

TASK OF SPEECH THERAPIST IN THE CARE OF NEWBORN BABIES WITH SUCKING PROBLEMS

Jana Tabachová

Palacký University in Olomouc, Czech Republic

Kateřina Vitásková

Palacký University in Olomouc, Czech Republic

Abstract. *This article points to the importance of speech therapy already in the neonatal period. When a baby is born, he should be equipped with primary reflexes that allow us to survive (e.g. sucking and swallowing). Food intake and physiological sucking is a prerequisite for adequate development of oral motor functions. If baby is not able to suck or suction is insufficient, we stop the breastfeeding and the baby is feeding by alternative method like nursing bottle, syringe or nasogastric tube. Mother often will not return to the breastfeeding. The task of the speech therapist is using stimulation to activate sufficient sucking reflex and using the child to swallow properly. When baby has no problem with swallowing, he constitutes a prerequisite for the proper development of oral motor functions and consequently speech. In the introduction of this article we deal with the theoretical definition of the problem- the classification of newborn, development of sucking and swallowing, the importance of breastfeeding. In the second part of this article we write about stimulation of sucking and swallowing in high birth weight infants and low birth weight infants. Data were obtained through interviews with parents, they completed anamnestic questionnaire, therapists observed and works with babies.*

Keywords: *newborns, oral motor function, orofacial stimulation, speech development, speech therapy, sucking problems.*

Introduction

The aim of the paper is to share the experience how to work with children who are born by C-section and have problem with sucking. From the perspective of speech therapists it is necessary to check the correct function of sucking reflex after the birth of these babies. Weak sucking reflex often leads to difficulties with breastfeeding, babies are bottle fed and in this period can start creating differences in speech development.

Neonatal period lasts six weeks after childbirth. This is a period of adaptation to the new environment. Child has to adapt to new internal and external conditions. We distinguish newborn after gestational age, after birth weight and after proportion between birth weight and gestational age. In terms of birth weight of infants can be divided into five categories:

- high birth weight infants (4500g or higher),
- newborns with normal birth weight (2500 g- 4499 g),
- neonates with low birth weight (less than 2500 g),
- infants with very low birth weight (less than 1500 g) and
- newborns with extremely low birth weight (less than 1000 g).

Based of gestational age babies are classified as premature newborns (to 36 weeks and 6 days), full term (from 37 weeks to 41 weeks and 6 days) and at the transmitted (42 weeks and more). We divided newborns according to gestational age and birth weight into three categories: eutrophic newborns (weight corresponds to achieved by gestational age), hypotrophic neonate (SGA- small for gestational age) and hypertrophic infant (LGA- large for gestational age) (Poláček, 1981; Pugnerová & Šimíčková-Čížková, 2008; Dort et al., 2013).

Child's first experiences in sucking are already in the prenatal period. We observed in fetal swallowing movements already in the 13th to 14th week (the beginning of the swallowing reflex). In the 15th week of prenatal age we can see at the ultrasound child's sucking movements- fetus sucks his fingers. From the 17th week increases the amount of suction and swallowing movements of the fetus. The pattern of these movements is: movement of the tongue backwards and forwards, regular opening of the mouth and rhythmic movements of the jaw. Through regular practice of sucking we can improve swallowing pattern. Between 30th and 34th week of maturation the ability to coordinate sucking, swallowing and breathing is developing. A child born in the 39th week of pregnancy should show a definite oral reflexes, reactions and adequate coordination of sucking, swallowing and breathing (Arvedson & Brodsky, 2002; Biber, 2014).

Immediately after birth rooting reflex is activated by touching the baby's face. The baby reacts by turning a header for this initiative, at the same time he opens his mouth and looking for what might suck. Reaction of turning the head from one side to the other occurs in premature and full term infants. This reflex should disappear within the first month of life. If there is inserted a nipple or a finger into the child's mouth, sucking reaction occurs. Sucking reflex allows the baby immediately after birth start to suck food. This reflex is described as the process during milk extraction from the breast through nipple, by compression of the nipple against palate, by rhythmical movements of the surface of the tongue. This reflex is mediated at the level of the pons and the medulla oblongata, there are participate V., VII., IX. and XII. cranial nerves. Change from sucking to suckling is in two to three months so it becomes more effective and activity engages the lower jaw. Involuntary intake should be inhibited between 6 months and a year. However, if it's activated properly or is activated later than the time of birth, it can leads to its persistence. If the activity of rooting and suckling reflex persist, we can see some of these problems: hypersalivation, frontal or interdental

position of tongue, formation of high and narrow palate, drooling, leaking, child doesn't want to eat different consistence of food, it has difficulty coordination of speech and breathing, it has increased need for oral stimulation (thumb suckling, suckling hair, biting pencils, shirts etc.). Persistent or inadequate sucking reflex may be a sign of brain damage. (Love & Webb, 2009; Volemanová, 2013).

Initial suction is usually irregular, uncoordinated and poor. In this case we are talking about non-nutritive suction when the child is not yet ready to suck breast milk from the breast, it is recommended to feed the child different way. With the increase activity of the child the amount of received milk from the breast during breastfeeding increases and the numbers of breastfeeding during the day increase too (Čapková in Janáčková & Kantor, 2015).

Breastfeeding is the natural way to feed newborns and infants. It is individual according taste and need of the child. Infant should be breastfed for at least 6 months. Benefits of breastfeeding include immunological factors, the optimum diet composition for healthy grow and development, the prevention of lifestyles diseases, support for the development of the child and the child's mother ties, economic profitability. Mother must learn how to properly breastfeed her child. After birth, lactation occurs physiologically. It starts the production of prolactin which begins milk production. Neonate stimulates nipples by his sucking and facilitates greater milk production. Breastfeeding mother must observe sufficient drinking regime. She must be careful because some herbal teas can decrease lactation e.g. sage, mint, ginseng, St. John's wort, Echinacea and aloe. If a child doesn't have a sufficiently developed sucking reflex or milk production is not sufficient, it performs stimulation stoking baby to the breast (must not be accompanied by a fear of failure and stress) (Frühau, 2011; Mydlilová, 2011; Janáčková & Kantor, 2015). Dort et al. (2013) reported that in the Czech Republic approximately 95 % of newborns are breastfed after discharge from hospital and the portion of children who are breastfed for longer than six months is about 60 %.

Sucking affects the development of the hard palate and jaw. Muscles of the tongue, lips and chewing muscles gradually involve to the sucking and influence oral conclusion and articulation itself, which we understand as the fines motor act. During breastfeeding all muscles in the orofacial area are symmetrically activate - elevation movements of the tongue, contraction of the lips is ongoing. When the baby is drinking from the inappropriate bottle, orofacial muscles are insufficiently active, the lips are hypotonic. Facial muscles are mainly involved during sucking. Sucking plays a very important role in the development of feeding, speech and language. In the course of sucking from the nipple or bottle, the cheeks are pulled inward and up, milk is moved towards the back of the tongue and initiated a swallow. A very similar pattern we can see in the development of fricative sounds. A pre-cursor for the development of the intra-oral pressure and oral closure

required for explosive sounds is the good lip closure around the nipple or bottle. When the tongue compresses the nipple, it becomes more strength. Tongue strength is very important for sounds like “L” and “R” (Morris, 1998; Biber, 2014; Fábianová, 2014).

It should be noted that the feeding skills are not the pre-cursor to talking. Feeding plays an important role. Children with problems of oral control during feeding may have the same oral difficulties during talking (Morris, 1998).

Research methodology

The aim of this article is to demonstrate the benefits of speech therapy from birth. In order to achieve the aim of the research, the qualitative research was chosen.

The objectives of the research study are as follows:

- To determine the ability of suckling in babies born by C-section
- To identify stimulations techniques to improve suction of these individuals.

The following criteria were used to form the **research sample**:

- Babies not born before 33th weeks of pregnancy
- Infants born by C-section
- Child development monitored at least four months and was documented.

The research sample included one boy and one girl.

Case 1: Monitoring of the five months long course of orofacial stimulation. The therapy began when the boy was two days old. The boy was transmitted, the weight was high so we can say that the boy was hypertrophic.

Case 2: A girl was born premature with low birth weight. She was hypotrophic. We observed the girl from the first day of her life into her six months.

Data collection was performed by means of interviews with parents, analysis of medical documentation and analysis of therapeutic techniques. These therapeutic techniques included stimulation of sensorimotor zones, stimulation of facial muscles, tongue muscles and movements. All relevant data relating to individual cases were collected.

During interview with parents we asked questions about their medical history- how old were they at the time of becoming pregnant, if they were healthy or had problems with blood pressure, cholesterol, sugar etc. We asked if they had heart diseases, hormonal diseases, neurological diseases, psychiatric illness or any other illness. Then we inquired the mother about pregnancy- if there were complications or everything was alright, which examinations she underwent

during pregnancy and what was the outcome. We interviewed with doctors too. We asked about the court of labor and the newborns reactions and adaptations.

Results of individual cases

Case 1

The hypertrophic boy was born to the 31 years old mother and 37 years old father as a second child. Both parents were healthy, they had no diseases. Their first baby was born full-term with normal weight and without complications. During pregnancy mother underwent ultrasound examination and other routine examinations. Because she felt older, she opted for genetic testing. These tests were without pathological findings.

The baby was born in the 42th week of pregnancy during C-section because during ultrasounds examination the doctor found out that the weight of the baby is almost 5000 g. After birth the baby cried, Apgar score was 10-10-10. Baby's weight was 4736 g and length was 52 cm. After washing the child was wrapped in blankets and carried away to the nursery. The child's mother was taken to the surgery department.

The first try of breastfeeding was 16 hours after birth. Mother had weak lactation and the child could not suck and started crying. Nurse took baby away and fed him with a syringe. Next attempt of breastfeeding was 21 hours after birth. This try was identical to the previous attempt. Mother lactation was still weak. The situation did not improve following day.

After examination of the speech therapist it was recommended to initiate stimulation to improve the sucking reflex. It was also very important to train mother in breastfeeding techniques and opportunities to improve lactation. The child was transferred to the mother's room as soon as possible. Mother was in near contact to her baby, she attached him to her breasts regularly. She used a mechanical suction and she tried to stimulate the breasts for greater lactation. She put milk into the special bottle- Supplemental Nursing System (SNS). When the baby started suck, milk flowed from the tube to the nipple. Sucking wasn't so heavy for child and during this process, baby stimulated lactation.

Because the child had weak sucking reflex, speech therapist performed the stimulation of sensorimotor zones on the face and in the mouth. Simulating contractions on the crown of the head, by rhythmically applying and re-applying pressure was very helping. The boy had problem with coordination sucking, swallowing and breathing so mother had to do regularly pauses during feeding. It was necessary to change child's position during feeding because the baby began to aspire and vomit. The optimal position of the baby was between 120 and 140. After two days of these stimulation activities and feeding with SNS baby was fully breastfed. Fifth day after birth the baby was breastfed without SNS. The baby was

released from hospital 7th day after birth. Three weeks after the birth, the mother discovered health complications that led to the termination of breastfeeding. The transition to a bottle feeding was very complicated and child vomited often. For this reason child remained in the care of speech therapist into 5 months of age when he began eat food with a spoon. There was no another problem with feeding.

Case 2

The hypotrophic girl was born to the 28 years old mother and 30 years old father as a first child. Both parents were healthy, they had no diseases. During pregnancy mother underwent ultrasound examination and other routine examinations. There was no need to conduct further tests.

In the 34th week of pregnancy, the mother began to have great pain and was taken to hospital. After arrival at hospital amniotic fluid drained and because the child was small, doctors performed a C-section. After birth the baby cried, Apgar score was 7-9-10. Baby's weight was 2384 g and length was 44 cm. After washing the child was wrapped in blankets and carried away to the nursery. The child's mother was taken to the surgery department.

The first try of breastfeeding was 4 hours after birth. Baby was in longer contact with mother than in first case. Lactation was good but the baby had problem with sucking from the breast. Mother sucked off milk and fed daughter with a syringe. After next 3 hours they tried it again but there was same problem. They tried it four times but baby's sucking reflex was very weak.

After examination of the speech therapist it was recommended to initiate stimulation to improve the sucking reflex. The mother's techniques of breastfeeding were good and lactation was sufficient. The girl had hypotonic facials muscles, activity of tongue was inadequate and suckling reflex was almost absent.

Speech therapist began to massage the orofacial muscles by pressure and slightly vibration. With little finger speech therapist stimulated sensorimotor zone in mouth and performed massage of tongue. Simulating contractions on the crown of the head, by rhythmically applying and re-applying pressure was ineffective at first day of life, because the baby was after this simulation very restless. After three day sucking reflex was better but still not so strong for breastfeeding. Because girl was generally hypotonic doctors made neurological examinations. After eight days from birth mother started with breastfeeding but it was still necessary to feed the baby with syringe. From 22th day from birth the baby was fully breastfed. At this time the girl is 6 months old. She is still in the neurological care for hypotonic syndrome and she is in speech therapist care too.

In the table 1 we compered basic information of the Case 1 and Case 2 to the better comparison.

Table 1 **Basic information of the Case 1 and Case 2**

	Case 1	Case 2
Week of pregnancy	42 th	34 th
Weight	4736g	2384g
Height	52cm	44cm
Apgar score	10-10-10	7-9-10
1st try of breastfeeding	16 hours after birth	4 hours after birth
Sucking reflex	Very weak	Very weak
Lactation	Very weak	good
2nd try of breastfeeding	21 hours after birth	7 hours after birth
Sucking reflex	Very weak	Very weak
Lactation	Very weak	good
1st visit of Speech therapist	2 nd day of life	1 st day of life
1st day of full breastfeeding	5 th day of life	22 th day of life
Motor development	normal	Delayed 3-4 weeks
Pre- verbal vocalization	Normal	The girl is quitter, slightly recognizable sounds production
Complication	Impossibility of breastfeeding→ bottle feeding	Hypotonic syndrome

In both cases it was necessary to teach mothers how to do these techniques because they had to stimulate their babies many times per day. Speech therapist controlled both babies two times per day and evaluated other procedures. In the table 2 we can see summary of stimulation techniques using in the both cases.

Table 2 **Summary of stimulation techniques**

	Case 1	Case 2
Massage of orofacial muscles	Yes	Yes
Stimulation of lip seal	No	Yes
Stimulation of sensorimotor zone in the mouth	Yes	Yes
Massage of the tongue	No	Yes
Changing position during feeding	Yes	No
Using SNS bottle	Yes	No
Simulating contractions on the crown of the head	Yes	No- at the first day Yes- from second day
Pressure to the palm during feeding	Yes	Yes

Conclusions

The first aim of this research study was to determine the ability of sucking by babies born by C-section. In these cases we describe two babies born by unplanned C-section. Both infants had problems with sucking. In the Case 1 there was complication with mother's lactation too. Speech therapist helped mother to improve her lactation (stimulation, SNS bottle) and helped the baby to improve his sucking reflex. So the baby was fully breastfed fifth day of life. In the Case 2 mother had good lactation but baby had very weak sucking reflex. In the first days of life they diagnosed her hypotonic syndrome. Speech therapist helped to detect this problem and improved sucking and feeding skills of the baby.

Second aim of this article was to identify stimulations techniques to improve suction of these individual. We can see in the table 2, that these stimulations techniques were similar in both cases: massage of orofacial muscles, stimulation of sensorimotor zone in the mouth, simulating contractions on the crown of the head and pressure to the palm during feeding. In the case 1 it was necessary to change position during feeding and at the first days boy's life to use SNS bottle. In the case 2 it was necessary to stimulate lip seal and to make massage of the tongue.

The last aim of this paper was to highlight the importance of speech therapy already in the neonatal period. In the Czech Republic all hospitals don't have availability of their own speech therapists. If a speech therapist works in a hospital, he often works at neurological or ENT departments. It is necessary to have speech therapist at neonatology department. When the baby is born, we couldn't now if he will have any problems with primary reflexes like sucking and swallowing. If there is baby with these problems, we will find out that we have lack the trained staff, which could help the baby and the mother. It is necessary to have somebody who will teach mother how to breastfeed her baby and if there is a problem with sucking or swallowing how to feed them. It is necessary to teach mothers how to stimulate their babies because only they are with babies most time of the day. We described two cases of children with sucking problems. Early intervention improve sucking and breastfeeding. We will continue to monitor children's development.

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References

- Arvedson, J., & Brodsky, L. (2002). *Pediatric swallowing and feeding: assessment and management*. 2nd ed. Albany, NY: Delmar Publishers.
- Biber, D. (2014). *Frühkindliche Dysphagien und Trinkschwächen*. Springer Berlin Heidelberg.
- Dort, J., Dortová, E., & Jehlička, P. (2013). *Neonatologie*. Praha: Karolinum.
- Frühauf, P. (2011). Kojenecká výživa a její význam pro budoucí zdravotní stav. *Lékařské listy*, 8, 25-26.
- Janáčková, L., & Kantor, L. (2015). *Maličké miminko: praktický průvodce pro rodiče předčasně narozených dětí*. Brno: Grifart.
- Morris, S. (1998). Feeding and Speech Relationships. Downloaded from: <http://www.new-vis.com/fym/pdf/papers/feeding.8.pdf>
- Mydlilová, A. (2011). Kojení donošených novorozenců. *Česká gynekologie*. 76, 44-46.
- Poláček, K. (1981). *Fyziologie a patologie novorozence*. Praha: Avicenum.
- Šimíčková-Čížková, J. (2008). *Přehled vývojové psychologie*. Olomouc: Univerzita Palackého.
- Fábianová, A. (2014). *Orofaciální a bazální stimulácia*. Havlíčkův Brod: Tobiáš.
- Love, R., & Webb, W. (2009). *Mozek a řeč: neurologie nejen pro logopedy*. Praha: Portál.
- Volemanová, M. (2013). *Přetrvávající primární reflexy*. Praha: Volemanová Marja Annemiek-Red Tulip.