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## Breastfeeding After a Cesarean Delivery

Sema Kuguoglu<sup>1</sup>, Hatice Yildiz<sup>2</sup>,  
Meltem Kurtuncu Tanir<sup>3</sup> and Birsal Canan Demirbag<sup>4</sup>

<sup>1</sup>Gazikent University, College of Health Sciences, Division of Nursing,  
Pediatric Nursing Department, Gaziantep

<sup>2</sup>Marmara University Health Science Faculty,  
Division of Nursing, Obstetric and Gynecological Nursing Department

<sup>3</sup>Zonguldak Kara Elmas University Health School,  
Division of Nursing, Head of Pediatric Nursing Department

<sup>4</sup>Karadeniz Technical University, School of Nursing,  
Division of Nursing, Public Health Nursing Department  
Turkey

### 1. Introduction

A cesarean delivery (also known as a cesarean section) is the birth of the baby through surgical incision made in both the wall of the mother's abdomen and her uterus. Anesthesia (*general or regional*) is required for the procedure (Alexander et al., 2010). A cesarean birth can be scheduled (*may be on maternal request*) or unscheduled event; it may be an emergency procedure to save the mother and/or fetus such as fetal distress, abruption placentea, a prolapsed cord, cephalopelvic disproportion, total placenta previa, multiple pregnancies, cervical failure, herpes, etc. A cesarean delivery is sometimes necessary for the safety of the mother or the baby, but sometimes it may be on maternal request. However, there is considerable debate about this type of cesarean that performed depending on the mother's request. Whatever the reason, the cesarean rate is dramatically increasing in recent years (Alexander et al., 2010; Mayberry, 2006; Pasupathy & Smith, 2008; Mayberry, 2006; Towle, 2009).

Cesarean delivery also carries a risk to the mother and infant as compared with normal vaginal deliveries (Mayberry, 2006; Towle, 2009). Because of the extend of the abdominal incision, there is a increased loss of blood with a cesarean delivery. When the incision is made, there is an increased risk of damage to other internal organs especially the urinary bladder and uterine blood vessels. If the fetus is large, there is a risk of tearing the uterine incision causing more trauma to uterine tissue (Towle, 2009). Women who have a cesarean birth have a significantly increased risk of rehospitalization for uterine infection, complications from surgical wound (infection, and so on), anesthesia complications, and cardiopulmonary and thromboembolic complications (Mayberry, 2006; Simpson, 2008). Risk of maternal mortality after cesarean birth from anesthesia complications, puerperal infections, and venous thromboembolism is 3.6 times higher for women who have vaginal birth (Smith, 2010). Babies born via cesarean are at significantly increased risk for respiratory complications and admission to the neonatal intensive care unit (NICU) (Simpson, 2008). In addition, other maternal outcomes are significantly in favor of vaginal

birth over cesarean birth in the postpartum period. These risks include postpartum hemorrhage, increased maternal hospital length of stay, and delayed or impaired breast feeding (Mayberry, 2006; Simpson, 2008).

The woman who has had a cesarean birth will require the same care as the woman who delivered vaginally, plus routine postoperative care (Towle, 2009). But, mothers who have cesarean delivery are had major abdominal surgery. Therefore, their hospital, postpartum, and breastfeeding experience will be different from the vaginal delivery mothers. Cesarean mothers usually stay in the hospital longer than vaginal delivery mothers, they have more discomfort, they may not be able to have rooming-in privileges (depending on hospital policies), and they may be more dependent on hospital staff (Rosenthal, 2000). The mothers and infant's experiences during labor and delivery may influence lactation in several ways. But, cesarean surgery is strongly associated with delayed lactogenesis, poorer infant suck, delayed in early breastfeeding, decrease in success of breastfeeding, more supplementation, and shorter duration of breastfeeding (Dewey et.al, 2002; Smith, 2010). So, mothers who delivery by cesarean section and their babies will need extended, intense, skilled, and knowledge able to help from maternity care team to establish and maintain exclusive breastfeeding (Smith, 2010).

## **2. How a cesarean can affect with breastfeeding**

There are many factors that are thought to have influence on the breast-feeding after birth. When we look according to delivery types, breastfeeding after the cesarean birth is affected by these reasons:

### **2.1 Maternal pain, fear and stress, fatigue, and prolonged recovery**

Mothers having cesarean section more experience complication, pain, prolonged recovery, readmitted to a hospital, fatigue, discomfort, stress and anxiety, and etc. then the mothers with vaginal birth (Lauwers & Swisher, 2011, B.M. Newman & P.R. Newman, 2009; Smith, 2010). Karlström et al.(2007) study found that women with cesarean section reported high levels of experienced pain during the first 24 hours. There was no difference between elective and emergency cesarean births in the levels of pain. Postoperative pain negatively affected breastfeeding and infant care. Therefore, mothers who had cesarean delivery need more post surgery pain relief drugs. The pain medication is also important for mother's comfort. However, the pain medication that is received during and after surgery is passed in to mother's milk. And, some post surgery pain relief drugs suppress breastfeeding, improve the amount of breastfeeding, and infant weight gain. Also, stress or fatigue can also lead to a decreased milk supply. Mothers who delivered by cesarean section often find it difficult to achieve a comfortable position for breastfeeding (Francis, 2007; Smith, 2010). Even though a mother experiences pain and discomfort after a cesarean section, breastfeeding should be started as soon as possible and should be help the mother put the baby to breast (Janke, 2008).

Stress clearly can affect people strongly. Mothers who had cesarean section have higher scores in somatic anxiety, muscular tension, and suspicion (Smith, 2010). Especially unscheduled cesarean sections (*due to mother or baby*) are often the result of fetal stress or serious maternal complications. Maternal and infant stress during labor and delivery can adversely affect the onset of milk production (lactogenesis). There is several possible mechanisms for this relationship. Maternal stress is known to affect the release of oxytocin and thus may inhibit the milk-ejection reflex. Infant stress may affect lactogenesis via weak

or inadequate sucking ability or reduced infant demand (Dewey et al., 2002). If woman have had an unexpected cesarean, she may be worse feelings (robbed/separated from baby etc.) associated with her childbirth experience and this situation can affect her ability to breastfeed. If the cesarean was planned (elective) or if it's experienced more than one time, woman probably have not experience this kind of emotional upheavals (Rosenthal, 2000). Carlander et al.(2010) study reported that mothers with a vaginal delivery experienced breastfeeding less stressful than the mothers with a caesarean delivery. Three and nine months after delivery the mothers with a caesarean delivery on request reported more breastfeeding problems than mothers in the other groups.

## **2.2 Complications and separation of mother and baby**

Some complications after cesarean delivery may interfere milk supply significantly in the postpartum period. Infant born by cesarean section have higher of respiratory distress, more likely to be taken to a newborn intensive care unit, more likely physically separate from the mother, and mother-infant attachment behaviors may more disrupt. Because of all these reasons, the stress hormones (cortisol and adrenaline) increase in mother and infant, establish breastfeeding more difficult, and more likely to have altered sucking patterns. Transfers less milk at breast on days 2-5, which increases the risk of early and unnecessary supplementation and leave excess milk in the mother's breast, suppressing lactogenesis (Smith, 2010). Women having a cesarean section have excessive blood loss as about twice amount than the women having a vaginal birth. If a woman experiences excessive blood loss during surgery, she may be experience anemia, and may be more sluggish and exhausted (Dewey et al., 2002). A report based on case studies has suggested that maternal postpartum hemorrhage may be risk factor for insufficient milk production. In this study, for all mothers are recommended as soon as possible early breastfeeding after birth (Willis & Livingstone, 1995). In multicentre cohort study reported that women with greater blood loss are less likely to initiate and sustain full breastfeeding and this may be related to delays in initial contact with their baby. These findings have implications for postnatal care as these women may require greater support, education and assistance in initiating and sustaining breastfeeding. In particular, enabling the opportunity for the newborn to suckle as soon as is practical should be encouraged (Thompson et al., 2010). In addition, mothers who are rehospitalized for infection stroke, or wound dehiscence after cesarean surgery are likely to experience suppressed or delayed onset of lactation (Smith, 2010). Therefore, management of factors that cause separation mothers and infants are important in the postpartum unit. In a pilot study has been tested the standardized intraoperative and postoperative nursing intervention protocol for maternal-infant separation after cesarean. And, in this study found that the standardized intervention protocol showed positively affecting maternal-infant outcomes after cesarean delivery (Nolan & Lawrence, 2009).

## **2.3 Delayed access to baby and supplementary feedings**

Initial contact between mother and infant should be during the first hour postpartum. Because early contact is important to establish successful breastfeeding. But, mothers who delivered through cesarean section experienced a longer delay in making their first contact with their infant (B.M. Newman & P.R. Newman, 2009). Sometimes hospital practices in the immediate postpartum period that is associated with operative intervention in delivery can affect first mother-infant contact and initiation of breastfeeding the findings of a study confirmed that cesarean section and hospital practices was significant barrier to

implementation of Baby-Friendly Hospital Initiative (Rowe-Murray & Fisher, 2002). Chalmers, et al.(2010) study found that more interventions in labor, women who had a cesarean birth after attempting a vaginal birth had less mother-infant contact after birth and less best breastfeeding practices (B.M. Newman & P.R. Newman, 2009). If mothers who had a general anesthetic cesarean may experience a bit more of delay to breastfeeding, since they'll need some time to come out of the anesthetic (*In this case, holding the baby close and cuddling can begin right after coming to and breastfeeding can begin shortly thereafter*) (Devroe, 2007; Rosenthal, 2000). Some mothers are able to nurse their babies' right on the table during surgery; most are told to wait until they are in the recovery room. This means a delay of almost a hour, and sometimes more. Although not ideal, this is not insurmountable. Some hospitals do also not permit women who have had a cesarean to have their babies' room in with them. All these situations can cause often delays the timing of the first breastfeeding, and the production of milk after cesarean birth, and also frequency of breastfeeding can reduce in the mothers who had cesarean (B.M. Newman & P.R. Newman, 2009). In a study that examined the factors associated with early breastfeeding, the breastfeeding within the first hour of life found that higher in mothers with vaginal birth than mothers with cesarean section. In the study, mothers with cesarean section and preterm birth were reported as vulnerable situations (Vieira et al., 2010). The study which made by Perez-Escamilla et al. (1996) examined the relationship between cesarean birth and breastfeeding, and they found that the cesarean section a risk factor for the initiation of breastfeeding. Leung et al. (2002) study found that the cesarean delivery was a risk factor for not initiating breastfeeding, for breastfeeding less than one month, and remained a significant hazard against breastfeeding duration. In another study was examined the effect of method of delivery and timing of breastfeeding initiation on the prevalence of breastfeeding at one and three months after delivery. And, odds of breastfeeding at one and three months after delivery found that a lower in the women with cesarean delivery. Also according to the findings emphasized that the importance of conservative use of operative obstetrical intervention due to its negative impact on breastfeeding (Chien & Tai, 2007).

The timing of the first breastfeeding is often delayed after cesarean birth. Delayed onset of milk production is a vexing problem by breastfeeding mothers. But, given a supportive hospital and home environment this need not adversely effect breastfeeding success. Because breastfeeding is very much a function of supply and demand, early and frequent breastfeeding is extremely important for establishing breastfeeding (Dewey et al., 2002). The more feedings of colostrum (the early milk) that the baby receives, the more immunological protection the baby gets. In addition, early and frequent breastfeeding can help lessen or treat a baby's tendency towards hypoglycemia, infants weight loss, and jaundice, problems common after birth scenarios that lead to cesarean (Dewey et al., 2002; B.M. Newman & P.R. Newman, 2009). Caglar et al.(2006) study found that the infants' weight loss and hypernatremia found associated with delay at initiation of first breastfeeding and cesarean section. And, the study reported that the mothers should have been helped and supported for breastfeeding their infants as soon as possible after delivery (Caglar et al., 2006).

Some mothers who have had cesarean birth are less often tending to start breastfeed according to mothers who have vaginal delivery. Most women plan to at least try to breastfeed, but sometimes theirs efforts may not be effective due to some physical or emotional reasons after cesarean. They may be groggy from drugs, woozy with pain, and exhausted from labor, surgery, and significant blood loss. Suddenly breastfeeding may seem overwhelming and too much trouble or they may be too out of it to try very

effectively. In this situation, bottle feeding may be often seems easier and more convenient (Dewey, 2002; Towle, 2009; Smith, 2010). Babies who are born by cesarean section and separated from their mothers are also frequently given formula as a first feeding. But, many cesarean babies give routinely the bottles of formula in some hospitals. Sometimes, supplementary feedings are necessary to prevent hypoglycemia, or when the baby loses a great deal of weight after birth and does not regain it quickly, or for the test of baby's ability to suck. These and similar factors that delayed breastfeeding after cesarean could effect woman's confidence and desire to breastfeed (Lauwers & Swisher, 2011). In a study, the delayed onset of lactation and early lactation success found associated with primiparity, cesarean section, labor medications, use of non breast milk (fluids and/or pacifiers), etc. (Dewey et al. (2003).

Therefore, supplementary feedings should be avoided as much as possible. The labor and delivery staff can preserve and protect breastfeeding by avoiding these types of practices, which can hinder subsequent breastfeeding (Lauwers & Swisher, 2011).

All cesarean mothers should be encourage for rooming-in and her baby's care if there is not a complication that causes to baby to be separated from the mother. If the mother had a cesarean birth having a support person stay with her facilitates earlier rooming-in. Since frequent feedings are an important part of establishing milk supply in a timely manner, rooming in is an important part of helping cesarean mothers breastfeed more easily, and sleeping with the baby in your arms can help even more (Lauwers & Swisher, 2011). Breastfeeding, with skin-to-skin contact, should be initiated within an hour of birth. Because the baby's sucking movements reach a peak 45 minutes after birth and decline until at 2 hours. Early feedings are associated with mothers who breastfeed for a longer duration. Successful latch-on and sucking greatly reduce sucking disorganization or dysfunction later and contribute to increased breastfeeding duration. If the baby has not been feed within 2 hours, this situation may cause sucking disorganization or disfunction on baby's sucking movements. (Janke, 2008). If mothers with cesarean are start as soon as possible breastfeeding and are supported, they can be as successful as the mothers who have vaginally delivery (B.M. Newman & P.R. Newman, 2009).

#### **2.4 Anesthesia and analgesia (delayed lactogenesis and poorer infant suck)**

There is inadequate information on whether anesthesia or analgesia used during labor and delivery have any influence on lactation (Dewey et al., 2002). But on the other hand, clearly that the some anesthesia or analgesics given during delivery have the potential to interfere with the early development of breastfeeding behaviors and negatively influencing breastfeeding long term (Janke, 2008). But yet there is no consensus about what unintended affects obstetric anesthesia cause on breastfeeding (Devroe, 2007). Because, effect on breastfeeding of some anesthetic/analgesic drugs that used during birth related to type and amount, and timing of medication. Some drugs may delay effective feeding for hours to several days, some drugs may depress sucking behavior of infant, so pulsatile oxytocin may decrease, etc. The route of administration local, IV, or injected pain relief drugs cross very quickly enter the infant bloodstream via placental perfusion, in a matter of seconds to a few minutes. The drugs tend to sequester in infant brain tissue and effect central nervous system function. Also, the drugs are designed to numb sensory nerves in the mother. Therefore, they also affect sensory and mother nerves in the infant that affect rooting, sucking, and breathing. All these behaviors must be intact for the infant to begin breastfeeding. Administration of epidural anesthesia causes the level of beta-endorphins to fall

dramatically. Beta-endorphins produced in labor and present in colostrums and milk protects the baby from pain. Epidurals may delay the onset of lactogenesis. Vaginally delivered mothers had significantly more oxytocin pulses than the cesarean section mothers. In addition, vaginally delivered mothers had significant rises in prolactin levels at 20-30 minutes after onset of breastfeeding, with the number of pulses correlated to duration of exclusive breastfeeding (Smith, 2010).

After delivery, levels of estrogen and progesterone in the body rapidly decrease, triggering the production of milk. Two hormones (prolactin and oxytocin) are released in response to a baby suckling (Alexander, 2010). Prolactin levels are high during about first ten days of postpartum and slowly decline over the next 6 months. Prolactin levels are also highest at night. It is thought that the frequent sucking acts as a stimulus to increase the binding capacity of prolactin receptor sites in the breast. This enhances tissue responsiveness, accounting for continued full milk production as prolactin concentrations decline over time. Nipple stimulation prompts oxytocin to be released from the pituitary gland in a pulsatile manner numerous times during each feeding. The sensation that accompanies the effect of oxytocin on breast tissue is called the letdown reflex or the milk-ejection reflex. Oxytocin causes the network of myoepithelial cells surrounding the alveoli to contract and expel milk into the larger ductules, making it available to the newborn. Touch, massage, and skin-to-skin contact stimulate oxytocin release. Separating mothers and newborns should be discouraged unless there is a medical indication (Janke, 2008).

A caesarean section can be carried out under either regional or general anaesthesia. The type of anaesthesia used for the caesarean can also influence breastfeeding rates. This may reflect the type of anaesthesia, the amount of medications the baby received, the amount of separation of mother and baby after the operation, or many other factors. In addition, whether the caesarean was scheduled or unplanned also may make a difference in delayed onset of lactogenesis (Francis, 2007; Lauwers & Swisher, 2011; Rosenthal, 2000). Zanardo et al. (2010) study found that emergency and elective caesarean deliveries are similarly associated with a decreased rate of exclusive breastfeeding compared with vaginal delivery. General anaesthesia tends to reach the baby strongly, and may depress baby's responses after birth for some time. Drugs may also result in the baby being less effective at suckling. Regional anaesthesia results in lower doses of the various drugs crossing the placenta to the baby, so although baby may still be affected, he may not be affected as strongly as after general anaesthesia. Also, breastfeeding frequency and longer breastfeeding periods after epidural anaesthesia are higher than after general anaesthesia (Devroe, 2007; Lauwers & Swisher, 2011; Rosenthal, 2000). In a prospective, randomized, and double-blind study found that high-dose labor epidural Fentanyl were more likely to have stopped breastfeeding (Beilin et al., 2005). It has been reported that the women with caesarean sections given epidural anaesthesia may be more likely to continue breastfeeding to 3 or 6 months postpartum than general anaesthesia (Dewey et al., 2002). Because, if the mother receive general anaesthesia during the caesarean section, the breastfeeding may be possible when mother awake and able to respond (Lauwers & Swisher, 2011). Baumgardner et al. (2003) study explored that the association between labor epidural anaesthesia and early breast-feeding success in both epidural and nonepidural anaesthesia groups. In this study it has been reported that labor epidural anaesthesia had a negative impact on breast-feeding in the first 24 hours of life, even though it did not inhibit the percentage of breast-feeding attempts in the first hour. According to these studies' results, caesarean with general or epidural anaesthesia effects sucking and breastfeeding success and lactogenesis negatively in

different levels. However, if there is no complication in mother and her baby, these negative factors may be reduced with starting breastfeeding as early as possible, supporting and encouraging mothers about breastfeeding. At the same time, mothers should be willing and endeavour for breastfeeding their baby.

Infant characteristics can also influence the timing of onset of milk production, the milk ejection reflex, and ultimately the volume of milk produced. Also babies born via cesarean section are often problematic babies. Such as, low birth weight infants and/or smaller size at birth infants has been associated with delayed lactogenesis. This may be due to reduced sucking strength, frequency or duration of feeds among smaller infants (Dewey et al., 2002). In a study found that the volume of milk transferred to infants born by caesarean section was significantly less than that transferred to infants born by normal vaginal delivery on days 2 to 5 (Evans et al., 2003). Cakmak & Kuguoglu (2007) study found that LATCH (*LATCH is a breastfeeding charting and scoring system that provides a systematic method for gathering information about individual breastfeeding sessions. Each letter of the acronym LATCH denotes an area of assessment. "L" is for how well the infant latches onto the breast. "A" is for the amount of audible swallowing noted. "T" is for the mother's nipple type. "C" is for the mother's level of comfort. "H" is for the amount of help the mother needs to hold her infant to the breast.*) scores for mothers who underwent cesarean sections averaged 6.27 for the first breastfeeding and 8.81 for the third breastfeeding, out of maximum possible score of 10 scores averaged 7.46 for the first breastfeeding and 9.70 for the third feeding in mothers who delivered vaginally. Riordan et al. (2000) used a scoring system to evaluate the effect of medications on neonatal suckling in 129 vaginally-delivered babies. Babies of medicated mothers scored lower in suckling effectiveness than babies of unmedicated mothers, and the scores were lowest in the group that received both epidurals and IV drugs. In summary, clearly that some anesthesia/analgesia drugs given during labor and birth may affect the baby's suckling response and feeding behaviors, and it's also clear that medication given to the mother can also affect her milk supply. The perinatal nurse maybe able to offset some of the side affect of labor medications by helping start breastfeeding early, keeping the mother and newborn together, and teaching the mother to recognize hunger cues and putting the newborn to breast (Janke, 2008).

### 3. Benefits of breastfeeding after a cesarean

The World Health Organization (WHO) recommends exclusive breastfeeding (EBF) the infant for the first six months of life, consistent with a previous recommendation by Unicef, to achieve optimal growth, development and health. Thereafter, appropriate complementary foods should be introduced, while breastfeeding continued up to two years of age or beyond. However, the prevalence of EBF is low globally in many of the developing and developed countries around the world. There is much interest in the effectiveness of breastfeeding promotion interventions on breastfeeding rates, in early infancy (Imdad et al., 2011)

Observational studies in low income populations, even in developing countries, have shown that fluids in addition to breast milk are unnecessary to maintain hydration. Furthermore, the addition of water, tea, or other liquids has adverse effects on the output of breast milk, growth, and morbidity and mortality due to infectious diseases (Black, 2002)

The duration of breastfeeding is longer in mothers who start to breastfeed immediately after birth. Initiating breastfeeding as early as possible provides many health advantages, in addition to assuring longer breastfeeding duration. Therefore, mothers who had cesarean

delivery, breastfeeding should have been start as soon as mother recovers, even if the mothers experience pain and discomfort after a cesarean birth. But, the mothers need help to put the baby to breast for the first day or two. Therefore, the mothers should be support in first few days. Breastfeeding offers many benefits such as faster uterine involution and controls bleeding immediately after delivery, and quicker weight loss after birth to the cesarean mother in particular. Cesarean babies who have been breastfeed also receive significant benefits such as immunological protections, and prevention/minimization of hypoglycemia and jaundice problems (Alexander, 2010; Francis, 2007; Janke, 2008; Lauwers & Swisher, 2011).

### **3.1 Uterine involution, postpartum bleeding and weight loss**

After the baby's born, the uterus needs to start shrinking down in order to return to its normal size and state. Breast stimulation causes endogenous oxytocin to be released by the pituitary gland, stimulating uterine contractions, and helps the uterus to start shrinking more quickly and efficiently, and promote uterus involution (Janke, 2008; Towle, 2009). The increased oxytocin secretion because of suckling, contacts with the uterus more quickly and controls bleeding immediately after delivery (Janke, 2008; Lauwers & Swisher, 2011). Eventually, due to the increased levels of oxytocin from breastfeeding, the uterus returns to its normal size more quickly and the women experiences less postpartum bleeding, and speeds up mother's well-being. But, cesarean mothers may have more trouble with uterine involution (Rosenthal, 2000; Alexander, 2010). Negishi (1999) found that cesarean mothers tended to have larger uterine at one month postpartum than mothers who had had a vaginal birth, so uterine involution may be of special concern to women who have had cesarean. So, especially breastfeeding may be helpful in cesarean mothers.

Many mothers find it difficult to return to the pre-pregnancy weight after birth, and anecdotally, this may be particularly true after a cesarean. Restrictions on mobility, pain from the incision, anemia from blood loss, adhesions from the surgery, etc. may all combine to make a cesarean mother less active than one who has given birth vaginally, sometimes significant lengths of time may affect postpartum weight loss. Therefore, breastfeeding may also helps a woman to return to her pre-pregnancy wight more quickly, if a woman have difficulties to resume her activity level after a cesarean (Alexander et al., 2010).

### **3.2 Immunological protections, hypoglisemia, jaundice, bonding**

Breastfeeding provides optimal nutrition for infants and improves maternal postpartum health (Devroe, 2007). Cesarean babies may be more at risk for infection for several reasons. Cesarean mothers also have higher rates of infection than mothers who have had vaginal births, thus potentially exposing their babies to this infection as well. Invasive procedures and equipment for the breathing problems common to cesarean babies may also further the risk for infection (Alexander et al., 2010; Simpson, 2008; Towle, 2009). And since cesarean babies stay in the hospital longer as their mothers recover, they are exposed to more germs and risk for infections (Rosenthal, 2000; Simpson, 2008; Towle, 2009). Breastfeeding decreases significantly incidence in many of the infant's complications after birth such as diarrhea, gastrointestinal difficulties, respiratory infections, ear infections, urinary tract infections, etc. (Alexander et al., 2010; Simpson, 2008; Towle, 2009). Also, breastfeeding known as a natural first vaccine. Because, colostrum (the first milk) is extremely high in protective antibodies that help for coat the baby's gastrointestinal system and protect it from

harmful bacteria, and it also contains substances that help 'kick-start' the baby's own immune system (Alexander et al., 2010). Intestinal bacteria play an important role in the development of the infant immune system. If these infants who born via cesarean delivery are not support for early breastfeeding, colonization and physiological development of their intestinal flora is delayed (Walker, 2011). Chen et al.(2007) study found that primary intestinal bifidobacteria in neonates who born with caesarean may be disturbed more significantly than lactobacilli. If intestinal flora develop on an alternate trajectory as caused by a cesarean delivery and/or feeding with infant formula, the development of the immune system might also be different, leaving it vulnerable to a number of diseases. For example atopic diseases appear more often in infants who have experienced a cesarean delivery compared with those delivered vaginally (Walker, 2011). Therefore, considering the possible infection risk in many cesarean's babies, breastfeeding's immunological protections become especially important (Alexander, 2010).

Jaundice is common in premature babies, sick babies, babies of diabetic mothers, and when labor was induced or augmented artificially with pitocin. Many of these babies end up with cesareans. Thus jaundice is not an unusual finding in cesarean babies, not because of the cesarean itself but because of the conditions and drugs that tend to cause a higher cesarean rate. Much of the bilirubin in the first days is eliminated through the baby's meconium (stool). If the baby does not stool enough, the bilirubin is reabsorbed through the intestines. Thus breastfeeding frequently is one of the best ways to minimize jaundice. Because, colostrum begins the establishment of normal bacterial flora in the newborn's gastrointestinal tract and exerts a laxative effect that begins elimination of meconium, decreasing the potential reabsorption of bilirubin (Janke, 2008).

Breastfeeding is important to prevent hypoglycemia in infants immediately after delivery. Because of the possibility of low blood sugar after a difficult birth, many hospitals routinely give a bottle of glucose water to cesarean babies. Unfortunately, this tends to cause a quick spike in blood sugar followed by a crash, and this unstable blood sugar can be a problem for the baby, causing a vicious cycle of treatment and re-treatment. The colostrum has plenty of lactose to help raise the baby's blood sugar (Janke, 2008).

Bonding is often an issue after a cesarean. Many mothers report feeling distant and detached from their cesarean babies. Breastfeeding is important for cesarean mothers and babies not only for physiological reasons, for emotional ones too. Unfortunately, many hospitals do not place a priority on breastfeeding, or have routine protocols that actively interfere with breastfeeding. Breastfeeding can help restore the bond between mother and baby, healing the separation that has occurred. For many women, breastfeeding was the most healing thing in their lives after going through the cesarean (Alexander, 2010).

#### **4. Breastfeeding positioning after cesarean**

Successful breastfeeding is possible for mothers if they have had a c section. Epidural or spinal anesthesia is ideal because of it allows the mother to be awake and relatively pain free in the postoperative period, thus improving the chances for early initiation of breast feeding. Appropriate pain medication may aid during this period. But all pain relieving drugs should be passing to baby with breastfeeding.

Many mothers who deliver by cesarean appreciate the extra teaching opportunities they receive while they were staying in the hospital. They usually need more help to find a comfortable position because of the abdominal incision and pain related the movement. The

women may need to void before beginning to breastfeed, and she should be instructed to wash her hands each time nurses her infant. (Lauwers, J.; Swisher A)

There are three common breastfeeding positions that can be used by most mothers. These positions are the *cradle hold*, the *football hold*, and the *side-lying* position. (Littleton & Engebretso, 2002). For some mothers, the best position for breastfeeding after surgery is the "*football position*" as the babies will not lie on the mothers' abdomen. Others put a cushion over the incision to reduce the pain (Filidel Rimon & Shinwell, 2005).

In the *football* (side sitting or Clutch) *hold*; the mother holds the infant's back and shoulders in her palm and tucks the infant under her arm. Remind the mother to keep the infant's ear, shoulder, and hip in straight line. The mother supports the breast with her hand and brings it to the infant's lips to latch on. She continues to support the breast until the infant begins to breastfeeding. This position allows the mother to see the infant's mouth as she guides her infant (Ricci & Kyle, 2008). Holding the baby's head in her right hand, she supports the child's body with her right forearm and raises his or her head to breast level.

The *Cross Cradle Hold* is a different take on the traditional cradle hold. In the *Cross Cradle*, the baby's head is at the mother's right breast but the baby's body is supported by the mother's left arm. Her left hand is at the base of the baby's neck. Supporting it and helping to direct the baby gently. The mother's right hand is then free to help with breastfeeding or she would like (Weiss, 2010).

In the *side lying position*, the mother lies on her side with a pillow supporting her back and another pillow supporting the newborn in the front. To start, the mother props herself up on an elbow and support the newborn with that arm, while holding her breast with the opposite hand. Once breast feeding is started, the mother lies down in a comfortable position (Ricci & Kyle, 2008).

#### 4.1 Breast feeding multiples after cesarean section

The three commonly used positions for simultaneous breastfeeding are as follows (Filidel Rimon & Shinwell, 2005)

1. "*Double football*". An infant's head is supported in each of the mothers hand or on a pillow, with an infant's body lying under each of the mother's arms. Many mothers use these positions initially until they gather more experience.
2. "*Double crade*". In this position each infant is held, in the cradle position. The two infants cross on the mother's abdomen. This position is often used when the mother is more experienced and the infants have better head control.
3. "*Combination of cradle with double football*", one infant is held in the cradle position and the second in the football position.

#### 5. Strategies for increasing breastfeeding success

The possible direct effect of cesarean delivery on the infant has been investigated with attention to the level of circulating catecholamine in umbilical plasma samples (Kroeger and Smith, 2004). Some researchers have found that neuro-behavioral depression caused by labor analgesia, particularly in cases where dosage intervals are short, may result in a delay in positive breast feeding behavior (Dennis, 2002). This has an adverse effect on

breastfeeding. Another study showed that mothers who had cesarean encounter difficulties, feelings of fatigue, sleeplessness and breastfeeding problems in the process of both their own recuperation and in caring for their babies (Gungor et al., 2004).

### **5.1 The effect of cesarean section on breastfeeding**

Cesarean delivery has negative effects on breastfeeding. After a surgical delivery, unassisted mothers are almost certainly unable to hold their newborns in the delivery room or for the frequent breastfeeding periods that follow (Mohrbacher, Stock, 2003), and bottle-feeding has become a common clinical practice in these cases (Perez et al., 1996; Chapman, 1999). In addition, feeding milk-based formulas will reduce the newborn's sucking capacity and consequently the mother's lactation stimulus. If the newborn becomes accustomed to bottle (formula) feedings, he or she may have difficulty adjusting to breastfeeding, which may cause the mother to become discouraged and to consider giving up breastfeeding (Welan et al., 1998).

Cesarean sections with local and general anesthesia are the factors that affect breastfeeding. Especially under general anesthesia, it takes mothers longer to recover from the effects of the anesthesia, being delayed in becoming sufficiently awake to hold and breastfeed their babies. It is obvious that the mode of delivery affects breastfeeding after birth and general anesthesia mothers are more likely to need support and help in breastfeeding compared with local anesthesia mothers. If you must have a Cesarean, prefer regional anesthesia (epidural, spinal, or combined spinal epidural) instead of general anesthesia (Vincenzo, 2010).

A prospective study by Janke likewise found no difference in breastfeeding outcomes by delivery method (Janke, 1998). This finding is important, because support and encouragement have been recognized as key indicators of breastfeeding success even after surgical births.

### **5.2 Lactogenesis after cesarean section**

Lactogenesis is a function of a finely tuned feedback mechanism, which is potentially susceptible to pharmacological, physical, and psychological manipulations on the part of the mother, her infant, or both (Evans et al., 2003; Dewey, 2001). Whichever birth method is used, early breastfeeding is effective in the active secretion of breast milk. A study was carried out with two groups of mothers who delivered with Cesarean section. The first group started to breastfeed one hour after the delivery and the second group 20 hours after the delivery. The study concluded that early sucking after CD promotes significantly earlier colostrum or breast milk secretion (Kroeger and Smith, 2004). Nursing within the first hour after birth and frequently thereafter help bring the mature milk in sooner and increases supply. If possible, nurse the baby before the effects of the regional anesthesia wear off. You will be relatively alert and free of pain, which will help the first nursing go better than if you are worn out, in pain, or in need of sleep (Vireday, 2002).

### **5.3 Mother baby bond**

Literature shows that Cesarean delivery may adversely affect the mother's bonding with her child, acting as an obstacle in the way of a positive mother and child relationship and making it difficult for the mother to accept the infant (Heck et al., 2003; Ince, 1998). In a

Cesarean section delivery, the mother is a surgical patient carrying the risks and problems that this entails (Kroeger and Smith, 2004). Thus, it is important in Cesarean section births that support is given to bring about the early initiation of a mother-and-child bonding.

If a bonding cannot be achieved soon after the birth for reasons related to the mother and child, the relation between the two is seen to adversely affect the physical care the mother gives to the child and also it affects the baby's relations with other people (Riorden, 1998).

#### **5.4 Baby breastfeeding positions after cesarean section**

Mothers delivering by cesarean are unable to offer their babies a satisfactory breastfeeding position because of their discomfort. In addition, they tend to initiate breastfeeding at a later time due to the effect of anesthetics (Heck et al., 2003; Ince, 1998). Mothers need more professional support in the early period after birth, particularly in holding the baby in breastfeeding position. It has been seen that this need is more pronounced in mothers who have delivered by cesarean section under general anesthesia (Cakmak and Kuguoglu, 2006)

The position of baby on the breast is very important to help establish breastfeeding and prevent nipple soreness. A mother should make sure her baby's body is close to her, chest to chest, chin to breast and nose away from the breast. The 'football' or 'clutch' hold is often more comfortable after a C-section. Women whose babies are born by cesarean delivery under general anesthesia can use cross-cradle position and side-lying position to be useful. The side-lying position is relaxing and gets mother much more needed sleep. This position is also beneficial for the mother who had a cesarean birth. Mothers need more professional support in the early period after birth, particularly in holding the baby in breastfeeding position. Utilize the support of a professional lactation consultant to help with positioning and latch-on concerns (Vireday, 2002).

#### **5.5 The effects of early breastfeeding**

The immediately after baby is born is a great time to start breastfeeding. The results demonstrate a dose–response relationship between early skin-to-skin contact and breastfeeding exclusivity (Mannel, 2011). As it is known, the hormones of labor will help breastfeeding get started sooner and more easily (Sozmen, 1992).

After a cesarean, breastfeeding should start as soon as possible. Try positioning the baby lying face down across the mother's breast (similar to cradle hold, but the baby is higher up and away from the mother's incision, and the mom is lying flat). When nursing in this position with a newborn, have someone nearby to make sure the baby's nose doesn't get blocked, since you both may be groggy from the meds. A partner or a nurse help position the baby, and use lots of pillows around the mother to help with support. In order to facilitate the secretion of milk soon after the Cesarean section, baby-mother communication must be established by supporting the general condition of the mother.

Breastfeeding carries certain benefits for a mother delivering by Cesarean section. The suckling action, it is known, stimulates the production of oxytocin which assists the process of healing in the postoperative uterus. Another useful aspect of it is the psychological satisfaction that a mother who has been unable to deliver naturally derives out of finally being able to participate actively in a maternal capacity (Dennis, 2002; Kroeger and Smith, 2004).

Whatever the mother's situation, it is generally reasonable to expect the acceptance of breastfeeding as a goal. In case where it is possible to introduce breastfeeding early on or even when time pass before the medical problems stabilize, the supporting role that the nursing staff will play is imperative to successful and satisfying lactation. The mother pursues regular and frequent feedings (at least 8-12 times in the first days and at least every 2-3 hours for the first several days to a week). Some babies nurse more efficiently than others, while some are sleepy at first and may take a long time to finish a feed. Babies don't need to nurse constantly, but neither should they be artificially limited to small amounts of time. Let your baby set its own feeding cues as long as it seems like they seem like they are getting enough. If there any doubt about baby's weight gain or whether there is sufficient intake, nurse frequently and don't limit time on the breast (Vireday, 2002).

### **5.6 The importance of education in effective breastfeeding**

To encourage, support and achieve the continuation of breastfeeding, educational programs should be organized during the antenatal, natal and postnatal periods.

### **5.7 Family support in breastfeeding**

Many studies have shown that family support to the mother is important in effective breastfeeding. Research has also shown that the prenatal education of fathers on the importance of breastfeeding encourages mothers in successful breastfeeding. That the nursing staff who looks after the mother at home after the Cesarean section has enough information on the uses of breastfeeding is of great importance in that it encourages the mother to breastfeed (Lynn et al., 2011).

Partners have been encouraged to be present in the operating theatre, to share the birth of their babies. The father or relatives can be an important source of moral and physical support and be involved with their baby from birth. Have a family member (father or other relative) in the room too. Sleep with the baby, which can greatly ease regular feedings. Vincenzo et al (20) showed that the role of fatigue, stress, pain, and health complications in scheduled Cesarean deliveries is important in lactation. Lacking assistance, the mother may be unable to breastfeed initially, which can affect lactation and cause breastfeeding to fail (Vincenzo, 2010).

### **5.8 The importance of the relaxation of mother in effective breastfeeding**

Before breastfeeding, the mother must be relaxed that she can succeed this. Those who will ensure this must be the medical team who are there. There is an association between the help of nursing staff and successful breastfeeding.

After cesarean, mother who has pain. So that nurse has to support to mother for breastfeeding. Nurse must to give relaxation of mother in effective breastfeeding. Don't limit time on the breastfeeding. Pursue regular, frequent feedings. Be sure that mother's nutrition is excellent and that the mother is getting plenty of extra fluids. If the mother has pains, she should take medicine as needed in order to be comfortable. A mother without pain will be breastfeed her baby more comfortably (Vireday, 2002).

If the mother is having trouble with milk supply, relaxation exercise and music can be effective. Use relaxation tapes and guided imagery to help decrease mother's stress and

increase milk output. In order for the mother to feel relaxed, support from lactation consultants can be obtained. It should be born in mind that early breastfeeding help lactation by activating hormones.

The emotional condition of the mother also affects breastfeeding. Each mother experiences the postnatal period differently and therefore they should be given psychological support. If they experience problems, get expert help from a professional lactation consultant as soon as possible.

### **5.9 The effect of mother baby bond created by their coexistence in the same room on the effective breastfeeding**

The coexistence of mother and baby in the same room after the birth is important for an effective breastfeeding. As soon as the baby starts to cry, the mother-baby contact starts. Have a family member in the room. Sleep with the baby, which can greatly ease regular feedings. Research shows that rooming in also increases breastfeeding rates. This is probably because the baby nurses more often (stimulating milk supply) and gets less supplementation. Because some hospitals do not permit women who have had Cesarean to have their babies room in with them, this can negatively affect breastfeeding rates.

### **5.10 Avoid supplements**

Hospital staff shouldn't give any supplemental bottles or pacifiers, as these artificial nipples can cause problems (Righard, 1998). If supplements are medically required, hospital staff should use alternative method rather than by bottle (supplements should be given via cup or feeding syringe rather than a bottle to avoid the risk of nipple confusion)

### **5.11 Yeast infection**

A yeast infection of the baby's mouth and/or the mother's nipples is a special concern after c-section. Any pain, redness, burning/itching of the mother's nipples, or white patches seen in baby's mouth may indicate that thrush has developed and needs to be treated. In such a case, the baby rejects breastfeeding.

## **6. Dealing with special situations**

### **6.1 Hypoglycemia**

A frequent concern regarding the newborn infant is hypoglycemia. Part of the challenge of health professionals in dealing with newborns is to discover whether the infant has hypoglycemia. Although no widely accepted standards for serum glucose levels have been set down as accurate criteria for determining whether an infant has the condition, there are various indications that are generally used in assessing hypoglycemia incidence across infant populations (Page-Goertz, 2010).

More recent views on defining hypoglycemia in infants accept the following blood sugar levels as normal in term neonates: 0-3 hours < 36 mg/dl (2.0 mmol/L), 3-6 hours < 25 mg/dl (.4 mmol/L), 6-24 hours < 30 mg/dl (.7 mmol/L), 24-48 hours < 40 mg/dl (2.2 mmol/L), and > 48 hours < 45 mg/dl (2.5 mmol/L) (Çetinkaya et al., 2006; Page-Goertz, 2010).

Hypoglycemia is a common and generally temporary condition in the early days of the infant. Whereas routine follow-ups of blood glucose levels in healthy term newborns are not necessarily a prescribed procedure, certain conditions are recognized as risk factors for hypoglycemia. Babies small or large for gestational age, a smaller twin, infants with a low birth weight or with diabetic mothers, or those with asphyxia, polycythemia, erythroblastosis fetalis, respiratory distress, or with any other similar condition before birth are considered to be at relatively more risk (Janke, 2008; Kliegman, 2002).

In some cases, cesarean birth can lead to the development of hypoglycemia in infants. Hypoglycemia in breastfed babies may be reduced or prevented with the use of methods that support breastfeeding. In this context, breastfeeding within an hour of birth, skin-to-skin contact between mother and newborn to prevent cold stress, increasing the infant's store of glucose, breastfeeding 8 to 12 times per day, not leaving the newborn to cry, and feeding the newborn every 1-2 hours with a spoon or cup if the baby is unwilling to suckle are methods that can be considered (Janke, 2008).

All high-risk babies should be evaluated for signs of hypoglycemia and treated, regardless of whether or not symptoms are present.

## **6.2 Jaundice**

Jaundice is another potential complication that can arise as a result of difficult labor and cesarean birth.

### **6.2.1 Cause and types of jaundice**

Newborn jaundice is a condition that is encountered in more than 60% of healthy babies and one that is more likely to appear as physiological jaundice. The condition reaches pathological levels that require treatment in only about 10% of cases. Jaundice is diagnosed when the total serum bilirubin (TSB) level exceeds 2 mg/dl in the adult and more than 5-7 mg/dl in newborns (Indriyani et al., 2009; Wong et al., 2006). Hyperbilirubinemia, seen in 60%-70% of term infants and in almost all preterms, is the most frequent reason for neonate presentation at the hospital and re-admittance after initial discharge (Maisels, 2006; Maisels et al., 2007; Maisels & McDonagh, 2008; Vatansever & Çelik, 2005).

Because of the potential toxicity of bilirubin, infants with severe hyperbilirubinemia must be promptly treated and closely monitored to avoid the development of acute bilirubin encephalopathy and/or kernicterus (American Academy of Pediatrics, 2004). The risk of developing kernicterus is higher in the premature infant compared to term babies due to the immaturity of the liver. The condition develops when indirect bilirubin levels in the blood rise because of extreme erythrocyte breakdown. When indirect bilirubin levels rise, the bilirubin penetrates the fetal blood-brain barrier, being released into the brain and causing damage to brain cells. The risk of developing hyperbilirubinemia is higher if the baby has acidosis, hypoxia or hypoglycemia, all of which prevent indirect bilirubin levels from bonding with albumin (Çavuşoğlu, 2011). Establishing standardized approaches and monitoring in the treatment of this physiological or pathological process has become a need recognized all over the world and countries such as the United States, Canada and Israel have prepared guidelines for this (American Academy of Pediatrics, 2004; Kaplan & Merlob, 2008; Sgro & Campbell, 2006).

Jaundice develops as one of several types. Abnormal jaundice appears in the first day or two following the birth of the infant and is usually associated with blood incompatibility or other similar problems. This type of jaundice requires a course of treatments, sometimes even blood transfusions (Kliegman, 2002).

## 6.2.2 Causes in relation to time from birth

### 6.2.2.1 Onset in less than 24 hours

This emergence of the condition is always pathological, likely to be a result of hemolysis (Rhesus disease, ABO incompatibility), and may be caused by an underlying serious disease such as sepsis and more rarely, other blood group incompatibilities, red cell enzyme defects (glucose-6-phosphate dehydrogenase deficiency (G6PD), and red cell membrane defects (hereditary spherocytosis) (Statewide Maternity and Neonatal Clinical Guidelines Program, 2009).

Early-onset jaundice appears in the first 24 hours of the infant's life, reaching its highest point on the third or fourth day and then beginning to decline until normal levels are attained after the first month. If processing is slow, concentrations of unconjugated bilirubin can increase. Since large amounts of unconjugated bilirubin are stored in the meconium, a delay in elimination for any reason may result in reabsorption of the bilirubin into the blood. Under normal conditions, the laxative effect of colostrum promotes the elimination of meconium, diminishing the level of unconjugated bilirubin and thus preventing resorption. In some hospitals, newborns are routinely given sugar-water. Infants given sugar-water have higher bilirubin levels; levels are lower in those given colostrum. This is because Dextrose (5%) water has 6 calories per ounce, and colostrum has 18 calories per ounce. By consuming sugar-water, the newborn fails to ingest two-thirds of the calories needed to ward off reabsorption of bilirubin. Effective breastfeeding management that relies on 8-12 feedings every 24 hours can reduce or prevent early-onset **pathological** jaundice (Janke, 2008).

### 6.2.2.2 Onset at 24 hours-10 days

The most frequently encountered reason for jaundice in newborns is increased levels of bilirubin. Jaundice that appears after the first 24 hours of life (after the first 48 hours in preterm infants) and does not exhibit a daily bilirubin increase of more than 5 mg/dl, and does not exceed a level of 12 mg/dl in healthy and term infants or 15 mg/dl in preterms, with a duration of not more than one week in term infants and no more than two weeks in preterms, is referred to as physiological jaundice (Törüner & Büyükönencü, 2012).

"Breast milk jaundice" is jaundice that emerges most frequently at the end of the first week of life in breastfed babies. Although the reason for this type of jaundice is not fully known, it is believed that in some cases, mother's milk contains a substance that inhibits the activity of the liver enzyme glucuronyl transferase. It is thought that this maternal factor increases the reabsorption of indirect bilirubin in the intestinal tract. It is also asserted that genetic factors may also play a role. The type of jaundice seen in breastfed infants who do not get enough mother's milk in the first four days of life is considered early-onset breast milk jaundice whereas the type of jaundice that starts after the fourth day and steadily increases is referred to as late breast milk jaundice. When breastfeeding is stopped for 2-3 days, the level of indirect bilirubin falls within 24-48 hours. Breastfeeding does not need to be interrupted continuously. When breastfeeding is resumed, the jaundice may increase slightly and last

for weeks but it will not reach the levels it had before breastfeeding was interrupted. Mothers should be informed about continuing to express milk during the period that breastfeeding is interrupted (Sivaslı, 2009; Törüner & Büyükgönenç, 2012).

### 6.2.2.3 Onset after 10 days (prolonged for more than 2 weeks)

Causes include conjugated hyperbilirubinemia due to idiopathic neonatal hepatitis, infections (Hepatitis B, TORCH, sepsis), congenital malformations (biliary atresia, choledochal cyst, bile duct stenosis), and metabolic disorders (galactosaemia, hereditary fructose intolerance, Alpha-1 antitrypsin deficiency, tyrosinaemia, glycogen storage disease type IV, hypothyroidism), also, sepsis, hypothyroidism, and hemolysis. Late onset breast milk jaundice develops 4 to 7 days after birth, peaking at 7-15 days. This condition is less common (Statewide Maternity and Neonatal Clinical Guidelines Program, 2009).

### 6.2.3 Treatment

Treatment for hyperbilirubinemia (American Academy of Paediatrics, 2004; Janke, 2008; Maisels & Watchko, 2003) ) includes the use of phototherapy, exchange transfusion, or pharmacological agents.

Because the level of bilirubin causing kernicterus cannot be determined and varies according to the individual infant, deciding upon the time to begin phototherapy is difficult. Newborns are generally introduced to phototherapy when bilirubin concentrations rise higher than 18-20 mg/dL after the first 48 hours after birth. The recommendation for bilirubin levels of over 18-20 mg/dL is more frequent breastfeeding and phototherapy (Agarwal et al., 2011).

Assessment of late-onset jaundice in a newborn is firstly based on an analysis of bilirubin levels, after which the baby is formula-fed for 24 hours followed by another bilirubin level analysis. Late-onset jaundice requires no treatment (Agarwal et al., 2011).

Treatment with an immediate exchange transfusion is indicated if the infant has jaundice and shows signs of intermediate to advanced stages of acute bilirubin encephalopathy, with possible symptoms of lethargy, hypotonia, poor feeding and a high pitched cry, hyper-alertness or irritability, hypertonia, arching, or retrocollis-opisthotonos, where the baby is obtunded or comatose, displays apnoea or seizures. The infant's condition must be reviewed by neonatology specialists before the start of pharmacological treatment (Statewide Maternity and Neonatal Clinical Guidelines Program, 2009).

### 6.3 Sleepy baby

One of the problems many mothers who have cesarean deliveries experience is a sleepy baby who has been affected by the medications administered during the birth and through the surgery. In general, babies show more interest in feeding when they are alert or awake, although they might be drowsy. In the first few hours after birth, babies are usually awake and eager to be fed but they may later become sleepy and then remain sleepy until they are a day old. The nurse will advise that the mother wake and feed the baby every three hours even if the baby does not demand the feeding on its own. Some babies may sleep for longer periods. Loosening the baby's covers, light massage, keeping the baby perpendicular, encouraging movement, changing the diaper, maintaining skin-to-skin contact or talking to the baby may be useful in waking the infant (The Childbirth Centre Queensway Carleton Hospital, 2005).

Mothers may think it unkind to wake a sleeping baby but they must be encouraged to do so in the first few days after birth. Particularly if there are medical concerns such as jaundice, it is important for the health of the baby that mother-led two-hour feeding schedules are set up.

#### 6.4 Prematurity

A major difficulty for cesarean mothers is the birth of a premature baby. Many premature babies are born by cesarean and this situation is twice as hard on the mother, since she must cope with both the stress of recovering from surgery and with the problems of a premature infant. The powerful emotional and physical implications of these situations can prove to be overwhelming for some women. Because preterm babies are born without having completed their intrauterine growth, all of their systems are immature and thus prone to many problems. One of the issues that come up in the clinical environment is the feeding of preterm infants. There are three principal factors that complicate preterm feeding: the relative immaturity of the preterm's gastrointestinal systems; their being born in the 24th-36th gestational weeks, the period in which fetal growth is greatest; and the fact that their nutrient stores are still relatively poor. Other difficulties include the risk of aspiration and the need for maximum patience on the part of the mother because of the baby's need for a prolonged feeding time (Savaşer, 2002).

Preterms begin to be fed by mouth when their sucking, **cheek** and tongue movements have developed, there is enough coordination so that the uvula moves up and back to close the nasopharynx and the epiglottis closes the glottis, esophageal action is able to bring the milk down into the stomach, and hiccup reflexes are present (Çavuşoğlu, 2011; Murray & Mckinney, 2006; Neyzi ve Ertuğrul, 2002). In one study, compared to a control group in which feeding regulation was doctor-designed, premature infants encouraged to feed with oral nutritional pathways were 6 days earlier in making the transition to completely oral feeding (Kirk et al., 2007). Healthy infants weighing more than 1500 grams may feed orally in the first few hours after birth (Tengir & Çetinkaya, 2008).

Preterm feeding depends on the baby's gestational age, whether or not there is a pathological condition, and on the infant's individual tolerance. Babies at a gestational age of more than 32-34 weeks with normal sucking and swallowing reflexes can feed on a bottle/breast in the absence of a severe pathological condition. At the same time, the transition to bottle-feeding may prove to be too stressful for a preterm infant (Savaşer, 2002).

Preterms should not be forced to feed orally if they are not ready. Oral feeding should be discontinued at the first sign of discomfort; the baby should not be allowed to get worse. In the case of babies that are unable to suckle, the use of a spoon may be tried in place of bottlefeeding to encourage babies to get used to the breast. However, sucking-swallowing and breathing coordination must be developed before bottlefeeding is initiated (Savaşer, 2002).

While the goals of enteral feeding are to reduce the incidence of hypoglycemia and hyperbilirubinemia and to enhance cerebral and somatic development, the objectives of making the transition into bottlefeeding are to ensure sucking, swallowing and breathing coordination and to create an adequate tolerance for nutrient intake so that healthy growth and development can be encouraged (Satar, 2001; Savaşer, 2002).

To conclude, nurses should be able to observe symptoms of nutritional deficiency in premature babies, manage an appropriate feeding schedule, watch for complications related

to nutrition, observe the effectiveness of caregiving in terms of feeding, as well as be able to determine and implement effective nursing interventions. Nurses should also never forget their role as nutritional educator and consultant to mothers and fathers before, during, and after feedings.

### 6.5 Breastfeeding in twins/triplets

Twin/triplet births are considered high risk. These infants are at risk of being premature or smaller relative to their gestational age. An ultrasound taken during pregnancy may be useful in determining the major issues in the infant's development (Çavuşoğlu, 2011; Kliegman, 2002, Murray & Mckinney, 2006). Multiple births have climbed significantly in the last 25 years, achieving unprecedented numbers in twins, triplets and other higher order multiples. Contributing to these rising rates have been the trend to delay childbearing and the increased interest in infertility therapy and assisted reproductive technologies (Bowers et al. 2008, Murray & Mckinney, 2006).

In multiple pregnancies, it is important to ensure that each of the babies get adequate care after birth. Any one of the infants may have problems that need immediate intervention (Çavuşoğlu, 2011; Kliegman, 2002). About 2% of twins are born with major structural deformities, a condition that is higher in prevalence in same-sex twins. The most frequently encountered abnormalities are cardiac malformations, neural tube defects, facial clefts, and gastrointestinal anomalies. The rate of cardiac defects and gastrointestinal anomalies in multiples is twice the rate for singletons. The striking incidence of congenital anomalies in all twins is almost exclusively related to the higher rate of anomalies in monozygotic twins (Bowers et al. 2008).

There are some abnormalities that are seen only in multiple gestations. Conjoined twins occur at a rate of 1/50,000 to 1/100,000 births, being three times more common in female fetuses than in male fetuses. Survival of conjoined twins is seen to be generally dependent on the extent of shared organs (Bowers et al. 2008). If twin infants have twin-to-twin transfusion syndrome (or fetofetal transfusion syndrome), the donor twin of the transfusion suffers retarded growth, anemia, pallidity, hypovolemia and malnutrition. For this reason, these babies may have to be transferred to the intensive care unit. Parents' first encounter with the newborn is an important step in their relationship. Parents need guidance in this process (Çavuşoğlu 2011, Kliegman, 2002, Bowers et al. 2008).

Twins and triplets may be nourished like other babies according to their gestational age, their special needs, and the mother's preferences. Breastfeeding has various advantages for twin/triplet births. Firstly, breastfeeding is less time-consuming and more economic. In formula feeding, feeding bottles and specially prepared formulas are needed. It is important for the mother that she is nourished during the lactation period with a diet enriched with protein and calories, adequate fluids and plenty of rest. If care is taken to meet these requirements, the mother will generally have adequate milk for her babies because twins and triplets actually stimulate milk production. Breastfeeding two babies simultaneously will give the mother time to rest and engage in other activities. The mother must be guided in placing herself in an optimum position for breastfeeding. If the infants are being artificially fed, she should enlist the help of other members of the household at feeding times (Çavuşoğlu, 2011).

## 6.6 Failure to thrive syndrome

The most important characteristic that differentiates children from adults is the fact that children are in a consistent state of growth and development. The term “growth” refers to increases in body dimension and “development” to the changes and maturing of biological functions. Growth and development processes are slower or more rapid at various ages but they occur with continuity and follow a defined pattern (Kurul, 2011).

Children’s growth after birth is divided into three main periods—infancy, childhood and adolescence. In the first six months of infancy, growth is a continuation of rapid development, independent of the growth hormones of the intrauterine stage. The most significant factor affecting growth in the child’s first 2 years is nutrition (Neyzi ve Ertuğrul, 2002; Günöz et al., 2003). This is particularly important in the fetal stage. Postnatally, long-term protein and energy deficiency leads to malnutrition and growth retardation. This is also an important issue in infancy, which is a period of rapid growth (Günöz et al., 2003).

Because of the unique characteristics of the period of pregnancy, making sure that conditions are appropriate for the healthy birth of a baby of normal weight and length is relatively more important in this period compared to other periods in life (Neyzi ve Ertuğrul, 2002). Babies will generally lose weight shortly after birth but then start to gain steadily and predictably. If the infant does not gain the weight it is expected to gain or instead loses weight, this is referred to as “failure to thrive.” This state may be caused by various different factors (Şahin, 2002). In the general population, failure to thrive affects 3-5% of infants. There is an organic explanation for a small minority. Non-organic failure to thrive brings with it an increased risk of physical illness, continued growth retardation as well as cognitive and emotional disturbances (Jaffe, 2011; Jolley, 2003).

In Organic Failure to Thrive (OFTT), organs involved in digestion and food absorption are either incomplete or malformed, meaning that the infant is unable to digest food. Non-organic Failure to Thrive (NOFTT) is the most common cause of FTT and refers to situations where the infant is unable to receive enough food because of economic reasons, parental neglect or psychosocial problems (Jaffe, 2011; Krugman & Dubowitz, 2003; Şahin, 2002).

### 6.6.1 Causes and symptoms

Sometimes babies are unable to take in, digest, or process food because of an underlying and inhibitive physical condition. Such conditions may involve the esophagus, stomach, small or large intestine, rectum or anus and are usually brought about by an incomplete development of the organ. Surgical correction is likely to be needed. Physical defects can usually be detected in the days immediately after birth. Failure to thrive may also be caused by an absence or poor quality of available food. Underlying this may be economic factors in the family, parental beliefs and concepts of nutrition, or child neglect. Additionally, in breast-fed infants, the problem may lie in the quality or quantity of the mother's milk. Psychosocial issues arising from poor parent-child relations can also bring about failure to thrive. The child’s appetite may be less than desired because of depression caused by a lack of adequate attention from the parents. Failure to thrive is accepted as a diagnosis when infants and toddlers exhibit significantly less growth than expected (Krugman & Dubowitz, 2003; Şahin, 2002).

Conditions that disrupt the child's health cause deviations in the growth process. For this reason, each child needs to be monitored and evaluated periodically from birth. In the first two weeks of the neonate, weight increase should be assessed at frequent intervals (once a week or more). Subsequently, a follow-up should be made at the end of the first month. The growth and development of the child should from then on continue to be monitored once a month until the 6th month, every three months from 6th months of age to a year, every six months from age 2 to age 6, and annually from age 6 up until adulthood (Neyzi & Ertuğrul, 2002).

### 6.6.2 Diagnosis

It is known that children who are at risk of growth retardation have improvements in their prognosis when they have been diagnosed early and started on appropriate rehabilitation (Kurul, 2011). Babies are usually weighed at birth and that weight reading is used as a reference for future well-baby check-ups. When the baby shows signs of poor weight gain, this requires a more comprehensive examination by the health professional. If no physical deformities can be diagnosed in the digestive tract, the health professional will then review the circumstances of the child's environment. This will involve looking into the family history of height and weight as well asking questions about feedings, illnesses, and family routines. In the case of breastfeeding, an evaluation will also be made of the mother's diet, general health, and well being since it is known that this has an effect on the quantity and quality of mother's milk. The diagnosis of failure to thrive is confirmed where there is a positive growth and a behavioral response to enhanced nutrition (Jolley, 2003; Krugman & Dubowitz, 2003).

### 6.6.3 Treatment

Failure to thrive stems from many underlying factors and therefore the treatment of the syndrome should be based on a multidisciplinary or team approach. The team should make an assessment of feeding disorders and ideally comprise a pediatric dietician, a social worker, and a speech/occupational therapist. A team approach can provide a more comprehensive assessment of the family situation, which will ultimately be more effective in dealing with symptoms such as growth retardation. A focus on only the child may conceal other factors that may be largely contributing to the growth failure (Jolley, 2003).

In the event that there is a physical cause of failure to thrive, such as a disorder of the swallowing mechanism or intestinal problems, a corrective intervention might reverse the condition. If there are environmental factors involved, the physician will advise as to how the parents can obtain sufficient food for the infant. The physician's recommendation may also include maternal education and parental counseling. Hospitalization or the need for a more nurturing home may be indicated in extreme situations (Bergman & Graham, 2005).

### 6.6.4 Prevention

Physical defects that bring about failure to thrive cannot be prevented but corrective measures can be taken so that the infant is not under risk. When there is no physical defect, maternal education and emotional/ economic support systems are all effective in helping to prevent the syndrome (Şahin, 2002).

## 6.7 Polycystic Ovarian Syndrome (PCOS) and breastfeeding

The endocrine disorder PCOS affects 5%-10% of women of reproductive age and is characterized by high levels of androgens (male hormones such as testosterone) from the ovary. It is associated with insulin resistance (Grassi, 2008; Kelley, 2003).

### 6.7.1 Causes PCOS

There is no definitive and known cause of PCOS but there is wide research being carried out to understand the syndrome. It is thought that PCOS develops as a result of genetic factors. Polycystic ovaries have been found in young girls before puberty, indicating that this might be a congenital condition. There are other theories that set forth the hypothesis that PCOS may develop through exposure to high androgen levels in the womb (Grassi, 2008).

### 6.7.2 Diagnosis of PCOS

Currently, PCOS is diagnosed on the basis of two of the following three conditions: oligomenorrhea (period intervals of > 40 days) or amenorrhea; clinical and/or biochemical signs of hyperandrogenism; and polycystic ovaries on an ultrasound, with exclusion of other causes. A few questions asked of a patient may reveal undiagnosed PCOS (Grassi, 2008; Trent et al., 2002).

Milk supply problems may stem from PCOS and therefore, clinical evaluation and management are important in maintaining the breastfeeding relationship (Grassi, 2008).

### 6.7.3 Treatment of PCOS

Relief of PCOS symptoms can be attained with diet, exercise and insulin-lowering medications such as Metformin and Byetta or Rosiglitazone. The use of oral contraceptives may help to restore and regulate menstrual function and hormone levels, as well as decrease acne and hirsutism (Grassi, 2008). The main objectives in treatment are menstrual function regulation, reduction of androgen and insulin levels, and improvement of dermatological symptoms (Grassi, 2008).

Supplementing progesterone and metformin are methods used in maintaining healthy pregnancies in women with PCOS. This has the added advantage of enhancing the milk supply. A study reports that progesterone treatment administered before conception and through the first trimester of pregnancy improved breast morphology and achieved successful lactation in an infertile (but non-PCOS) patient (Kelley, 2003).

Low volumes of glandular tissue may indicate a lack of ductile support for breastmilk production. Lactation may be adversely affected as a result of hormonal imbalances such as elevated androgens, low prolactin levels and insulin resistance, all seen in PCOS. It is common for women with PCOS to produce milk normally and breastfeed without difficulty but whenever milk supply is a problem, an assessment should be made for the diagnosis of PCOS. In the study by Vanky et al (2008) 75% of the women with PCOS were breastfeeding exclusively at one-month postpartum and 14% did not breastfeed at all. In the control group, 89% were breastfeeding exclusively and 2% did not breastfeed. It was found that at three- and six-months postpartum, breastfeeding was equal in the two groups. Another study came to the conclusion that maternal androgen levels in mid-pregnancy are negatively associated with breastfeeding (Carlsen et al., 2010).

Breastfeeding rates in women with PCOS seem to be lower in the early postpartum period. It is possible that gestational dehydroepiandrosterone-sulphate might have a negative effect on the breastfeeding rate of women with PCOS. For this reason, breastfeeding women with the syndrome need additional emotional and clinical support. They should be strongly encouraged to breastfeed since they are usually able to carry this out successfully and it is highly beneficial for their infants (Vanky et al., 2008).

It is suggested that women with PCOS pump their milk from each breast for at least 10-15 minutes in order to maintain an adequate milk supply in the first 2 weeks of nursing. Milk production can be maximized with frequent feedings with full drainage along with an adequate diet and drinking fluids. Setting up strategies for breastfeeding early on during pregnancy, accessing resources from local support groups, and working with a certified lactation consultant soon after delivery are beneficial.

## **7. Breastfeeding and bonding after cesarean**

### **7.1 Effect of cesarean birth on breastfeeding**

In recent years, cesarean births occur more frequently than vaginal deliveries, all over the world and in Turkey. According to Turkish Population and Health Research (TNSA) data for 2008, 36.7% of all births are by cesarean section (Ergöçmen et al., 2009). This percentage is above the target set (15%) by the World Health Organization (World Health Statistics, 2011).

It is known that a cesarean delivery can affect the bonding between mother and baby and make it more difficult for the mother to accept her child (Yiğit et al., 2009). It is believed that the rise in cesarean birth rates stems from such factors as the rise in the ages of pregnant women, the increase in the percentage of first deliveries, the anxieties of mothers and doctors about the delivery, the preference shown to giving birth at private hospitals, and the desire to choose the time of birth (Olds et al., 2004; Usha Kiran & Jayawickrama, 2002; Yılmaz et al., 2009).

There are disadvantages involved in cesarean birth. These include the necessity for surgery, the risk of infection and hemorrhage, the relatively more painful process compared to normal delivery, the prolonged recovery time, problems with digestion and elimination, and the delayed return of the mother back to her normal life (Büyükkayacı Duman & Karataş, 2011; Murray & Mckinney, 2006). Because of these factors, the mother sometimes has difficulty taking the baby into her arms to breastfeed. Cesarean, however, is not an obstacle in the way of breastfeeding. Mothers who have given birth by cesarean section are as capable of breastfeeding their infants as mothers who have had normal deliveries (Yılmaz et al., 2009).

There is often a delay in the initiation of breastfeeding with cesarean mothers due to the fact that these mothers need extra time to recuperate and to feel well enough to nurse their babies. Breastfeeding can begin as soon as they can hold the baby when they are fully conscious and alert. Epidural anesthesia generally is generally effective in helping mothers to breastfeed their babies sooner and for longer periods than mothers who have had general anesthesia (Jonkers, 2005).

Cesarean babies are likely to be drowsy and lethargic, particularly if the mother was kept under anesthesia for a prolonged period during labor. Breastfeeding in these circumstances

will still be successful but the milk supply may take longer to come in compared to what would occur after a vaginal birth. The lethargic baby may need encouragement and stimulation to be alert during feedings, but this period of lethargy is usually quick to pass (Ahmed & Najib, 2010).

After the birth, the nurse should make sure that the mother is provided the support needed from the husband and family to establish the mother-baby bond, initiate and maintain breastfeeding as early as possible, ensure that the infant is fed only mother's milk and that the baby rooms in with the mother. Moreover, during the mother's stay at the hospital, the nurse should provide her with information about lactation and the mechanism involved, breastfeeding methods, baby care, problems that may be encountered and their solutions, breast care, personal care, nutrition and exercise. The method used in breastfeeding should be observed and improvements made to help the mother take the optimum position for successful breastfeeding. It should be ensured that the mother will be able to breastfeed her child using the correct method on her own (Ilgaz, 2000; İnce, 2001; Savaşer, 2001; Yıldız, 2001).

The effects of educating mothers on mother-and-baby and family health have been clearly demonstrated. Information and consultation made available to the mother to eliminate deficiencies of knowledge about baby care has proved to increase competence, boost parents' self-confidence, reduce mothers' anxieties, and contribute to the growth and development of the baby. Social support has been found to have a positive effect on the psychological and social adjustment of the parents as well as on the bond between mother and baby (Gagnon & Bryanton, 2009).

## **7.2 The Importance of the mother-baby bond after a cesarean**

The term "bonding" refers to the emotionally positive and mutually satisfying relationship established between the baby and the baby's care-givers. Bonding is the process in which the baby has the tendency to feel closer to certain people and safer in their presence (Görak, 2002; Murray & Mckinney, 2006; Sabuncuoğlu & Berkem, 2006).

Because of the biological immaturity of the baby's life systems, the baby is dependent upon his mother or caretaker for vital needs such as food, warmth, and protection. It is inevitable and natural that the baby should develop a bond with the person fulfilling its needs, the one who loves, protects and cares for him/her--the mother (Soysal et al., 2005; Tüzün & Sayar, 2006). Babies trust the person they bond to and they want to spend their time with her, feeling safe and happy, seeking that person out whenever there is a situation that provokes fear or discomfort. It is for this reason that the bonding concept in infancy includes all of the patterns of these emotions and behaviors (Soysal et al., 2005).

The togetherness of the family and the baby is a high quality and effective relationship that starts in the prenatal period, increases as the fetus becomes more active, coming to a peak with the actual birth. The process of connection between the family and the baby is different for the mother and the father. While bonding with their babies is a phenomenon that noticeably increases from around the fifth month of pregnancy for women, emotional development in this context is slower in the father and reaches the mother's level after the birth with the start of baby care (Driscoll, 2008; Görak, 2002; Lowdermilk & Perry, 2007; Murray & Mckinney, 2006).

The period right after the birth is an emotional time in terms of mother-baby bonding. The time that the mother is most ready to bond with her baby and respond to the baby's needs is in the first 60-90 minutes after awakening. This is why the mother's contact with the baby is especially important in this time frame (Görak, 2002). Mothers who have difficulty developing bonding behavior are observed to be indifferent and inhibited toward the idea of touching their babies. The mother's ability to cope in this period is not only dependent upon the baby's medical risk status, the age of pregnancy and developmental factors, but also on the quality of the mother's social support, her skills in coping with stress, the marital relations of the mother and father, and is also said to be associated with the relationship of the mother with her own mother (Özbek & Miral, 2003).

Bonding frequently becomes problematic after a caesarean. There are mothers who indicate that they feel distant and detached from their caesarean babies. Part of these feelings may have to do with the fact that the mother cannot be a part of the actual birthing process and therefore is the last person to hold and cuddle the baby. Some women may feel suspicious about whether the baby is really their own. Others are so bothered by physical pain, grogginess and exhaustion that they are disappointed in not being able to feel particularly joyful and caring about the baby (Korte, 1998).

It is important for the cesarean baby to be nursed at an early stage after birth. This is because being nurtured with mother's milk helps to foster the mother-baby bond, facilitates and strengthens the development of a loving relationship. The mother who willingly and lovingly nurses her child instills a feeling of trust in the baby. A healthy biological and psychological closeness is created. Mothers that breastfeed are more compassionate with their babies and complain less about the baby's care and feeding (Brandt et al., 1998).

Goodfriend (1993) has shown that babies taken from their mothers into special care for one reason or another immediately after birth often experience slower development or a halt in development altogether, exhibiting a sad facial expression while not feeding and retreating from social contact (Soysal et al., 2000).

Lastly, starting off on a positive mother-baby relationship after a cesarean helps to instill a feeling of trust in the child and forms the foundation for the development of a healthy personality in later life. Nurses and other health professionals working with newborns have important responsibilities in helping to initiate this relationship.

### **7.3 Factors that affect the mother-baby bond (e.g. depression, hormonal factors, emotional factors, pain)**

Although cesarean birth may appear to be a safe procedure, the fact that it is after all a surgical intervention causes it to be a traumatic experience with related adverse factors (McFarlin, 2004). The physical and psychological effects of cesarean birth have more of an impact on the mother compared to normal delivery. Besides the physical problems that may arise because of the surgical nature of the procedure, not being able to actively participate in the birth, being unable to see the baby immediately and the inability to take an interest in the infant are all factors that may riddle the entire experience of birth with negative feelings (Sayner et al., 2009).

In terms of the attitudes families have toward their babies, it is reported that some of the factors that can influence the relationship are individual genetic backgrounds, the baby's reaction, the baby's being a planned and wanted child, the mother's feelings of trust, the

family's socioeconomic and cultural situation, marital relations and marital support, relations with the mother's family and social circle, the length of labor and birth, the type of birth, the anxiety experienced in the first days after birth, the health of both mother and child, any anomaly that the baby may have, the baby's extended stay at the hospital, the nature of the bonding of the mother with her own mother when she was a baby (Görak, 2002; Steele et al., 2002; Tilokskulchai et al., 2002).

In one study, when mothers were asked when they felt love toward their baby, 41% responded "during the pregnancy", 24% said "at the delivery", 27% remarked "in the first week after the birth", and 8% commented "after the first week". Forty percent of first-time mothers noted that they felt nothing when they first held their babies in their arms. For this reason, evaluating the early reactions and emotions of mothers is important in terms of fostering a bond between mother and infant (Moehler et al., 2006). Another reason mothers may be ambivalent after a cesarean birth is that their pain may be so great that they forget about breastfeeding altogether or feel too uncomfortable to hold the baby in their arms (Ilgaz, 2000).

There are many factors that exacerbate mothers' emotional instability after the birth. Hormonal changes, psychological problems, unwanted or risky pregnancy, difficult birth, conflicts in the family, a lack of social support, not being able to get support from the health team during the birth, a stressful lifestyle, obstetrical complications, the stress created by baby care, and difficult babies can all be cited as potential troublemakers (Beck, 2001; Tammentie et al., 2002; Tezel 2006). In a study where the correlation of the level of social support with pregnancy and postpartum depression was explored, it was found that women whose social support system was lacking were at significantly higher risk both in pregnancy and for postpartum depression (Xie et al., 2009).

The mother's emotional status is a factor that affects the baby's adaptation period and its speed. About 50%-80% of mothers will experience "baby blues" or "postpartum blues" after the birth. Most women in this situation are unable to provide a logical explanation for their feelings, which are in generally affected by hormonal changes. Some women feel depressed because they feel that their bodies have become deformed after the birth, some are disappointed that the delivery did not go as planned, while others are sad because they haven't received the support that they were expecting from their families (Beji, 2010). In a study of mothers in depression, only 29% were identified as having problems with bonding (Brockington et al., 2001). It has been reported that the mother's emotional tie or bond with her baby and the behavioral relationship between mother and baby are often affected by psychological factors. In fact, the babies of mothers experiencing postpartum depression have been found to be lacking a trustful bond with their mothers even in their second year (Martins & Gaffan, 2000).

It is therefore important when there is a new arrival and the mother is trying to cope with adjusting to the baby, with postpartum discomfort, the new order in the family and the changes in her body, that there should be support and information available to the mother on baby care and the baby's needs (Murray & Mckinney, 2006).

#### **7.4 The effect of rooming in on the mother-baby bond**

A relationship of bonding and care is important for the healthy physical, mental and emotional development of the newborn. The role of the neonatal nurse is pivotal in the development of mother-baby bonding. The most important task of the nurse is to determine

the needs of the mother as regards the child and to support the mother until she is able to take on the baby's care on her own. Elements that foster the development of the mother-baby relationship are the baby's being allowed to share the mother's room (rooming-in), skin-to-skin contact between the mother and the baby (kangaroo care), eye-to-eye contact, holding the baby, nursing, and participating in caring for the baby (Görak, 2002; İşler, 2007; Neyzi & Ertugrul, 2002).

### 7.5 The effect of rooming in on breastfeeding

The American Academy of Pediatrics (AAP) recommends that mothers feed their babies exclusively with mother's milk and continue to breastfeed for at least one year. To facilitate breastfeeding, the further recommendation is for mothers to sleep in close contact with their babies. It is emphasized that sleeping together makes breastfeeding easier over the course of the night. Some of the reasons mothers should sleep in contact with their babies include making the baby comfortable, increasing the time spent with the baby, strengthening the mother-baby bond, compensating for a situation where the baby has nowhere else to sleep. The most important reason cited in many studies for sleeping in close contact with the baby is being able to breastfeed (American Academy of Pediatrics 2005; Buswell & Spatz, 2006; Galler et al., 2006).

Feeding the baby breast milk strengthens the psychological bond between mother and child. In particular, breastfeeding in the first half-hour after birth and sharing the mother's room is known to create a bond between mother and baby (Çınar et al., 2010). It is for this reason that mothers and babies should be accommodated in the same room. The mother can then breastfeed for however long and at whatever frequency the baby demands. It is a fact that adequate milk production is dependent upon regular breastfeeding. The mother's being together with her baby in the same room will relax the mother and makes the baby feel safer. The baby's place is with the mother and a system whereby the baby can be in a bassinet but in the same room with the mother will have a positive effect on the baby's health. Putting babies to the breast at frequent intervals is the most important factor in achieving breastfeeding success. The mother should take the baby in her arms and breastfeed whenever the baby cries (Buswell & Spatz, 2006; Jansen et al., 2008).

The close contact of mother and baby after the birth and frequent breastfeeding is the best method of speeding up milk production. The mother should pick the baby up in her arms and breastfeed whenever she wants or whenever the baby cries. Rooming in provides healthy babies with the opportunity to suckle at frequent intervals. The rooming-in arrangement makes both mother and baby happier. Because problems such as crying and feeling hungry are solved on the spot, the baby can rest more peacefully. It has been observed that mothers in rooming-in situations are more successful at breastfeeding (Neyzi & Ertugrul, 2002).

In a study in which the relationship between breastfeeding and where the baby was kept was explored, Çınar et al (2010) reported that babies sleeping in the same room with their mothers were breastfed more than babies kept apart from their mothers and that the statistical difference between the two groups was highly significant. Other studies as well have shown that babies sleeping in the same room with their mothers are breastfed during the night three times more frequently than babies in separate rooms and that overall, this is twice the frequency experienced by babies in separate rooms (Blair & Ball, 2004). AAP recommends that, to make breastfeeding easier, the baby should be in the same room but sleeping in a separate bed (American Academy of Pediatrics, 2005).

Despite the existence of some studies that report that a baby's remaining in the same room with its mother has no effect on breastfeeding (Brenner et al., 2003; Flick et al., 2001), there are a great many studies that conclude that breastfeeding is positively affected when mother and child are in the same room together (Blair ve Ball, 2004; Galler et al., 2006).

Breastfeeding as early as possible after the birth starts mother and baby off on their bond together. When they are accommodated in the same room, mothers tend to more quickly adapt to their own roles and develop increasing interaction with their babies (Görak, 2002; Hofer, 2005). For this reason, in the first days after birth, together with the start of breastfeeding, nurses need to promote an adequate, successful, and sustained interaction between the mother and her baby (Soysal et al., 2005).

### **7.6 The effect of Kangaroo care on the mother-baby bond**

Kangaroo care is a method that has many benefits for both mother and baby, the least of which is that by initiating an interaction between mother and baby, the method helps mothers feel closer to their babies. The method is also known to help to develop mothers' caregiving skills and also regulate babies' periods of sleep. Listening to the mother's heartbeat soothes a baby and promotes feelings of security and a deep sleep (Olds et al., 2004).

Kangaroo care is a cost-free, easy-to-implement method that gives the mother an active role in the baby's care and brings both parents and the baby numerous benefits. It is also regarded as a safe and non-pharmacological model of baby care (Derebent & Yiğit, 2006).

In various studies, it has been found that skin-to-skin contact between mother and child in the first 15-60 minutes after birth has a positive effect on the behavior of both mother and baby throughout the feeding period. Studies conducted since 1980 have found that babies exposed to skin-to-skin contact with their mothers after birth successfully seek the breast, grasping it and suckling without any help from mother (Bystrova et al., 2009; Renfrew et al., 2010).

The skin contact between mother and child not only helps in breastfeeding but also offers benefits for the process of bonding as well. This can be explained by the fact that prolactin and oxytocin secretion is stimulated in this way and the mother's milk supply increases (Matthiesen et al., 2001; Soysal et al., 2005). Early skin contact between the baby and mother has been shown to increase the time and the quality of time at the breast, strengthening the bond between the mother and child and encouraging the mother to be more caring for her baby. It has been observed that mothers who spend more time with their babies, who have more skin contact and practice massaging the baby are more successful at breastfeeding and are able to breastfeed for longer periods of time. In a study by Glover et al (2002), it was noted that mothers in postnatal depression who attended a massage course experienced an increase in the secretion of the hormone oxytocin.

Ali et al (2009), in their comparison of babies receiving and not receiving kangaroo care, reported that the group of infants receiving kangaroo care had good weight gain, shorter stays at the hospital, a lower incidence of hospital infection, reduced risk of hypothermia, and that they received high and exclusive quantities of mother's milk. In short, it can be suggested that parents of newborns be informed about kangaroo care and the advantages it provides so that the method can be practiced with more awareness and consequently with more benefits.

## 8. Conclusion

In conclusion, cesarean birth is not a hindrance to breastfeeding. Mothers who deliver by cesarean section can breastfeed their babies just like women who have had normal childbirth. Cesarean mothers may however encounter problems, some of them having to do with the mother, and some related to the baby. It is inevitable that nurses at hospitals and health clinics have major responsibilities in this context, as they are the health professionals that spend the most time with mothers giving childbirth. Since nurses/midwives are key figures in helping mothers to decide on and continue with breastfeeding, their duties and responsibilities in supporting breastfeeding starts from before the birth and should continue until the time the baby is weaned from the breast. Besides making sure that the baby is provided with good care and nutrition, the nurse should also have knowledge about breastfeeding mechanisms and methods and also the skills to assist mothers in coping with and solving the problems that they may encounter in breastfeeding. For this reason, breastfeeding methods should be observed and improvements suggested so that the mother can be in an optimum position to nurse her baby and to ensure that she will later be able to correctly breastfeed the infant on her own.

Health professionals should realize that breastfeeding and mother-baby bonding following a cesarean birth are multi-faceted processes. In this awareness, health personnel need to work to strengthen the coping strategies adopted by the baby's family at each contact with the baby. Their efforts should also go into increasing the parents' self-confidence about baby care and helping mothers and fathers to develop their respective parental roles.

## 9. Vignettes about the breastfeeding after a cesarean

### 9.1 Vignette 1

Mrs. Merih experienced her first delivery via elective cesarean section under general anesthesia. Her baby was female, healthy, and baby's weight was 3.300 g. She said that about her experiences and feelings after the caesarean section: *"When I met with my daughter, my consciousness was not totally open. The first thing I could remember, breastfeeding was tried to be done with my breasts by nurses instead of me. My first breastfeeding couldn't be in appropriate position. This problem continue until I felt myself well. And I had nipple cracks at the evening of first day. Then the breastfeed become both exciting and painful experience for me. Things that I most wanted after delivery were sitting comfortable, hugging my baby easily, breastfeed her troubleless and comfortable and dressing her up. I could make this my wishes after 7-8 hours from ceserean section. I had more trouble than the mothers who had a vaginal delivery. Because of these reasons I said "I wish, I had a normal delivery" and I felt guilty for being elective cesarean."*

1. What kind of experiences this mother has about breastfeeding and which problems might be later on?
2. By thinking about how cesarean affect breastfeeding, what kind of a care plan should apply for this mother's needs and problems?

### 9.2 Vignette 2

Mrs Karabacak has 3 children. They are all girls. When Mrs Karabacak was 41 weeks pregnant, she was admitted to the hospital for Cesarean section. Mrs Karabacak's husband was not with her. The Karabacaks had not attended preparatory classes for childbirth. Mrs Karabacak's section progressed, and she had a baby girl. Mrs Karabacak

was transferred to the postpartum unit, and the baby girl Karabacak was transferred to the nursery. Because Mrs Karabacak stated that she was tired and that she was not able to look after the baby at the time. Mrs Karabacak will breast-feed her baby. Until now, her husband has not come to the hospital yet. Mrs Karabacak is unhappy. During a conversation with the nurse, Mrs Karabacak said that if the baby had been a boy, her husband would have been very happy.

1. The nurse does an assesment of the baby girl Karabacak with her mother. Which further assesment will be more effective for breastfeeding?
2. The nurse and Mrs. Karabacak have discussed breast-feeding. What kind of strategies should the nurse follow for effective breastfeeding?

### 9.3 Vignette 3

#### 9.3.1 Jaundice

Esra, 30 years old, has given birth for the first time to a live baby boy from her second pregnancy, delivered at term with C/S , birth weight 3180 grams. There is Rh incompatibility with her husband and as a result, Baby Ege has developed jaundice. Initial treatment was carried out immediately after the birth. The first jaundice reading was 15 and Ege was started on phototherapy. Baby Ege would start to cry each time he was laid down in the incubator. Each time they saw the baby cry, Esra and her husband couldn't help themselves and cried along with him. After two days of treatment, the reading came down to 11 and they were discharged. Within a month Ege's jaundice reappeared, the value this time going up to 16. The cause of the jaundice was not exactly known. Mother's milk was stopped for a 2-day interval; the baby was fed frequently but the reading failed to drop. Ultimately, inadequate liver enzymes were suspected and the baby was started on oral treatment. The medication regulated the enzymes. Following treatment, the value dropped down to 7 this time. The parents, however, were very anxious that the jaundice would return. Esra in particular was very despondent and exhausted. She said that her milk had dried up because she had been so upset. At the time they came in for a check-up after the dose of medicine was completed, the jaundice reading had fallen to 5. The mother began to cry from happiness. *"I'm so happy," she said. "My baby doesn't have to suffer any more. They've been constantly drawing blood from his heels, his hands and his arms. His pain was piercing me to the core. Now he's saved from going through all that suffering."*

### 9.4 Vignette 4

#### 9.4.1 Postpartum depression

Ayşe and Ahmet have been married for two years. Ayşe had always wanted to have a baby but because her husband was in a different city due to his job, the husband felt that Ayşe would have trouble with a baby on her own so the couple decided to postpone pregnancy. Ayşe finally did get pregnant. Her mother-in-law stayed with her during the pregnancy. There were constant arguments at home. The pregnancy gave Ayşe a craving for certain foods but no one paid her any attention. Her husband was always away. She was very upset by all of this and she would cry herself to sleep almost every night. Finally, the day came for her to take her baby in her arms. Her husband Ahmet was by her side that day. Baby Arda came into the world a healthy baby; everything was going well. But when two hours later, the baby was brought to Ayşe's room, she didn't want to hold him at first and only threw furtive glances at him from the corner of her eye. When the baby started to cry, she almost

threw him into her mother-in-law's arms. The nurse came into the room and said, "Let's see if we can breastfeed the baby, I'll help you get into position, there's nothing to worry about." Ayşe told the nurse that she didn't want to breastfeed the baby, that she "had pain and that she couldn't hold the baby in her arms." The nurse assisted her in picking the baby up but she burst out angrily, "Take him away from me, I don't have any milk anyway, why do you keep insisting?" And Ayşe started to cry... A consultation was requested from the psychiatric department and she was started on therapy...

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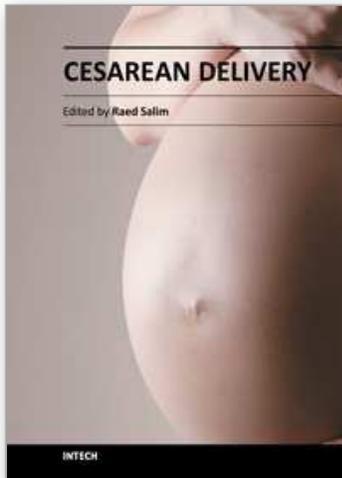
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## **Cesarean Delivery**

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This book provides broad, science-based information regarding the most common major surgical procedure performed, i.e. Cesarean Delivery. The book provides relevant scientific literature regarding epidemiology and rates of cesarean delivery in low and high income countries and the impact of the disparities in the rate of cesarean delivery between countries. In addition, the book systematically reviews the relevant scientific literature regarding all perioperative considerations with a broad cover of anesthetic techniques, drugs and difficulties that anesthesiologists may encounter during cesarean delivery. Care of the neonate after cesarean and crucial guidelines for obese women undergoing cesarean are also provided. The book was written by distinguished experts from different disciplines to ensure complete and accurate coverage of the recent scientific and clinical advances and to bring care providers and purchasers up to date including essential information to help improve health care quality.

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Phone: +86-21-62489820  
Fax: +86-21-62489821

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