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Feeding Accommodations for Infants with a Cleft Lip and/or Palate

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FEEDING ACCOMMODATIONS FOR INFANTS WITH A CLEFT LIP AND/OR
PALATE

by

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A Research Paper
Submitted in Partial Fulfillment of the Requirements for
the
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A Research Paper Submitted in Partial

Fulfillment of the Requirements

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in the field of Communication Disorders and Sciences

Approved by:

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Introduction

Clefts of the lip and palate are the most common form of craniofacial malformations in the world, affecting one out of every 940 infants (Center for Disease Control and Prevention, 2012). Infants with a cleft lip/palate may have difficulty in feeding and a lack of growth due to the deficit, affecting not only the nutrition of the infant, but the parents as well; because they may experience a tremendous amount of stress if their child is not eating properly. According to Glass and Wolf (1999), clefts of the lip and/or palate are congenital defects that alter the oral-facial anatomy potentially, adversely affecting feeding abilities (p.70). Most infants with cleft lip and/or palate need at minimum minor feeding modifications to achieve safe and efficient oral feeding in the newborn stage (Arvedson & Brodsky, 2002, p.529).

Two forms of intervention can aid in successful feedings for these infants. The form discussed in this paper is indirect management, which contains three separate entities: equipment adaptations, positioning, and modifications of food. Equipment adaptations may include (a) special types of bottles, nipples, and cups, (b) placing the infant in certain position for feeding, and (c) modifications of food. The forms can help an infant with a cleft lip and/or palate by using them simultaneously or individually.

Survival of the Fittest

Infants are designed for survival when they are born and in order to survive they need to eat and breathe. Although this is the primary function of an infant, not all infants are born with this capability. Some infants are born with birth deficits that affect their anatomical structures needed for adequate feeding. There are a series of stages infants' progress through for the development of feeding. The malformations that occur can interrupt the typical feeding development leading to the need for intervention. The current trend for intervention in feeding for craniofacial malformations appears to be surgical. Surgery may not be an option for everyone due to the cost of the operation, religious beliefs, or parents not wanting their infant to undergo anesthetic and surgery. Those that cannot afford surgery may be families of low socioeconomic status. Other options must be sought to accommodate feedings.

Normal Feeding Development

At the time of birth, an infant's first phase of development in sucking is called suckling, this appears as an in and out motion of the tongue (Morris & Klein, 2000, p.77). The tongue begins a unique, rhythmic, backward-forward movement that helps draw liquid into the mouth and forces it toward the pharynx for swallowing (Morris & Klein, 2000, p.77). Morris and

Klein, (2000) stated that in this phase of sucking, infant's lips do not fully close over a nipple, which may cause milk to be lost (p.77). Due to the loss of milk infants tend to drink approximately every two to four hours between two to six ounces of milk (Klein & Morris, 2000, p.77). The phase of swallowing, when milk is lost, begins to fade at three or four months of age (Klein & Morris, 2000, p.90).

Morris and Klein (2000) stated that at six months the suckle pattern is still present but the infant begins to gradually shift into the true suck pattern (p.90). The true suck is characterized as an out, in, and up movement, which is an effective way to suck. The suck, swallow, breathe pattern is now present and the infant can take in more milk (Morris & Klein, 2000, p.90). Less milk is lost at this stage and the infant's feeding time increases as the ounces increase. During this stage of development, the infant is able to close off the lips completely (Morris & Klein, 2000, p.90). At approximately six months solids are introduced. Between six and seven months, infants learn to hold their mouths open while waiting for the spoon to enter (Morris & Klein, 2000, p.90). The new ability to silence the tongue and jaw in readiness for the food to enter the mouth creates the opportunity for accurate movements of the

upper lip in clearing food from the spoon (Morris & Klein, 2000, p.90).

Morris and Klein (2000) stated that the ninth month is an important month in the development of feeding (p.92). By the time an infant reaches nine months both lips are more active and the infant is able hold and bite a soft cookie between the gums or teeth (Morris & Klein, 2000, p.91-92). The tip of the tongue begins to elevate and separate from the jaw, whereas earlier infants relied on the movement of the jaw to move the tongue (Morris & Klein, 2000, p.92). The tip of the tongue begins to elevate allowing infants to move food around in the mouth. According to Morris & Klein (2000), jaw movement during chewing follows the transfer action of the tongue, moving in the diagonal rotary pattern during movement of the food to the side, and in a non-stereotyped vertical direction during the munching that occurs between transfers (p.92).

Finally, at 12 months of age infants are referred to as a children or toddlers. At this stage, rotary chewing begins to develop and the children is able to have meats that are effortlessly chewable and they do not have difficulty with foods with pieces (Morris & Klein, 2000, p.92). If the child has food residue on the lips the child is able to clean it off with his tongue, teeth, or gums (Morris & Klein, 2000, p.92). Morris and

Klein (2000) stated that the child is able to stabilize a cup to a certain degree, but loss of liquid may occur with the removal of the cup (p.92). At 15 months, loss of liquid is less likely to occur with the removal of the cup from the mouth and the tongue tip is now completely independent from the jaw (Morris & Klein, 2000, p.93).

Formation of Cleft Lip/Palate

Clefts, the most common craniofacial malformation, are caused by the separation of the lip and/or palate (Morris & Klein, 1987, p.337). Clefts of the lip are characterized by the separation of the lip, maxilla, and upper gum; this can be unilateral, occurring on one side or bilateral, occurring on both sides (Morris & Klein, 2000, p.649). The cause of a cleft is unknown, but it is known for there to be genetic and environmental factors (Glass & Wolf, 1999, p.72). According to Glass and Wolf (1999), there is a failure to fuse in the facial process between the 7th and 12th week gestation (p.72). Clefts of the lip can be incomplete "affecting primarily the lip and not extending into the nasal cavity" or complete, which includes "separation of the dental ridge and lip and extending through the nasal cavity" (Morris & Klein, 2000, p.649). Isolated clefts of the palate occur at one in about 2,500 births and unilateral, left clefts are more common (Arvedson & Brodsky, 2002, p.528).

Arvedson and Brodsky (2002) reported that the incidence of isolated clefts is higher in boys than girls by nearly two to one (p.528).

Another type of cleft is known as the submucous cleft; the bones of the palate are not fused together although the lining covering the roof of the mouth is intact (Morris & Klein, 1987, p.337). This often leads to the submucous cleft being untreated, which can cause significant feeding complications.

Sufficient Oral Seal and Intraoral Pressure

The presence of a cleft impairs the infant's ability to seal the oral cavity and create adequate suction, so infants are unable to draw fluid into the mouth successfully (Glass & Wolf, 1999, p.72). In order to seal the oral cavity, an infant must have intact oral structures, especially lip and palatal structures, and functional capability of appropriate musculature including the lips, cheeks, tongue, velum, and pharyngeal walls (Reid et al., 2007, p.312-313). Masarei et al. (2007) investigated the sucking patterns of 50 infants, rating the patterns as normal, disorganized or dysfunctional (p. 323-324). This was assessed and rated using a standardized observational scale, the Neonatal Oral Motor Assessment Scale (NOMAS), and a majority of the infants with clefts were rated as having disorganized feeding (Masarei et al., 2007, p.323-324). In a

study conducted by Reid et al., (2007), a 1-minute sample of nutritive sucking was obtained to confirm the presence or absence of negative intra-oral pressure; of the 40 participants with cleft lip and/or palate, 22 were able to generate suction (p. 315). Spriestersbach (1973) reported that 73% of infants with a cleft palate had moderate to severe feeding difficulties described as sucking inefficiency and the inability to develop adequate intraoral negative pressure for sucking from a breast or regular nipple (Arvedson & Brodsky, 2002, p.529).

When infants have a cleft of the lip and alveolar ridge they have difficulty creating negative intraoral pressure when using a regular bottle and nipple. Masarei et al. (2007) reported that most reports about the nature of feeding problems and the oral stage of swallowing are based on clinical observation and identify an inability to generate sufficient suction to extract milk from the nipple (p.321). Therefore infants will chew the nipple in an attempt to compensate for their structural deficiency (Masarei et al., 2007, p.321).

Infants with a posterior cleft palate usually have considerable difficulty developing sufficient negative pressure while nipple feeding (Arvedson & Brodsky, 2002, p.529). Bessell et al. (2008) reported that there were only two studies measuring intraoral negative pressure, which is thought to be

absent or partially diminished when infants have a cleft palate (p.8). However, some infants with a small cleft may be able to functionally plug the air leak and create partial or intermittent negative pressure (Clarren et al., 1987, p.245).

According to Cooper-Brown et al. (2008), infants with an intact palate generate negative intraoral pressure as their lips and tongue form a seal around the nipple and the tongue generates rhythmic sucking motions (p.149), but infants with a cleft palate cannot. Therefore, infants with a cleft will need a bottle system that assists with an easier flow of liquid (Klein & Morris, 2000, p.654).

When there was an inability to create negative intraoral pressure infants were unable to intake milk effectively and often died of malnutrition (Masarei et al., 2007, p. 321). In a 1619 Fabricus of Aquapendente pointed out that infants with a cleft palate were unable to suck and often died of malnutrition; centuries later drastic measures such as death is less likely to occur (Jones, 1988, p.379). When infants are unable to intake milk there is a lack of nutrition, leading to malnutrition.

Squeezable/Compressible Bottles

Indirect management involves the adaptation of equipment, positioning of infants, and modifications of food. There are

squeeze bottles that assists with the delivery of milk and there are a number of other equipment adaptations. The squeezable bottle can be used for infants with a cleft lip and/or palate to assist the rate of flow of milk. As reported in *Feeding Management of Infants*, when using a squeeze bottle squeezing should occur at a rate that allows infants adequate time to ingest each bolus before the next bolus is delivered (Glass & Wolf, 1999, p.79). Another bottle type that accommodates feeding for infants with a cleft palate is called the Haberman feeder. According to Glass and Wolf (1999), the Haberman feeder is made with a one-way valve for a tolerable delivery of fluid by compression, compensating for the infant's incapability to produce suction (p.75).

According to Clarren et al. (1987), any feeding device that delivers an appropriate amount of milk into the mouth and allows the infant an adequate amount of time to swallow was effective (p.246). This conclusion was drawn from a study assessing 53 infants presenting with clefts of the lip and palate. Soft plastic bottles, like the Mead-Johnson cleft palate feeder and the ascepto feeder, were very beneficial for delivering an appropriate amount of milk into the infants mouth, which gave the feeding person exceptional control over the quantity of milk entering in the infant's mouth (Clarren et al., 1987 p. 246).

Glenny et al. (2004) stated that squeezable bottles look as if they are easier to use than rigid feeding bottles for infants born with clefts of the lip and/or palate (p.2). In a literature review conducted by Reid (2004), it was found that compressible bottles used with a NUK orthodontic nipple, cleft palate feeders, and crosscut nipples used with a standard rigid bottle (p.270-271) are most effective for infants with cleft palates and/or lips only. Although compressible bottles are most effective, it is unclear if compressible bottles alone provide maximal advantage for improving an infant's feeding ability (Reid, 2004, p.271). Glass and Wolf (1999) also recommended that feeding infants in an upright position with compressible bottles to minimize the entry of milk into the nasal cavity and Eustachian tubes based on experience from the cleft palate team in the hospital (p.74).

Other Feeding Devices

A syringe, without the needle, is another feeding device that can be used with infants with a cleft lip and palate. Ize-Iyamu and Saheeb (2011) stated that infants presenting with a cleft that were fed with a syringe showed a decrease in spillage and regurgitation of milk as their age increased (pg. 917). In the same study conducted by Ize-Iyamu and Saheeb (2011), infants fed with a syringe versus a cup ate faster; infants fed with the

syringe containing a combination of breast milk and formula also gained more weight compared with infants that were fed with breast milk only (p.917).

Nipple Selection

Selection of nipples is also important for the flow of milk. An orthodontic nipple is (a) useful when infants have a flatter and larger tongue, (b) requires less pressure to collapse, (c) has a less predictable flow rate, and (d) can draw the infant's tongue back to the pharynx (Groher & Crary, 2010, p.256), which can be used with a regular bottle or any other special bottle. This was found in an evidence-based resource. The nipple on the Haberman feeder has a slit opening which allows for the flow rate to be adjusted depending on the position of the nipple in the infant's mouth. The Haberman feeder nipple works well for infants with good compression between the tongue and palate and those with weak suction (Glass & Wolf, 1999, p.76). Mandy Haberman's research included contact with the Cleft Lip and Palate Association of Great Britain and a study of cineradiography of suckling infants. The Haberman feeder was tested for a one-month period. A long, firm, and round cross-section nipple can assist with feedings of infants to provide better contact between the nipple and tongue (Glass & Wolf, 1999, p.79). Glass and Wolf (1999) stated that a long

nipple will have improved contact on the tongue, and a firm nipple, along with downward pressure of the nipple on the midline of the tongue, can stimulate appropriate tongue movement (p.79). This was found in an article based on an outline of components about the effect of clefts on feeding.

In infants with an isolated cleft palate a soft nipple with an enlarged opening on any bottle type is the best solution (Clarren et al., 1987, p.246). Regular nipples do not work well, so an enlarged nipple opening along with the nipple being soft assists the tongue to force out a greater quantity of milk (Clarren et al., 1987, p.247). This conclusion was drawn from a study assessing 17 infants presenting with an isolated cleft palate. The size of the nipple opening should not be so large that the milk flow causes infants to choke. The rapid flow of milk may risk the infant's ability to synchronize sucking, swallowing, and breathing if milk is being brought directly to the pharynx (Reid, 2004, p.271).

Nipples with a large base work well for infants with isolated clefts of the lip. In a study assessing 143 infants with clefts of the lip and palate, nipples with large bases work well by plugging the space of the cleft, thereby solving the problem of air leaks around the lips (Clarren et al., 1987, p. 248). Large-based nipples with a long shaft, such as the lamb's

nipple, works well for infants with Robin Malformation Sequence, also known as Pierre Robin Sequence (PRS) (Clarren et al., 1987, 247). PRS is a craniofacial condition characterized by a small lower jaw with receding chin, a cleft palate, and a large tongue placed too far back in the mouth. Clarren et al. (1987) stated that the position of the nipple in the infant's mouth is very important with PRS; if inserted too far, there could be gagging and vomiting; if it is not inserted enough, infants will not get enough tongue action (p.247). This was found in a study assessing 23 infants presenting with PRS.

Positioning

According to Glass and Wolf (1999), upright positioning can use gravity to move food through the hypopharynx and away from the Eustachian tubes and nasopharynx (p.74) which will work for infants with a cleft palate alone. People believe that it is unsafe to feed an infant or any human eating while lying down, due to increases in the risk of choking and vomiting. Feeding in a lying position can be done for infants with a cleft palate accompanied with Pierre Robins Sequence due to obstruction of the airway (Cooper-Brown et al., 2008, p.148).

Contrary to advice concerning a supine position to prevent cot death, infants with Pierre Robin Sequence may need to be placed on their sides or stomach to sleep, and fed in a lateral

position (Owens, 2008, p.778). Cooper-Brown et al. (2008) stated that laying infants with PRS in a prone position, on the stomach, allows for gravity to pull the tongue down for sufficient airway management (p.148) which was found in a study conducted by Wagner et al. When a cleft is present with PRS, then feeding infants in the side-lying position may not be enough, so a squeezable bottle will be essential for milk delivery (Glass & Wolf, 1999, p.78). This was found in an article based on an outline of components about the effect of clefts on feeding. Infants with PRS are not the only infants with clefting that should be fed in a lying position. Sitting an infant in a semi seated position is the normal feeding position, but in a study assessing 101 infants it was found that infants with micrognathia are fed in the prone position which is considered safer (Shaw et al., 1999, p. 263).

Breastfeeding

The majority of the information presented in this section is from a non-empirical source, Le Leche League International. Le Leche League International is an international, nonprofit, nonsectarian organization dedicated to providing education, information, support, and encouragement to women who want to breastfeed. They are partnered with World Alliance for

Breastfeeding Action and other groups acting in unison to protect, promote, and support breastfeeding worldwide.

Breastfeeding is an important time for mothers to bond with their infant, but it is more than just a bonding experience. Infants will receive colostrum which is a protective source of immunities against disease (Le Leche, 2004, p.46). Glass and Wolf (1999) reported that breast milk, whether from the breast or pumped, is essential because it provides the infant with greater protection from middle ear infection, which is a common problem associated with clefts (p.76). Intraoral suction is mandatory to draw the breast into the infant's mouth during the latch on, as well as maintaining the breast nipple in an elongated position during sucking (Glass & Wolf, 1999, p.76).

When infants are born with clefts of the lip and/or palate breastfeeding can be difficult. Mei, Morgan, and Reilly (2009) reported that many mothers choose to breastfeed their newborn with cleft lip and/or palate; however these infants may experience feeding difficulties as a result of the anatomical deficiency which is based on a systematical review of literature of 14 studies (p.48). An infant with an isolated cleft lip may only need assistance in forming an adequate seal on the breast while sucking (La Leche, 2004, p.288). Specifically a cleft palate may disrupt an infant's ability to generate the negative

intra-oral pressure required to draw milk into the mouth from the breast (Reid, 2004, p.268) which is based on a literature consisting of 55 published articles.

According to Le Leche League International (2004), some mothers use their thumb to close the gap in the infants lip and in some instances the breast naturally fills in the open space (p.288). This allows the infant to create a sufficient oral seal to create adequate suction, although some assistance may be needed in those cases as well.

To achieve successful breastfeeding there are a series of steps that should occur, the first two related to positioning. Positioning is another essential factor in breastfeeding an infant with the absence or presence of a cleft lip and/or palate. Different feeding positions may need to be tried for the infant to obtain an adequate seal on the breast and effective extraction of milk (Cooper-Brown et al., 2008, p.149). The mother must first position herself properly. The mother should sit upright with her knees up using a pillow behind her back, under her elbow, and on her lap (Le Leche, 2004, p. 47). Next, the infant should be positioned properly with his/her whole body facing the mother, knees pulled in close, and ear, shoulder, and hip in a straight line (Le Leche, 2004, p.47). Using a more upright football hold and firmly holding the infants to the

breast will also improve nursing (Glass & Wolf, 1999, p.76) based on an outline of components about the effect of clefts on feeding. Le Leche (2004) reported that infants should also be held at the level of the mothers' nipple where the mother is not leaning and the infant is not straining to latch (p.48).

Glass and Wolf (1999) reported that infants with a cleft palate can be put on the breast to breastfeed and will not be able to achieve adequate nutrition (p.76). Therefore supplemental nutrition must be sought to achieve adequate nutrition if they are unable to extract milk from the breast. Infants with a large isolated cleft palate have the poorest prognosis for breast feeding due to the lack of separation between the nasal and oral cavity and inability to develop negative intraoral pressure (Cooper-Brown et al., 2008, p.149). This was found in an article overviewing feeding difficulties.

Future Research

There are several investigations regarding feeding infants with cleft lips and cleft palates using several different feeding methods. While researching, I found that there is a lack of research regarding which feeding accommodations promote weight gain in infants with cleft lips and/or palate. I have designed five research investigations to determine what

accommodation promotes weight gain in infants with clefts of the lip and/or palate.

The purpose of this investigation is to determine whether the orthodontic nipple or a long, firm, and round cross-section nipple improves weight gain in infants with a cleft. The participants will be full-term infants presenting with clefts of the lip and palate with no other deficits under the age of three months. After the birth, each infant will be given seven nipples; half will receive the orthodontic nipple and the other half will receive the long, firm, and round cross-section nipple. For the first three months the infants will not use any other type of nipple and drink only formula milk. Their weight will be recorded once a week. At the three month mark each infant will be weighed by the pediatrician and each group weight will be averaged.

The purpose of this investigation is to determine whether the Haberman feeder or the Mead-Johnson cleft palate feeder allows infants with a cleft lip and/or palate achieve greater weight gain. The participants will be full-term infants presenting with a cleft lip and/or palate with no other deficits. Candidates will begin the first day of birth. There will be four groups total; two groups will consist of infants with an isolated cleft lip divided into two using either the

Haberman feeder or the Mead-Johnson cleft palate feeder. The other groups will consist of infants with an isolated cleft palate using the Haberman feeder and Mead-Johnson cleft palate feeder. Weight will be recorded bi-weekly for three months. Each group's weight will be averaged to determine greater weight gain.

The purpose of this investigation is to determine whether infants with a cleft lip and/or palate will achieve greater weight gain being fed with a normal bottle and nipple with formula or extracted breast milk. The participants will be full-term infants with a cleft lip and/or palate with no other deficits. Parents will be surveyed to determine whether they would like their newborn to be fed breast milk or formula to determine what group they will be placed in. Bi-weekly weighing's of the participants will be recorded. An average weight will be calculated after four months.

The purpose of this investigation is to determine which feeding device provides successful feedings for infants with a cleft lip and/or palate to maintain adequate nutrition. The participants will be full-term infants with cleft lip and/or palate six months and under. At birth each infant will be assessed to determine which technique and feeding device gives the infant successful feedings. After acquiring this information

each infant will be categorized by the feeding device and cleft type. Successful feedings will be evaluated by the amount of weight gained and frequency of spillage during feedings.

The purpose of this investigation is to determine which position for feeding reduces the risk of aspiration in infants with clefting. The participants will be infants presenting with clefts of the palate under the age of six months. Each infant will be fed using a compressible bottle. There will be two groups, one group will be fed in the semi-upright position and the other group will be fed in a complete upright position. Risk of aspiration will be defined by the number of choking incidents during each feeding. At the conclusion on the investigation an average of each group choking incidents will be calculated to determine the risk.

Conclusion

Infants presenting with a cleft lip and/or palate are faced with feeding difficulties and lack of growth. These infants must learn how to manage feeding during the first three months of life. Infants presenting with a cleft lip may receive surgery at three months of age and infants with a cleft palate may receive surgery at six months of age. During the time period before surgery can be performed accommodations must take place in order for the infant to intake food. The most important goal for any

infant is to obtain adequate intake of nutrition, therefore other options must be sought for survival.

Research has shown that indirect intervention can aid in successful feedings for infants with a cleft lip and/or palate, with equipment adaptations and positioning being the most influential. With each equipment adaptation positioning is a major factor in successful feedings. Before any device or position can help the infant must create a sufficient oral seal sucking inefficiency and develop adequate intraoral negative pressure. An oral seal and intraoral pressure must be achieved in order for the infant to suck from an artificial nipple or breast. When a sufficient oral seal and intraoral pressure cannot be achieved equipment adaptations plays a major role for nutrition intake.

It was also shown that compressible/squeezable bottles seem to be the best bottle solution for feeding. The Haberman feeder is effective for infants presenting with an isolated cleft palate. The Haberman feeder has a one-way valve which assists with delivery of milk by compression compensating for suction. For infants presenting with clefts of the lip and palate, soft plastic bottles like the Mead-Johnson cleft palate feeder, which gives the infant remarkable control over the amount of milk entering their mouth.

A soft nipple with an enlarged opening seemed to be the best solution for infants with an isolated cleft lip. The enlarged opening should not be too large where the choking will occur. A large base also works well for infants with an isolated cleft lip, the base helps fill in the open space. As mentioned previously, positioning is an important factor. Feeding an infant with an isolated cleft palate in an upright position prevents milk from flowing into the Eustachian tubes and decreases nasal regurgitation. Additionally infants presenting with Pierre Robins Sequence with a cleft palate may be fed in the supine position.

According to Glass and Wolf (1999) breastfeeding is essential for infants with clefts providing greater protection against the common occurrence middle ear infections (p.76). Intraoral suction is mandatory for infants to latch on and a cleft lip and/or palate may disrupt an infant's ability to generate the negative intra-oral pressure required to draw milk into the mouth from the breast (Reid, 2004, p.268). Infants with a large isolated cleft palate have the poorest prognosis for breast feeding due to the lack of separation between the nasal and oral cavity and the inability to develop negative intraoral pressure (as cited in Cooper-Brown et al., 2008, p.149). Infants with an isolated cleft lip have less difficulty breastfeeding

only needing assistance creating an adequate oral seal, which may be the mothers thumb (La Leche, 2004, p.288). This should allow infants to create adequate suction to draw milk from the breast into the mouth.

The purpose of this current study was to determine whether indirect management is effective in providing adequate intake of nutrition in infants with clefts of the lip and/or palate. Infants with clefts of the lip and/or palate present with feeding difficulty. With the right feeding intervention adequate nutrition must be achieved with safety. I feel that with the right bottle, nipple, and position there is hope.

REFERENCES

- Arvedson, J., & Brodsky, L. (2002) *Pediatric swallowing and feeding: Assessment and management*. San Diego, CA: Singular Publishing Group.
- Clarren, S., Anderson, B., & Wolf, L. (1987). Feeding infants with cleft lip, cleft palate, or cleft lip and palate. *Cleft Palate Journal*, 24, 244-249.
- Cooper-Brown, L., Copeland, S., Dailey, S., Downey, D., Petersen, M., Stimson, C., & Van Dyke, D. (2008). Feeding and swallowing dysfunction in genetic syndromes. *Developmental Disabilities Research Reviews*, 14, 147-157.
- Glass, R., & Wolf, L. (1999). Feeding management of infants with cleft lip and palate and micrognathia. *Infants & Young Children: An Interdisciplinary Journal of Special Care Practices*, 12(1), 70-81.
- Glenny, A., Hooper, L., Shaw, B., Reilly, S., Kasem, S., Reid, J., & Bessell, A. (2008). Feeding intervention for growth and development in infants with cleft lip, cleft palate or cleft lip and palate (review). *The Cochrane Collaboration*, (4), 1-29.

- Groher, M. E., & Crary, M. A. (2010). *Dysphagia: Clinical management in adults and children*. Maryland Heights, MO: Mosby Elsevier.
- Ize-Iyamu, I., & Saheeb, B. (2011). Feeding intervention in cleft lip and palate babies: A practical approach to feeding efficiency and weight gain. *International Journal of Oral & Maxillofacial Surgery*, 40, 916-919.
- Jones, W. B., (1988). Weight gain and feeding in the neonate with cleft: A three center study. *Cleft Palate Journal* 24, 379-384.
- La Leche League International (2004) *The womanly art of breastfeeding*. Schaumburg, IL: Plume.
- Masarei, A., Sell, D., Habel, A., Mars, M., & Wade, A. (2007). The nature of feeding in infants with unrepaired cleft lip and/or palate compared with healthy noncleft infants. *Cleft Palate-Craniofacial Journal*, 44, 321-328.
- Mei, C., Morgan, A. T., & Reilly, S. (2009). Benchmarking clinical practice against best evidence: An example from breastfeeding infants with cleft lip and/or palate. *Evidence-Based Communication Assessment & Intervention*, 3(1), 48-66.

- Morris, S., & Klein, M. (1987) *Pre-feeding skills: A comprehensive resource for feeding development*. United States: Therapy Skill Builders.
- Morris, S. & Klein, M. (2000) *Pre-feeding skills: A comprehensive resource for mealtime management*. Austin, TX: Therapy Skill Builders.
- Owens, J. (2008). Parents' experiences of feeding a baby with cleft lip and palate. *British Journal of Midwifery*, 16(12), 778-784.
- Reid, J., (2004). A review of feeding interventions for infants with cleft palate. *The Cleft Palate-Craniofacial Journal*, 41, 268-278.
- Reid, J., Reilly, S., & Kilpatrick, N. (2007). Sucking performance of babies with cleft conditions. *Cleft Palate-Craniofacial Journal*, 44, 312-320.
- Shaw, W., Bannister, R., & Roberts, C. (1999). Assisted feeding is more reliable for infants with clefts—a randomized trial. *Cleft Palate-Craniofacial Journal*, 36, 262-268.

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