

Historical Commentary

# The sciatic nerve was first known as the femoral nerve (*neruus femoris*): Evidence of ancient knowledge of human neuroanatomy and peripheral nerve injury

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**Abstract:** The etymology of anatomical terminology provides insight into the history of anatomy, medicine, and scientific understanding. Therefore, this study assessed the anatomical language of the 7<sup>th</sup> century *Codex Amiatinus*, the earliest surviving and most reliable copy of Saint Jerome's original 4<sup>th</sup> century Latin Vulgate translation of the Bible, for details regarding the injury of Jacob as described in the Book of Genesis 32:22-32. The *Codex Amiatinus* notes that Jacob sustained an injury to the "*neruus femoris*." Additional context, given by Jewish dietary practice, suggests the *neruus femoris* most likely refers to the modern-day sciatic nerve (*nervus ischiadicus*). However, conceivably, *neruus femoris* may refer to any motor nerve in the vicinity of the thigh including either the femoral nerve, tibial nerve, common fibular nerve, or obturator nerve. By utilizing the term *neruus femoris*, "nerve of the thigh," the *Codex Amiatinus* provides evidence of ancient knowledge of human neuroanatomy and ancient understanding of the sequelae that result from peripheral nerve injury.

**Keywords:** anatomical terminology; anatomy; history of medicine; neurology; sciatica; peripheral nerve injury

## Introduction

The etymology of anatomical terminology provides insight into the history of anatomy, medicine, and scientific understanding. Yet, retrospective analysis of formal Latin anatomical terminology is limited to the Late Middle Ages and Renaissance. For example, Mundinus (c. 1270 – 1326) published *Anathomia*, one of the oldest formal Latin anatomical texts in 1316 (Mundinus 1493, 1507) and Sylvius (1478 – 1555), who is often mentioned as the founder of modern anatomical terminology, published *In Hippocratis et Galeni physiologia partem anatomicam isagoge* in the mid-16<sup>th</sup> century (Dubois, 1555; Sakai, 2007; Sawai, 2018). Thus, in order to uncover historical insights that predate the 14<sup>th</sup> century, Latin writings which

exist outside of formal anatomical texts require examination.

The author presents novel historical insights into neuroanatomy and the understanding of nerve trauma gleaned from the *Codex Amiatinus*, the earliest surviving and most reliable Latin Vulgate translation of the Bible. Specifically, the author details aspects of Genesis 32:22-32, which describes the story of Jacob sustaining an injury as a result of a wrestling match with an angel (alternatively considered a man or God) (Ceolfrid, 688).

## Main Text

*Insights from the Hebrew Language*

The site of Jacob's injury has been posited as the "hollow of the thigh" or "kaf yerekh" (Hoenig, 1997). The "hollow" has been said to refer to the surface anatomy formed by the gluteal musculature (Epstein, 1983; Hoenig, 1997). Likewise, translations of the story include language such as "the hollow of Jacob's thigh was strained" and "he limped upon his thigh" (Hertz, 1981; Hoenig, 1997). Accordingly, it has been suggested that Jacob sustained a musculoskeletal injury to the hip, characterized by the tearing of ligaments and tendons and, perhaps, sustained by repeated blows (Hoenig, 1997). Some have also speculated that Jacob's hip was injured by a "low-blow" delivered close to the genitalia (Hoenig, 1997).

In addition to suppositious musculoskeletal etiologies, it has been suggested that Jacob sustained a peripheral nerve injury, especially an injury to the sciatic nerve (Hoenig, 1997; Rosenstock, 2014). Indeed, the notion that Jacob's injury involved the sciatic nerve is supported by a historical record of Jewish dietary practice. For example, Biblical translations document that, as a result of Jacob's injury, "the children of Israel eat not the sinew of the thigh-vein which is upon the hollow of the thigh, unto this day; because he touched the hollow of Jacob's thigh, even in the sinew of the thigh-vein" (Hertz, 1981; Hoenig, 1997). And, as per Jewish tradition, the "sinew of the thigh-vein" or "gid hanasheh" was the term used for the sciatic nerve (Hoenig, 1997). Accordingly, the consumption of the sciatic nerve from ungulate animals was banned according to Jewish dietary law (Hoenig, 1997).

### *Insights from the Latin Language*

The aforementioned interpretations are predicated upon Hebrew text, specifically. However, the earliest Christian Bible (i.e., the *Codex Amiatinus*) is a compilation of translations from numerous languages (Hebrew, in the case of the Book of Genesis) into Latin—the language that is preferred in the modern-day anatomical lexicon as per the Federative International Programme for Anatomical Terminology (FIPAT) of the International Federation of Associations of Anatomists (FIPAT, 2019). Thus, an assessment of the earliest record of Jacob's injury in the Latin language, may provide insight into the etymology of modern Latin anatomical language.

The *Codex Amiatinus* (CA) is considered to be the earliest surviving and most reliable copy of Saint Jerome's original 4<sup>th</sup> century Latin Vulgate translation of the Bible (Ceolfrid, 688). Within the CA, Genesis 32:22-32 details the story of Jacob wrestling with an angel (Ceolfrid, 688) (Figure 1, Supplement 1). The CA notes that, ultimately, the angel hinders Jacob "qui cum videret quod eum superare non possit tetigit neruum femoris eius et statim emarcuit" (Figure 1, Supplement 1) which has been translated from the Latin to the English "when he saw that he could not overcome him, he touched the sinew of his thigh, and forthwith it shrank" (The Holy Bible..., 1844).

➤ QUICUM VIDERET QUODEUM  
SUPERARE NON POSSIT  
TETIGIT NERUUM FEMORIS EUS  
ET STATIM EMARCUIT

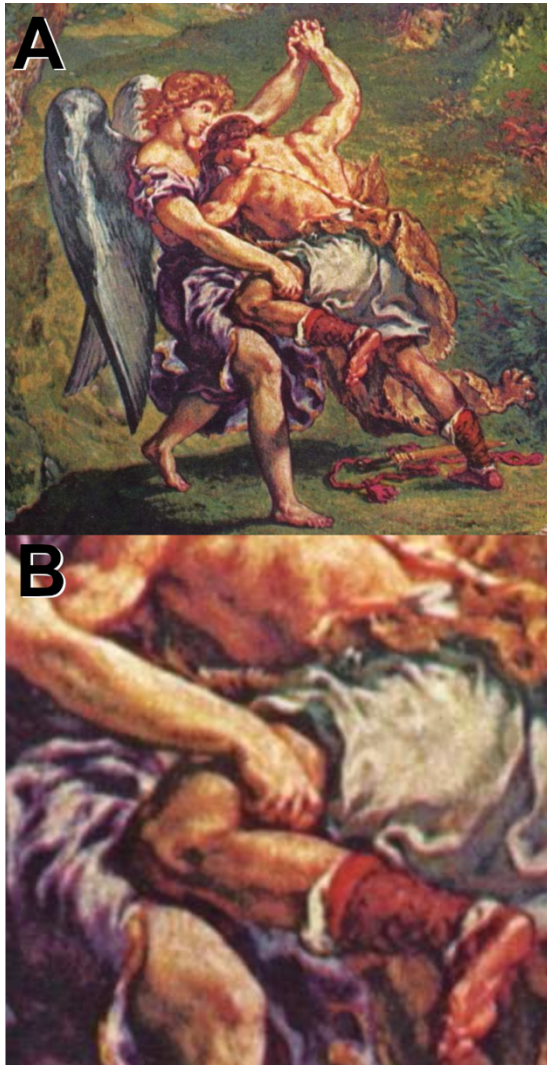
➤ QUAM OB CAUSAM NON COMEDUNT  
FILII ISRAEL NERUUM QUI  
EMARCUIT IN FEMORE IACOB  
USQUE IN PRAESENTEM DIEM  
EO QUOD TETIGERIT NERUUM  
FEMORIS EUS ET OBSTUPUERIT

**Figure 1.** Excerpts from the Book of Genesis 32 found in the *Codex Amiatinus* that document the use of the term "*neruum femoris*." Top (red arrowhead): Verse 25 details the injury to the *neruum femoris* by noting that "tetigit neruum femoris eius et statim emarcuit." Bottom (blue arrowhead): Verse 32, the final verse of Genesis 32, describes the dietary practice of avoiding ingestion of the *neruum femoris*. (The excerpts were digitally edited for clarity. No known copyright restrictions. Original passages can be viewed through the United States Library of Congress at: <[www.loc.gov/item/2021668243/](http://www.loc.gov/item/2021668243/)>. The red and blue arrowheads correspond to the arrowheads found in Supplement 1, which contains the additional verses 24, 26 – 31 to provide additional context.)

The author wishes to draw attention to the specific term *neruum femoris*, a term that could conceivably be interpreted as the "nerve of the thigh" or "femoral nerve" rather than "sinew of the thigh." Indeed, such an interpretation is noteworthy because, today, both the *Terminologia Neuroanatomica* and *Terminologia Anatomica* list the femoral nerve as the *nervus femoralis* (FIPAT, 2017; FIPAT, 2019).

The Biblical passage is commonly imagined as an angel touching a nerve (i.e., *neruum femoris*) in the "hollow" of Jacob's thigh—often depicted as a

nerve in the popliteal fossa, as shown by many noteworthy works of art including, for example, the painting by Eugène Delacroix from the Chapelle des Anges at Saint-Sulpice, Paris (Kliman, 1983) (Figure 2). The sciatic nerve is favored for this particular explanation because of the aforementioned Jewish dietary practices regarding the sciatic nerve (Ceolfrid, 688; Hoenig, 1997).



**Figure 2.** Details from the painting *Jacob Wrestling with the Angel* (1856-1861) by Eugène Delacroix from the Chapelle des Anges at Saint-Sulpice, Paris. **A:** Depiction of Jacob wrestling with an angel; **B:** Close detail of the painting that illustrates “*tetigit neruum femoris,*” (Genesis 32:25) which may translate to “touched the nerve of the thigh,” in this case, at the location of the popliteal fossa. (No known copyright restrictions).

### *Neuroanatomical Considerations*

Within the popliteal fossa, the tibial nerve and common fibular nerve occupy more expansive distances and are more easily accessible than the sciatic nerve, which is only exposed for a relatively small portion of the most proximal part of the popliteal fossa when it is found in the popliteal fossa at all. Indeed, the sciatic nerve is absent from the popliteal fossa in approximately one-in-five lower limbs as a result of a proximal bifurcation (Bergsteedt et al., 2021). Thus, assuming that the popliteal fossa was the location of nerve injury, it might be a more-likely scenario that the tibial or, especially, the common fibular nerve would be implicated as opposed to the sciatic nerve. However, in the 4<sup>th</sup> century, when St. Jerome was translating the Hebrew text, the tibial and common fibular nerves had no formal Latin appellations; therefore, each nerve might have been considered a *neruus femoris*. The same can be said of other motor nerves in the vicinity of the thigh including the modern-day femoral nerve or obturator nerve.

The femoral nerve is a relatively superficial structure that is located in another “hollow” of the thigh – the concavity given by the femoral triangle. Also, the femoral nerve is located anterior to the femoroacetabular joint, which is an important anatomical relationship since hip dislocation has been suggested as a “differential diagnosis” for Jacob (Hoenig, 1997). Entertaining the notion of luxation, an anterior hip dislocation may certainly injure the femoral nerve (although posterior dislocation with resultant sciatic nerve injury is a more likely event) (Rahimi Shorin et al., 2014). Further, a femoral nerve injury would support the suggestions that Jacob was injured near the genitals. Similarly, direct injury to the obturator nerve would also satisfy notions of injury in the proximity of the genitals and result in subsequent limping. However, injury to the well-protected obturator nerve seems to be a less-likely scenario. Likewise, injury to the well-protected inferior or superior gluteal nerves also seems an unlikely scenario. Frankly, all scenarios are speculative.

Thus, the modern-day femoral nerve (i.e., *neruus femoralis*) may have been named the *neruus femoris* by St. Jerome in the 4<sup>th</sup> century— a millennium before the advent of formal Latin anatomical

terminology. Certainly, the term *neruus femoris* was used in the 7<sup>th</sup> century CA (Figure 1) (Ceolfrid, 688). However, when considering the context of Jewish dietary laws, the modern-day femoral nerve is not likely the “first” femoral nerve (i.e., *neruus femoris*). Rather, the first documented femoral nerve (i.e., *neruus femoris*) was most likely the modern-day sciatic nerve. Parenthetically, the sciatic nerve was not known as *sciatic nerve* until the late 17<sup>th</sup> century Swanson, 2014).

Jacob’s wrestling match resulted in a name change— Jacob was renamed Israel (Ceolfrid, 688) (Supplement 1). Ironically, the ancient *neruus femoris* was likely “renamed” the *nervus ischiadicus* (i.e., *sciatic nerve*). The term *neruus femoris*, which resembles the modern-day *nervus femoralis*, has an storied etymology that blends religion and science. The term *neruus femoris* was originally used in the 4<sup>th</sup> century AD to describe the modern-day *nervus ischiadicus*. Thus, by utilizing the term *neruus femoris*, and noting that the *neruus femoris* was explicitly touched (i.e., *tetegit*) to cause Jacob’s affliction, the CA provides evidence of ancient knowledge of human neuroanatomy and ancient understanding of the sequelae that result from peripheral nerve injury.

In addition to providing insight into the neuroanatomical knowledge of ancients, this paper underscores the importance of understanding anatomical etymology for the proper interpretation of historical texts such as the CA. To underscore this point, the term *vulva* was used often in the CA (Zdilla, 2022). Such use of *vulva* might conceivably confuse the modern-day reader; however, the term *vulva* of the CA corresponds to the modern-day uterus (Zdilla, 2022). Likewise, as this paper posits, the term *nervus femoris* of the CA corresponds to the modern-day sciatic nerve.

#### *An Additional Note Regarding Mnemonic Etymology and Education:*

In the tradition of informal mnemonic anatomical terms like *Achilles tendon* (i.e., calcaneal tendon) or *argo* (i.e., navicular bone of the foot, *os naviculare pedis*) (Zdilla, 2021), which blend anatomy with the humanities, the sciatic nerve can be thought of as the *Jacob nerve*. Similarly, informal mnemonic clinical terms that blend with the

humanities akin to *Don Juan fracture* (i.e., fracture of the calcaneus) or *Hand of Sabazios / Hand of Benediction* (i.e., *Dupuytren disease*) (Zdilla, 2017; Biz et al., 2022), might also apply to the manifestation of sciatic nerve palsy (Hagiwara et al., 2003)— *Israel gait*, for example.

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## Supplement

ET ECCE AUR LUCTABATUR  
A ME O USQUE MANE  
▶ QUICUM VIDERET QUOD EUM  
SUPERARE NON POSSIT  
TETIGIT NERUUM PEDORIS EUS  
ET STATIONE CADARUNT  
DIXITQUE AD EUM DIMITE ME  
IAM ENIM ASCENDIT AURORA  
RESPONDIT NON DIXIT TACITE  
NISI BENE DIXERIS MIHI  
ALTERGO QUOD NOMEN EST TIBI  
RESPONDIT IACOB ATILLE  
NEQUA QUAM INQUIT IACOB  
APPELLABITUR NOMEN  
TUUM SED ISRAHEL  
QUONIAM SI CONTRADUM FORTIS  
FUISTI QUANTO MAJUS CONTRA  
HOMINES PRACULEBIS  
INTERROGAVIT EUM IACOB  
DIC MIHI QUO APPELLE  
RIS NOMINE  
RESPONDIT CUR QUÆRIS  
NOMEN MEUM  
ET BENEDIXIT EI IN EODEM LOCO  
VOCAVITQUE IACOB NOMEN  
LOCILLIUS PHANABEL DICENS  
AUDI DOMINE FACIENS AD FACIENS ET  
SALVA FACTA EST ANIMA MEA  
ORTUS QUE EST ET STATION SOL  
POST QUAM TRANSCRESSUS  
EST PHANABEL  
▶ IPSE UERO CLAUDICABAT PEDA  
QUAM OB CAUSAM NON COMEDUNT  
FILII ISRAHEL NERUUM QUI  
CADARUNT IN PEDORE IACOB  
USQUE IN PRAESENTEM DIEM  
EQUO D TETIGERIT NERUUM  
PEDORIS EUS ET OBSTUPUERIT

Supplement 1. Genesis 32:24-32 from the *Codex Amiatinus*. Red and blue arrowheads correspond to Figure 1, verses 25 and 32, respectively. (The excerpts were digitally edited for clarity. No known copyright restrictions. Original passages can be viewed through the United States Library of Congress at: <[www.loc.gov/item/2021668243/](http://www.loc.gov/item/2021668243/)>.)