



# Analysis of the Variations in the Morphology, Topography of the Pterion, and Their Implications in Neurosurgery: An Osteometric Study

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## Abstract

**Objective** Pterion is an “H” shaped formation of sutures located in the temporal fossa of the skull. It is an important anatomical landmark and a craniometric point. The thinness of the skull and its inner relation with the middle meningeal artery make this anatomical landmark clinically significant. Variations in the pterion are imperative, especially for neurosurgeons in order to have the most suitable craniometric point to be minimally invasive.

**Materials and Methods** One hundred pterions were studied to report the variations in the type and location of the pterion. Murphy’s classification was used to classify the pterion into four types on the basis of bone articulation-sphenoparietal, frontotemporal, stellate, and epipteric.

**Results** All four types of pterions were observed, sphenoparietal being the most common. No significant gender difference was observed in terms of type and laterality of various pterions. The mean distance between the center of pterion to the superolateral point of zygomaticotemporal (PZT) suture and the anterolateral point of the frontozygomatic (PFZ) suture were  $3.91 \pm 3.79$  cm and  $3.68 \pm 3.79$  mm, respectively. Correlation analysis showed a strong positive relation between PZT and PFZ sutures.

**Conclusion** Accurate data on the morphology and morphometry of bony anatomical points are crucial, while performing intracranial surgery using them as recognizable landmarks. The morphometric parameters may help in determining the soundness of the pterion as an identifiable landmark for performing interventions like burr hole and other neurosurgical procedures in this area.

## Keywords

- cranial sutures
- craniotomy
- burr hole
- pterion
- middle meningeal artery

## Introduction

Floor of the temporal fossa in the skull is formed by greater wing of sphenoid, frontal bone, parietal bone, and squamous

part of the temporal bone. Here, these four bones meet at an H-shaped junction of the sutures termed the pterion.<sup>1,2</sup> Being covered superficially by scalp and the origin of the

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# Objective Study Of Neurosurgery

**Lei Shi**



## **Objective Study Of Neurosurgery:**

*Neurological Surgery of Trauma* United States. Army Medical Service, Leonard Dudley Heaton, 1965

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[Progress in Paediatric Neurosurgery](#) Jesse Howard Muncie, John Louis Horsfall, Otto Olson, Pennsylvania State College. Agricultural Experiment Station, R. Bruce Dunlap, Samuel Irvin Bechdel, William Frear, William Henry Tomhave, 1922

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Journal of Neurosurgery ,1987 **Neurosurgery** William Sharpe,Norman Sharpe,1928 **Neurological Surgery** Hermann Dietz,Charles Langmaid,E. Metzel,1981 Directory of Research and Scholarship at Stanford ,1975 **Annual Report** University of Iowa. Cancer Center,1988 **Neurological Surgery** ,1996 **Operative Neurosurgical Techniques** ,1995 Principles and Practice of Pediatric Neurosurgery A. Leland Albright,P. David Adelson,Ian F. Pollack,2008 This book presents the latest management techniques for pediatric neurosurgical disorders frequently encountered in clinical practice In this edition chapters are organized into separate sections including cerebral disorders spinal disorders neoplasms trauma cerebrovascular disease functional disorders and infectious disorders Each chapter describes the diagnostic studies pathology and pathobiology indications for surgery treatment alternatives prognostic factors and outcomes Features of the second edition Commentaries at the end of each chapter provide insights from the senior editors Pearls identify critical steps in management More than 850 high quality images demonstrate disease pathology and surgical approaches and techniques Easy to read tables synthesize key clinical concepts New chapters cover ethical issues in pediatric neurosurgery pediatric neurosurgery in developing countries and in utero neurosurgery This comprehensive book is a must have reference for all neurosurgeons and specialists and residents in pediatric neurosurgery and pediatric neurology

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