

# Minipterional Approach for Anterior Circulation Aneurysms

## *Acesso Minipterional para Aneurismas de Circulação Anterior*

Roberto Alexandre Dezena<sup>1</sup>

### ABSTRACT

*The minipterional approach is less invasive than pterional craniotomy and uses the gravity as an ally. Patient's head position is a key, due to deflection and rotation of aneurysms. This is a brief note aiming to describe the approach step-by-step.*

**Keywords:** *Minipterional approach; Anterior Circulation Aneurysms*

### RESUMO

*A abordagem minipterional é menos invasiva do que a craniotomia pterional e usa a gravidade como aliada. A posição da cabeça do paciente é crucial, devido ao desvio e rotação de aneurismas. Escrevemos esta nota breve com o objetivo de descrever a abordagem passo a passo.*

**Palavras-chave:** *Acesso Minipterional; Aneurismas de Circulação Anterior*

MD, PhD, Associate Professor and Chief, Neurosurgery Residency Program Director, Division of Neurosurgery, Federal University of Triângulo Mineiro, Uberaba, Minas Gerais, Brazil

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### BRIEF NOTE

The minipterional approach is a less invasive variant of the classic pterional craniotomy, which was one of the landmarks of the advent of Microneurosurgery<sup>1</sup>. The fact of being smaller, with an reduced osteotomy in diameter (5-8cm) does not imply that it contradicts or calls into question the principles introduced by our master Yasargil<sup>2</sup>.

The first important step for a successful approach is the position of the head. To this end, gravity is used as the main ally, since the use of brain retractors such as Leyla or Greenberg is not feasible due to reduced osteotomy. The head must be fixed on a Mayfield three pin holder, and must be positioned

in 5 movements: traction, elevation, deflection, rotation, and torsion. The changes in the different topographies of the aneurysms is the deflection and rotation. Posterior communicating aneurysms have practically no deflection, with 15 to 30 degrees of rotation. Carotid artery bifurcation, middle cerebral artery, anterior cerebral artery, and anterior communicating complex aneurysms use as much deflection as the head allows, with virtually no rotation. Torsion is of utmost importance in all cases, as it verticalizes the Sylvian fissure in relation to the midline, allowing the neurosurgeon to be as close as possible to the apex of the patient's head.

The incision is centered at the keyhole, 5 cm backwards, in an arc shape with 5 cm inferiorly and 5 cm superiorly (Figure 1). A muscle-aponeurotic detachment by planes can be used with

interfascial dissection, or a myoplastic single-plane flap can be performed.

The first burr-hole is performed in the keyhole, and another one can be performed more posteriorly, in the superior temporal line, and optionally a third one, temporo-basal. This depends on the patient's age, which is related to the degree of dural detachment.

Drilling of the lesser wing of the sphenoid bone is performed exactly as in the classic pterional approach, with block removal until the meningo-orbital artery is exposed, in the transition to the anterior clinoid process. Then, the dura mater is opened in an arch, with the Sylvian fissure exactly in the center of the arch.

Finally, the microsurgical step begins with the CSF emptying of the basal cisterns, before the opening of the sylvian fissure. This step is fundamental, because it is a reduced access. Therefore obtaining the space is of key importance.



**Figure 1.** Detail of skin incision for minipterional approach.

## REFERENCES

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## CORRESPONDING AUTHOR

*Roberto Alexandre Dezena, MD, PhD*  
*Associate Professor and Chief*  
*Neurosurgery Residency Program Director*  
*Division of Neurosurgery*  
*Federal University of Triângulo Mineiro*  
*E-mail: rdezena@yahoo.com.br*