Simplicity Systems

by JMMR Inc.

Blount's Disease
A New Dynamic Bracing Technique

What is Blount's Disease

First documented as infantile tibial vera by Erlacher 70 years age [1]

The eponym Blount's Disease comes from 28 cases described by Blount's in 1937 [2]

- Blount's Disease is a progressive children's disease that effects the varus angle of the proximal tibia. It is also associated with an internal torsion of the tibia. It is characterized by a disordered endocondral ossification of the medial tibial ephisis [3]

Types Of Blount's Disease

- Infantile Form : occurs prior to 3 Years of age

- Adolescent form which develops after the age of 8 years

Classification

Lagenskiold and Riska System

Staging: (Langenskiold, JBJS, 1964)

I	irregular metaphyseal ossification combined with medial and distal protrusion of the metaphysis
II, III, IV	evolves from a mild depression of the medial metaphysis to a step-off of the medial metaphysis
V	increased slope of medial articular surface and a cleft separating the medial and lateral epicondyle
VI	bony bridge across the physis

Diagnostic Characteristics

- Sharp Varus anglulation in the metaphysis
- Widened and irregular physeal line medially
- A Medially sloped and irregularly ossified epiphysis
- Prominent Beaking

of the medial metaphysis with lucent cartilage islands in the beak [4]

Affected Population

- Frequency world wide < 1 % of all children born.
- Distribution: boys and girls are affected equally.
- Race influence: African and West Indian Blacks are more affected than whites but there is a significant increase of the white population affected in Finland (reasons unknown). [5]

Manifestations

- Abnormal Gait
- Leg length discrepancies
- Pain is associated in 93% of the adolescent cases [6]
- Uniformly Bi-lateral in 50-75% of cases [7]

Blount's Disease is Idiopathic

Early Ideas of causation that have been refuted included the following

- A form of Rickets [8]
- Trauma [8]
- Infection [8]
- Inflammatory conditions [8]
- Vascular deficiencies [8]
- Early Ambulation [8]

Important facts

- Heredity and Developmental factors are considered likely etiologic possibilities [9]
- The disease does not develop in non-ambulatory patients

Beskin And Thomas Study

- The researchers Beskin [10] and Thompson [11] noted that when the knee was returned to a neutral alignment by a tibial osteotomy, it corrected itself. (this suggests that the cartilage undergoes an initial insult that damages the physeal cartilage, then the pathogenesis of the disease takes over causing the varus deformity if there is no intervention.)
- Cook's study on the pathogenes found that weight bearing is necessary for the progression of the deformity [12]

Interesting Laws

- Hueter – Volkmann Law : indicates that as the compression forces increase on the epiphises, growth is inhibited. [13]
- Delpech's Law : Release of abnormal pressure stimulated epiphyseal growth

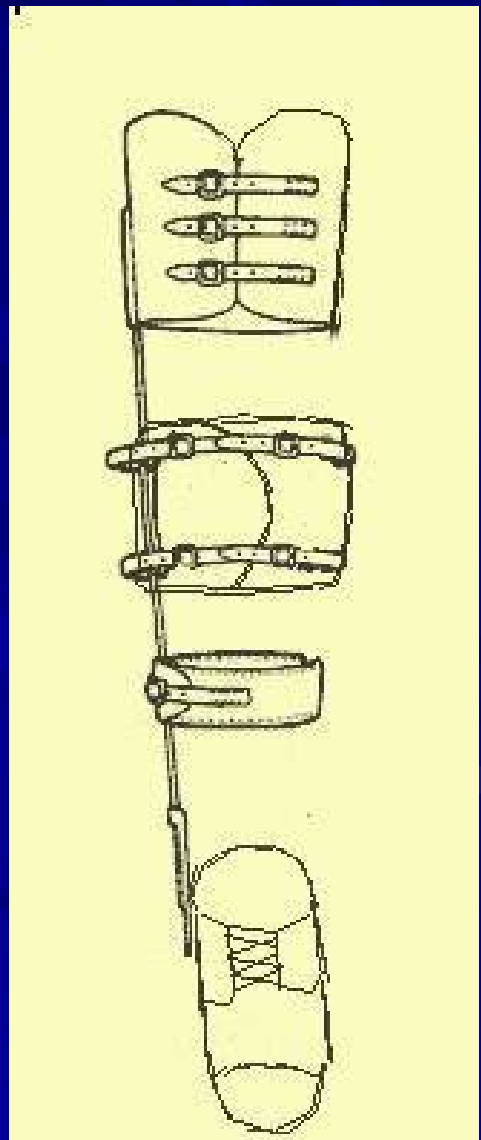
(this law supports the necessity for application of a dynamic orthosis)

Intervention and Treatment

- Some studies show that complete regression can occur if orthotically treated during stages I-IV using the Lagenskiold –Riska scale. The patient should be three years of age or less
- Stages V - VI do not regress and usually require surgical intervention. Surgery is usually the course of action for patients > than three years old

Conventional Orthotic Design

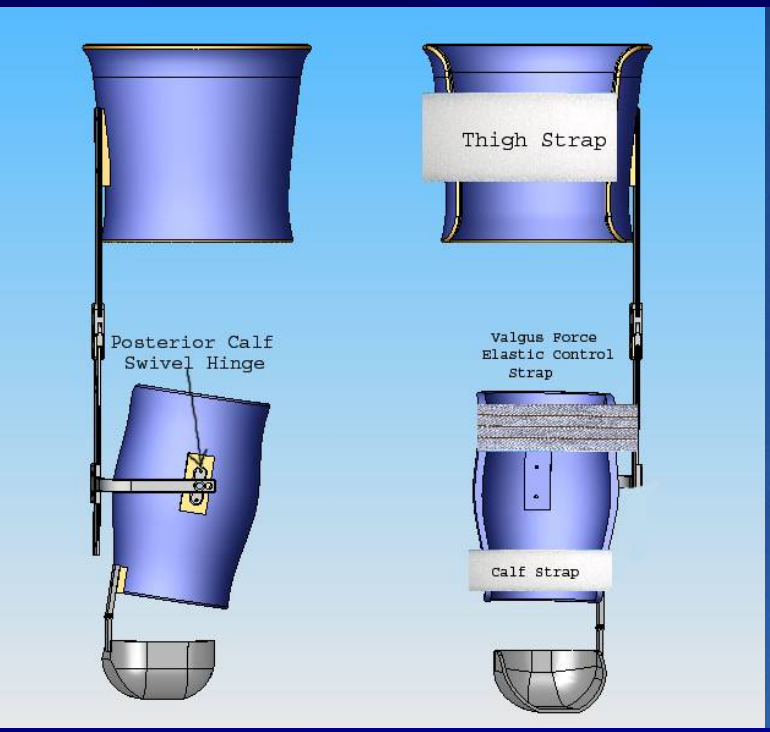
- Consists of a medial bar
- Thigh Cuff
- Foot plate
- Locked knee
  (or drop lock knee joint)
- Medially directed force strap at the knee joint that pulls the knee towards the medial bar



The JMMR Blount's Brace

Patent Pending

- Brace Illustrations:



Posterior
Pivot Joint

Posterior View

Pivot Joint

Anterior View

Corrective Force Strap

Positive Track
Telescoping
Ankle Hinge

Correction Case One

- Pre and Post Comparison 20 Weeks
- Pre bracing 15 degrees Bi - Lat Post bracing 6 degrees

Correction Case Two

- Pre and Post Comparison 22 Weeks
- Pre bracing 14 degrees Bi - Lat Post bracing 5 degrees

Studies

We are in the process of compiling data on enough cases to substantiate that this device repeatedly corrects a patients deformity in 12 to 26 weeks. We are engaged in working with top New York City pediatric Orthopedic Surgeons and Hospitals and will publish our results when available.

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Thank You!

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