Mastitis : a guide for the chiropractor working with the breastfeeding dyad

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INTRODUCTION

In 2021, it is generally acknowledged that the promotion of breastfeeding provides multiple benefits for the mother and child, both psychological and nutritive.[1,2]

The World Health Organization promotes initiating breastfeeding immediately after birth and exclusive breastfeeding for the first six months of life with breastmilk remaining a staple supplement to a whole foods diet until the child's second birthday. Health benefits associated with the nutritional and bioactive components in human milk are many and dependent on breastfeeding duration.[3,4]

Duration of breastfeeding is influenced by social and physiologic factors including, and for our purposes in this paper, pain. In a study of 1,323 mothers who stopped breastfeeding during the first month postpartum, 29.3% cited pain and 36.8% identified sore, cracked, or bleeding nipples as an important reason.[5]

Many mothers recognize that breast milk provides the ultimate nutrition and protection for the infant; however, a significant proportion of women experience difficulties breastfeeding, some of which lead to weaning the infant.[6] Lactation mastitis is one of the sources of pain for many lactating women, and, unfortunately, a frequent cause of cessation of breastfeeding.[7] Efficient and rapid management of these issues are critical in ensuring success for the breastfeeding dyad.[8] The purpose of this paper is to discuss mastitis and the role of the chiropractor in supporting breast health and facilitating resolution of these issues in the postpartum, lactating female. Practitioners such as chiropractors and osteopathic physicians have played an important role in the reduction of pain and restoration of proper biomechanical function as well as serving as a portal for natural health care in the diagnosis, management and collaborative referral of patients for both conventional medical and integrative therapies.[9-11] As such, it is an important aspect of the chiropractic practice when working with the breastfeeding dyad to not only be educated in the differential diagnosis of breast pain or breastfeeding dysfunction as well as appropriate therapeutic management.

ANATOMY OF THE LACTATING BREAST

Gray's Anatomy describes the lactating breast of glandular and adipose tissue held together by a loose framework of fibers called Cooper's ligaments. The lobes are composed of lobules, which consist of clusters of alveoli containing lactocytes (mammary secretory epithelial cells) that synthesize breastmilk. The adipose tissue of the breast is typically situated between lobes rather than within lobules. The alveoli are connected to very small ducts that join to form larger ducts draining the lobules. These larger ducts finally merge into one milk duct for each lobe. Then under the areola this single milk duct is depicted as widening into a lactiferous sinus before narrowing at the base of the nipple and terminating at its orifice on the surface of the nipple.[12] The milk ducts in the lactating breast are small (mean 2mm in diameter), superficial and easily compressed.[12]

INFLAMMATORY DISEASE OF THE BREAST

According to the WHO guidelines, plugged ducts, also referred to as blocked or clogged ducts in the literature, and mastitis are different "stages" of breast inflammation during lactation caused initially by blockage of the lactiferous ducts.[4] This blockage can be caused when ducts are compressed or milk is not efficiently removed from the breast and milk stasis can ensue. Compression can be caused by a variety of factors ranging from systemic inflammation to restriction/compression from tight clothing (like a tight brassiere). Inefficient removal of milk can be influenced by something as simple as mother's lack of knowledge about positioning the infant at breast to more complex biomechanical or oral motor dysfunction of the infant due to subluxation or joint dysfunction or muscular compensations due to the presence of tethered oral tissues.[13] Stress, fatigue, postpartum thyroid dysfunction, anemia and a weakened immune system have also been associated with the formation of plugged ducts.[14] Table 1 (following page) lists many of the possible factors that could contribute to the development of mastitis in the breastfeeding mother.

Education and guidance on mechanical milk expression (by hand or electric pump), breastfeeding ergonomics and on what a good latch looks (and feels) like as well as evaluating how efficient the infant's latch and transfer are can be provided by a professional educated in lactation support. All of the aforementioned causes of mastitis might require the collaboration of the lactation consultant and another appropriate health care provider to resolve the problem.

A plugged duct may have a gradual or sudden onset. The breastfeeding mother, her lactation consultant or other health care provider, including her chiropractor, may palpate a tender lump the size of a pea. If the plug has formed close to the nipple where the duct exits the nipple a small blister or "bleb" might form. Alternatively, the breast may be generally sensitive to the touch in one area without palpating a nodule. Occasionally, they may be a stringy discharge from the nipple (it would be a RED FLAG if accompanied by excess mucous, pus or blood). The infant may frequently detach from the nipple or seem frustrated when feeding from the affected breast because the milk flow

Anatomical variants - maternal	• Short nipples • Flat nipples • Inverted nipples • Very large nipples • Very elastic nipples • Previous breast surgery
Anatomical/physiologic/neurologic variants resulting in inefficient or injurious (compressive) latch–infant	• Torticollis • Asymmetric movement of the mandible • Tethered oral tissues (i.e. tongue tie, lip tie, buccal ties) • Birth injury • Stroke • Jaundice (lethargy)
Direct compression of the breast by mother	• Fingertip compression during hand expression too forceful • Bruising from overzealous or inefficient hand expression
Direct compression of the nipple by infant	• mechanical compression from a poor or shallow latch where the lips and/or gums are compressing the nipple only and not encompassing the full nipple and areola • biomechanical dysfunction of the infant due to subluxation • oral motor dysfunction • muscular compensations due to the presence of tethered oral tissues
Engorgement	• Hyperlactation • Missing a feeding • Inefficient emptying of breast by infant or pump but frequently stimulating the breast • Weaning too quickly
Ergonomics	• Position of infant at breast
Factors causing external compression/restriction of the breast	• Tight clothing (brassiere, sling for babywearing) • Improperly sized nipple shield • Improperly sized breast pump flange • Holding the flange of the breast pump too tightly against the breast • Failure to understand hand expression
Failure to empty breast	• Failure to understand how to use breast pump • Improperly functioning breast pump
Systemic Inflammation/edema--maternal	• IV administration during labor • Gut dysbiosis • Food intolerance • Underlying infection • Lymphedema • Autoimmune diseases • Postpartum thyroid dysfunction • Stress (high cortisol levels) • Fatigue • Anemia • Weakened or over-reactive Immune System

Table 1. Possible factors contributing to mastitis in the breastfeeding mother.

may be reduced due to the presence of the blockage or due to a change in the taste of the milk. (https://www.medela.com/breastfeeding-professionals/education/building-and-maintaining-milk-supply/blocked-ducts).

A plugged duct may also occur if there is damage to the nipple due to repeated compression from poorly fitted flanges or nipple shields, inflammation in the mother from other issues like food sensitivities, allergies, systemic infections like candida albicans, illness or from oral motor dysfunction of the infant (like tongue tie or other restrictive tethered oral tissues (rTOTS). Loss of integrity of the nipple can result in the point of entry for bacteria or yeast into the ducts resulting infection and blockage.

Initially, mastitis is an inflammation of the breast that is most commonly caused by milk stasis (obstruction of milk flow) rather than infection (bacteria or yeast entering the breast, multiplying and causing a blockage). Although a plugged duct may be painful, when it is accompanied by changes in skin color or temperature (red, hot, "streaking" - a burst of red, hot, sensitive "lines" radiating away from the site of the plug) it has potentially advanced to mastitis. Non-infectious mastitis can usually be resolved without the use of antibiotics. However, the World Health Organization suggests that in a breast from which the milk has not been effectively removed, non-infectious mastitis is likely to progress to infectious mastitis and from there to abscess formation.[4] See RED FLAGS in Table 2.

Infectious mastitis may require pharmacologic intervention with antibiotics. An abscess could also require surgical intervention, if not dealt with quickly and effectively. Antibiotics present their own challenge when required, as first, they treat the infection but don't necessary clear the blockage and, secondly, they often result in disruption of the healthy microbiome and its subsequent ramifications ranging from gastrointestinal distress, increases in inflammation to disruption of the critical functions of the immune system.[15]

To support the chiropractor when evaluating a patient with pain associated with breastfeeding, The Academy of Breastfeeding Medicine provides an excellent outline of the appropriate history questions and physical examination to establishing a differential diagnosis.[14]

COLLABORATIVE CARE

Collaborative care of the breastfeeding dyad should be a part of every chiropractor's treatment planning. Optimizing lactation support is essential in women with mastitis and chiropractors are a potentially excellent source of information and referrals for collaborative care when patients present with breastfeeding dysfunction.

First and foremost is the recognition of the professionals, International Board Certified Lactation Consultants (IBCLC), who are exclusively trained to support the breastfeeding dyad.[16] According to the IBLC, their certifying agency, an "International Board Certified Lactation Consultant functions and contributes as a member of the maternal-child health team. They provide care in a variety of settings, while making appropriate referrals to other health professionals and community support resources. Working together with mothers, families, policymakers and society, IBCLC certificants provide expert breastfeeding and lactation care, promote changes that support breastfeeding and help reduce the risks of not breastfeeding." (https://iblce.org/about-iblce/).

Patient education is an important part of any therapeutic protocol to prevent or treat plugged ducts and mastitis. Empowering the patient with tools for self-care is one of the roles of the lactation consultant and any other health care provider in a supportive role to the breastfeeding mother.

Manual interventions such as those used by chiropractors and osteopathic physicians for breastfeeding dysfunction have been described in the literature and address many of the biomechanical causes of oral motor dysfunction in the breastfeeding infant.[16-18] Oral motor dysfunction often results

Timing	• The mother has been recently hospitalized. • The neonate is less than 2 weeks of age.
Integrity of breast/nipple	• Breast feels hot to the touch • The inflammation (mastitis) appears in both breasts. • There is broken skin on the nipple with signs of infection (redness, inflammation, pus). • Blood or pus are present in the milk when expressed. • Red streaking is present on the breast.
Other signs/symptoms of infection	• Chills • The mother's temperature is suddenly elevated. • The mother is experiencing flu-like symptoms (muscle or joint pain, headache, lethargy). • Sudden, severe onset of symptoms.

Table 2. Red flags in chiropractic management of women with mastitis.

in compensatory behaviors that may compress the nipple resulting in the development of a plug of coagulated milk and ultimately, these compensations of the infant can result in the loss of integrity of the breast making it vulnerable to infection. It can also be hypothesized that manual therapies like chiropractic and osteopathy can address edema and biomechanical dysfunction as a result of the ergonomics of the postpartum lactating female potentially also reducing the risk of developing a plugged duct.

There are also other health care professionals who also utilize ancillary treatment like acupuncture, supplements and herbs, homeopathy, essential oils, manual lymphatic drainage, Kinesio taping, ultrasound and low level laser technics to support recovery. Additional references for complementary and alternative approaches are provided in Table 3. These are not home care approaches to be undertaken without appropriate supervision/advice but can be trialed if the patient is not responding to self-care approaches

Intervention	Link	Notes
Acupuncture	• A Short Guide on Acupuncture & Herbs for Mastitis • A Five-step Systematic Therapy for Treating Plugged Ducts and Mastitis in Breastfeeding Women	Acupuncture is often combined with other treatment, particularly herbs.
Herbs and supplements	• A Short Guide on Acupuncture & Herbs for Mastitis • Humphrey, Sheila. *The Nursing Mother's Herbal* (2003 paperback) • Topical curcumin for mastitis • Thai herbal compress • Herbal compresses • Omega 3's • Cabbage leaves	Immune system-stimulating herbs such as echinacea, anti-inflammatory herbs like curcumin or cabbage leaves or supplements like the Omega 3's, adaptogenic or tonic herbs such as ginseng, and vitamin C are often recommended.
Essential oils	• Plant essential oils' effect on mastitis	Most research on essential oils focuses on dairy cows and is often extrapolated to nursing mothers. ***WARNING***: Although often recommended, great care needs to be paid to the potential toxicity of the infant ingesting oils from contact with the breast.
Homeopathy	• Homeopathic treatment of plugged ducts and mastitis	
Manual lymphatic drainage	• Comparison of manual lymphatic drainage and kinesiotape on postpartum breast engorgement	
Kinesiotape	• Same as above • Does Kinesio Elastic Therapeutic Taping Decrease Breast Engorgement in Postpartum Women	Although there is a paucity of literature supporting the use of K-Tape in treating mastitis, clinical experience has demonstrated success in reducing edema which can be one cause of mastitis.
Ultrasound	• Ultrasound as a treatment of mammary blocked duct • Ultrasound for postpartum breast engorgement	
Low level laser	• Low level laser for breastfeeding problems • Low level laser for nipple pain in breastfeeding women	

Table 3. Supplementary resources for complementary and alternative interventions for mastitis.

based on clinical experience despite mixed literature reviews.[25,26] Obstetricians, primary health care physicians, naturopathic physicians, physical therapists, homeopaths, acupuncturists, herbalists, ayurvedic practitioners and massage therapists are just a sampling of other healthcare providers who can provide support to the breastfeeding mother should pain associated with breastfeeding arise and the chiropractor should refer appropriately and in a timely fashion and can work collaboratively to assure the best outcome for their patient.

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IF PAIN and FEVER persist referral to a qualified medical or naturopathic physician is advisable. Allopathic interventions include Ibuprofen to reduce pain and inflammation. Be aware that ibuprofen can mask the flu-like symptoms which indicate systemic infection (fever, body aches, chills). If your patient has these symptoms, they may need to contact their OB/GYN/Midwife or PCP who may prescribe antibiotics. Some alternatives or additions to antibiotics offered by IBCLC's and CAM providers are below:

- **Raw garlic**: 4-5 garlic cloves per day; allicin, the chemical property that gives garlic its strong odor, also has antimicrobial properties that have been shown to be effective against infection. Raw garlic is preferred over garlic capsules. Tip: chop garlic finely and swallow using juice.[19]
- **Elderflower, yarrow, and peppermint**: This combination of herbs is excellent for treating mastitis when there is engorgement or an overabundance of milk. The yarrow is very astringent and helps slow the milk production. The herbs have antimicrobial and antipyretic activity. These can be used in addition to garlic. Only use 1-2x as yarrow can slow milk production. Herbal tea: http://herbsandremedies.com/recipes/detail/elderflower-peppermint-yarrow-tea. This formula is best taken as a tea made of equal parts of the herbs.
- **Vitamin C megadose**: 3000-5000mg of vitamin C daily. Increase dose to "bowel tolerance" (meaning, until stool loose).[20]
- **Echinacea tincture**: Echinacea has immune boosting properties. Administer 3-4 times per day. Can be given in capsule or tincture form.[21]
- **Fermented Cod Liver Oil**: 1 teaspoon twice a day during the infection to combat inflammation.[22]
- **Breastfeeding probiotics**: multiple studies have shown that probiotics (specifically lactobacillus strains) are effective in both preventing and treating mastitis.[23] This is the example of a specific product designed for breastfeeding mothers
- **Adaptogens**: In cases of recurrent mastitis, there may be underlying immune system compromise, stress being the issue (especially sleep deprivation and handling the rest of the families' needs when postpartum and nursing). Ashwagandha is a great long-term adaptogenic herb that helps the body deal with stressors (both physical and emotional) which tax the immune system. B Vitamins are also important (and knowing if your patient has the MTHFR genetic mutation. If the patient is not able to methylate their B vitamins, appropriate vitamins need to be prescribed: methyl folate, methylcobalamin, Pyridoxyl-5-Phosphate (P5P)).[24]

Figure 1. Commonly used complementary herbal/nutritional treatment for women with mastitis.

Self-Help for Nursing Moms with Plugged Milk Ducts

• **BREASTFEED! Nurse frequently or nurse on demand**. If the breast is not fully emptied after the feed or if you can still feel the plug with your fingertips, then hand express or pump to expel the plug.

• **Massage**: excellent video and research on gentle self-massage and hand expression (emphasis on gentle): https://vimeo.com/65196007 & http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.865.2838&rep=rep1&type=pdf.

• Apply **vibration** to the affected area: again, very gently apply light vibration (the back of an electric toothbrush, a personal vibrator, a child's vibrating toy) moving from the chest towards the nipple.

• **Silicone hand pump** (i.e. haaka: Fill haaka with enough warm water so that when suctioned onto your breast, your nipple is submerged in water. Add 1-2 tablespoons of epsom salts. Suction onto breast for 15-20 minutes. Epsom salts are frequently used to reduce pain and swelling, which can also help a clog loosen. (***Note:** *discard solution afterwards — babies cannot drink the milk that is expressed*).

• **Position** your baby with their chin pointed to the plug (using football, cradle or koala hold) or nurse side-lying with the plugged breast on top (lie on your right side if the left breast is plugged and nurse the baby from the left breast). Medela provides an excellent outline of these ways to hold your baby to nurse and "dangle feeding" is another helpful possibility! https://www.medela.com/breastfeeding/mums-journey/breastfeeding-positions.

• **Cabbage leaf compress**: cabbage leaves can play a role in reducing the pain and inflammation of mastitis. Crack fresh, clean green cabbage leaves and place them inside your bra against the inflamed tissue and plug. Do not cover the nipple. Leave them in for 20 minutes. Remove and wash breast (discard leaves). Repeat 3 times during the day. ***Note:** Cabbage leaves are also used to help dry up milk supply, so if you're hoping to continue breastfeeding, be sure to follow this time guideline–DO NOT exceed it.

• **Alternate moist heat and cold compresses before nursing or pumping**:
  o Take a warm shower or place a comfortably warm moist compress on the breast to help loosen the plug (think melting butter). Apply for only 3-5 minutes to avoid increasing inflammation.
  o Cold compresses: apply the cold pack to the breast (not the nipple). Cold helps decrease inflammation and pain. Be sure to have a cloth barrier between the ice pack and breast. Don't apply ice for longer than 3-5 minutes or the brain will think you are going to suffer frost bite and will flood the area with warm blood causing swelling again.

• C**astor Oil Pack Therapy**: Instructions: http://www.drmomma.org/2010/02/castor-oil-pack-therapy.

• **Hydration**: Drink lots of fresh water! Avoid dehydration! You can drink coconut water, bone broth or clear soups, or a pinch of sea or Himalayan salt and squeeze of lemon in your water.

• **Rest**: Ask for and accept help with meals, holding the baby (between feedings), and companionship for other children at home. Rest is crucial! Your body needs rest to fight infection and heal.

• **Sunflower Lecithin**: this is a supplement that is thought to be an emulsifier, which essentially means it may decrease the thick stickiness of breastmilk, encouraging expression of plugged ducts. Talk to your healthcare provider about appropriate doses for you.

• **Homeopathy**: OTC remedies are often recommended in social media for plugged ducts (Phytolacca) and mastitis (Belladonna) but a consultation with your health care provider who practices homeopathy for potency and frequency is advised rather than self-prescribing.

• **Essential oils–WARNING**: Although often recommended, great care needs to be paid to the potential toxicity of the infant ingesting oils from contact with the breast.

IF ALL MEASURES FAIL AND PAIN, REDNESS, STREAKING OR INFLAMMATION PERSIST, YOU SUDDENLY HAVE A FEVER OR FEEL LIKE YOU HAVE THE FLU, OR YOU SEE BLOOD OR PUS IN THE MILK YOU EXPRESS CONTACT YOUR HEALTH CARE PROVIDER IMMEDIATELY!

Figure 2. Self-Help for Mothers with Mastitis

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