



Mesto aparata po Ilizarovu u ortopedskoj hirurgiji i traumatologiji. Prošlost, sadašnjost i budućnost

Place of Apparatus According to Ilizarov in Orthopedic Surgery and Traumatology. Past, Present, and Future

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Apstrakt

Ilizarov aparat je dobio naziv po doktoru Gavrilu Abramoviču Ilizarovu. Rođen je u Sovjetskom Savezu 1921. godine, a upisao je Medicinski fakultet na Krimu sa 18 godina. Nakon diplomiranja 1944. god. dobija posao porodičnog lekara u provinciji Kurgan u jugoistočnom Sibiru. S obzirom na udaljenost ove oblasti, Ilizarov je uglavnom radio sam i bio je osposobljen za izvođenje mnogih hiruških procedura.

Prvo se zainteresovao za ortopediju i rekonstrukciju kosti, jer su veliki broj njegovih pacijenata predstavljali vojnici koji su se vraćali sa frontova u Drugom svetskom ratu. Mnogi od ovih pacijenata su zadobili teške prelome i morali su da pretrpe dugotrajno lečenje. Gips i skeletna trakcija bile su jedine metode koje su opšte korišćene. Ilizarov je verovao da postoje i drugi načini lečenja preloma, te je svoju karijeru posvetio ortopediji. Ilizarov metod je odlična alternativa od više konvencionalnih metoda, naročito u slučajevima teške kontaminacije rana i u slučajevima gubitka mekog tkiva i kostiju. Tretman gubitka kostiju, kao rezultat akutne traume, tradicionalno je bio i ostao složen hirurški problem.

U pokušaju da izbegnemo probleme povezane sa deficitom graft-materijala, kao i transfera slobodnog tkiva, unutrašnji transport kostiju je tehnika koja je bila uspešan metod za rekonstrukciju koštane mase kod akutnog gubitka kostiju. Osim toga, Ilizarov aparat može postići stabilnost, čak i u slučajevima koštane kominucije, kada interna fiksacija ne može učiniti ništa značajnije. Nesrastanje dugih kostiju je često povezano sa značajnim gubitkom funkcije pogođenog ekstremiteta, krutosti u zglobovima, atrofijom mišića, difuznom osteopenijom, pa čak i amputacijom ekstremiteta ili sistemskim manifestacijama u slučaju infekcije. Indikacije za odgovarajuću metodu lečenja su često nejasne. U složenom polju nesrastanja kostiju, intramedularna fiksacija je poželjna u odloženoj (produženoj) konsolidaciji i hipertrofičkim nesrastanjima, bez ugaonih defekata ili hipometrije, dok je metoda Ilizarov više indikovana kod atrofičnih nesrastanja sa ugaonim defektima i hipometrijom.

Okvir prstenova aparata stabilizuje i podržava osnovnu kost, uz pomoć transfiksacionih igala i poluklinova. Stabilnost aparata se povećava sa uvećanjem promera igle i sile napregnutosti, korišćenjem više igala po prstenu, postavkom igala sa suprotne strane prstena ili u različitim ravnima. Povećanjem uglova ukrštanja igala do 90 stepeni, dobija se maksimalna stabilnost aparata, dok njihovo smanjenje ispod 60 stepeni omogućava klizanje

Abstract

The Ilizarov apparatus was named after Doctor Gavril Abramovich Ilizarov. He was born in the Soviet Union in 1921. and he entered the Faculty of Medicine in Crimea at the age of 18. After graduating in 1944 he gets a job as a family doctor in the Kurgan province in Southeast Siberia. Due to the remoteness of this area, Ilizarov mostly worked alone and was trained to perform many surgical procedures.

He first became interested in orthopedics and bone reconstruction because a large number of his patients were soldiers returning from the fronts of World War II. Many of these patients sustained severe fractures and had to undergo long-term treatment. Plaster and skeletal traction were the only methods commonly used. Ilizarov believed that there are other ways to treat fractures and dedicated his career to orthopedics. Ilizarov's method is an excellent alternative to more conventional methods, especially in cases of severe contamination of wounds and in cases of soft tissue and bone loss. Treatment of bone loss as a result of acute trauma has traditionally been and remains a complex surgical problem.

In an attempt to avoid the problems associated with a deficit of graft material as well as free tissue transfer, internal bone transport is a technique that has been a successful method for bone reconstruction in acute bone loss. In addition, the Ilizarov device can achieve stability even in cases of comminuted fracture when internal fixation cannot do anything significant. Nonunion of long bones is often associated with significant loss of function of the affected limb, joint stiffness, muscle atrophy, diffuse osteopenia, and even limb amputation or systemic manifestations in case of infection. Indications for the appropriate treatment method are often unclear. In the complex field of bone nonunion, intramedullary fixation is preferred in delayed (prolonged) consolidation and hypertrophic nonunion without angular defects or hysometry, while this method is more indicated in atrophic nonunion with angular defects and hysometry.

The frame of the apparatus rings stabilizes and supports the underlying bone with the help of transfixing pins and half wedges. The stability of the apparatus increases with the increase of needle diameter and tension force, using more needles per ring, and setting the needles on the opposite side of the ring or in different planes. By increasing the crossing angles of the needles up to 90 degrees, the maximum stability of the apparatus is obtained,



kostiju, koje možemo sprečiti i upotrebom igala sa olivom ili poluklinova. Kod pacijenata koji su doživeli multiple prelome ili politraumu, očuvanje normalne funkcije ekstremiteta sa minimalnim komplikacijama je najveći prioritet. Uspostavljanje stabilnog ekstremiteta, jednake dužine, bez deformacija, sa dobrom mišićnom funkcijom, dobrom pokretljivošću zglobova i minimalnim rizikom od pojave infekcije, predstavljaju principe koji su osnove primene ove tehnike. Takođe je bitno da vreme onesposobljenosti pacijenata bude minimalno i da se uradi što manje hiruških intervencija. U većini slučajeva, spoljna fiksacijska tehnika Ilizarova omogućuje ostvarenje ovih principa.

Ruske studije Popove i Khodesevicha 1984. godine, kao što je navedeno od Ilizarova i Rozbruha 2007. godine, pokazale su da se korišćenjem ove metode smanjuje vreme lečenja, troškovi lečenja i invalidnine. Kada se koristi za lečenje fraktura i posttraumatskih nesraslih preloma, primarna nesposobnost stanovništva se smanjila tri do pet puta, a osam puta u odnosu na lečenje otvorenih preloma metodama konvencionalnog pristupa.

while their reduction below 60 degrees allows the bones to slide, which can also be prevented by using olive needles or half wedges. In patients who have experienced multiple fractures or polytrauma, preservation of normal limb function with minimal complications is the highest priority. Establishing a stable limb, of equal length, without deformations, with good muscle function, good mobility of the joints, and minimal risk of infection are the principles that are the basis of this technique. It is also important that the time of incapacitation of patients is minimal and that as few surgical interventions are performed as possible. In most cases, the external fixation technique of Ilizarov enables the realization of these principles.

Russian studies by Popov and Khodesevich in 1984, as stated by Ilizarov and Rozbruch 2007, have shown that using this method reduces treatment time, costs, and disability benefits. When used for the treatment of fractures and post-traumatic non-union fractures, the primary disability of the population decreased three to five times, and eight times compared to the treatment of open fractures with the methods of the conventional approach.