

*ORIGINAL SCIENTIFIC PRESENTATION*

# Marcaine: A Dependable Local Anesthetic for Breast Augmentation

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**Background:** Many investigators have evaluated the utility of local anesthetic use before, during, and after augmentation mammoplasty. Routes used include subcutaneous injections, intercostal nerve blocks, pump infusions, drain infusions, and “splashing” into the submuscular pocket. Although many of these techniques yield statistically significant results, they can add time to the operation and can cause additional complications. In particular, local anesthetic pump infusions add significant cost and require a foreign body to be in contact with the skin in a pocket with a sterile implant. We sought to find an affordable solution that would decrease postoperative recovery time, reduce narcotic requirements, and decrease pain in the early postoperative period without adding significant cost or risk to the procedure.

**Objective:** To determine whether Marcaine placement into the breast pocket during breast augmentation actually improves patient pain in the early postoperative period, and to determine whether this therapy has any detrimental effects.

**Methods:** This double-blind, randomized study was undertaken to compare the effects of placing 10 mL 0.25% Marcaine with epinephrine into 1 or both breast pockets of each patient undergoing bilateral breast augmentation. We sought to evaluate whether this therapy improved postoperative pain and to assess the safety of using Marcaine for this purpose.

**Results:** A total of 26 patients voluntarily enrolled in and completed our study. Of these, 25 received Marcaine in 1 or both breast pockets. In all, 24 patients reported less pain on the Marcaine-infused side, and 1 believed that her pain was equal in the 2 breasts. Among 4 patients who received Marcaine in both pockets, no narcotics were required in the recovery suite. No negative reactions to Marcaine were

reported in any patient, nor were any infections or hematomas noted.

**Conclusions:** Placing 10 mL of 0.25% Marcaine with epinephrine into each breast pocket during breast augmentation is a safe and effective form of early postoperative analgesia.

For years, surgeons of many fields have relied upon Marcaine (bupivacaine) for postoperative relief of incisional pain after various operations. Although skin injection has long been one of the more popular routes of administration, cosmetic surgeons have tried other modalities as well. These modalities include subcutaneous injections, intercostal nerve blocks, infusions through postoperative drains, local catheter infusion pumps, and “splashing” the substance into the breast pocket.<sup>1-4</sup> Intravenous steroids also have been used to decrease pain, although these pose a theoretical risk of wound healing complications and infections.<sup>5</sup>

Subcutaneous infusions fail to address the pain associated with the pocket dissection and provide analgesia only to the area of the incision. Intercostal nerve blocks fail to completely relieve pain within the pocket and may be associated with pneumothoraces. Many techniques such as paravertebral blocks significantly increase the operating room time, as well as anesthesia costs.<sup>6</sup> Infusions through drains pose a theoretical threat of introducing bacteria into a sterile pocket.<sup>7</sup> Similarly, catheter infusions pose a risk of introducing skin flora into a sterile pocket.<sup>7</sup> These potential pocket infections are believed to contribute to capsular contracture and can represent a real management challenge for the cosmetic surgeon.

Because Marcaine is a cheap and easily obtainable local anesthetic with a high safety profile, we decided to see whether its placement into the newly created breast pocket would affect patient pain in the early postoperative period and, if so, to what degree.

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## Methods

We designed a double-blind study and offered enrollment to all patients undergoing breast augmentation from March 2008 to July 2008. A total of 26 female patients opted to enroll in the study and signed informed consents allowing 0.25% Marcaine with epinephrine to be placed into 1, both, or neither of their breast pockets. Because Marcaine is commonly used as a local anesthetic in surgical procedures and is not an experimental substance, institutional review board approval for this study was not required.

All patients enrolled in the study underwent standard female breast augmentations without any previous history of breast surgery. Our study used both saline and silicone implants, and all were placed via inframammary, periareolar, or axillary incisions. While in the operating room, a submuscular pocket was created with an emphasis on meticulous hemostasis. Standard normal saline irrigation was performed, and the pocket was aspirated of excess fluid. In all, 10 mL of sterile 0.25% Marcaine with epinephrine was “squirted” into the pocket through a 20 mL syringe; this was followed by placement of implants. After the operation, the recovery nurse completed a pain questionnaire for each patient without knowing who had received Marcaine, or on which side/sides it had been placed. Patients were discharged after 60 to 90 minutes in the recovery suite.

## Results

Of 26 patients enrolled in the study, 21 received Marcaine in 1 pocket, 4 received Marcaine in both pockets, and 1 did not receive any Marcaine. Despite the use of a well designed pain questionnaire with scales between 1 and 10, many patients were unable to provide exact pain scale numbers because they experienced varying degrees of postoperative sedation. All patients, however, were able to report pain differences between each breast prior to discharge.

Of major importance is the fact that no patients had any known adverse reactions to Marcaine placement within the pocket. No implant infections or hematomas occurred in our study group, and to date, no patients have experienced capsular contracture.

Of 21 patients who received Marcaine in 1 breast pocket, 20 reported less pain in the Marcaine-irrigated breast (95%). On average, the pain scale reflected a 50% decrease in pain with the irrigated pocket, although 7 patients reported no pain at all on the Marcaine-injected side. Of 4 patients who received Marcaine in both breast pockets, 1 patient reported no

pain at all in either breast. The other 3 patients reported “pressure in the center of the chest” and “heaviness” only. None of these 3 patients required postoperative narcotics, and all were discharged pain free after 1 hour in recovery.

Overall, 24 of 25 patients who received Marcaine in the breast pocket had less pain in the Marcaine-infused side. Fisher’s exact test data failed to reach significance ( $P = .0769$ ), which was likely a result of the small sample size.

## Discussions/Conclusions

Although further research into this technique is needed, our preliminary data suggest that infusion of Marcaine into the newly created breast pocket is a useful and cost-effective tool that can be used to reduce postoperative pain and discomfort in the early recovery period. Marcaine is well accepted as a safe drug, and once again, it proved safe in our study, with no adverse reactions noted. Infusion of sterile Marcaine did not appear to be associated with increased risk of infection, hematoma, or capsular contracture in our study. Although small in total numbers, our data certainly suggest that 0.25% Marcaine with epinephrine is a very safe drug when “squirted” into the newly created breast pocket.

Our cost for placing 20 mL of 0.25% Marcaine into breast pockets is approximately \$1.60 per surgery, and minimal time is added to the procedure (seconds only). Given that the costs for infusion devices are far higher than the costs for additional narcotics, we consider this technique to be extremely cost-effective for our practice.

Although the numbers were small, those patients who were given Marcaine in 2 breast pockets required fewer narcotics (actually none) in the recovery suite and appeared clinically very comfortable.

Because of the good margin of safety of Marcaine and our favorable early results, our practice has instituted the placement of Marcaine into all breast pockets during breast augmentation and augmentation-mastopexies. Our patients require fewer postoperative narcotics and report high levels of postoperative satisfaction. Many do not require oral narcotics for several hours following surgery.

Although we recognize the need for larger study numbers, we believe that placement of Marcaine into the breast pocket is a safe, affordable, and effective process that decreases early postoperative pain, reduces postoperative narcotic requirements, and improves overall patient satisfaction and well-being.

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