



Conservative Management of Nonsynostotic Plagiocephaly in Infants: A Literature Review with Focus on Osteopathic and Manual Therapy

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Abstract

Background: *Nonsynostotic plagiocephaly is one of the most common cranial deformities observed in infants. The condition is characterized by unilateral flattening of the occipital region of the skull resulting from prolonged external mechanical pressure. In recent decades, the prevalence of positional plagiocephaly has increased significantly, largely due to the introduction of supine sleeping recommendations following the “Back to Sleep” campaign aimed at reducing sudden infant death syndrome.*

Objective: *The aim of this literature review was to evaluate conservative therapeutic approaches used in infants with nonsynostotic plagiocephaly, with particular emphasis on osteopathic and manual therapy, and to analyze their influence on cranial symmetry, cervical mobility, and motor development.*

Materials and Methods: *A narrative literature review was conducted using PRISMA-informed screening principles. The PubMed database was searched using a broad exploratory strategy to identify studies related to plagiocephaly and cranial asymmetry in infants. Studies evaluating conservative therapeutic interventions in infants with positional plagiocephaly were screened for eligibility according to predefined inclusion and exclusion criteria.*

Results: *A total of 5620 publications were initially identified. After screening procedures and application of inclusion criteria, 21 studies were included in the qualitative analysis. The analyzed literature suggests that conservative therapeutic interventions may improve cranial symmetry and functional outcomes in infants with positional plagiocephaly. In particular, osteopathic and manual therapies demonstrated potential benefits in improving cranial asymmetry, cervical mobility, and motor development.*

Conclusions: *Conservative therapeutic approaches appear to be important in the management of nonsynostotic plagiocephaly. Osteopathic and manual therapy may represent safe and potentially effective components of*

multidisciplinary treatment; however, further randomized controlled trials are required to establish standardized treatment protocols and evaluate long-term outcomes.

Key words: *plagiocephaly, cranial asymmetry, osteopathy, manual therapy, infant development, conservative treatment*

Introduction

Nonsynostotic plagiocephaly, also referred to as positional plagiocephaly, is a cranial deformity characterized by unilateral flattening of the occipital region of the skull resulting from prolonged external mechanical pressure during infancy [1, 2]. The condition develops when external forces act asymmetrically on the malleable infant skull during periods of rapid cranial growth and skeletal plasticity.

During the first year of life, the infant skull remains highly adaptable due to the presence of cranial sutures and fontanelles, which permit dynamic brain growth and skull expansion. However, this same anatomical flexibility renders the skull particularly susceptible to deformation in response to sustained mechanical loading [1].

The prevalence of positional plagiocephaly has increased substantially since the implementation of the “Back to Sleep” campaign in the early 1990s, which recommended supine sleeping positioning to reduce the risk of sudden infant death syndrome [1]. Although this recommendation significantly decreased infant mortality, a parallel increase in positional skull deformities has been observed in pediatric populations worldwide.

The etiology of nonsynostotic plagiocephaly is multifactorial and includes prenatal, perinatal, and postnatal contributors. Prenatal risk factors include fetal malposition, multiple pregnancy, and limited intrauterine space. Perinatal contributors include prolonged labor, instrumental delivery, and birth trauma. Postnatal factors include prolonged supine positioning, congenital muscular torticollis, restricted cervical mobility, and prolonged use of positioning devices such as car seats and reclined infant carriers [1, 3].

Although plagiocephaly has traditionally been regarded primarily as a cosmetic issue, increasing evidence suggests that cranial asymmetry may be associated with broader functional consequences. Infants with positional plagiocephaly frequently present positional preference, cervical asymmetry, reduced movement variability, delayed acquisition of motor milestones, and altered postural control [4, 5]. Some authors have also suggested potential associations with later developmental and behavioral differences, although the causal relationship remains under investigation [4].

Several conservative therapeutic strategies are currently used in the management of nonsynostotic plagiocephaly. These include repositioning therapy, physiotherapy, manual therapy, osteopathic treatment, and helmet therapy in selected moderate to severe cases [2, 3, 6, 7]. While osteopathic and manual therapy have gained increasing attention as non-invasive therapeutic options, treatment protocols remain heterogeneous and no universally accepted management standard has yet been established [3, 8–12].

Therefore, the aim of this literature review was to evaluate conservative therapeutic approaches used in infants with nonsynostotic plagiocephaly, with particular emphasis on osteopathic and manual therapy, and to analyze their influence on cranial symmetry, cervical mobility, and motor development.

Etiology and Pathophysiology of Positional Plagiocephaly

Positional plagiocephaly develops as a consequence of prolonged asymmetric external pressure applied to the infant skull during periods of rapid cranial growth [1, 6]. Due to the malleability of cranial bones and the incomplete ossification of sutures and fontanelles during infancy, sustained mechanical forces may lead to flattening of the occipital region and secondary compensatory deformation of adjacent cranial structures.

The occipital bone is central in the development of cranial asymmetry. Compression of the occipital region may alter the spatial relationship of the cranial base and contribute to secondary deformation of the frontal, temporal, and parietal bones. This compensatory remodeling may produce the characteristic craniofacial asymmetry observed in infants with positional plagiocephaly,

including anterior displacement of the ipsilateral ear, frontal bossing, and facial asymmetry [1, 2].

Biomechanically, deformation of the cranial base may influence the alignment of the occipital condyles and upper cervical spine, potentially contributing to asymmetrical cervical muscle activation and altered postural control. Restricted cervical mobility, particularly in infants with coexisting congenital muscular torticollis, may further reinforce persistent head preference and perpetuate the deformational cycle [3, 13].

The pathogenesis of plagiocephaly is considered as multifactorial and dynamic. Mechanical compression may begin prenatally due to fetal constraint, multiple pregnancy, or abnormal intrauterine positioning, and may continue postnatally as a result of prolonged supine positioning, environmental positioning devices, and limited spontaneous movement variability [1].

Importantly, positional plagiocephaly must be differentiated from craniosynostosis, a pathological condition involving premature fusion of one or more cranial sutures. Unlike positional plagiocephaly, craniosynostosis often requires surgical management; therefore, accurate differential diagnosis remains essential in clinical practice [2].

Emerging evidence suggests that the biomechanical and neuromuscular consequences of cranial asymmetry may extend beyond skull morphology alone. Several authors have proposed that altered cranial and cervical biomechanics may influence motor control, postural development, and neuromuscular coordination during infancy, although the precise mechanisms underlying these associations remain incompletely understood [4, 5].

Table 1. Prenatal, perinatal, postnatal, and environmental risk factors associated with positional plagiocephaly

Category	Risk factors
Prenatal factors	Multiple pregnancy, fetal malposition, limited intrauterine space
Perinatal factors	Prolonged labor, instrumental delivery, birth trauma
Postnatal factors	Prolonged supine positioning, torticollis, limited cervical mobility
Environmental factors	Prolonged time in car seats, baby carriers and reclined positions

Source: Authors' own elaboration based on [1, 3].

Materials and Methods

Study Design

This study is a narrative literature review evaluating conservative therapeutic approaches used in infants with nonsynostotic plagiocephaly, with particular emphasis on osteopathic and manual therapy.

Data Source

The literature search was conducted using the PubMed database.

Search Strategy

The PubMed database was searched on 28 February 2026 using a broad exploratory search strategy designed to identify literature related to positional plagiocephaly and cranial asymmetry in infants. The following search terms and combinations were used with Boolean operators:

("plagiocephaly"[Title/Abstract] or "positional plagiocephaly"[Title/Abstract] or "deformational plagiocephaly"[Title/Abstract] or "cranial asymmetry"[Title/Abstract] or "skull asymmetry"[Title/Abstract])

Following the initial search, manual screening of titles, abstracts, and full-text articles was undertaken to identify studies specifically evaluating conservative therapeutic interventions relevant to the aims of this review, including osteopathic therapy, manual therapy, physiotherapy, repositioning strategies, and helmet therapy.

The search was restricted to English-language full-text studies published between 2007 and 2023 involving infant populations.

Inclusion Criteria

Studies were included if they:

- involved infants diagnosed with nonsynostotic plagiocephaly,
- evaluated conservative therapeutic interventions,
- assessed cranial symmetry, cervical mobility, motor development, or functional outcomes,
- were available in full text.

Exclusion Criteria

Studies were excluded if they:

- involved infants with craniosynostosis,
- described syndromic, neurological, or genetic disorders,
- included non-infant populations,
- focused exclusively on diagnostic procedures,
- lacked clinically relevant outcome data,
- were duplicate publications.

Study Selection Process

A total of 5620 records were identified during the initial database search. Following duplicate removal and title/abstract screening, studies were assessed for relevance according to the predefined eligibility criteria.

The majority of excluded records were removed because they addressed craniosynostosis, syndromic cranial deformities, diagnostic-only studies, non-infant populations, or did not evaluate conservative therapeutic interventions relevant to the objectives of this review.

Ultimately, 21 studies were included in the qualitative synthesis.

Table 2. PRISMA study selection proces

Stage	Number of studies
Records identified through database search	5620
Records after duplicates removed	1134
Records screened by title and abstract	117
Records excluded	80
Full-text articles assessed	37
Studies included in qualitative synthesis	21

Results

The reviewed literature suggests that conservative therapeutic interventions may improve cranial symmetry and functional outcomes in infants with non-synostotic plagiocephaly.

Among the analyzed studies, osteopathic and manual therapy were the most frequently discussed hands-on treatment modalities. Osteopathic treatment focuses on restoring functional mobility of cranial bones, reducing mechanical restrictions within surrounding connective tissues, and improving biomechanical balance in the cranial and cervical regions. Several clinical and observational studies reported improvements in cranial symmetry following osteopathic intervention [8, 10].

Manual therapy demonstrated beneficial effects particularly in infants presenting with associated cervical dysfunction and positional preference. These interventions may improve cervical mobility, promote symmetrical head positioning, and reduce the persistence of asymmetrical mechanical loading on the skull [9, 11, 12].

Lessard et al. demonstrated that infants receiving osteopathic treatment showed significant improvement in cranial symmetry compared

with untreated infants [10]. Cabrera-Martos et al. reported that manual therapy combined with repositioning therapy reduced treatment duration and improved motor development in infants with severe nonsynostotic plagiocephaly [9]. Pastor-Pons et al. observed significant improvements in cervical mobility and reduction of asymmetry severity following integrative manual therapy [11, 12].

In addition to hands-on therapeutic approaches, several studies evaluated broader conservative management strategies. Physiotherapy interventions were found to improve cervical mobility, support symmetrical motor development, and reduce plagiocephaly prevalence, particularly in infants with congenital muscular torticollis or positional preference [6, 13]. Van Vlimmeren et al. demonstrated that pediatric physiotherapy may reduce the incidence and severity of deformational plagiocephaly in at-risk infants [13].

Helmet therapy was identified as an effective treatment option in moderate to severe deformities. Comparative studies indicated that cranial orthoses may achieve faster correction in selected severe cases; however, their use is associated with higher financial cost, lower accessibility, and variable parental acceptance [6, 7].

Overall, the available literature suggests that multimodal conservative management may provide the greatest therapeutic benefit, particularly when interventions are initiated during early infancy and tailored to the severity of deformity and associated functional impairments [2, 3].

Impact of Plagiocephaly on Functional Development

Although positional plagiocephaly has historically been regarded primarily as a cosmetic deformity, increasing evidence suggests that cranial asymmetry may be associated with functional consequences affecting infant development [4, 5].

One of the most frequently discussed aspects in the literature is the relationship between plagiocephaly and motor development. Infants with positional plagiocephaly often demonstrate positional preference, reduced spontaneous movement variability, limited cervical mobility, and asymmetrical

postural patterns during early developmental stages [5, 13]. These factors may interfere with symmetrical neuromotor development and delay acquisition of motor milestones.

Collett et al. investigated developmental outcomes in toddlers with deformational plagiocephaly and reported differences in motor and cognitive development compared with children without cranial asymmetry [4]. Although a direct causal relationship has not been definitively established, the authors suggested that plagiocephaly may be associated with broader developmental vulnerability rather than being solely a cosmetic condition.

Similarly, Kennedy et al. demonstrated that infants with positional plagiocephaly may present delayed acquisition of selected motor milestones, including rolling, independent sitting, and crawling [5]. These findings support the hypothesis that cranial asymmetry may coexist with or contribute to altered motor development patterns during infancy.

One possible explanation for these observations is reduced movement variability caused by persistent positional preference. Infants with plagiocephaly often spend prolonged periods maintaining asymmetrical head positioning, which may reduce activation of postural musculature and limit opportunities for symmetrical sensorimotor experience.

Another important contributing factor is congenital muscular torticollis, which frequently coexists with plagiocephaly. Limited cervical range of motion may reinforce asymmetrical positioning patterns and perpetuate both cranial deformation and motor asymmetry [3, 13].

Postural asymmetry associated with plagiocephaly may also influence spinal alignment, trunk control, and overall musculoskeletal balance. Although many infants eventually achieve age-appropriate developmental milestones, early therapeutic intervention may help reduce the risk of persistent asymmetry and secondary functional impairments [9, 13].

Taken together, the available literature suggests that plagiocephaly should not be considered exclusively a cosmetic concern, but rather a condition potentially associated with broader functional and developmental implications requiring early clinical attention.

Role of Early Intervention

Early identification and treatment of positional plagiocephaly are considered essential for achieving optimal therapeutic outcomes [9, 3, 13]. The first months of life represent a critical therapeutic window due to the high plasticity and malleability of the infant skull during early development.

During infancy, cranial sutures and fontanelles remain flexible, allowing the skull to adapt rapidly to changing mechanical forces. As a result, therapeutic interventions introduced during the first months of life may facilitate faster and more effective correction of cranial asymmetry compared with treatment initiated later in development [1, 3].

Repositioning therapy is commonly recommended as a first-line intervention for mild deformities [2, 3]. This strategy involves encouraging variation in head positioning during sleep and wakefulness to reduce sustained pressure on the flattened cranial region and promote symmetrical skull growth.

Parents are also routinely advised to increase supervised prone positioning, commonly referred to as “tummy time.” Prone positioning facilitates activation of cervical and trunk musculature, promotes antigravity postural control, and supports symmetrical motor development [5, 13].

When plagiocephaly is associated with congenital muscular torticollis or restricted cervical mobility, physiotherapy may be introduced to improve neck range of motion, facilitate symmetrical movement patterns, and support developmental progression [6, 13].

Manual therapy and osteopathic treatment may provide additional therapeutic benefits by addressing cervical dysfunction, muscular tension, and cranial biomechanical restrictions contributing to persistent asymmetry [8–12].

Several studies suggest that early multidisciplinary intervention may shorten treatment duration, reduce deformity severity, and improve functional outcomes [3, 9, 13]. For this reason, prompt recognition and early referral remain important components of clinical management.

Comparison of Treatment Approaches

Several conservative therapeutic approaches have been proposed for the management of nonsynostotic plagiocephaly, including repositioning therapy, physiotherapy, manual therapy, osteopathic treatment, and helmet therapy [2, 3]. Selection of treatment strategy typically depends on deformity severity, infant age, associated functional impairments, and the presence of coexisting cervical dysfunction [2, 3].

Repositioning therapy is commonly recommended as the initial intervention for mild plagiocephaly [2, 3]. This approach aims to reduce mechanical pressure on the flattened region of the skull by encouraging symmetrical head positioning during sleep and wakefulness. Although repositioning is non-invasive and cost-effective, its success depends heavily on parental adherence and early implementation.

Physiotherapy may be particularly beneficial in infants presenting with associated congenital muscular torticollis, positional preference, or delayed motor development [6, 13]. Physiotherapeutic interventions focus on improving cervical mobility, promoting symmetrical motor patterns, and enhancing postural control.

Manual therapy includes gentle mobilization techniques targeting cervical structures and surrounding soft tissues [9, 11, 12]. By improving cervical range of motion and reducing muscular restrictions, manual therapy may decrease positional preference and indirectly reduce asymmetrical cranial loading.

Osteopathic treatment emphasizes restoration of cranial mobility, normalization of musculoskeletal balance, and reduction of biomechanical restrictions affecting cranial and cervical structures [8, 10]. Osteopathic practitioners often employ gentle cranial and fascial techniques aimed at supporting symmetrical cranial growth and functional mobility.

Helmet therapy is generally reserved for moderate to severe plagiocephaly, particularly when conservative first-line interventions fail to produce sufficient improvement [6, 7]. Cranial orthoses may provide more rapid correction in severe cases; however, helmet therapy is associated with increased cost, lower accessibility, and reduced parental acceptance in some settings.

Current evidence suggests that no single intervention is universally superior in all clinical scenarios. Instead, optimal management appears to depend on individualized treatment planning based on deformity severity, associated musculoskeletal dysfunction, and timing of intervention [2, 3]. In many cases, multimodal therapeutic approaches combining repositioning, physiotherapy, and hands-on interventions may provide the most favorable outcomes.

Table 3. Comparison of conservative therapeutic approaches used in the management of nonsynostotic plagiocephaly in infants

Therapy	Mechanism	Advantages	Limitations
Repositioning therapy	Reduces pressure on flat-tened skull region	Non-invasive	Requires parental compliance
Physiotherapy	Improves motor development and neck mobility	Effective for torticollis	Requires regular therapy
Manual therapy	Improves cervical mobility	May reduce asymmetry	Limited high-quality evidence
Osteopathic therapy	Restores cranial mobility and musculoskeletal balance	Gentle and non-invasive	Limited standardized protocols
Helmet therapy	External cranial correction	Effective in severe cases	High cost and limited availability

Source: Authors’ own elaboration based on the reviewed literature [2, 3, 6–13].

Long-Term Outcomes

Long-term outcomes of positional plagiocephaly remain an area of ongoing investigation. Although mild cranial asymmetry may improve spontaneously in some infants as postural control develops and independent mobility increases, moderate to severe deformities may persist if left untreated [1, 2].

Persistent cranial asymmetry may contribute to long-term cosmetic concerns and may be associated with secondary craniofacial consequences, including facial asymmetry, mandibular deviation, dental malocclusion, and temporomandibular joint dysfunction [1, 2]. The clinical significance of these structural changes varies between individuals and remains incompletely understood.

Some authors have also proposed potential associations between persistent plagiocephaly and visual disturbances, auditory processing abnormalities, and attention or behavioral differences later in childhood [4, 5]. However, current evidence remains inconclusive, and it is not yet clear whether plagiocephaly directly contributes to these outcomes or rather represents a marker of broader developmental vulnerability.

Despite ongoing debate regarding long-term functional consequences, the possibility of persistent structural asymmetry and associated developmental concerns highlights the importance of early recognition and appropriate therapeutic intervention [2, 3].

Further prospective long-term follow-up studies are needed to clarify the developmental and functional implications of untreated or partially corrected plagiocephaly across later childhood.

Future Research Directions

Despite increasing interest in conservative treatment approaches for nonsynostotic plagiocephaly, further research is needed to establish standardized therapeutic protocols and clarify the comparative effectiveness of available interventions.

Current literature is characterized by substantial methodological heterogeneity, including differences in study design, sample size, intervention frequency, treatment duration, and outcome measures [2, 3]. These variations limit direct comparison across studies and reduce the strength of available evidence.

Future randomized controlled trials should aim to evaluate specific conservative therapeutic modalities using standardized outcome measures and clearly defined intervention protocols. Particular attention should be paid to comparing isolated treatment approaches with multimodal strategies commonly used in clinical practice.

Long-term follow-up studies are also required to determine whether early conservative intervention influences developmental, functional, and structural outcomes later in childhood [4, 5].

Additionally, further research is needed to identify which patient subgroups may benefit most from specific therapeutic approaches based on deformity severity, associated cervical dysfunction, and developmental presentation.

Improved methodological quality and greater standardization in future research may contribute to the development of evidence-based clinical guidelines for the management of nonsynostotic plagiocephaly.

Table 4. Characteristics of studies included in the literature review on conservative management of nonsynostotic plagiocephaly in infants

Author	Year	Study Design	Intervention / Focus	Main Findings
Amiel-Tison & Soyez-Papiernik [8]	2008	Clinical study	Osteopathic therapy	Improvement in cranial symmetry
Bagagiolo et al. [14]	2019	Clinical study	Osteopathic manipulative treatment	Improvement in cranial symmetry
Bialocerkowski et al. [1]	2008	Systematic review	Conservative management	Reduction in cranial asymmetry across conservative interventions
Blanco-Díaz et al. [2]	2023	Systematic review	Conservative treatment	Overall improvement in cranial shape reported
Cabrera-Martos et al. [9]	2016	Randomized controlled trial	Manual therapy + repositioning	Reduced treatment duration and improved motor development
Collett et al. [4]	2011	Cohort study	Developmental assessment	Developmental differences observed in affected children
Ellwood et al. [3]	2020	Systematic review	Conservative interventions	Conservative treatment considered effective and safe
Esparza Rodríguez et al. [15]	2007	Clinical protocol	Preventive positioning	Prevention of skull deformity
Filisetti et al. [16]	2020	Observational study	Osteopathic treatment	Improvement in cranial symmetry
González-Santos et al. [6]	2020	Comparative study	Physiotherapy vs helmet therapy	Both methods effective depending on severity
Kennedy et al. [5]	2009	Observational study	Motor development assessment	Delayed milestones observed in some infants
Kim et al. [7]	2013	Comparative study	Helmet therapy vs positioning	Faster correction with helmet therapy

Author	Year	Study Design	Intervention / Focus	Main Findings
Lessard et al. [10]	2011	Clinical study	Osteopathic treatment	Reduction in cranial asymmetry
Ola et al. [17]	2022	Longitudinal study	Behavioral assessment	Behavioral/developmental differences reported
Pastor-Pons et al. [11]	2021	Randomized controlled trial	Integrative manual therapy	Improved cervical mobility
Pastor-Pons et al. [12]	2021	Clinical trial	Manual therapy	Reduced plagiocephaly severity
Van Vlimmeren et al. [13]	2008	Clinical trial	Physiotherapy intervention	Reduced plagiocephaly prevalence

Discussion

The findings of this literature review suggest that conservative therapeutic interventions are important in the management of nonsynostotic plagiocephaly. In particular, osteopathic and manual therapy appear to offer clinically relevant benefits in improving cranial symmetry, cervical mobility, and selected functional outcomes when incorporated into individualized treatment strategies.

Osteopathic treatment is based on the assumption that restoring mobility of cranial and cervical structures may reduce asymmetrical mechanical loading on the infant skull and facilitate more symmetrical cranial growth [8, 10]. Several included studies reported improvement in cranial symmetry following osteopathic intervention; however, the currently available evidence remains limited by relatively small sample sizes and heterogeneity of treatment protocols.

Manual therapy demonstrated beneficial effects particularly in infants presenting with cervical dysfunction, positional preference, or coexisting congenital muscular torticollis [9, 11, 12]. By improving cervical range of motion and reducing muscular restrictions, manual interventions may indirectly reduce persistent asymmetrical loading forces contributing to skull deformation.

At the same time, the reviewed literature indicates that plagiocephaly management should not rely exclusively on a single treatment modality. Physiotherapy, repositioning interventions, and parental education remain essential components of first-line conservative management, particularly in

mild to moderate deformities [3, 13]. Helmet therapy continues to represent an effective treatment option in more severe cases or when first-line conservative management fails to achieve satisfactory correction [6, 7].

Importantly, the available evidence suggests that early intervention is consistently associated with improved outcomes across treatment modalities [3, 9, 13]. This likely reflects the greater plasticity of the infant skull during the first months of life and the increased responsiveness of early developmental neuromuscular patterns to therapeutic modification.

Nevertheless, interpretation of current evidence should remain cautious. Considerable heterogeneity exists across studies with respect to intervention protocols, treatment duration, outcome measures, and methodological quality [2, 3]. Furthermore, many studies evaluate multimodal interventions, making it difficult to determine the isolated effectiveness of specific treatment approaches.

Overall, current findings support the inclusion of osteopathic and manual therapy as potentially valuable components of multidisciplinary conservative management; however, stronger evidence from large randomized controlled trials is required before definitive treatment recommendations can be established.

Limitations

Several limitations of this literature review should be acknowledged. First, the review included only studies indexed in the PubMed database and limited to English-language full-text publications, which may have resulted in omission of relevant studies published in other databases or languages. Second, the available literature demonstrates substantial methodological heterogeneity with respect to study design, sample size, intervention protocols, treatment duration, and outcome measures, limiting direct comparability across studies. Third, many included studies evaluated multimodal therapeutic interventions rather than isolated treatment modalities, making it difficult to determine the independent effectiveness of specific approaches. Finally, the relatively limited number of high-quality randomized controlled trials reduces the strength

of the available evidence and highlights the need for further well-designed prospective research.

Clinical Implications

Early recognition and individualized management of nonsynostotic plagiocephaly are essential to optimize treatment outcomes. Clinical decision-making should consider deformity severity, associated cervical dysfunction, developmental status, infant age, and parental preferences when selecting an appropriate therapeutic strategy.

A multidisciplinary conservative management approach involving pediatricians, physiotherapists, osteopaths, and other pediatric rehabilitation specialists may provide the greatest therapeutic benefit, particularly in infants presenting with both cranial asymmetry and associated functional impairments.

Hands-on therapeutic approaches such as osteopathic and manual therapy may represent useful adjunctive interventions in selected cases, particularly when cervical dysfunction or musculoskeletal asymmetry contributes to persistent deformational forces.

Conclusions

Nonsynostotic plagiocephaly is a common cranial deformity in infancy with potential structural, functional, and developmental implications. Conservative therapeutic approaches appear to be important in the management of this condition and may improve cranial symmetry and associated functional outcomes.

Among available conservative strategies, osteopathic and manual therapy appear to be promising adjunctive interventions, particularly when integrated within multidisciplinary treatment plans tailored to the individual patient.

Early therapeutic intervention remains a key factor associated with improved treatment outcomes. However, further high-quality randomized controlled trials are required to establish standardized treatment protocols and determine the long-term effectiveness of specific conservative therapeutic approaches.

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