

# The Minipterional Craniotomy: Surgical Experience with 102 Ruptured and Unruptured Anterior Circulation Aneurysms

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### Introduction

Present the authors clinical experience with the minipterional craniotomy in more than one hundred ruptured and unruptured anterior circulation aneurysms.

### Methods

from August 2005 to July 2013 86 consecutive patients with 102 ruptured non-giant, anterior circulation aneurysms were treated with early surgery with the minipterional craniotomy.

### Learning Objectives

Clinical experience with the minipterional in vascular surgery

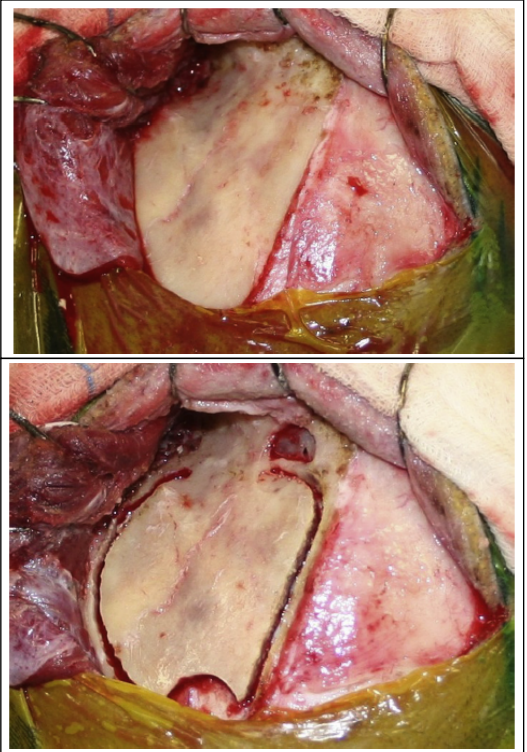
### Results

Thirty-seven patients (43%) presented with subarachnoid hemorrhage (SAH), while 49 (57%) patients had unruptured aneurysms. Twenty-four patients (64.8%) were classified as Fisher 3 and 4, and 13 categorized as Fischer 1 and 2 (35.1%). Seven patients (18.9%) presented in Hunt Hess 1, 15 (40.5%) in Hunt Hess 2, 2 (32.4%) in Hunt Hess 3 and 3 (8.1%) patients in Hunt Hess 4. Twelve patients (32.4%) need external ventricular shunt due to acute hydrocephalus. Thirty patients (81%) with ruptured aneurysms were operated on until day five after SAH. Postoperative angiogram was carried out in all cases. Results were excellent in 67(77.9% - mRS 0 or 1)), good in 7(8,1% - mRS 2 or 3) of the cases and 12(13.9%) patients deceased.



### Conclusions

the minipterional technique provides adequate surgical exposure and excellent outcomes for both ruptured and unruptured anterior circulation aneurysms clipping. It constitutes a safe and effective alternative to the pterional approach, with potential better aesthetic and functional outcomes.

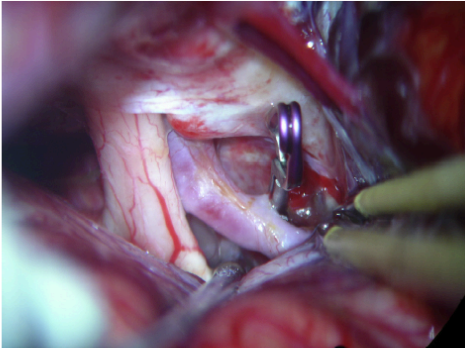


**Table 2**  
Surgical timing after subarachnoid hemorrhage of 37 anterior circulation ruptured aneurysms operated with the minipterional craniotomy

Surgical timing	Patients (n)
<5 days	30
6-10 days	03
>10 days	04

**Table 1**  
Clinical presentation of 86 patients with anterior circulation aneurysms operated with the minipterional craniotomy

Clinical presentation	Patients (n)
Ruptured aneurysm	37
Unruptured aneurysm	49
Hunt-Hess grade	
1	7
2	15
3	12
4	13
Fisher grade	
1	4
2	9
3	12
4	12
Hydrocephalus	
Yes	74
No	12



**Fig. 7.** Intraoperative photograph showing microsurgical dissection has been performed and aneurysm seen in Fig. 6 has been clipped uneventfully.

**Table 3**  
Location of 102 anterior circulation aneurysms operated with the minipterional craniotomy

Aneurym location	Aneurysms (n)
Ruptured aneurysms	
PcomA	11
ChA	3
ICA bifurcation	0
OphA	2
AComA	10
MCA	11
Unruptured aneurysms	
PcomA	20
ChA	5
ICA bifurcation	3
OphA artery	0
AComA	8
MCA	29
Total	102

AComA = anterior communicating artery, ChA = anterior choroidal artery, ICA = internal carotid artery, MCA = middle cerebral artery, OphA = ophthalmic artery, PcomA = posterior communicating artery.

**Table 4**  
Size of the 102 anterior circulation aneurysms operated with the minipterional craniotomy

Aneurysm size	Aneurysms (n)
4 mm	34
5-9 mm	58
>10 mm	10

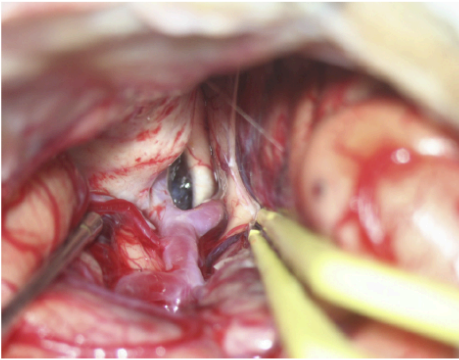
**Table 5**  
Clinical outcome of 86 patients with anterior circulation aneurysms operated with the minipterional craniotomy

Clinical outcome	Patients (n)
Modified Rankin Scale	
0	57
1	10
2	7
3	0
4	0
5	0
Deaths	12

**Table 6**  
Postoperative and clinical complications of 102 anterior circulation aneurysms operated with the minipterional craniotomy

Complications	Aneurysm (n)
Intraoperative bleeding	
Yes	05
No	97
Intracranial hemorrhage	
Yes	3
No	99
CSF leak	
Yes	01
No	101
Clinical vasospasm	
Yes	34
No	68
Radiological vasospasm	
Yes	16
No	86
Postoperative hydrocephalus	
Yes	06
No	96
Infection	
Yes	03
No	99

CSF = cerebrospinal fluid.



**Fig. 5.** Intraoperative microsurgical view showing the dura has been opened and the Sylvian fissure has been split.