



Results of Ilizarov versus Intramedullary Nailing Associated with Bone Graft in Management of Congenital Pseudoarthrosis of the Tibia

A Systematic Review of Literature

Essay

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدق الله العظيم

سورة البقرة الآية: ٣٢



*First thanks to **ALLAH** to whom I relate any success in achieving any work in my life.*

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Mohammad Khalil Fahmy Ibrahim

Abstract

Background: Of all the diseases in children, CPT is probably one of the most difficult to treat, failure to obtain bone union is frequent and in cases that achieve union, difficulty of maintaining union.

Methods: Searches were conducted in three electronic databases including Medline, Pubmed and Cochrane.

Results: Thirteen studies were obtained compare the results of management of congenital pseudoarthrosis of the tibia, Ilizarov versus intramedullary nailing associated with bone graft.

Conclusion: CPT is one of the most difficult diseases in management, combination of both Ilizarov & IMN with bone graft have the best results according to union rate, alignment and the least incidence of refracture.

Keywords: "pseudoarthrosis tibia", "Ilizarov", "Intramedullary rods", "bone grafting".

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List of Abbreviations

Abb.	Full term
<i>CPT</i>	<i>Congenital Pseudoarthrosis of the Tibia</i>
<i>IMN</i>	<i>Intramedallry Nail</i>
<i>NF</i>	<i>Neuro Fibromatosis</i>
<i>RhBMP</i>	<i>Recombinant Human Bone Morphogenetic Protein</i>
<i>Ras-GTP</i>	Ras protein binds guanosine triphosphate
<i>Ras-GDP</i>	Ras protein binds guanosine diphosphate

Introduction

INTRODUCTION

Congenital pseudoarthrosis of the tibia is an uncommon disease defined as a disorder of the diaphysis with various clinical presentations ranging from simple anterolateral tibial angulation to complete non-union with extensive bone defects. Congenital pseudoarthrosis of the tibia was first described by Paget in 1891. There is True bone dysplasia with non union or potential non union through a hamartomatous area in the tibia. The defect in the bone is filled with mature, fibrous connective tissue, and the exact pathogenesis still remains unclear. ⁽¹⁾

Treatment of Congenital pseudarthrosis of the tibia is surgical, as natural progression of the disease is towards worsening, deformity and shortening. The aim of surgical treatment is to achieve bone union of the pseudoarthrosis while restoring alignment in the leg to prevent the risk of recurrent fracture and to preserve function and bone growth in the leg. ^(2,3)

Ilizarov was the first to use his fixation technique in Congenital pseudarthrosis of the tibia, Small bone fragments can be stabilized with this technique, a residual deformity can gradually be restored, and length discrepancies in the affected limb can be treated during the same surgical procedure. ^(4,5)

Intramedullary nailing associated with bone graft first described in 1956 by Charnley, the principle is based on resection of areas of pseudarthrosis associated with stable

intramedullary fixation and transfer of a large graft, the use of nail or pins helps protect the reconstructed area during growth and avoids having to change the internal fixation.^(6,7)

The superiority of one treatment over another remains difficult to determine. The many different clinical presentations of Congenital pseudoarthrosis of the tibia, the effect of prior treatment, the necessity of having a follow-up that is long enough and until skeletal maturity, the age at surgery and the few number of cases in each series make comparison of treatments and evaluation of results difficult, there is no gold standard surgical technique to successfully treat all types and presentations of Congenital pseudoarthrosis of the tibia.⁽⁷⁾

Systematic reviews are types of literature reviews that collect and analyze multiple research studies. Providing a complete summary of current literature relevant to a research question. Systematic reviews of randomized controlled trials are key in the practice of evidence-based medicine, presented as level I of evidence.⁽⁸⁾

Aim of the Work

AIM OF THE WORK

A systematic review of literature to compare the results of management of congenital pseudoarthrosis of the tibia, Ilizarov versus intramedullary nailing associated with bone graft according to:

- Union rate.
- Alignment.
- Recurrent fracture.

Chapter I

Review of Literature