



# Prospective randomized study comparing clinical, functional and aesthetics results of "classical" pterional and minipterional craniotomies.

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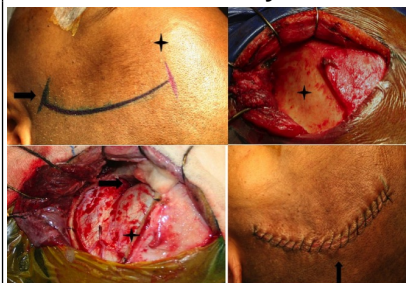
## Introduction

To compare the clinical, functional and aesthetic results of two surgical techniques, pterional (PT) and minipterional (MPT) craniotomies, for microsurgical clipping of anterior circulation aneurysms.

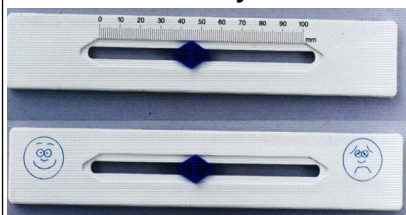
## Methods

Fifty-eight patients with ruptured and unruptured anterior circulation aneurysms were enrolled into a prospective and randomized study. The first group included 28 patients who underwent MPT technique, while the second group comprised 30 patients who underwent classical PT craniotomy. To evaluate the aesthetic effects, patients were asked to grade in a rule from 0 to 100, respectively, the best and the worst aesthetic result. Photographs were also taken, assessed by two independent observers, and classified into excellent, good, regular, and poor aesthetic result. Furthermore, quantitative radiological assessment was performed in the temporal muscle, subcutaneous tissue and skin. Functional outcomes were compared using the Modified Rankin Score. Frontal facial palsy, post-operative hemorrhage, cerebrospinal fistulas, hydrocephalus and mortality were also analyzed.

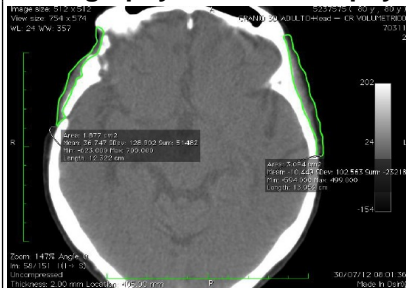
**Figure 1: Minipterional craniotomy**



**Figure 2: Evaluating patient satisfaction by himself**



**Figure 3; calculating muscle area in the computed tomography to define atrophy**



## Results

Satisfaction in terms of aesthetic result was observed in 19 patients (79%) in MPT group and 13 (43%) in PT group ( $p=0,07$ ). Two independent observers analyzed the patients' photos and the kappa coefficient correlation for the aesthetic results was 0,73. According to them "excellent" and "good" results were observed in 21 patients (87%) in MPT and 12 (48%) in the PT groups. The degree of atrophy of temporal muscle, subcutaneous tissue and skin was 14,9% in MPT group and 24,3% in PT group ( $p=0,01$ ). Measurements of the temporal muscle revealed atrophy of 12,7% in MPT group and 22% in PT group ( $p=0,005$ ). The volumetric reduction was 14,8% in MPT and 24,5% in PT groups ( $p=0,012$ ). Mortality and Rankin Modified Score were similar in both groups in the 6-month evaluation ( $p=0,99$ )

**Table 1: Evaluation of atrophy grade**

Muscle atrophy grade	MINIPTERIONAL	PTERIONAL
Grade 0 or I	20 (83,3%)	11 (44,0%)
Grade II or III	3 (16,7%)	14 (66,0%)
	$P = 0,007$	

**Table 2: Evaluation of neurological recovery (6 months after surgery)**

Rankin Scale (6 months)	MINIPTERIONAL	PTERIONAL
0	15	13
1	7	8
2	2	2
3	0	1
4	0	1
5	0	0
	$p = 0,99$	

**Table 3: Comparison of muscle and global atrophy between two groups of patients operated**

	MINIPTERIONAL (%)	PTERIONAL (%)	p
Muscle atrophy	14,9%	24,3%	0,01
Temporal Muscle atrophy	12,7%	22,0%	0,005
Global atrophy (Skin, fat, muscle)	14,6%	24,4%	0,001

## Conclusions

MPT provides similar clinical results when compared with the PT technique. Additionally, it provides better cosmetic results.

## Learning Objectives

Teaching the importance of aesthetic gain in cerebral aneurysm surgery

To describe the technical aspects of minipterional craniotomy

## References

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