Recurrent Clubfoot After Ponseti Treatment: What’s Next?

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I HAVE NO DISCLOSURES
PONSETI METHOD

• Most pediatric orthopedists converted to this technique after excellent long term results reported by multiple authors
• Poor results after long-term follow-up documented after posteromedial release (PMR) by numerous authors
• Series of 6 long leg casts applied with consistent technique
PONSETI METHOD

- 90% get percutaneous heelcord tenotomy at time of last cast
- Bar and shoe brace with affected foot externally rotated 70 degrees
- Wear full time for 3 months
- Wear at night for 2-4 years
- Relapse rate 10 to 20%
- RX with repeat casting, TAL, TA transfer
PONSETI FAILED: WHAT NEXT?

• More likely in genetic syndromes
• Arthrogryposis, spina bifida
ANSWER: CONSIDER MODIFIED PONSETI METHOD
MODIFIED PONSETI METHOD

• Start with initial tenotomy
• Proceed with a series of casts
• More than usual 6 casts
• Occasional mid-treatment tenotomy if correction stalls
• Final tenotomy with foot in maximally corrected position
PHILLY SHC: AMC CENTER

Harold J.P van Bosse, M.D. experience

- No PMR releases since 2001
- No talectomies since 2001
- Exception: mission work
Arthrogrypotic Clubfeet

Pre-treatment

Post-treatment

Courtesy of Dr. Van Bosse
Initial Achilles Tenotomy

Courtesy of Dr. Van Bosse
4 Point Bender

Courtesy of Dr. Van Bosse
3 Year Old – No Previous Treatment

Initial tenotomy
9 casts
Final tenotomy

Treatment time: 3 months

Courtesy of Dr. Van Bosse
9 Year Old Girl – Previous Surgery

Timeline:
8 sets of casts
Tenotomies
7 sets of casts

Total:
16 sets of casts
4 months

Courtesy of Dr. Van Bosse
MODIFIED PONSETI METHOD

- Requires motivated patient and surgeon
- Frequent visits to clinic
- Difficult for patients who live far away
- Some families “burn out” from first round of Ponseti treatment
POSTEROMEDIAL RELEASE (PMR)

- Posterior, medial, and subtalar soft-tissue contractures are released
- Permits the realignment of the abnormal anatomy of the bones
- Corrected alignment is secured with K wire of talonavicular joint
- Second K wire (if used) pins subtalar joint
Plantar-medial release through Cincinnati incision
Complete release of TN joint, release of CC joint
Posterior release of ankle and subtalar joint
Reduce TN joint and pin. Repair FHL, FDL, TP, and Achilles in lengthened position.
3 yo female, failed Ponseti, family desires surgery
Good short-term result from PMR
PMR: LONG TERM F/U

van Gelder JH, van Ruiten AG, Visser JD, Maathuis PG

• Stiff and painful feet after 16 year F/U
PMR: LONG TERM F/U

Levin MN, Kuo KN, Harris GF, Matesi DV.

• 38.9% excellent, 26.9% good, 15.6% fair, and 18.6% failure at 8 year F/U
PMR: LONG TERM F/U

Long-term follow-up of patients with clubfeet treated with extensive soft tissue release.
Dobbs MB, Nunley R, Schoenecker PL

• Many patients with clubfoot treated with an extensive soft tissue release have poor long-term foot function
16 years after PMR. Daily pain 8/10. Considering subtalar arthrodesis.
PMR AND BONY PROCEDURES

• Over age 4 to 5 likely bony adaptive changes
• Lengthen medial column
  – Opening-wedge medial cuneiform osteotomy
• Shorten lateral column
  – Closing-wedge cuboid osteotomy
  – Closing-wedge osteotomy through CC joint
  – Decancellization cuboid, calcaneal neck, talus
Closing-wedge osteotomy of the cuboid and opening-wedge osteotomy of medial cuneiform
5 yo with spina bifida; failed previous Ponseti treatment
Braceable after PMR and midfoot osteotomies
VEREBELYI-OGSTON PROCEDURE

• Decancellization of cuboid, anterior neck of calcaneus, and talus at time of PMR
• Controlled abduction and dorsiflexion of foot leads to deformity correction
• Hold in corrected position with K wires and cast
• Alternative (or adjunct) to talectomy

The role of the Verebelyi-Ogston procedure in the management of the arthrogrypotic foot.

Gross RH
4 yo female with diastrophic dysplasia; failed Ponseti method of treatment
Good result after PMR and decancellization of calcaneus, talus, and cuboid
TALECTOMY

- Possible salvage procedure after failed PMR
- Occasionally primary procedure
- Used in spina bifida and arthrogryposis
  - 24 feet in 15 patients
  - 20 year follow up
  - 32% good, 43% fair, 25% poor
TALECTOMY

Clinical photograph of a good result

Radiograph of a good result after talectomy
4 yo with arthrogryposis; failed Ponseti method. 2 years after takedown
Poor clinical result after talectomy in a 15 year old
Calcaneocuboid fusion in children undergoing talectomy.

Pirpiris M, Ching D, Kuhns C, Otsuka N.
TALECTOMY AND CC FUSION

• 17 children, mean age at surgery of 5.6 years
• 14 isolated talectomy, 17 combined talectomy and CC fusion
• Average follow-up was 9.7 years
• Prevented the development of postoperative equinus, varus, adductus, and supination deformities by adding CC fusion
Neglected clubfoot seen during recent mission work
Removal of talus

Removal of wedge through calcaneocuboid joint
Pin foot in corrected position
Failed previous left PMR; severe and rigid deformity
2 years after L talcetomy and decancellization of cuboid and calcaneus; family prefers L foot.
Recommendations

• Use Ponseti method for idiopathic clubfoot
• Treat relapses early in idiopathic clubfoot
• Attempt modified Ponseti method for syndromic, teratologic clubfeet
• PMR in younger patients who fail 1-2 rounds of Ponseti treatment
• After soft tissue releases, assess for bony deformity
Recommendations

• PMR with bony procedures in older child with established bony deformity
• Shorten lateral column by wedge resection through calcaneus or calcaneocuboid joint
• Lateral column decancellization a useful alternative
• Talectomy with CC fusion in severe deformities, failed previous PMR, or older neglected clubfoot
Thank You