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Medical views on the death by crucifixion of Jesus Christ

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ABSTRACT

The death of Jesus Christ remains a pivotal moment in world history and a symbol of love, mercy, and courage across the globe. Yet for centuries, the manner of Jesus' death has remained a subject of controversy in academic and medical circles. Forensic pathologists and clinicians have argued for several hypotheses concerning Jesus' death, including pulmonary embolism, cardiac rupture, suspension trauma, asphyxiation, fatal stab wound, and shock. This article surveys a broad range of medical and other specialist views regarding Jesus' experience on the cross, concluding that asphyxiation or asphyxiation-dominant theories have emerged as the consensus position regarding the cause of Jesus' death. Two features of this article are significant. First, it provides a rich resource of different medical opinions regarding the effects of Jesus' crucifixion. Second, and more importantly, the survey results show that, perhaps less similar to crucifixion *in general*, there is a growing consensus regarding *Jesus'* cause of death by medical professionals. A table maps these results, summarizing for those in the medical field as well as historians and theologians what medical professionals consider to be the cause of Jesus' death.

KEYWORDS Ancient world; asphyxiation; crucifixion; Jesus Christ

In 2006, the *Journal of the Royal Society of Medicine* published an article by Matthew Maslen and Piers Mitchell that examined different medical theories on the causes of death by crucifixion. After providing a representative sampling of different theories, they concluded, "There is insufficient evidence to safely state exactly how people did die from crucifixion in Roman times. It is quite likely that different individuals died from different physiological causes, and we would expect that the orientation in which they were crucified would be crucial in this respect."[1]

Given the wide variety of ways in which crucifixion can be carried out, the method of crucifixion largely depended upon the executioners and circumstances. In the ancient world, crucifixion was viewed as the worst and lowest punishment that could be bestowed upon a non-Roman citizen.[2] Crucifixions were usually reserved for criminals and political revolutionaries. This form of torture would become synonymous with the Roman Empire and, ultimately, the founding of Christianity and its subsequent branches. Although a subject of academic inquiry, the Gospel accounts are still utilized in order to provide consistent historical and archaeological information concerning the culture and history of the ancient world. The Gospels, then, can provide important historical sources regarding Jesus' crucifixion as well as the practice of Roman execution.

The manner of Jesus' death remains a subject of controversy in the medical profession.[3] This article surveys a broad range of medical and scholarly views regarding Jesus' experience on the cross, concluding that asphyxiation or asphyxiation-dominant theories have emerged as the consensus position regarding the cause of Jesus' death.

STRAUSS' ARGUMENT FOR JESUS' DEATH

David F. Strauss (1808–1874) was a highly influential German theologian in the 19th century. He was a fierce opponent of orthodox Christianity but was also agitated by rationalist attempts to explain away New Testament accounts too simplistically. For example, attempting to explain Jesus' resurrection naturally, many rationalist thinkers in the 18th and 19th centuries put forward the theory that Jesus only *appeared* to die on the cross. Despite Strauss' criticisms of Christianity, he was highly critical of this naturalistic theory. Strauss argued that it would be "impossible" for Jesus to somehow "creep out of the tomb" after having just been beaten and crucified and give his disciplines "the impression

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that he was a Conqueror over death and the grave, the Prince of Life, an impression which lay at the bottom of their future ministry"; this type of resuscitation "could by no possibility have changed their sorrow into enthusiasm, have elevated their reverence into worship."[4]

In other words, after having been beaten, flogged, and nailed to a cross, if Jesus were to have been able to make his way out of the tomb, while also bleeding, swelling, and limping, the disciples would not have called Jesus victorious over death, but rather would have called a doctor. Nor should one expect that the disciples would have been excited to receive a similar resurrection body. Thus, the apparent death theory fails to account for the historical events surrounding the crucifixion, and it was the skeptic Strauss who emphasized this fact. His critique has convinced many academics and physicians such that one might reasonably suggest that Strauss' critique dealt the "death blow" to the apparent death theory.

While some might question this conviction on the part of Jesus' disciples, even atheist and other non-Christian New Testament scholars vouch regularly for the historicity of the followers' belief here. As even Bart Ehrman asserted firmly, "Historians, of course, have no difficulty whatsoever speaking about the belief in Jesus' resurrection, since this is a matter of public record. For it is a historical fact that some of Jesus' followers came to believe that he had been raised from the dead soon after his execution."[5] Ehrman also insisted that "we can say with complete certainty that some of his disciples at some later time insisted that … he soon appeared to them, convincing them that he had been raised from the dead. Their conviction on this matter eventually turned the world on its ear."[5]

Therefore, the specialists who are well acquainted with the medical and/or historical details perhaps affirm Jesus' death by crucifixion at least in part because they recognize that they are on the horns of a dilemma here. The challenge is either to explain Jesus' health immediately afterwards in other terms or to deny the solid historical convictions of his early followers that he was raised from the dead—convictions that fueled their exceptionally well-attested message, as stated by Ehrman. Hence, death by crucifixion, especially when there are no known exceptions to the complete process despite dozens of historical reports, is the better diagnosis. The question is, then, based on the historical information available, what do medical specialists believe to be Jesus' cause of death?

SHAKING THE HORNETS' NEST: THE EDWARDS-WESLEY-FLOYD HISTORICAL MEDICAL ANALYSIS OF JESUS' DEATH

One of the first major expansions of Strauss' argument would appear in the *Journal of the American Medical Association* (JAMA) in the 1986 article "On the Physical Death of Jesus Christ" by William D. Edwards, Wesley J. Gabel, and Floyd E. Hosmer.[6] At the time of this publication, the most common hypotheses on the manner of Jesus' death included pulmonary embolism, cardiac rupture, suspension trauma, asphyxiation, fatal stab wound, and shock.[3] Pulmonary embolism has been proposed as the mechanism of Jesus' death due to the high prevalence of hereditary thrombophilia (e.g., Factor V Leiden).[3]

However, the more widely accepted medical hypotheses for Jesus' death are cardiac rupture, asphyxiation, and shock. These medical hypotheses are based on accounts from the Gospels and our modern understanding of traumatic injuries. The torture of Jesus from the Roman centurions produced extensive blunt and penetrating trauma to Jesus' body. The large amount of blood loss would have put Jesus in a vulnerable state in the moments leading to his crucifixion. Once nailed to the cross, the prolonged immobilization and pressure on the thoracic cavity could well have led to a slow asphyxiation. Regardless, the piercing of Jesus' heart by the Roman centurion induced a fatal injury to Jesus in the form of a cardiopulmonary effusion or cardiac tamponade; however, the spear wound to the chest would likely have been done postmortem. Therefore, it is believed that the manner of Jesus' death is "multifactorial; multiple blunt, and occasionally penetrating trauma, which led slowly to death by this mechanism."[3] In other words, most clinicians believed that the combination of physical abuse Jesus experienced before and during the crucifixion contributed to his ultimate demise on the cross.

Through a lengthy historical and medical analysis, Edwards et al argued that a combination of scourging from deep stripe-like lacerations and blood loss led to hypovolemic shock exacerbated by asphyxiation from the crucifixion process.[6] The response was overwhelming in the medical community, with over a dozen letters to the editor with varying responses.[7–24] Some authors applauded the efforts of Edwards et al. Bailes wrote:

> What an interesting article this was! My congratulations to the authors who spent so much time and effort on this article. I want to make several important points regarding the conclusions about the death of Jesus. The usual manner of death on the cross was undoubtedly just as it has been so accurately described by these authors.[7]

However, the overwhelming response was critical. Suster argued that Edwards et al's argument was "historically inaccurate":

> The reliance of Edwards et al on the New Testament Gospels of Matthew, Mark, Luke, and John as a primary basis for deriving historical data is unfounded. The Gospels are a set of theological documents that are not necessarily historical. The reliance on the scriptures as a source of scientific inquiry pertaining to the actual history of Jesus has been refuted by biblical scholars.[8]

Other physicians even accused Edwards et al of promoting anti-Semitism. White wrote:

> The article on the death of Jesus Christ is interesting. It is theological, since Christ is only used as a post-resurrection title. Moreover, the authors seem to be largely unaware of the nature and results of New Testament scholarship over the last 200 years. This results in some degree of historical distortion and distant (admittedly not malevolent) echoes of anti-Semitism.[9]

The most common objection was that Edwards et al's analysis was unscientific, mythological, or anti-Semitic. In response, Edwards et al replied to the concerns, accusations of anti-Semitism, and methodology used for their analysis. Among these latter respondents to the Edwards et al article,

one physician out of a much larger group mentioned "suffocation" while only one other physician mentioned syncope as a cause of death.[22,24] The large majority of responses lacked actual medical details, limiting the value of most of the comments. Whether or not Edwards et al realized, their article would usher in intense dialogue within the medical community concerning the overlap of medical knowledge in the realms of historical and anthropological analysis of historical figures, particularly within the realm of theology. A critical response to Edwards et al appeared in 1991 in the *Journal of the Royal College of Physicians of London.*[25]

MARGARET AND TREVOR LLOYD DAVIES: A CRITICAL RESPONSE TO THE HISTORICAL-MEDICAL ANALYSIS OF JESUS' DEATH

In response to Edwards et al's article, Lloyd Davies and Lloyd Davies provided a short response against Edwards et al's hypothesis in the article "Resurrection or resuscitation?" which summarized the history and medical perspectives on Jesus' death in the medical community.[25] In contrast to previous medical hypotheses, they provocatively argued that Jesus did not die on the cross. Instead, they argued that the torture Jesus received from the Roman centurions (e.g., blows to the head, whipping, and beatings) weakened his body and put him in a state of shock.[25] The lack of blood and hypotensive state led to a loss of consciousness from a reduced blood supply to the brain and skin, which would have led to an ashen appearance. However, Lloyd Davies and Lloyd Davies doubted the severity of Jesus' torture derived from the Gospel accounts. Specifically, they argued:

> Of the four Gospels, only that according to St. John records the incident of the spear thrust into Jesus's side and the emission of blood and water. If indeed it took place (because of the Lazarus story and for other reasons, John's medical credibility is open to doubt), it is likely to have been no more than the pricking of a bleb (occasioned by the flogging) by a soldier idling away time.[25]

Furthermore, the cry that Jesus gave before his death, according to Lloyd Davies and Lloyd Davies, was "a loud expiration preceding syncope."[25]

The authors argued that Jesus' death would have been mistaken by the Roman centurions, the Jewish Sanhedrin, and observers at the crucifixion.[25] While the blood supply to the brain was minimal, the removal of Jesus from the cross would have restored circulation to his body once he was laid to the ground. The resulting cooler temperatures in the evening would have induced a hypothermic state, allowing for the preservation of neurological and cardiovascular functions.[25] In summary, they argued:

> The abuse meted out to Jesus in the Praetorium led to his collapse and early removal from the Cross, and to resuscitation. Individual and corporate suggestibility among the disciples and the women explains the reports of subsequent appearances. This hypothesis accepts the historical events surrounding the crucifixion of Jesus but explains what happened in the light of modern knowledge. Faith does not require the abandonment of thought or the assent to concepts not scientifically acceptable. The Church will be strong if it accommodates proven knowledge within its creeds. If it does not, all that is left is blind belief, far beyond the credulity of most people.[25]

Curiously, Lloyd Davies and Lloyd Davies argued that the supposed appearances of Jesus were not compelling evidence for or against the resurrection or resuscitation. They believed that, beyond Jesus' ascension, no one saw Jesus in the flesh. The emotional trauma and shock the disciples and women felt produced an elevated level of suggestibility or hallucinations through a process known as "transmarginal inhibition" (e.g., battle fatigue or brainwashing).[25] Lloyd Davies and Lloyd Davies believed that the empty tomb was a story derived from the psychological need of the disciples and the women to explain the appearances of Jesus and, therefore, should not be taken literally for a bodily resurrection. In other words:

> The strong suggestion that the appearances may be a monument to imagination is consistent with the Greek text. Matthew, Luke and even John, when describing the appearances, use the Greek verb *horaō* which besides carrying the meaning of objective sighting also carries the meaning to see with the mind, to perceive or experience. Paul (1 Cor. 15:5) uses the same verb to describe the appearance of Jesus to Cephas and the Twelve, to more than five hundred brethren, to James and to himself. No possibility of a physical presence of Jesus arises in the case of Paul on the road to Damascus, and he clearly thought that the other appearances were in the same category.[25]

Unlike Edwards et al's article, Lloyd Davies and Lloyd Davies did not ignore the Gospels in their analysis. Rather, they incorporated the Gospels to argue against key historical and medical arguments supported by Edward et al's article.[25] At the conclusion of their article, they listed several points of contention toward their opponents regarding historical analysis, interpretation, and medical hypotheses on the manner of Jesus' death:

> No one knows what happened on the Cross. Those who prefer alternative hypotheses must (a) explain Jesus's early and unexpected collapse on the Cross and consider the significance of this in the light of the medical knowledge of the time; (b) explain how, if Jesus was placed in the tomb which, according to Matthew (27:65), was at Pilate's command guarded by soldiers, he escaped or his body was removed. If he was dead, how did the Romans and Sanhedrin, both of whom had all pervading intelligence organisations, fail to find the body? The advantage which would accrue from doing so, or even of saying that they had, would be enormous; (c) consider whether the whole episode was planned by Jesus and his followers, possibly at Gethsemane, that death would be feigned so that early removal from the Cross might be secured; (d) accept that if John's (19:34) account of the issue of blood is correct, Jesus did not die from crucifixion but from injury caused by the spear thrust.[25]

A HEAD COUNT OF MODERN VIEWS ON THE MANNER OF JESUS' DEATH

The letters showed that physicians, regardless of religious or medical specialty, can and have engaged with historical, religious, and medical arguments concerning Jesus' death. However, no study has summarized the numbers of academic or clinical professionals adhering to the different views on Jesus' death. Toward this end, we compiled a broad review of the

Table 1. Scholarly views on the manner of Christ's death

Scholarly View	Citations: first author and year (chronological)
Asphyxiation	LeBec, 1925[28]; Whitaker, 1935[29]; Mödder, 1948[30]; Hynek, 1951[31]; Furlong, 1952[32]; Barbet, 1963[33]; DePasquale, 1963[34]; Bucklin, 1970[35]; Lumpkin, 1978[36]; Wassener, 1979[37]; Jewell, 1979[38]; Zias, 1985[39]; Potter, 1986[22]; Edwards, 1986[6]; Blum, 1986[40]; Thurston, 1987[41]; Leinster, 1991[42]; Bernardo, 1991[43]; Porter, 1991[44]; Holoubek, 1995[45]; Metherell, 1998[46]; Retief, 2003[47]; Papaloucas, 2004[48]; Eduard, 2017[49]
Chiefly asphyxiation with secondary factors	Sava, 1958[50]; Davis, 1965[51]; Miller, 2013[52]; Bordes, 2020[53]
Cardiovascular trauma	Stroud, 1847[54]; Bersgma, 1948[55]; Ball, 1989[56]; Wright, 1991[57]
Shock	Tenney, 1964[58]; Zugibe, 2005[59]; Bergeron, 2012,[3] 2018[60]
Coagulopathy	Brenner, 2005[61]
Suspension trauma	Schulte, 1963[62]; Bishop, 2006[63]
Syncope	Warren, 1986[24]
No death	Davies, 1991[25]; Ytrehus, 2002[64]; Ledochowski, 2012,[8] 2014[8,65]

various sources describing the hypotheses concerning Jesus' death, including those who believe that Jesus did not die. The results are shown in *Table 1*. As observed from the table, many medical and other researchers have considered the nature of death by crucifixion. These studies have progressed for many years but chiefly during the last several decades.

Many details have been discussed and a view seems to be coalescing here into a probable outcome. There were approximately twice as many asphyxiation and asphyxiation-dominant views as all the other options combined (e.g., cardiovascular trauma, shock, coagulopathy, suspension trauma, and syncope). In general, the mechanism for the asphyxiation has been approached through multiple angles using both cadavers and living persons. The principal mechanism is believed to be a combination of hypoxia from restriction of the chest cavity to expand from increased stress on the upper extremities and chest as well as the position of the body when nailed to the cross. Other postmortem arguments (such as shock or suspension trauma) have been developed, which are believed to contribute to the underlying cause of asphyxiation. Only three responses argued against Jesus dying on the cross.

The postmortem Roman spear wound to Jesus' body that is recorded in John 19:33-35 is also affirmed by the Roman writer Quintilian (*Declamationes* 6.9), who stated that after crucifixions, the executioner did not forbid to families the bodies of the victims for burial after those bodies had first been struck or pierced (Latin, *percussus*). As Cook attested, the Latin term here usually involves the use of a weapon such as a sword, ax, or spear.[26] Hengel also listed additional death-blows for crucifixion victims.[27] The most crucial item to note here is that for both Quintilian and John, the purpose of the piercing with a spear or another weapon was to ensure that the crucified victim was actually deceased, as opposed to the article by Lloyd Davies and Lloyd Davies.

CONCLUSION: THE CAUSE OF JESUS' DEATH BY CRUCIFIXION

Many medical and other researchers have considered the nature of Jesus' death by crucifixion. After having reviewed the relevant details, two summary points are worth highlighting. First, there appear to be twice as many asphyxiation and asphyxiation-dominant views as all the other medical options combined. The medical reasoning here proceeds from multiple angles—such as Miller's comments on the exceptional cell oxygen loss beyond just the breathing difficulties alone combining to make asphyxiation the major cause of Jesus' death. The anatomy of the chest muscles and their potential effect on the lungs of someone in these positions also contribute in large part here. Second, two other strong postmortem arguments have been developed (the Roman chest wound plus Strauss' argument), both of which clearly argue for a *sure death* even when an exact cause is only probably known. Thus, even if it is judged that a precise cause of Jesus' death is difficult to determine, the *fact* of Jesus' death from crucifixion is established historically by, among other things, the post-death Roman spear plus Strauss' exceptionally well-regarded critique. Taken together, these two factors lead to the probable conclusion on the dominant cause of Jesus' death, backed by the even more clearly established *fact* of Jesus' death. In short, historians have long agreed *that* Jesus died; medical specialists now seem to be growing in agreement on *how* Jesus died.

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