Report of the 1st European consensus meeting on Ponseti clubfoot treatment

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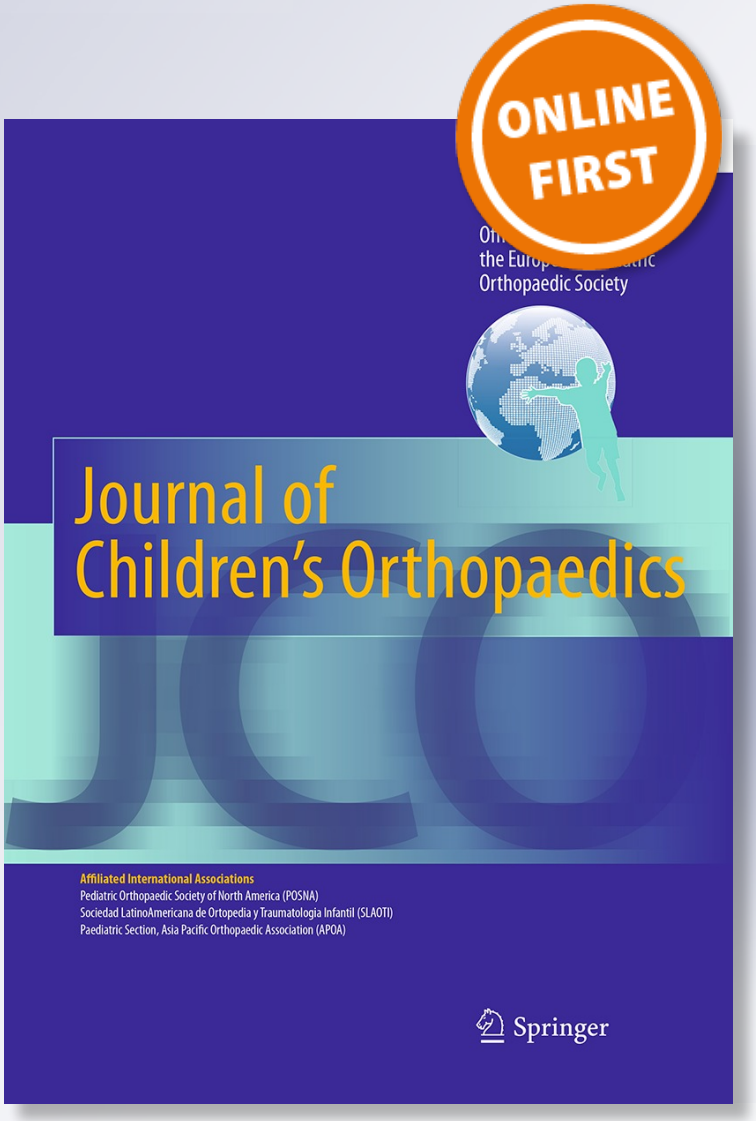

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MEETING REPORTS

Report of the 1st European consensus meeting on Ponseti clubfoot treatment

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Abstract
Introduction Standards for treating idiopathic clubfoot are still under discussion. Over the last 10–15 years the Ponseti method has been widely accepted as the treatment of choice, but the method has been modified very often, and the original protocol is not always properly performed. A consensus group was set up in the UK in 2011 to define standards for Ponseti clubfoot treatment, and the purpose of our meeting is to extend these standards to the European level. Clubfoot experts from 12 countries met at Karolinska University in Stockholm to discuss goals, standards, challenges and treatment outcome, based on literature review and personal experience.
Items discussed The ambitious agenda included most aspects of clubfoot treatment. Discussion following an intensive literature review was constructive, and the group was able to carry out discussions on defining the goal of clubfoot treatment and the preferred standard of treatment.
Conclusion In order to establish the Ponseti method as the most effective treatment in the European context a methodological approach and analysis of existing literature remain crucial. Focus should hereby remain on defining outcome measures, the evaluation and comparison of all available methods over the long term and ease of implementation in the different healthcare environments across Europe.

Keywords Clubfoot · Ponseti method · Consensus meeting

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Introduction

For almost 20 years the Ponseti method, which is a conservative approach to the clinical management of clubfoot, has fundamentally changed our understanding of this condition. Based on the results of a constantly increasing number of publications, including long-term studies [1], the Ponseti method has established itself as the "golden standard" in clubfoot treatment [2]. A recent survey by the American Academy of Orthopaedic Surgeons has shown that more than 90 % of orthopaedic surgeons in the USA use the Ponseti method as their standard approach to clubfoot. However, the increasing popularity of this method has led to the identification of new challenges in the management of clubfoot. Despite the Ponseti method being increasingly used for more complex presentations [3], such as relapsed feet after surgery [4], children up to the age of 10 years of age and syndrome-associated clubfeet [5], individual modifications in casting and brace treatment have surfaced [6]. The UK Ponseti group has been leading the way in formulating a consensus and effectively standardizing the Ponseti method in accordance to the available evidence. In an attempt to emulate these efforts at a European level, a representative group of experienced Ponseti users from 12 countries were invited to attend a consensus meeting at the Karolinska Institute in Stockholm, Sweden.

The attendee list included Shafique Pirani (Canada), Naomi Davis (UK), Gavin DeKiewiet (UK), Johannes Hamel (Germany), Angela Simon (Germany), Franck Chotel (France), Vladimir Kenis (Russia), Erica Lamprecht (Switzerland), Arnold Beeselaar (The Netherlands), Ralph Sakkers (The Netherlands), Marios Tryfonidis (Cyprus), Anna Ey Batlle (Spain), Cristina Alves (Portugal), Henrik Wallander (Sweden), Bertil Romanus (Sweden), Arne Johansson (Sweden), Marc Sinclair (UAE) and Stephanie Böhm (Sweden).

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Apologies for being unable to attend the meeting were sent by Alain Dimeglio (France), Ernesto Ippolito (Italy) and Christof Radler (Austria)

Marc Sinclair (Dubai) and Stephanie Böhm (Stockholm) were the initiators of the meeting. These two chairpersons selected the invited participants based on personal contact and inclusion criteria that consisted of (1) many years of expertise in the field of clubfoot management; (2) active efforts in spreading their knowledge in their home country. An attempt was made to also include experts who use a different protocol than the Ponseti method (such as, for example, the "French method"), but these experts were unfortunately unable to accept the invitation, promising attendance at the next meeting.

The objective of the meeting was to discuss current concepts of clubfoot treatment, with the aim of producing a consensus statement. Although the validity of a consensus is never absolute, the attendees hope that it can serve as a blueprint for orthopaedic associations, policy-makers and healthcare providers in developing national guidelines for the treatment of clubfoot.

Items discussed

(1) Goal of treatment
1.1 What is a good result and how do we measure it (Shafique Pirani)
(2) Standard of treatment
2.1 What is the standard of treatment in idiopathic clubfoot (Naomi Davis)
2.2 What is the standard of treatment in atypical clubfoot (Gavin DeKiewiet)
2.3 Which qualifications should people have (Arnold Beeselaar)
(3) Challenges of the Ponseti method
3.1 Older children. Limitations and challenges (Naomi Davis)
3.2 Ponseti in surgically pretreated clubfeet (Anna Ey Batlle)
(4) Outcome
4.1 Summary of literature search by UK Ponseti group (Gavin DeKiewiet)
4.2 Roye's score validation (Naomi Davis)
4.3 Alternative scoring system (Stephanie Böhm)
4.4 Data on outcome of complex clubfeet (Gavin DeKiewiet)
(5) Consensus

The ambitious agenda included most aspects of clubfoot treatment. The discussion following an intensive literature review of each aspect was constructive, and the group was able to have discussions on defining the goal of clubfoot treatment as well as what the standard of treatment should be (Items 1–2.2) Other topics, including the discussion on challenges to the Ponseti method and the outcome measurement, were postponed to a future meeting due to time constraints.

The consensus group hopes that by sharing the outcome of this discussion, further meetings can take place, effectively leading to a standardized, evidence-based approach to clubfoot management.

Goal of treatment

What is a good result and how do we measure it (Shafique Pirani)

The first session on the "Goal of treatment" was chaired by Prof Shafique Pirani. The attendees agreed that defining a good result was difficult and that parameters defining a good outcome are ill defined in literature. The minimal requirement for a good outcome was seen to be a foot that functions well and is free of pain and for which deformity is fully corrected. There is little agreement as to what can be considered good function. In their study, Cooper and Dietz [7] suggest that a minimum dorsiflexion of 10° correlates with a functional foot. However, although most attendees agreed that subtalar motion is a helpful indicator for good foot function, the support in literature for this remains poor. All attendees agreed that it remains important to score the foot at least once at presentation using the Pirani score [8] or Dimeglio score [9]. The Pirani score is favored by most, given it's simple method of assessment and predictive value in terms of requirement for tenotomy.

Standard of treatment

What is the standard of treatment in idiopathic clubfoot (Naomi Davis)

The discussion on "Standard of treatment" was moderated by Dr Naomi Davis. The UK Ponseti Consensus group has worked hard on defining the basic guidelines of clubfoot treatment as a national consensus. These guidelines are discussed and largely agreed upon.

Treatment for clubfoot should start not later than within the first months of life. The parents should be able to accommodate regular clinic visits for cast changes. In premature babies there is no need to start treatment in the neonatal intensive care unit, and treatment should be deferred for several weeks to allow for the baby's foot to grow in size.

Before any treatment, the foot should be assessed using the Pirani or Dimeglio score. In addition, the foot should be examined for the following clinical signs:

- plantar creases
- position and shape of the heel
- anterior process of the calcaneum
- calf size
- toe movement and position of the big toe.

The casting procedure will be done by two practitioners trained in the Ponseti method. Gentle manipulation strictly following the Ponseti protocol should be performed, using a thin layer of padding plus plaster of Paris, ending up with an above knee cast at 90° of flexion. Cast changes are routinely performed in the clinic after 5–7 days. Cast removal happens the same day in the clinic solely for the following reasons:

- approval of foot position in the cast (cast slippage?)
- approval of parental compliance
- maintaining the achieved correction

Immediate re-application of cast should be planned.

The percutaneous Achilles tendon tenotomy can be performed either under local or general anesthesia. There are upcoming scientific anesthesiological studies warning of increased risks with this procedure when performed under general anesthesia on patients younger than 3 months. As such data have not yet been published, the attendees found both conditions acceptable to date.

The tenotomy should be complete and result in dorsiflexion of the ankle above neutral. The tenotomy rate is usually >90 %. [2] The final cast after tenotomy remains for 3 weeks.

The required number of casts for an idiopathic clubfoot was determined to be five to seven casts in the newborn period and not more than nine casts in older children.

The casting period is followed directly by treatment with the foot abduction brace.

The brace is applied on the same day that the last cast is removed.

For the first 3 months a 23 h/day treatment is recommended. After this time the bracing routine can be reduced to 12–14 h per day, ideally applied at nighttime and during naps until the age of 4 years. If the child tolerates the brace, it is recommended to continue bracing until the age of 5 years.

The group agreed that dynamic supination is a primary sign for recurrence and the need for a tibialis anterior transfer (TAT). According to the Ponseti protocol [1, 10–12], the need for a TAT is NOT equal to treatment failure. It is part of the Ponseti technique and necessary in 20–40 % of cases [1]. Full tendon transfer to the lateral cuneiform should be performed.

What is the standard of treatment in atypical clubfoot (Gavin DeKiewiet)

"Atypical" or so-called "complex clubfoot" is a topic which has not been described during the last 50 years in which the Ponseti method has been in use. Of the 18 attendees of the Stockholm meeting, only two described that they found typical complex clubfoot signs in newborn children at their first clinical visit. This observation brought up the question of whether "atypical" feet are a separate entity of severe clubfoot or an iatrogenic deformity and a result of an overzealous casting technique. No group consensus was reached on this topic.

Conclusion

To summarize, the consensus meeting revealed that although the Ponseti method has proven to be an effective treatment modality in clubfoot management, it remains difficult to define what exactly is considered a good outcome. In order to establish the Ponseti method as the most effective treatment in the European context, a methodological approach and analysis of existing literature remain crucial. Focus should hereby remain on defining outcome measures, the evaluation and comparison of all available methods over the long term and ease of implementation in the different healthcare environments across Europe.

The Consensus Group in the UK and the Dutch Study Group are excellent examples of consensus-building efforts that ideally should be promoted by National and European Pediatric Orthopaedic and Foot and Ankle Societies. The inclusion of both clubfoot specialists using different forms of clubfoot treatment and parent groups in the consensus process as well as more extensive literature reviews are crucial for future work and outcomes. The involvement of all of these entities in leading to a consensus will inadvertently result in an improved and standardized care for clubfoot.

At this time our meeting report is not meant to function as a guideline. Our aim is however to continue to work towards the establishment of an European Paediatric Orthopaedic Society (EPOS) accredited and certified document that will continue the work of Dr. Ponseti.

Conflict of interest None.

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