INPLASY

Congenital deformities of the lower limbs and clubfoot: a systematic review

INPLASY202470072
doi: 10.37766/inplasy2024.7.0072
Received: 19 July 2024
Published: 19 July 2024

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ADMINISTRATIVE INFORMATION

Support - No financial support.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202470072

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 July 2024 and was last updated on 19 July 2024.

INTRODUCTION

Review question / Objective What are the main techniques available for correcting congenital clubfoot?

Rationale Regarding the treatment method, with the advent of new surgical techniques and, mainly, in the face of greater safety regarding anesthetic procedures, the management of PTC has changed over the years. Given this context, it becomes relevant through the present study to present in a summarized way a systematic review of publications in journals on the approach to Congenital Clubfoot and the main applicable management techniques.

Condition being studied Condition being studied is the Congenital Clubfoot. With complex characteristics, its changes are particularly located in the skeletal muscles, caused by compromised flexibility and/or structuring of foot alignment, and whose main etiology is associated with an isolated defect, of idiopathic origin, that is, of spontaneous and /or genetics. With an etiology still unknown, research and studies indicate that the most likely origin of the disease is associated with a multifactorial order, encompassing several factors, such as mechanical, neurological, muscular origin, and/or related to connective or vascular tissue, especially several congenital malformations, such as developmental dysplasia of the hip, peroneal hemimelia and congenital torticollis.

METHODS

Search strategy ("foot deformities" OR "congenital clubfoot") AND (orthopedic OR procedures).

Participant or population Any patient with congenital clubfoot.

Intervention Any surgical tecnique for clubfoot correction.

Comparator The final results after surgical correction.

Study designs to be included Only systematic reviews and meta-analyses.

Eligibility criteria As eligibility criteria, studies available in Portuguese or English that answered the guiding question and published in the last 5 years were included.

Information sources A systematic literature search was carried out, using the databases Latin American and Caribbean Literature in Health Sciences (Lilacs), Medical Literature Analysis and Retrieval System Online (MedLine/Pubmed), Scientific Electronic Library Online (Scielo) and Biblioteca Virtual of Health (VHL).

Main outcome(s) The deformity correction.

Additional outcome(s) None.

Data management The files were selected individually by two different authors. Disagreements in the selection of articles were resolved by common agreement. The evaluation of the articles took place during the first quarter of 2024. The following variables were included in the instrument for data extraction: Title/Theme; Author(s); Year/ Country; Goals; Study design/ Level of Evidence; Results and Conclusion. Afterwards, they were presented through tables and/or charts covering the main characteristics of the articles used for the purposes of this review. The critical analysis of studies was carried out using the categorization by levels of evidence by the Agency for Healthcare Research and Quality (AHRQ), which covers seven levels: (I) evidence resulting from meta-analysis and systematic review; (II) evidence obtained in randomized clinical trials; (III) evidence from clinical trials without randomization; (IV) evidence from cohort and case-control studies; (V) evidence from a systematic review of descriptive and qualitative studies; (VI) evidence based on a descriptive or qualitative study and (VII) opinions of an authority or specialty committee.

Quality assessment / Risk of bias analysis We conduct a quality assessment by first defining specific criteria and using standardized tools such as the Cochrane Risk of Bias Tool or the Newcastle-Ottawa Scale, depending on the study type. We evaluate the study design for appropriateness and bias minimization, examine the sample and population for representativeness and selection criteria, and review data collection methods for validity and reliability. We analyze the statistical methods used, ensuring they are appropriate and account for confounding factors. Reporting and transparency would be assessed for completeness, adherence to guidelines, and ethical considerations like obtaining informed consent. Potential sources of bias, such as selection, performance, detection, attrition, and reporting biases, would be identified and addressed. Using a scoring system, we assign grades to various study aspects and summarize the overall quality. Finally, we have the quality assessment reviewed by multiple experts to ensure objectivity and consistency, using expert judgment to interpret findings and implications for study validity.

Strategy of data synthesis We should clearly describe our data analysis plan by outlining the types of data collected, the statistical methods and software used, and the rationale for these choices. We should detail data preparation procedures, including handling missing data and outliers, and define primary and secondary analyses. It's important for us to specify how multiple comparisons and confounding variables will be addressed, describe any sensitivity analyses, and explain data visualization methods. Lastly, we should provide a framework for interpreting results, including criteria for statistical significance and clinical relevance, to ensure transparency and reproducibility.

Subgroup analysis We should outline our subgroup analysis plan by specifying data types, statistical methods, and justifications. Describe data preparation, including handling missing data and outliers, and define primary and secondary analyses. Address multiple comparisons and confounding variables, outline sensitivity analyses, and present a clear framework for interpreting results with criteria for significance and relevance.

Sensitivity analysis We should detail our sensitivity analysis by outlining data types, methods, and justifications. Include data preparation steps, handling of missing values, and a framework for interpreting results with significance and relevance criteria.

Language restriction Only texts in english were selected.

Country(ies) involved Brazil (Orthopedics and Traumatology Service - Santa Casa de Misericórdia de Ribeirão Preto. Ribeirão Preto - SP, Brazil).

Keywords Orthopaedics. Congenital Deformities. Clubfoot. Surgery.

Dissemination plans The article will be submitted for publication in an open access journal.

Contributions of each author

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