

A diagnostic approach to breastfeeding problems

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In the early 1980s, Health and Welfare Canada had a major campaign to promote and protect breastfeeding. Since then, there has been a considerable increase in the number of breastfeeding mothers. Unfortunately, the incidence of breastfeeding difficulties has also risen and recent studies show that the failure rate or early termination of breastfeeding has not changed in the last ten years.¹

One-third of breastfeeding mothers stop within the first two months because they cannot solve their infant feeding difficulties, not because they wish to stop breastfeeding. This early weaning rate is unacceptably high, according to current infant feeding recommendations. The World Health Organization suggests that weaning should not occur until the second year, yet less than 10% of infants in Canada are receiving breast milk by one year.²

Breastfeeding problems include: infant failure to thrive, early supplementation due to inadequate milk supply, infant distress, or maternal discomfort and distress. The etiology or underlying cause(s) should be carefully identified before appropriate management is instituted and preventative measures taken. Successful breastfeeding implies that a young infant is thriving on breast milk and that mother and infant are content. This article focuses on a diagnostic approach to clarifying the underlying causes of breastfeeding difficulties.

Lactation

Lactation is the term given to the physiological process of making milk. Breastfeeding is a technical process involving the infant suckling at the breast. An infant cannot thrive unless lactation and breastfeeding are intact. During pregnancy the breasts undergo mammogenesis. Placental lactogenic hormones and pituitary hormones result in proliferation and extensive arborization of the ducts as well as glandular development. This produces breast enlargement and tenderness. High levels of estrogen and progesterone inhibit the production of milk by blocking the action of prolactin.³

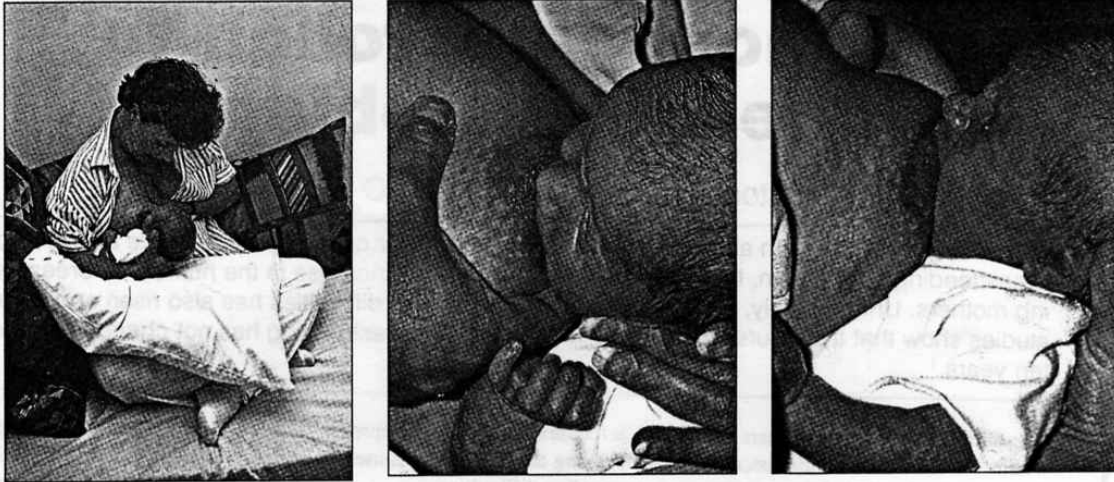
Lactogenesis (initiation of lactation) occurs around parturition. Milk secretion is triggered by the delivery of the placenta and the withdrawal of hormones. Frequent suckling on the breasts causes surges of prolactin from the anterior pituitary, resulting in the production of colostrum.

Colostrum is a dense, caloric food and is the preferred fluid for the prevention of hypoglycemia in infants. It increases gut transit time and it may be the treatment of choice for physiological jaundice.⁷ Infants ingest 7-20 mls of colostrum per feed and do not require supplemental fluids. The addition of water or glucose may upset the process of lactogenesis by removing the infants' hunger drive and decreasing the frequency of breast stimulation and subsequent drainage.

Early initiation of effective breast stimulation is critical to the ongoing production of milk. Studies have shown the duration of lactation correlates inversely with the time of first breastfeeding; a delay of a few hours postpartum may impede successful lactogenesis.⁴ Placental remnants may also impede lactogenesis: complete removal of placental tissue should be ensured.⁵

Ideally, breastfeeding should begin immediately after birth when the infant is in a quiet, wakeful state and then allowed to continue unrestricted.⁶ There are very few medical indications to prevent early

breastfeeding; uncomplicated cesarian birth is not a contraindication to early breastfeeding, nor is gestation diabetes. If mother and infant are separated, the mother must start breast stimulation and expression within a few hours in order to initiate milk production.



Access to an efficient electric breast pump is ideal. Pumping every three hours for 20-30 minutes using a double pumping kit has been shown to be the most effective method of breast stimulation. It is not advisable to postpone breastfeeding by following the usual management of allowing the mother to rest after a prolonged, arduous labor or difficult delivery. Assisting the infant at the breast while the mother is positioned comfortably should not compromise her recovery. The mother should be shown how to latch her baby on in an effective manner if the infant does not naturally do it.

Breast fullness and engorgement in the first few days is indicative of lactogenesis and is related to a marked increase in breast vascularity. It is due primarily to lymphatic congestion, not to quantities of milk. The most effective prophylaxis and management is frequent breastfeeding and/or breastpumping to ensure adequate breast drainage. Circulation and drainage of the lymphatic congestion can be improved by avoiding restrictive clothing, massaging towards the periphery of the breast, or allowing breasts to hang in a dependent fashion to relieve weight from the vascular and lymphatic bed. Hot or cold compresses may also provide symptomatic relief.

Milk build up may cause pressure atrophy of the acinar glands and affect subsequent milk production. Engorgement should therefore be managed aggressively. If the areolar tissue is too distended and tense, the baby may not be able to latch on and suckle, thereby leaving the breast engorged. The mother must be shown how to soften the area by hand or pump, to displace some of the edema and improve the elasticity of the areolar before putting the baby to the breast.

Galactopoeisis is the ongoing production of milk and it is dependent on an intact pituitary/breast axis. Regular effective breast stimulation and complete drainage of milk are required.

Two distinct mechanisms produce different qualities of milk. Between feeds, milk passes across the glands into the ductules through passive diffusion. This milk is composed of low fat, low protein, high lactose, and it collects in the ducts and lactiferous sinuses. Clinically, some women pool (collect) large quantities of this foremilk. When the ejection or letdown reflex under oxytocin is triggered, either by direct breast stimulation or by hypothalamic mediation, the ductules contract and eject this milk through several nipple pores.

The active process of lactation is controlled by prolactin, oxytocin, and other poorly defined mechanisms. When the nipple and lactiferous sinuses are directly stimulated, prolactin surges result in hind milk production, which has a higher fat and protein content. The quantity of milk decreases, while the quality increases throughout feeding.⁸

Breast augmentation may interrupt the afferent nerves and impair letdown. Hypoplastic breasts that require augmentation may never lactate adequately. Reduction mammoplasty interferes with ductule drainage of the breast, and nerve innervation (the earlier technique of nipple auto-transplant) results in almost certain lactation failure. Newer inferior flap techniques now attempt to preserve nipple and areolar integrity. Studies have not been done to evaluate lactation ability following this surgery. It is probable that all surgery impairs lactation to a considerable degree and infant growth should be carefully monitored. Although mothers can be counselled on the nurturing aspects of breastfeeding, the nutritional component may be inadequate.

Breastfeeding

Breastfeeding is a learned skill and mothers must be taught the correct principles associated with positioning and latching, frequency and duration.⁹ A comfortable chair with armrests and a firm back support is preferable to a rocking chair, a pillow can provide support for the infant.

Small infants are positioned most effectively lying on a pillow at the side, tucked beneath the mother's arm, while directly facing the breast with their arms embracing the breast. This is called the "football position" and it affords maximum control of the baby by the mother. She should support her breast by placing her fingers below and the thumb above, avoiding compression over the areolar, and allowing the infant access to the nipple and areolar. She should support the baby's shoulders and head with her palm, gently lifting the infant to her breast. Larger infants are positioned more easily, in a modified cradle hold. The baby lies tummy-to-tummy, facing the breast directly, while the mother uses her forearm to support the baby's back, as she cradles his head and shoulders in her hand.

Latch

To achieve an effective latch the baby must have a wide-open mouth, with the tongue down. Brush the nipple lightly across the infant's lips until his mouth opens widely, then quickly draw the baby onto the breast, allowing the nipple to be positioned at the back of the throat rather than just behind the gums. Some women have inelastic, thick nipple and areolar tissue that may cause flattening or inversion of the nipple when stimulated. This may impede successful latching, unless particular care is taken to ensure that the baby's mouth is wide open before placing him on the breast. Manual expression of milk, softening and pulling out the breast tissue before feeds often help overcome this problem. As the infant suckles, the tissue gradually becomes more elastic and pliable. True inverted nipples are congenital anomalies and may prevent successful suckling. Surgical correction is usually unsuccessful.

Correct positioning and latch is the secret to successful breastfeeding and is often the solution to problems. If the baby is poorly positioned and not latched over the areolar, breastfeeding becomes less effective due to decreased neurohormonal triggering, inadequate compression and stripping of lactiferous sinuses, and incomplete breast drainage. This leads to suboptimal milk production and ejection and, hence, decreased milk intake.

The tongue action on the nipple quickly causes trauma with soreness, fissures and ulcers on the nipple. Almost all sore nipples in the first few days are caused by trauma of the tongue.¹⁰ The correction remedy is simply to reposition the baby onto the breast beyond the nipple.

Suck

When the baby is latched on, he shapes a teat out of the nipple and areolar tissue and begins non-nutritive suckling. This is a rapid, gentle jaw motion that puts pressure from the gums and jaw over sensitive receptors in the lactiferous sinuses, triggering the oxytocin ejection reflex. Foremilk that has pooled in the ducts is ejected by smooth muscle contraction. The time taken to initiate this letdown depends on the strength of the suckle, the correct positioning of the jaws, and the development of the maternal reflex. Nutritive suckling is a rhythmic suck/swallow action that occurs with milk let. The tongue strips the milk out through the teat in a peristaltic manner.¹¹

Throughout the feed, the swallow pattern alternates. It is dependent on the strength and coordination of the suckle, letdown reflex, and milk flow. Towards the end of the feed, the bursts of nutritive suckling decrease. The infant will release the teat when he is ready to terminate feeding.

The infant's suckle on the breast is different from the suck on a rubber nipple. Radiographic studies reveal the tongue is bunched back in order to control milk flow from a bottle. This tongue action can cause nipple trauma at the breast if the infant is confused and unable to shape a teat from the maternal breast.

Based on over 1,500 personal breastfeeding consultations, clinical experience shows that not all infants become nipple confused. The deciding factor tends to be the degree of elasticity and shape of the maternal nipple areolar tissue. The more developed and stretchy the maternal nipple, the easier it is for the infant to switch from bottle to breast. Nipple confusion can be prevented if rubber nipples are avoided. Small babies who require supplements can be fed successfully using gavage tubes, small cups, spoons, or an eyedropper. Even low birthweight babies can be cup-fed with alacrity¹²

Ankyloglossia (tongue tie) is an important cause of suckling difficulty for some infants. The tethered tongue is unable to protrude over the gums and cannot move upwards, the teat is not stripped correctly, and less milk transfer occurs.

The nipple often becomes traumatized and sore, the baby may not thrive, and milk production decreases due to inadequate drainage. A simple "snip" of the frenulum is required and should be done as soon as possible. Experience indicates that after a few weeks it is often difficult to alter the way these infants suckle.

The infant's suck should be evaluated carefully. A visual and digital examination of the mouth are necessary. The fifth finger is inserted slowly into the baby's mouth and the tongue should move gently around it and protrude over the gum. Sucking should be rhythmic, coordinated, and equal. An uncoordinated, weak, fluttering, or bunched-up tongue may indicate a sucking defect. For fuller details concerning evaluation and treatment refer to Danner and Marmet's work.^{13,14}

Duration

All mothers and infants are different, therefore feeding times will vary. Breast milk is rapidly absorbed and gastric emptying generally occurs within two hours. Most babies will breastfeed eight or more times a day. Some cluster-feed and then sleep several hours, other feed repeatedly. Parents should learn to recognize their infant's hunger cues and feed on demand.⁸

The rate for milk transfer varies and is dependent on the volume of milk that has collected in the breast, frequency of letdown, and infant suckling technique.

The mother should assist the infant at the breast throughout feeding and wait until he releases the teat at the termination of the feed. The first breast should be emptied before switching to the second. Excessively long feeding times may mean that the technique is faulty; short feeds may indicate that the mother ends feeding before the infant is ready. Pausing at the breast with eyes closed does not mean that the baby is asleep, he may be waiting for the next letdown.

The lactation ability of women is not equal; the adage of "supply-and-demand" may not apply to everyone. Experience shows maternal lactation ability to be a bell curve. Most women produce milk to meet infants' requirements but some women have an inadequate milk supply, resulting from either iatrogenic causes or of unknown etiology; others have a temporary or persistent overabundance of milk (hyperlactation).¹⁵ Infant growth and clinical manifestations of breastfeeding problems are interdependent on lactation ability, drainage of the ducts, and breastfeeding technique.

Some women with hyperlactation do not completely drain their breasts. This leads to milk stasis, blocked ducts, and, if left untreated, to mastitis and abscess formation. The warning signs are: tenderness, lumpiness, erythema, and flu-like symptoms of fever and aches.

Milk stasis causes an inflammatory reaction that may predispose to infection. Treatment requires complete drainage of the blocked ducts. To do this, it is recommended that mothers take a hot shower and

gently rub the surface of the nipple with a face cloth to ensure that nipple pores are open. Then, with soapy or oily fingers, firmly squeeze the breast from the periphery towards the centre, in a manner similar to squeezing the last drops of tooth paste out of the tube. Slow, steady pressure with the fingers and thumb over the blocked duct will release the blockage and milk will squirt out of the nipple pore. If it is infected, pus will be extruded.

The process should be repeated until milk flows freely or until the pus is out. Manual stripping should be done before each feed, for the next few feeds, to ensure that the duct is open.¹⁶ Antibiotics may be added to prevent spread and the breast must continue to be drained regularly, either by breastfeeding or by using an efficient pump to prevent further milk stasis.

Perceived inadequate milk supply leading to poor growth is usually a result of failure to establish a milk supply in the early postpartum days. Correction of maternal or infant breastfeeding techniques quickly leads to more efficient breast stimulation and drainage and, hence, milk yield rises.

Formula supplementation is rarely the treatment of choice for this problem.¹⁷

In conclusion, when a physician is confronted with a breastfeeding problem, the maternal lactation ability, breastfeeding technique, and infant health should be assessed. Based on this information, a diagnosis can be made and simple advice, following sound principles, can be given to correct the problem.

References

1. Tanaka PA, Yeung DL, Anderson GH: Infant feeding practices: 1985 vs 1977. *Can Med Assoc J* 1987;136:940-4
2. Statement and Recommendation of the Joint WHO/UNICEF meeting on Infant and Young Child Feeding. *Food and Nutr Bull* 1989;2(3):24-31
3. Neville MC and Neifert MR: Lactation: physiology nutrition and breastfeeding. Plueem PUY 1983
4. Salariya EM, Easton PM. and Cater JI: Duration of feeding after early initiation and frequent feeding. *Lancet* 1978;2:1141-1143
5. Neifert M, McDonough S, and Neville M: Failure of lactogenesis associated with placental retention. *Am J Obstet Gynaecol* 1981;140:477-478
6. Salariya EM, Easton PM, and Cater JI: Duration of feeding after early initiation and frequent feeding. *Lancet* 1978;2:1141-1143
7. Auerbach KG, Gartner LM: Breastfeeding and human milk: their association with jaundice in the neonate. *Clinics in Perinatology*. Saunders March 1987; 14(1). 89
8. Woolridge MW, Baum JD, and Drewett RF: Individual patterns of milk intake during breastfeeding. *Early Hum Dev* 1982;7:265-272
9. Royal College of Midwives: Guide to Midwives: Successful Breastfeeding; Honywell Press, Oxford 1988
10. Woolridge MW: Aetiology of sore nipples. *Midwifery* 1986;2:172-176
11. Woolrdige MW: The 'anatomy' of infant sucking. *Midwifery* 1986;2:164-171
12. Armstrong HC. Breastfeeding low birthweight babies - advances in Kenya. *Journal of Human Lactation*. June 1987;3(2)
13. McBride MC, Danner SC: Sucking disorders in neurologically impaired infants: assessment and facilitation of breastfeeding. *Clinics in Perinatology*. Saunders March 1987;14(1): 109
14. Marmet C, Shell E: Training neonates to suck correctly. *MCN* 1984;9:401-407
15. Neifert MA, Seacat JM: Lactation insufficiency: a rational approach. *Birth* 1987;14(4): 182-190
16. Cantlie HB: Treatment of acute puerperal mastitis and breast abscess. *Can Med Assoc J* 1988;34:2221-2226
17. Livingstone VH: Liberty bottler liability bottle? A formula for failure. *Can Med Assoc J* 1988;34:1143-1146

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