What if It All Began with a Broken Bone? Paleolithic Reflections on the Origins of Medical Care and Traumatology

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ABSTRACT
Fractures represent one of the earliest tangible traces of medical care in prehistory. Osteological evidence from Paleolithic sites such as Shanidar (Iraq) and Krapina (Croatia) shows that individuals with severe injuries survived thanks to sustained, collective care. These healed fractures reflect not only biological responses and rudimentary immobilization practices, but also social behaviors involving support and task redistribution. This article argues that traumatology, understood as a response to visible bodily trauma, may have constituted the earliest form of organized medical practice. In an era of increasing specialization, revisiting this ethical and communal foundation reminds us that orthopedic care remains, at its core, a deliberate act of supporting and caring for others.
Keywords: Paleolithic; bone fractures; traumatology; healthcare; bioarchaeology.
Level of Evidence: V

¿Y si todo comenzó con un hueso roto? Reflexiones paleolíticas sobre el origen del cuidado médico y la traumatología

RESUMEN
Las fracturas constituyen una de las primeras huellas tangibles del cuidado médico en la prehistoria. La evidencia osteológica de sitios paleolíticos, como Shanidar, en Irak, y Krapina, en Croacia, demuestra que individuos con lesiones graves sobrevivieron gracias a una atención sostenida y colectiva. Estas fracturas cicatrizadas reflejan no solo respuestas biológicas y de inmovilización rudimentaria, sino también respuestas sociales de acompañamiento y redistribución de tareas. Este artículo propone que la traumatología, entendida como reacción al trauma visible, pudo haber sido el primer gesto médico organizado. En una era de alta especialización, recuperar esa raíz ética y solidaria nos recuerda que la práctica ortopédica sigue siendo, en esencia, una decisión de cuidar y sostener al otro.
Palabras clave: Paleolítico; fracturas óseas; traumatología; atención de la salud; bioarqueología.
Nivel de Evidencia: V

"Because not only might the history of medicine have begun with a broken bone, but in some cases, so might our own individual paths as physicians."
In memory of Dr. Gustavo Argibay, an example of science, skill, and humanity.

When we attempt to reconstruct the origins of medicine, we often imagine herbal preparations, shamanic rituals, or even the earliest trepanations. However, osteological evidence invites us to shift these hypotheses toward another phenomenon, simpler from a pathophysiological perspective, more concrete, yet equally profound: the treatment of a fracture.

A fracture is visible, painful, and functionally disabling. In a hostile environment, at the mercy of predators and dependent on constant mobility, it can be life-threatening.

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Skeletal remains recovered from Paleolithic sites show a remarkable frequency of healed fractures. According to Spikins et al.,[1] between 79% and 94% of the skeletons analyzed exhibit signs of bone trauma, and between 37% and 52% correspond to severe injuries. Even more striking, approximately 13–19% of these traumas occurred early in life. In contexts where a severe fracture could mean the end of an individual's usefulness to the group, these data are as surprising as they are revealing.

One of the most emblematic cases is Shanidar 1, discovered in present-day Iraqi Kurdistan. Dated between 35,000 and 70,000 years before present, he was an adult male who lived to approximately 35–40 years of age—remarkable longevity for his era—despite presenting multiple injuries, including a probable right forearm amputation, bone deformities due to infection, cranial damage, unilateral deafness, and chronic lameness.[2,3]

Today, such conditions would require a combination of surgery, analgesia, rehabilitation, and nutritional support, an intervention of a complexity and level of coordination far beyond simple goodwill care. In the Paleolithic, his recovery can only be explained by prolonged intervention consisting of direct care, accompaniment, and redistribution of tasks.

Some might argue that Shanidar 1 was not "cured" of all his ailments in the strict technical sense. But he survived. And survival, in that context, is sufficient proof that someone intervened in a systematic, planned, and intentional manner. As Tilley[4] explains, the mere fact that an individual with such a degree of disability reached adulthood requires sustained social commitment.

The methodology of the bioarchaeology of care, proposed by Lorna Tilley, provides a rigorous framework for interpreting this type of evidence. This model outlines four stages: diagnosis of the pathology, assessment of functional limitations, inference about the nature of the care provided, and analysis of the cultural context that made such care possible.[4]

This methodology has been applied to numerous archaeological sites. In Krapina (Croatia), dated to over 120,000 years ago, at least 11 individuals with healed fractures of the clavicles, ulnae, ribs, and skull have been documented. These injuries, as Rajković and Krklec[5] note, not only healed but did so under conditions that implied sustained care: wound cleaning, rudimentary immobilization, protection of the injured individual, and support throughout the recovery period. Thus, we can assert that bone injury, in these contexts, becomes a fossilized trace of collective care.

Fractures have a particular feature that makes them central to understanding the origins of medicine: they are visible. Unlike internal diseases or psychological conditions, a fracture is difficult to conceal. It usually causes immediate incapacity.

In a subsistence environment based on mobility, gathering, and hunting, an injured limb may have represented, at the same time, a threat to the survival of the group and an opportunity to exercise solidarity.

Spikins et al.[1] propose that care in Neanderthal communities was neither anecdotal nor solely motivated by kinship ties. It was an adaptive strategy, a way of maintaining group cohesion and making use of the non-physical abilities of injured individuals. Caring was not charity; it was social intelligence.

Within this framework, traumatology, understood as the response to visible trauma, may have been the first collective medical gesture. There were no scalpels or orthopedic splints. There were likely sticks, plant-fiber bandages, and assistance with eating, standing, and sleeping. And above all, there was time and presence.

Today we call "traumatology" a highly technical surgical specialty. Yet its etymological root (*trauma*, injury) together with its fundamental purpose, functional restoration and pain relief, connects it directly to that primordial act of supporting the fallen. A fracture remains an emergency that mobilizes us, a disruption that demands presence.

The 21st-century orthopedic surgeon has precise instruments, high-resolution imaging, and an ever-expanding technical corpus at their disposal. But their work continues to be, at its core, a response to trauma. And that response still involves not only technical intervention, but also emotional support, accompaniment, and the decision to hold.

CONCLUSIONS

Was medicine born with traumatology? It is a possibility. In any case, there were bones that broke, and they were not abandoned. There was someone who, without knowing the word *"heal,"* tried to alleviate suffering. For the earliest form of medicine was neither science nor art, but an ethical reaction, a willingness not to leave the suffering person alone.

Understanding this not only helps us reflect on the origins of medical care; it forces us to reexamine the driving force behind our current practice. In an era of super-specialization, protocols, and efficiency, recovering that primitive gesture, the decision to be present, to support, to intervene in the face of injury, may well be the most contemporary act of all.

Statement on the use of generative AI and AI-assisted technologies in the writing process

During the preparation of this manuscript, the author used ChatGPT-5 (OpenAI) to detect typographical errors. After using this tool, the author reviewed and edited the content as necessary and assumes full responsibility for the content of the publication.

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