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C 5.5. COMMUNICATION – ABSTRACT

The Evolution of Spine Surgery

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ABSTRACT: The evolution of Spine Surgery has been shaped by centuries of progression towards a highly advanced, image-guided, minimally invasive and microscopic techniques. Early foundations were laid by ancient civilizations, namely by the Egyptian Smith Papyrus, who first recognized spinal injuries. The 19th century marked the birth of modern Surgery with the advent of anesthesia, antisepsis and radiography, enabling simple spinal decompression procedures. At the beginning of the 20th century, spinal fusion was introduced for deformity and infection, while mid-century innovations in instrumentation, biomechanics and microsurgery transformed spinal stabilization and decompression. The late 20th century brought important technological breakthroughs, including CT and MRI, and the introduction endoscopic procedures that improved diagnostic accuracy and promoted reduced morbidity. Early in our century, the advancement of navigation systems, robotics and artificial intelligence have revolutionized precision and safety in Spine Surgery.

In the near future, emerging technologies, such as augmented reality or artificial intelligent-based approaches, and regenerative medicine promise a new era of personalized, data-driven spinal care. The evolution of spine surgery continues to promote innovation aimed at optimizing outcomes, preserving motion and enhancing quality of life.

KEYWORDS: Spine surgery; History of surgery; Spinal instrumentation; Minimally invasive surgery; Surgical innovation

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