

# ABM Clinical Protocol #20: Engorgement, Revised 2016

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*A central goal of The Academy of Breastfeeding Medicine is the development of clinical protocols for managing common medical problems that may impact breastfeeding success. These protocols serve only as guidelines for the care of breastfeeding mothers and infants and do not delineate an exclusive course of treatment or serve as standards of medical care. Variations in treatment may be appropriate according to the needs of an individual patient.*

## Purpose

**T**HE PURPOSE OF this protocol is to evaluate the state of evidence as to the prevention, recognition, and management of breast engorgement to encourage successful breastfeeding.

## Background

Engorgement has been defined as “the swelling and distension of the breasts, usually in the early days of initiation of lactation, caused by vascular dilation as well as the arrival of the early milk.”<sup>1</sup> The concept put forward by Newton and Newton<sup>2</sup> in 1951 suggested that alveolar distension from milk then led to compression of surrounding ducts, which subsequently led to secondary vascular and lymphatic compression. Some degree of breast fullness in the second stage of lactogenesis (secretory activation)<sup>3</sup> is considered physiologic and should be reassuring for the mother and healthcare provider that milk is present. A recent study suggested considering distinguishing between “breast engorgement” and “breast edema” although both may cause significant issues for mothers and infants in the postpartum period.<sup>4</sup> (II-2) (Quality of evidence [Levels of evidence I, II-1, II-2, II-3, and III] is based on the U.S. Preventive Services<sup>5</sup> Task Force Appendix A Task Force Ratings and is noted in parentheses.) Breast edema is fluid accumulation in the interstitial space caused by generalized fluid accumulation late in pregnancy or as a result of large amounts of intravenous fluids during labor and may be responsible for edema around the areola and nipple.<sup>6,7</sup> (III, III).

Engorgement symptoms occur most commonly between days 3 and 5 postpartum, with more than two-thirds of women experiencing tenderness by day 5, but the onset may be as late as days 9–10.<sup>4,8,9</sup> (II-2, III) In the 2008 Infant Feeding Practices Survey, 36.6% of women reported overly full breasts within the first 2 weeks postpartum,<sup>10</sup> while other studies indicate that up to two-thirds of women experience

at least moderate symptoms of engorgement.<sup>9,11</sup> (III) The incidence of engorgement may depend on breastfeeding management within the first few days following birth. Engorgement occurs less commonly when infants spend more time breastfeeding in the first 48 hours<sup>12</sup> (III) and when mother and infant are rooming in. One difficulty when evaluating incidence and treatment options for this condition involves the spectrum of engorgement, from expected physiologic breast fullness through to severely symptomatic engorgement. In addition, more optimal lactation management and support that are available in some healthcare facilities may reduce the frequency of significant symptoms compared to less supportive environments.

## Assessment of Engorgement

### Tools

No standardized reliable tool for assessing breast engorgement has yet been established. Various methods of subjectively rating engorgement have been utilized, such as visual descriptions, cup size, hardness or firmness scales, skin tension measurements, and thermography, but none has become clinically useful.<sup>2,9,13–16</sup>

### Predictors

1. The onset of lactogenesis II (secretory activation) occurs sooner in multiparous compared to primiparous women<sup>17,18</sup> (II-2, II-2) and tends to resolve more rapidly than in primiparous women.<sup>9,19</sup> (II-2)
2. In one study, women who underwent cesarean section typically experienced peak engorgement 24–48 hours later than those who gave birth vaginally.<sup>12</sup> Women in this study also initiated breastfeeding significantly later than their vaginally delivered counterparts and the impact of this delay has not been adequately explored. This finding appears consistent with other research that

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- has found that a cesarean birth may correlate with a higher likelihood of delayed onset of lactogenesis.<sup>17,18</sup>
3. Large amounts of intravenous fluids given during labor appear to be associated with an earlier and more prolonged maternal perception of breast fullness and tenderness as well as increased levels of breast edema extending beyond day 9 postpartum.<sup>4</sup>
  4. One study suggests that women who experience premenstrual breast tenderness and engorgement may be more likely to develop more severe engorgement postpartum.<sup>20</sup> (II-2)
  5. It is not uncommon for women who have undergone any breast surgery or lumpectomy to experience engorgement, and so, they should be given anticipatory guidance regarding these potential complications.<sup>21,22</sup> (III, III)
  6. The influence of length of labor, premature delivery, and anesthetic options remain unclear.<sup>23-25</sup> (III, III, III)

### Differential diagnosis

Differentiating engorgement from these other causes of breast swelling is key.

1. Mastitis. Engorgement may be associated with a slight elevation of maternal temperature, but significant fever, especially when associated with breast erythema and systemic symptoms such as myalgias, suggests the diagnosis of mastitis. Typically, mastitis affects only one breast with a segmental pattern of redness.<sup>26</sup> Engorgement is usually diffuse, bilateral, and not associated with breast erythema.<sup>1</sup>
2. Gigantomastia. Gigantomastia is a diffuse bilateral process that occurs very rarely and does not typically present in the postpartum period. The reported incidence is ~1:100,000, but some feel that it is more common with a rate as high as 1:8,000.<sup>27</sup> It is usually regarded as bilateral, benign but progressive massive breast enlargement to an extent that respiratory depression or tissue necrosis may occur. Infection and sepsis may result. Histologic findings suggest marked lobular hypertrophy and ductal proliferation. No clear etiology for this condition has been elicited, although hormonal changes may be involved.<sup>27-30</sup>

### Prevention and Treatment

#### Prevention

There has been a great deal of research into medical therapies to suppress lactation, but limited research into prevention and treatment strategies for lactating women who may develop engorgement. Focused education given to mothers regarding breastfeeding positioning and attachment has shown no difference in subsequent incidence of engorgement.<sup>31,32</sup> (III, III) However, some breastfeeding techniques have been specifically associated with less engorgement, including emptying one breast at each feeding and alternating which breast is offered first.<sup>33,34</sup> (II-1, II-2) Limited evidence suggests breast massage after feeds performed for the first 4 days postpartum may reduce the extent of engorgement.<sup>32</sup> Although it appears that, in observational studies, frequent, effective feeding patterns help prevent engorgement,<sup>12</sup> this

management option has not been studied in detail.<sup>33</sup> One recent study found a reduction in engorgement in women who expressed colostrum once or twice for 25–30 minutes in the first 1–2 days (vaginal birth) or 2–3 days (cesarean birth) postpartum. Infants of the women in this study did not have free access to the breast and were limited to six to eight breastfeeds per day.<sup>20</sup> However, these findings do suggest that early and frequent breast emptying in this population may prevent engorgement.

#### Treatment

While one study found an increase in milk production on day 4 for primiparous women with marked engorgement,<sup>19</sup> adequate management of engorgement is important for successful long-term lactation.<sup>35,36</sup> (III, III) Experiencing engorgement is temporarily uncomfortable for mothers and appears to be associated with an increase in the likelihood of early weaning.<sup>37</sup> (III) Failure to effectively resolve prolonged symptomatic engorgement may also have a negative impact on continued production of an adequate milk supply. Suckling problems in the infant should be considered at the same time. Moreover, pain control is an important consideration in managing a woman with symptomatic engorgement.

Both pharmacologic and nonpharmacologic therapies have been considered to be beneficial for the treatment of engorgement. A Cochrane Systematic Review of both randomized and quasirandomized controlled studies assessing the effectiveness of treatments for breast engorgement was done by Mangesi and Dowswell in 2010.<sup>38</sup> (I) This analysis identified eight studies, including 744 women who evaluated acupuncture, cabbage leaves, protease complex, therapeutic ultrasound, oxytocin (subcutaneous), and cold packs. Meta-analyses could not be performed because of the differences in the study designs. Overall, the authors concluded that there was insufficient evidence to recommend any particular treatment regimen.<sup>38</sup> However, they did find the following.

1. Acupuncture resulted in significantly fewer women having engorgement symptoms on day 4 and 5, but not day 6 postpartum.
2. Although the study investigating cold packs found a reduction in pain intensity in the intervention group, problems with the study design make results difficult to interpret.
3. Enzyme therapy using a protease complex enteric-coated tablet containing 20,000 U of bromelain and 2,500 U of crystalline trypsin, another anti-inflammatory agent taking orally, was compared to a placebo. However, this study is now 50 years old and it is not certain that the preparation is in general use.<sup>39</sup> (I)
4. Treatments such as cabbage leaves may be soothing, are inexpensive, and are unlikely to be harmful although evidence for their use is not conclusive.
5. For many treatments (ultrasound, cabbage leaves, and oxytocin), the interventions did not result in more rapid resolution of symptoms than occurred in the comparison groups (engorgement symptoms often resolve over time).

Another later systematic review conducted by the Joanna Briggs Institute<sup>40</sup> (I) specifically looked at the effect of the

application of cabbage leaves on engorgement and found that, although women who used cabbage leaves had a reduction in pain scores, there was not sufficient evidence to indicate that they were more effective than other treatments for reduction in engorgement.<sup>40</sup> Researchers continue to explore the effect of cabbage leaves.<sup>41</sup> (I) In Japan, grated potatoes are used for the same purpose, although there is no evidence for its use. (III)

It may be that some treatments help a mother's discomfort without relieving the actual engorgement but could still have an effect on preventing early weaning.

#### Other treatment considerations

1. Breast massage. Two studies of trials of different types of breast massage, Gua-Sha Therapy<sup>42</sup> (I) and Oketani breast massage<sup>43</sup> (II-2), compared to conventional breast massage in control groups found that there was a reduction in pain, engorgement, and discomfort in the control and intervention groups in both studies, but the intervention groups had a significantly greater reduction in symptoms.

Another observational study performed in breastfeeding women with symptomatic pain, engorgement, plugged ducts, or mastitis evaluated therapeutic breast massage during lactation (TBML) by a trained provider combined with consultation with a lactation professional. TBML included an average of 30 minutes (range 15–60 minutes) of gentle breast massage toward the axilla alternating with hand expression. Breast pain, tenderness, and engorgement severity were significantly reduced following treatment. Periareolar swelling decreased from 93% to 7% ( $p < 0.001$ ) and engorgement severity using the 6-point Humenick scale decreased from 5.31 before treatment to 3.48 after TBML.<sup>34</sup>

2. Herbal remedies. At the present time, herbal remedies for breast engorgement and oversupply have been described, but evidence regarding their effectiveness is limited. One randomized trial of the application of Hollyhock compresses in conjunction with hot and cold compresses found a significant reduction in engorgement severity compared to hot and cold compresses alone.<sup>44</sup> (II-I)
3. Hot and cold packs. A number of intervention trials have used the application of warm/hot packs before a breastfeed<sup>42</sup> and cold packs following a breastfeed in their control groups. These studies found a reduction in engorgement symptoms in both the control and intervention groups suggesting that hot and cold packs may be as effective as other treatments.<sup>42–45</sup> (II-3) There are no trials that compared hot and cold packs with no treatment.
4. Hand expression or pumping. If the infant cannot successfully attach to the breast or breastfeed, measures should be undertaken to assist the mother with milk expression for a few minutes to allow sufficient softening of the breast so that the infant can latch well. If the infant cannot breastfeed, the milk may be given to the infant by cup, spoon, or other suitable method, and the mother should be encouraged to breastfeed more frequently before the recurrence of severe breast engorgement. All new mothers should be instructed in the technique of hand breast expression.<sup>46</sup> Handpumps

should not be introduced unnecessarily at this point in time.

5. The reverse pressure softening technique is especially useful for breast edema and uses gentle positive pressure to soften an area (~3–4 cm [1–2 inches]) near the areola surrounding the base of the nipple. The goal is to temporarily move some swelling slightly backward and upward into the breast. Moving the edema away from the areola has been shown to improve the latch of the infant during engorgement.<sup>6</sup> The physiologic basis for this technique is the presence of increased resistance in the subareolar tissues during engorgement.
6. Anticipatory guidance regarding the occurrence of breast engorgement should be given to all breastfeeding mothers before birth center or hospital discharge. In countries where women may have longer hospital stays, engorgement may occur in the birth hospital. However, many women are discharged before the expected time of peak symptomatic engorgement. Mothers should be counseled about symptomatic treatment options for pain control. Acetaminophen (or paracetamol) and ibuprofen are both safe options for breastfeeding mothers to take in appropriate doses. In addition, contact information for breastfeeding supportive advice should be provided. Healthcare personnel seeing either the newborn or mother after discharge should routinely inquire about breast fullness and engorgement.

#### Recommendations for Future Research

Currently, there is inadequate research into both the physiologic process of engorgement and effective prevention and treatment strategies.

- A uniform measurement system for the severity of the engorgement should be developed to allow standardized measures and comparison of results among studies.
- Once an objective noninvasive bedside measure of breast engorgement has been developed, then clinical trials correlating objective measures of engorgement and treatment of engorgement and the subsequent effect on breastfeeding duration and problems can be conducted.
- Knowledge about the influence of labor interventions and patient characteristics predisposing to the development of significant engorgement would be useful in identifying patients at risk for engorgement and those who could benefit from counseling, surveillance, and a closer follow-up.
- More evidence-based investigation of nonpharmacologic remedies for the management of engorgement is needed because these tend to be popular especially in non-US sites.
- Double-blinded placebo-controlled studies of medications known to be safe during lactation and with the potential to relieve symptomatic engorgement should be prioritized.

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