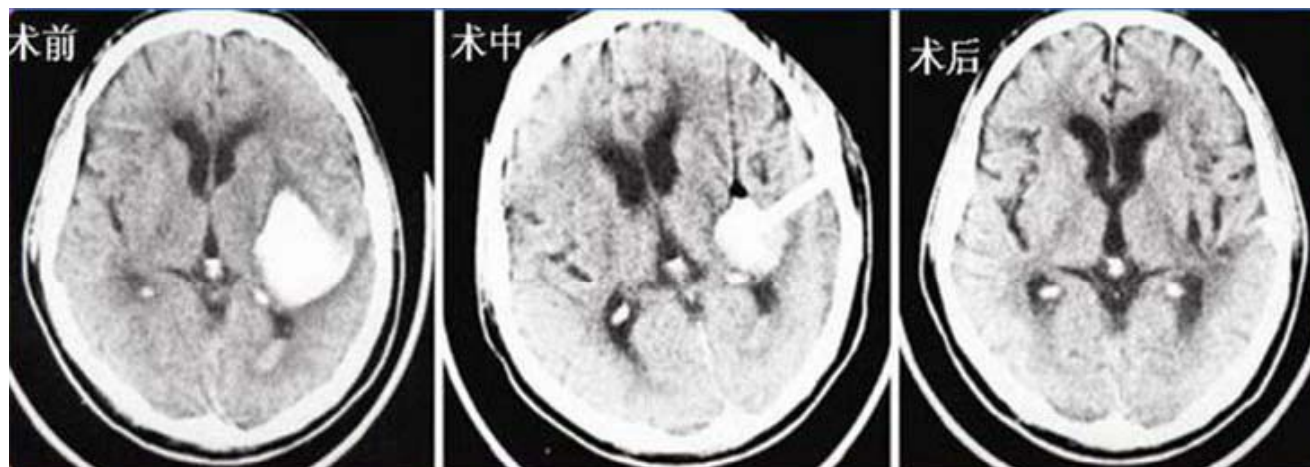
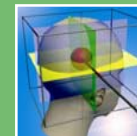
病例介绍：小脑出血术后



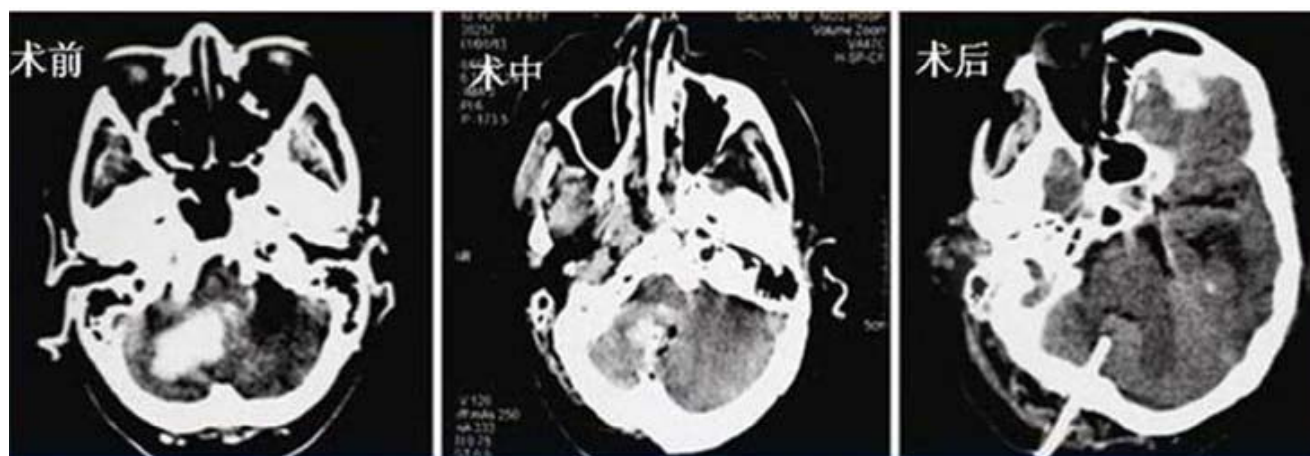




CSA单管治疗幕上、幕下脑出血



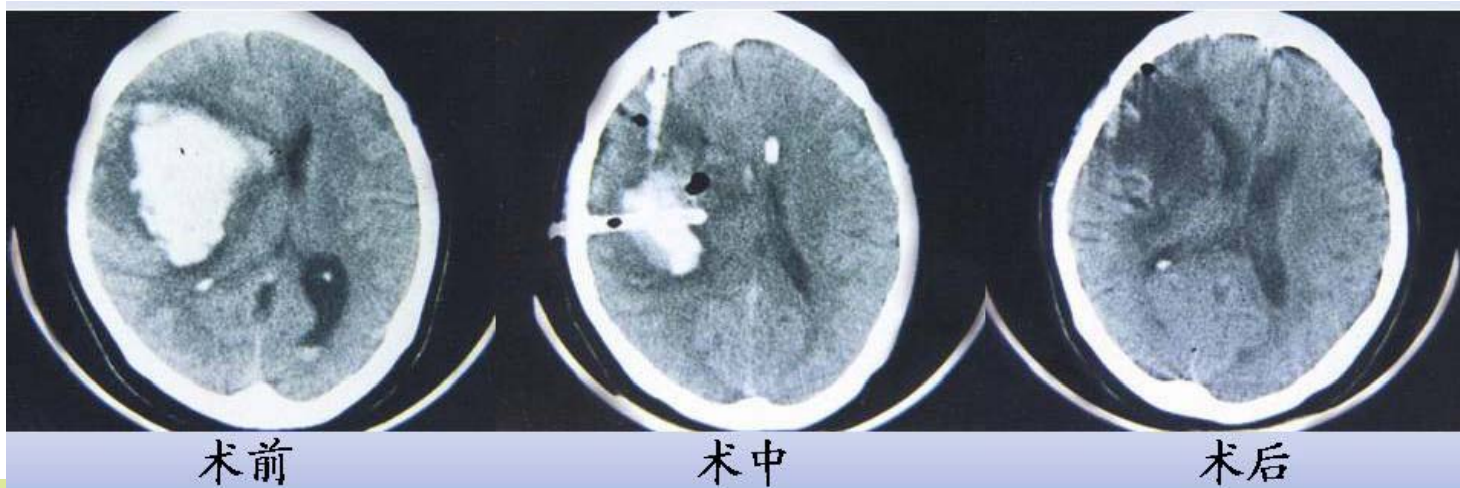
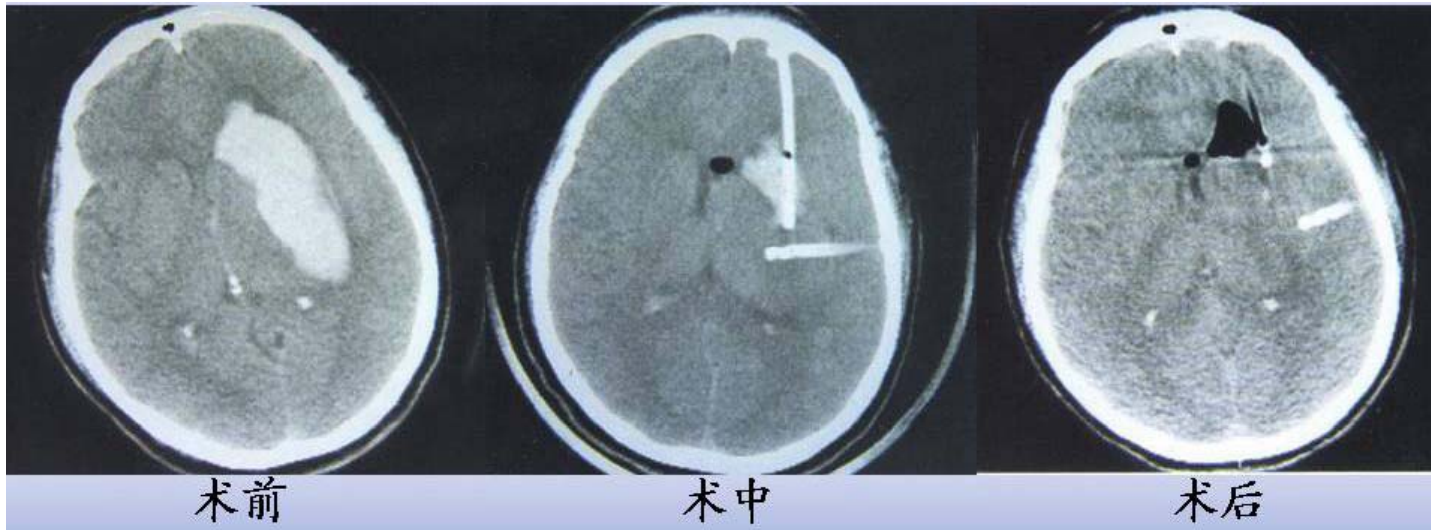
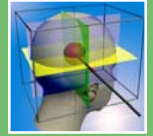
幕上



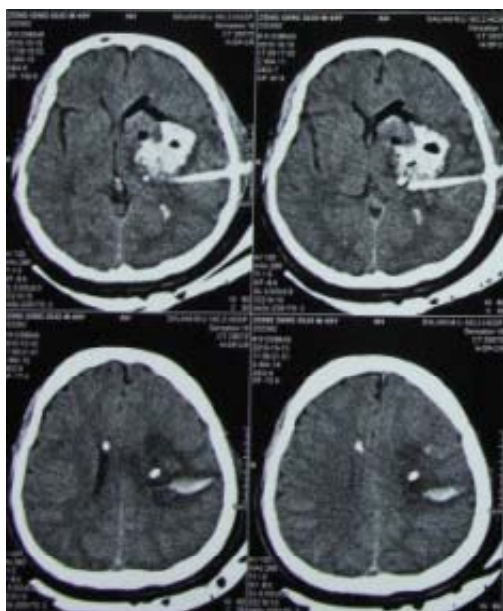
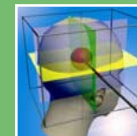
幕下



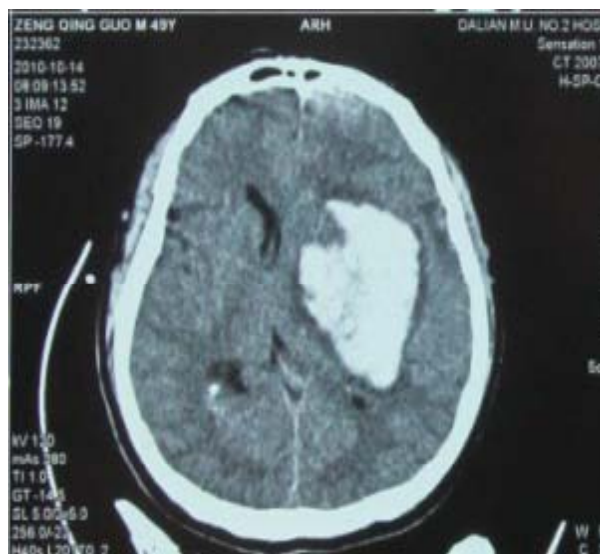
CSA多管治疗脑出血



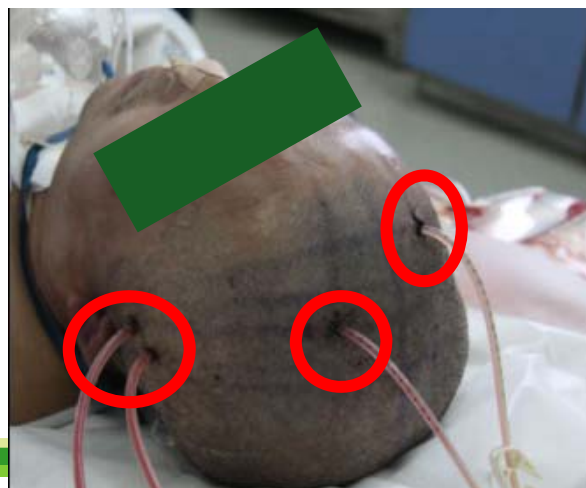
多管技术



during-operation



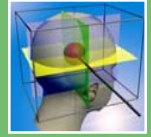
pre-operation



post-operation



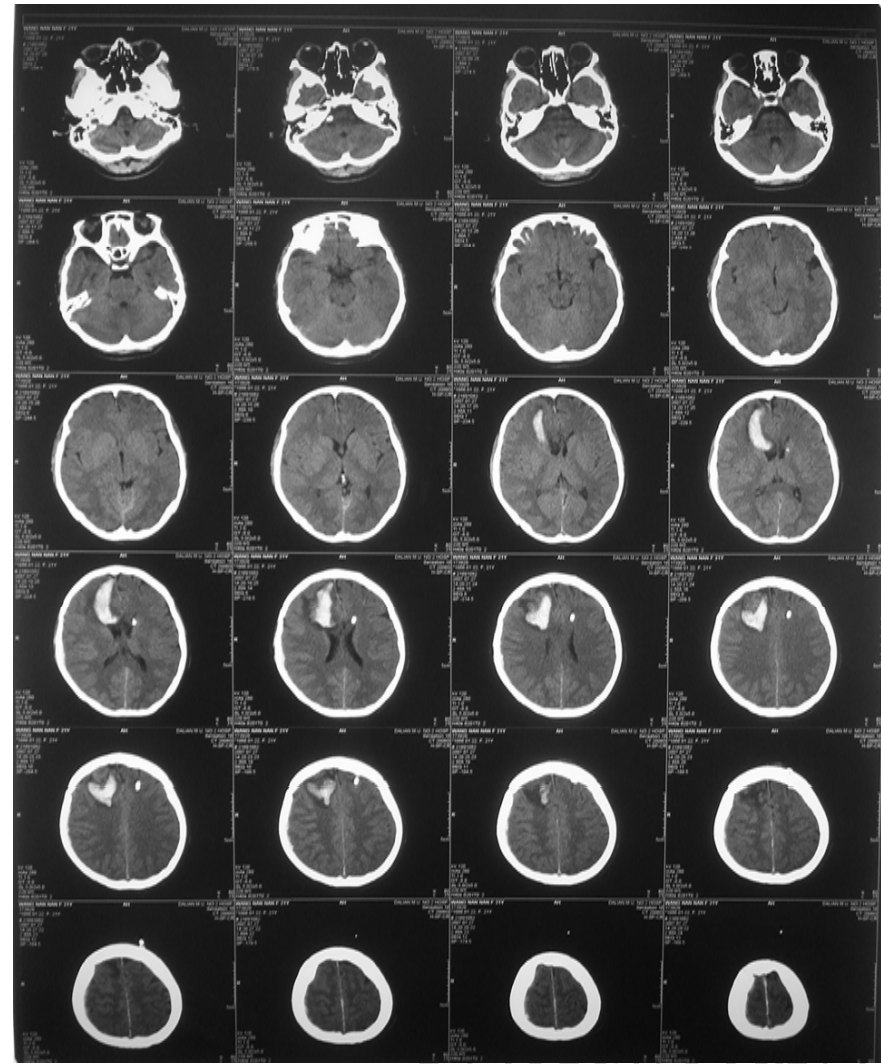
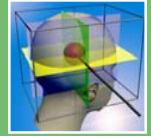
特殊病例介绍



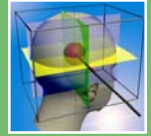
CSA救治21岁心肺复苏的脑出血病人

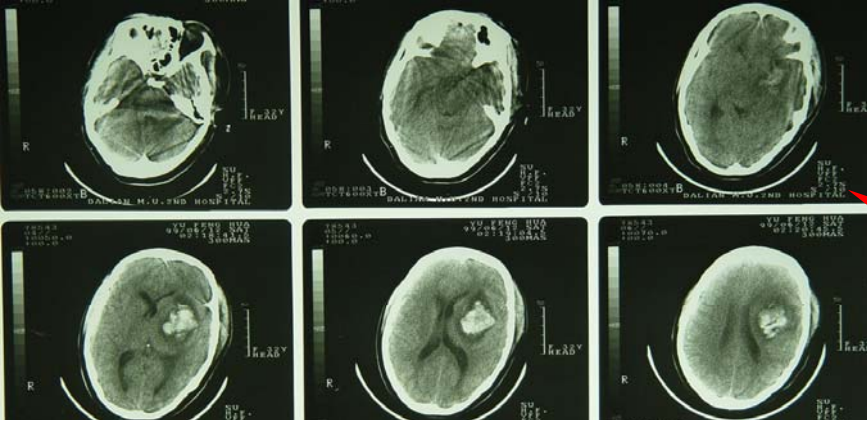
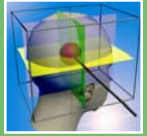


before discharge

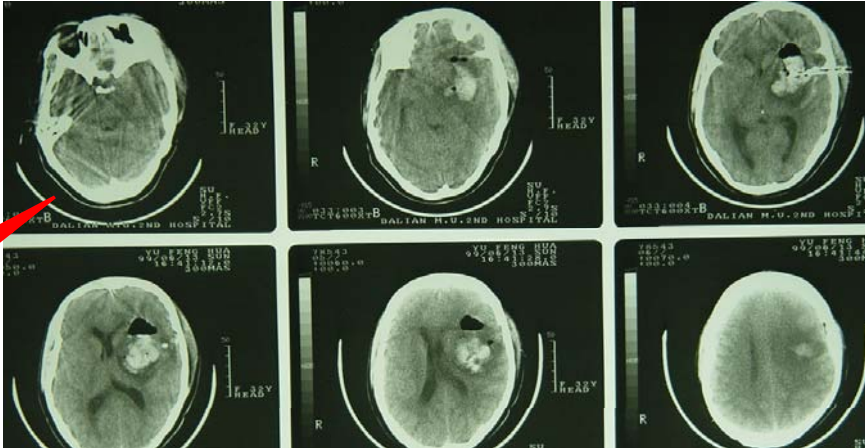


特殊病例——救治妊高症合并脑出血的病人



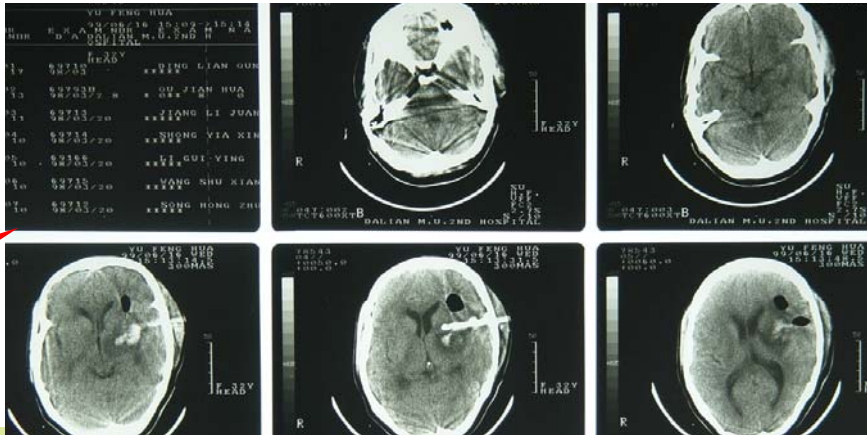


Before surgery

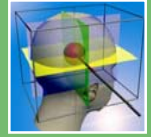


1 day after surgery

3 day after surgery



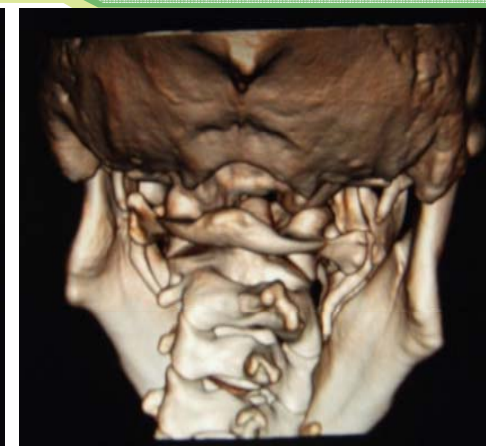
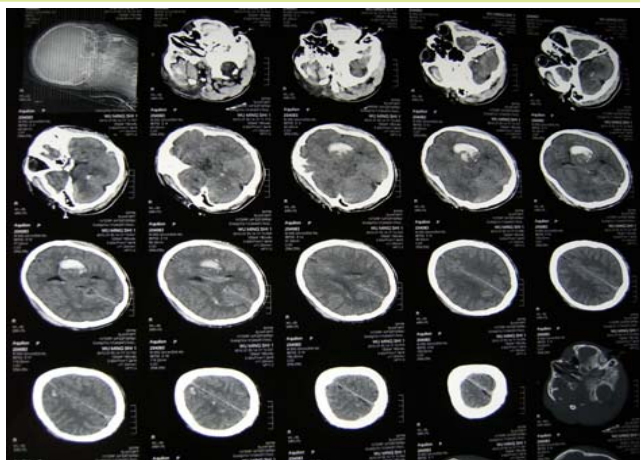
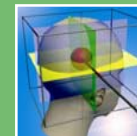
特殊病例介绍



CSA救治65岁心肺复苏的脑出血病人



救治寰枢关节半脱位合并脑出血的病人

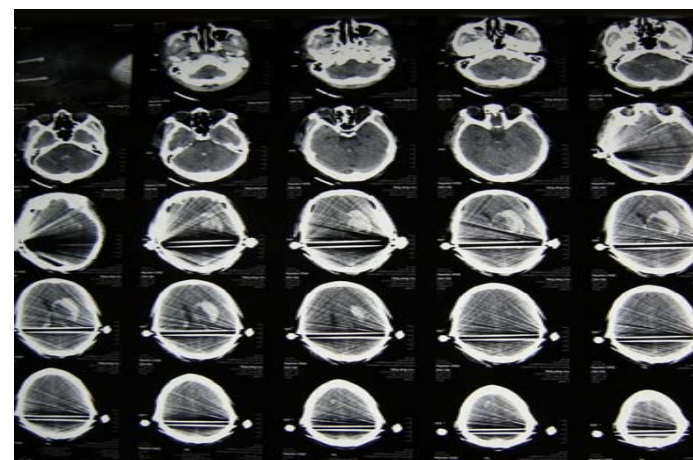


方庆初，男，29岁，D773725

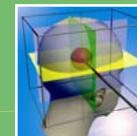
寰枢关节半脱位



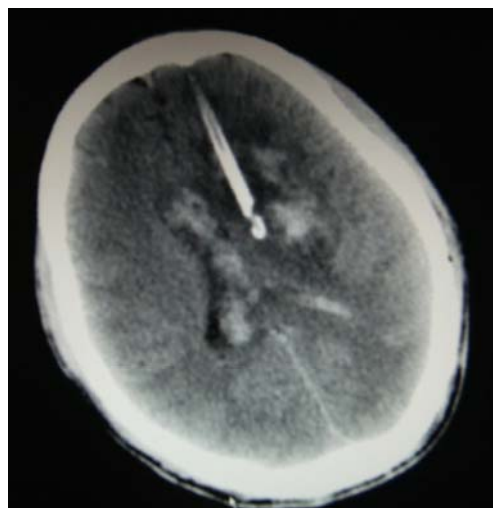
持续骨牵引



伤后第二天脑疝



术前画线定位



复查CT



置管



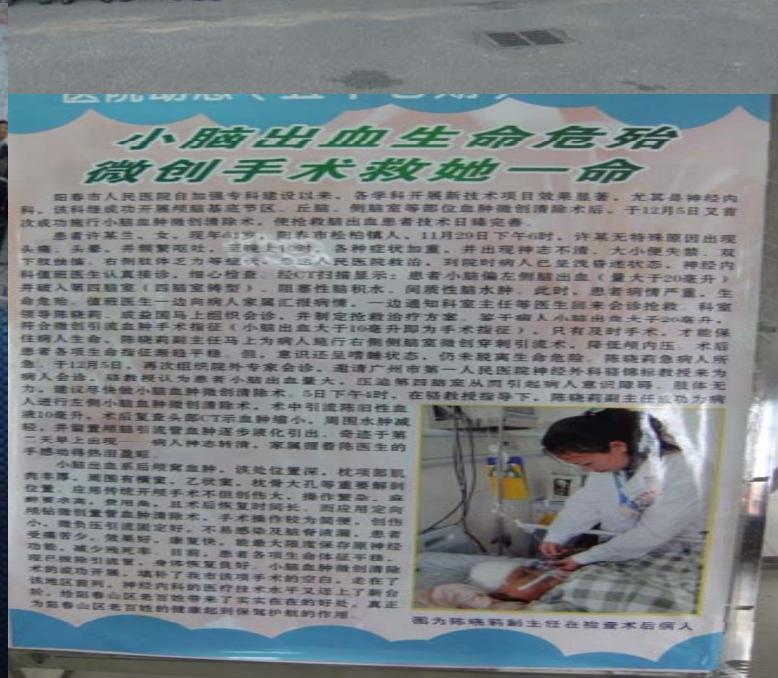
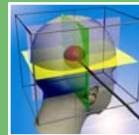
抽吸出的血



术后清醒



全国各地培训及开展情况





Thank you!

