

Kuntscher Nail: The Rod Who Fleed From Germany Inside the Legs of America

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Nowadays through internet, it is considered normal to read about a new invention, that can be viewed and discussed in short time. This concept is especially applicable to engineered surgical products, where basic solutions are just some keyboard clicks away. But try to drive you for a while to the past, to peculiar times, as WWII. In these eras, spreading of new surgical solutions was inconceivable, since countries were one against the other and there was no shared knowledge. Nevertheless, through war, ingenious minds found revolutionary solutions that are successfully and intensively used even nowadays. "He who desires to practice surgery must go to war" said Hippocrates and it appears to be the most suitable motto. And on this route, successful outcomes in treating long bones fractures were recorded by German surgeon Gerhard Kuntscher, thanks to his revolutionary invention of intramedullary nailing technique. Since American soldiers returning from German prison camps after WWII were sometimes found to have steel rods inside their fractured femurs, what seemed to be human experimentation, as accused by Sir Reginald Watson-Jones (at that time acting as surgeon to the Royal Air Force), was contrarily an alternative and advanced healing treatment [1]. Therefore, Kuntscher nails literally fled abroad from Europe to North America inside the legs of American soldiers [2], adding new technology, or just new ideas at the very beginning, to the standard American orthopaedic armamentarium of that epoch. Acting as an internal bone splint, the metallic rod was conceived and developed to permit the return of operated soldiers to combat fields in just a few weeks. Moreover, closed nailing did not interfere with the fracture haematoma. The device was employed intensively and effectively in the remote north-eastern Finnish combat front in Kemi from 1942 to 1944, where Kuntscher was sent as Chief Medical Officer of the German Army [3]. Shocking as a breaking news, in March 12 of 1945 an article published on the "Time" journal entitled: "Amazing thighbone" first reported the healing of a femoral fracture of a repatriated American soldier operated on with endomedullary nail in Germany. The "amazing" attribute was attributable to absence of infection, only a few days time to full weight bearing and reduced blood losses [4]. At England General Hospital in Atlantic City, where the soldier was visited, surgeons reported that the access wound was

only a 2½-inch incision above the hipbone. Radiograph carried out to the affected femur revealed "a half-inch metal rod of some kind rammed down the thighbone through the marrow for three-quarters of the bone's length, thus supplying a permanent, internal splint" [5]. The original Kuntscher nail was 7-10 mm in diameter, made of stainless steel and "V" shaped in cross section, whereas, from late 1940s, Kuntscher changed design, introducing a nail with a cloverleaf fashioned section instead of the "V" shaped one [6]. Apart from technical descriptions, American surgeons were skeptical in using endomedullary nailing of long-bone fractures, requiring about twenty years to be fully accepted in North America and England. But, as Edwin F. Cave, chief of Fracture Service of the Massachusetts General Hospital commented in 1952: "This, I think, is fortunate, as the slow acceptance of this technique has allowed us to avoid many pitfalls that would have discouraged us as surgeons and would have led to abandonment of a procedure that is one of the great advances in fracture treatment during this century" [7]. For he who walks for a long time a well-known and comfortable path, it may be difficult to fully comprehend and appreciate a new road. Kuntscher changed the way, walking the one that was taken afterwards by all orthopaedic surgeons to new, enthusiastic results in long bones fractures treatment.

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