



# 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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of disability and is one of the most common reasons for visiting a doctor The years lived with a disability have increased highlighting the need for attention to the diagnosis management and treatment of LBP at various levels of healthcare In this Research Topic we aim to specifically explore a wide range of diagnostic approaches therapeutic interventions and strategies for effectively managing LBP symptoms This Research Topic will focus on the advances and recommendations on LBP and will serve as a forum to decrease morbidity mortality and the global disease burden

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web 42 prelude to revolution map showing the territorial gains of britain and spain following the french and indian war with lands held by the british prior to 1763 in red land gained by britain in 1763 in pink and lands ceded to the kingdom of spain in secret during 1762 in light yellow

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web this is a list of military actions in the american revolutionary war actions marked with an asterisk involved no casualties major campaigns theaters and expeditions of the war boston campaign 1775 1776 invasion of quebec 1775 1776 new york and new jersey campaigns 1776 1777 saratoga campaign 1777 philadelphia campaign 1777 1778

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web sep 12 2023 american revolution 1775 83 insurrection by which 13 of great britain s north american colonies won political independence and went on to form the united states of america the war followed more than a decade of growing estrangement between the british crown and many north american colonists

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web washington s crossing is the first game in the campaigns of the american revolution series future linkable titles in the series will cover the new york campaign of 1776 the philadelphia campaign of 1777 and the new jersey campaign of 1778 washington s crossing game components the game consists of the following components 200 die

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web digital implementations vassal players two player only games advertisement 1776 is a two player turn based war game played on a hex grid map of the thirteen colonies and canada it is primarily concerned with the military aspects of

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web jul 3 2020 battles of the american revolution from gmt games we acquired the tri pack that includes guilford saratoga and brandywine late last year but haven't played it yet supply lines of the american revolution the southern strategy from hollandspiele we also own this one but haven't played it yet

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web the american revolutionary war 1775 1783 also known as the american war of independence was a war between the kingdom of great britain and thirteen british colonies on the north american continent as well as some naval conflict the war was the culmination of the political american revolution whereby the colonists overthrew

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web a series of books that provide wargame rules and colour photocopyable figures for miniatures battles each book tackles a specific time period of history this book covers the american revolutionary war american war of independence in