



EFFECT OF COMPREHENSIVE APPROACH ON FEEDING ABILITY OF INFANT WITH FACIAL NERVE PALSY & MICROTIA GRADE 4: A CASE REPORT

Dr Shailaja Sandeep Jaywant*

Assistant Professor in Occupational Therapy, L.T.M.Medical college & G.Hospital, Sion ,Mumbai 400022 *Corresponding Author

Dr Mansi Manoj Mulye

Assistant Professor in Occupational Therapy, L.T.M.Medical college & G.Hospital, Sion ,Mumbai 400022

Dr Pritam V Mehta

Clinical Therapist ,Occupational Therapy Dept, L.T.M.M.C.& G.Hospital, Sion, Mumbai-400022

Dr.Pradhnya N Lonare

2nd M.O.Th , Occupational Therapy Dept, L.T.M.M.C.& G.Hospital, Sion, Mumbai,400022

ABSTRACT

Facial nerve palsy is a condition with several implications, particularly when occurring in childhood. It can be congenital or acquired. The unilateral facial paralysis can be suspected when, in absence of front and nasolabial groove motility, there is also asymmetry of the face with buccal deviation when crying. The custom-made Facial splint of low-temperature thermoplastic material can support the weak muscle & prevent the deviation. The infant was referred to Occupational Therapy with facial palsy grade IV. The aim of our study is evaluating the immediate functional outcome, while using the custom-made splint. The patient was assessed twice (i.e. Baseline & after 6 weeks) on Neonatal Behavioral Assessment scale (NBAS), Neonatal Oral Motor Assessment Scale (NOMAS), Nonnutritive sucking scoring system, Preterm Infant Feeding Readiness Assessment Scale & Parent stress scale was used to track the feeding readiness & parental stress respectively during intervention. On NBAS, Level 3 to level 5. On NNSS, infant scored 2 to 6 scoring system on non-nutritive sucking & on NOMAS baby scored from 19 to 22. Her ability to initiate suck was improved considerably. Improvement in scores of Preterm Infant Feeding Readiness Assessment Scale at baseline & after 6 weeks. Infant scored 65 to 57 on Parent Stress Scale. In this study, Family Centered approach & the need-based intervention, a custom-made facial splint of low-temperature thermoplastic material along with face strap effective to facial palsy patient, along with conventional Occupational Therapy intervention.

KEYWORDS : Facial Nerve Palsy, Need-based intervention, facial Splint

INTRODUCTION:

Facial nerve palsy is a condition with several implications, particularly when occurring in childhood. It represents a serious clinical problem as it causes significant concerns in doctors because of its etiology, its treatment options and its outcome, as well as in little patients and their parents, because of functional and aesthetic outcomes. There are several described causes of facial nerve paralysis in children, as it can be congenital (due to delivery traumas and genetic or malformities diseases) or acquired (due to infective, inflammatory, neoplastic, traumatic or iatrogenic causes). Nonetheless, in approximately 40% -75% of the cases, the cause of unilateral facial paralysis still remains idiopathic.¹

In a very young children and in newborns, the unilateral facial paralysis can be suspected when, in absence of front and nasolabial groove motility, there is also asymmetry of the face with buccal deviation when crying. In cases of severe paralysis, the child cannot close the eye due to a complete absence of movement on the affected side and there is an asymmetry of the face at rest. In newborns, this condition can also hamper breastfeeding.²

In all the cases, the occurrence of facial nerve palsy in children represents a serious clinical problem also due to the functional and aesthetic outcomes affecting the quality of life; this feature is cause of significant concern in the little patients and their parents as well as in doctors.¹ The severity of FNP's must be estimated using a grading system, as it aids in the assessment of recovery or progression in medical follow-up clinics. The House-Brackmann facial nerve grading system is one of the most commonly used tools for clinical assessment.³

To reduce this difficulties, custom-made Facial splint of low-temperature thermoplastic material can support the weak muscle & prevent the deviation. The infant was referred to us

with facial palsy grade IV. In such cases, facial splint is an option, but absence of pinna of ear/external ear posed the problem to secure the splint on appropriate harnessing area.

The facial splint was made along with face strap was given. This treatment is designed to decreased functional limitations, while breast-feeding. The aim of our study is evaluating the immediate functional outcome, while using the custom-made splint.

As per House-Brackmann facial nerve grading system:

Stage	Description
I	No paresis: normal function
II	Mild paresis: no deformity at rest
III	Moderate paresis: obvious difference from the other side, no deformity at rest, synkinesis, total closure of eyelids at maximum effort
IV	Moderately severe paresis: disfiguring asymmetry, synkinesis, eye closure incomplete at maximum effort
V	Severe paresis: asymmetry at rest (ptosis of the labial commissure, effacement of the nasolabial fold), some visible residual movements
VI	Complete paralysis: atony at rest, no active movement

METHODS:

The study were conducted in tertiary care government hospital. 2 months 15 days old female child born with non-consanguineous marriage was 1st child G1P1. Child born with Full term, LSCS delivery with Breech presentation, cried immediately after birth with birth weight 2090 grams, child was not accepting feeds orally & has Left side Anotia/Microtia grade 4 (absence of complete external ear), has difficulty in sucking milk, there is also spillage of milk when feed with vati-spoon, facial asymmetry (Deviation of mouth on right side),

Baby shows absence of Left ear pinna. Baby was admitted to PU on same day and was kept on RT feeds as baby was accepting feed well. After clinical investigations baby was diagnosed as a case of Left Facial nerve Palsy with Left middle ear atresia (Grade III Microtia) with Patent Ductus Arteriosus. Based on clinical presentation baby was referred to Occupational Therapy for management in November 2021. Most facial palsies resolve spontaneously within several days; total recovery may require several weeks or months. Electrodiagnostic testing is beneficial in predicting recovery; repeatedly normal nerve excitability indicates a good prognosis, but decreased or absent excitability early in the course suggests a poor outlook.⁴ The probable outcome in this infant could not be assessed with nerve conduction study, as the first preference was weight gain & improving infant's ability to feed before further procedures. Written consent was obtained from parent using Helsinki guidelines. Parents were informed of the possible benefits of the splint.

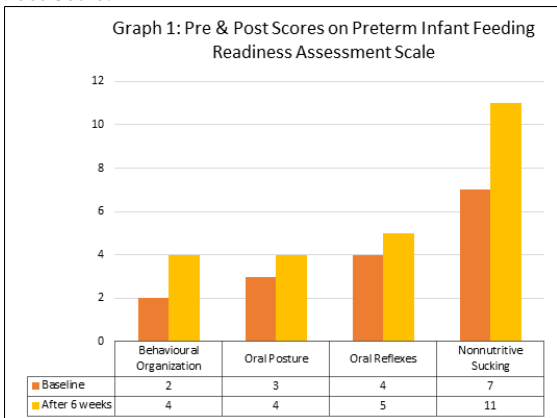
Occupational Therapy Intervention: After taking due consent from Neonatologist & using procedural clinical reasoning, custom-made facial splint of low-temperature thermoplastic material along with face strap was given (Illustration 1). The splint was made in two parts. First, strap around the face and head; secondly, facial splint of low thermoplastic material. The patient was assessed twice (i.e. Baseline & after 6 weeks) on Neonatal Behavioral Assessment scale (NBAS). In most Neuro Muscular Disorders in children the triggering and timing of swallowing in the bulbar region is normal, so that dysphagia is mainly related to weakness of the oral muscles rather than to incoordination of sucking, swallowing, and breathing. This emphasizes the need for a thorough feeding and swallowing assessment, in order to make the right decisions regarding food adaptation or other interventions.⁵



Neonatal Oral Motor Assessment Scale (NOMAS)⁶, Nonnutritive Sucking Scoring System⁷, Preterm Infant Feeding Readiness Assessment Scale⁸ & Parent stress scale⁹ was also used to track the feeding readiness & parental stress during intervention.

RESULTS:

Follow up was taken after six weeks of using Modified facial splint with face strap. She was evaluated on NBAS, NNSS, Preterm Infant Feeding Readiness Assessment Scale & Parent Stress Scale.



On NBAS, Level 3 (Awake/ Transition state) to level 5 (Active alert). On NNSS, infant scored 2 to 6 scoring system on non-nutritive sucking & on NOMAS baby scored from 19 to 22. Her ability to initiate suck was improved considerably. Graph 1 shows scores of Preterm Infant Feeding Readiness Assessment Scale at baseline & after 6 weeks. On Parent Stress Scale, she scored from 65 to 57, which reduced stress, more confident to handling the baby.

DISCUSSION:

Person-Environment-Occupation performance model was used while considering the problems in performing basic occupation of feeding in this infant. Thus as this infant lacked the pinna of ear custom-made facial splint of low-temperature thermoplastic material along with face strap was moulded using all guidelines. After counselling of the mother, proper positioning, regular oral motor stimulation, feeding with splint was improved. Shyni M (2021) stated that the weak muscles are suitably supported by a well-executed splint, which aids in muscle retraining. Splinting, in general, aids in the retraining of paralyzed facial muscles by maintaining symmetry and facilitating paralyzed muscles, preventing over activity of normal muscles, and acts as a stabilizing mechanism by promoting a desired symmetrical movement pattern that must be repeatedly reinforced before it can be learned (Croxon et al, 1990; Kate, 2010).¹⁰

On NOMAS scoring baby had shown the better ability, was able to initiate & sustain the suck after 2 weeks of intervention with stimulations & use of splint. Previous research on the management of bilateral Bell's palsy utilizing a novel method of mouth splinting and found it to be effective. The splinting procedure developed by Dr. Vijay Batra (2007) was founded on the concepts of neuromuscular re-education, neurophysiology, and biomechanics. Irradiation and temporal and spatial summation can be used to strengthen or assist weak or paralyzed muscles, according to the study, it can be established a thorough appropriate therapeutic regimen with splinting.¹¹ The splinting protocol incorporates all of the above principles and serves the primary goal of preventing asymmetry and over-pulling of paralyzed muscles. The use of splint during feeding facilitates & reinforces movement in a graded manner, and maximizes functional use of affected muscles.¹⁰ The use of splint has also helped in enhancing the oral reflexes which are used for developing feeding abilities.

The result can be attributed to neuro muscular re-education, neurophysiology and biomechanics by correcting the vector required for intended direction of movement, avoiding asymmetry. The infant was given oral motor stimulations along with the mother's counselling on positioning during breastfeeding or spoon feeding. The appropriate use of muscle stimulations & the biomechanical approach used during feeding enabled infant to swallow effectively during feeding & organizing sucking burst. This has also helped in reducing parents' stress. The family centred approach was more helpful in considering their feeding problem. Early intervention with family centred approach capitalizes on infants' and toddlers' rapid brain development and increases the likelihood that a child's quality of life will be higher. McGuire says that practical advantage of focusing on everyday environments is sustain ability by identifying families need to be able to support their children's development with available resources.¹²

The long term follow up with this infant has also shown the encouraging results. Further follow-up till the infants gets fitness for neurosurgical intervention is recommended by neonatologist. In the last follow-up mother had complained inability to use splint throughout the day, when baby was awake, as infant had become more active, with midline

orientation activities was pulling back the splint. Therapist advised the mother continue using splint during feeding till her surgery.

CONCLUSION

As an early intervention provider collaboration with the family has enabled us to develop infants strengths and provide need based intervention. The family was trained to identify changes in the infant's development within everyday routines & continue using facial splint. The study the need-based intervention, a custom-made facial splint of low-temperature thermoplastic material along with face strap effective to facial palsy patient, along with conventional Occupational Therapy intervention.

REFERENCES:

1. Ciorba, A., Corazzi, V., Conz, V., Bianchini, C., & Aimoni, C. (2015). Facial nerve paralysis in children. *World journal of clinical cases*, 3(12), 973-979. <https://doi.org/10.12998/wjcc.v3.i12.973>
2. Khair, A. M., & Ibrahim, K. (2018). Idiopathic Non-traumatic Facial Nerve Palsy (Bell's Palsy) in Neonates; An Atypical Age and Management Dilemma. *Oman medical journal*, 33(1), 65-68. <https://doi.org/10.5001/omj.2018.12>
3. Wohrer, D., Moulding, T., Titomanlio, L., & Lenglar, L. (2022). Acute Facial Nerve Palsy in Children: Gold Standard Management. *Children (Basel, Switzerland)*, 9(2), 273. <https://doi.org/10.3390/children9020273>
4. van den Engel-Hoek, L., de Groot, I. J., de Swart, B. J., & Erasmus, C. E. (2015). Feeding and Swallowing Disorders in Pediatric Neuromuscular Diseases: An Overview. *Journal of neuromuscular diseases*, 2(4), 357-369. <https://doi.org/10.3233/JND-150122>
5. van den Engel-Hoek, L., de Groot, I. J., de Swart, B. J., & Erasmus, C. E. (2015). Feeding and Swallowing Disorders in Pediatric Neuromuscular Diseases: An Overview. *Journal of neuromuscular diseases*, 2(4), 357-369. <https://doi.org/10.3233/JND-150122>
6. Palmer, M. M., Crawley, K., & Blanco, I. A. (1993). Neonatal Oral-Motor Assessment scale: a reliability study. *Journal of perinatology : official journal of the California Perinatal Association*, 13(1), 28-35.
7. Smith, J.R. (2013). Impact of a novel relaxation method of touch on neonatal neurobehavioral development among very preterm infants. <https://www.semanticscholar.org/paper/Impact-of-a-novel-relaxation-method-of-touch-on-Smith/d76816f2e252975c14f4ffbea0013a3fbb8a65e5>
8. Chang, Y. J., Hao, G., Ni, A., Layton, T., Huang, J. Y., Yang, S. F., & Chen, S. C. (2022). Preterm oral feeding scale to assist in deciding initial oral feeding of preterm infants in neonatal intensive care units. *Pediatrics and neonatology*, S1875-9572(22)00019-5. Advance online publication. <https://doi.org/10.1016/j.pedneo.2021.12.008>
9. Outcome & Experience Measures. (2022). Retrieved 10 May 2022, from <https://www.corc.uk.net/outcome-experience-measures/>
10. M, s. (2022). Efficacy of facial splint in improving facial symmetry in the management of bell's palsy among community dwellers | *International Journal of Development Research (IJDR)*. Retrieved 8 May 2022, from <https://journalijdr.com/efficacy-facial-splint-improving-facial-symmetry-management-bell%E2%80%99s-palsy-among-community-dwellers>
11. Batra, Vijay & BATRA, DR. (2008). Vijay Batra & Meenakshi Batra; To study & compare the efficacy of functional dynamic taping protocol over conventional treatment protocol for the patients with bell's palsy, *Indian Journal of Occupational Therapy 2007*; Vol. XXXIX (2); 35-40. *Indian Journal of Occupational Therapy*. XXXIX. 35-40.
12. Iversen, M. D., Shimmel, J. P., Ciacera, S. L., & Prabhakar, M. (2003). Creating a family-centered approach to early intervention services: perceptions of parents and professionals. *Pediatric physical therapy: the official publication of the Section on Pediatrics of the American Physical Therapy Association*, 15(1), 23-31. <https://doi.org/10.1097/01.PEP0000051694.10495.79>