



## The Use of Well-Monitored Sedation Anesthesia for Breast Augmentation

According to the authors, breast augmentation can be safely performed with the use of well-monitored sedation anesthesia. They credit this method with a brief recovery period, fast return to normal activity, minimal discomfort, and more safety and convenience than general anesthesia. (*Aesthetic Surg J* 2004;24: 277-279)

**B**reast augmentation is one of the aesthetic surgery procedures most frequently performed in Europe and the United States. In the past few years, increasing patient demand for a return to normal activity soon after surgery has led to new surgical and anesthesia techniques to reduce both the recovery period and the incidence and severity of postoperative complications.<sup>1</sup> Since 1997, we have been using well-monitored sedation anesthesia in our breast augmentation procedures.

We reviewed the cases of 1050 consecutive women, ranging in age from 20 to 41 years, who underwent a total of 650 subpectoral and 400 subglandular breast augmentations under well-monitored sedation anesthesia between January 1997 and March 2003. Particular indications for these breast augmentations are listed in the Table.<sup>2</sup> On the basis of the American Society of Anesthesiologists classification system, 85.4% of these patients were categorized as class I, 14.0% as class II, and 0.6 % as class III.<sup>3</sup>

In all patients, cardiopulmonary function was well monitored; the anesthesia protocol for sedation included fentanyl citrate, propofol, and, if required, a narcotic agent.<sup>4</sup> We routinely performed a physical examination and took a medical history before surgery. We then determined the patient's desired implant size by inserting different implant samples in her bra.

### Technique

Make preoperative markings with the patient standing; mark pockets and check and correct different levels of inframammary lines to provide symmetrical and pleasing results (Figures 1 and 2).<sup>5</sup> Thirty minutes before surgery, administer oral premedication consisting of 1 g

paracetamol and 10 to 15 mg of diazepam, depending on the patient's weight and anxiety level.

Secure the patient's arms to the armboards of the operating table. Arrange for supplemental oxygen and intraoperative monitors, including pulse oximetry and continuous electrocardiography, before sedating the patient. Administer

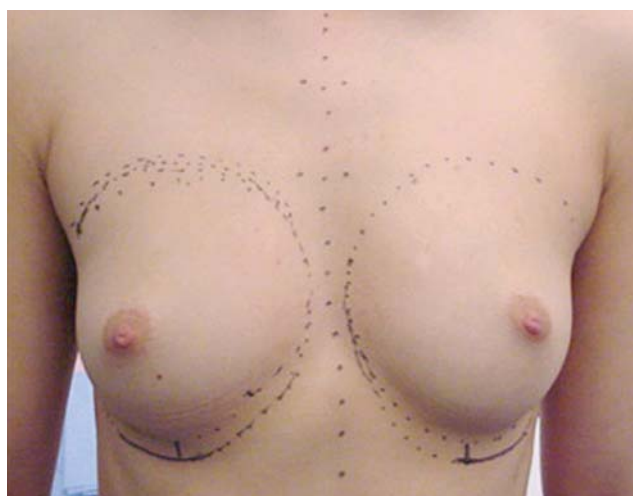
intravenous antibiotics along with 0.2 mg of Robinul (First Horizon Pharmaceutical Corp., Alpharetta, GA). Before administering local anesthesia and nerve block, administer 2 mL of intravenous fentanyl for 3 to 4 minutes, then inject a total of 25 to 35 mL of bupivacaine as follows: (1) block intercostal nerves, from ribs 2 through 8, with 0.25% bupivacaine and (2) inject the interspace of ribs 2 through 6, 1 to 1.5 cm lateral to sternocostal junctions (Figure 3). Next, with a number-22 spinal needle, infiltrate 100 mL of 0.25% lidocaine with epinephrine 1:200,000 plus 40 mL of sodium chloride around the glands and subglandular areas that cover the parasternal line, the inframammary fold, the midaxillary line, and superiorly to the level of the third rib (Figure 4). At the same time, administer 25 to 100 µg/kg/min propofol intravenously.

Wait 15 minutes for the local anesthesia to take effect and begin surgery with an axillary, preareolar, or inframammary incision, depending on the placement of the implant and the degree of breast ptosis. We usually choose an inframammary incision between 3 and 4 cm long and 1.5 cm below the inframammary fold. Next, dissect medially to the parasternal line, laterally to the midaxillary line, superiorly to the third rib, and inferiorly to the new inframammary fold.<sup>2</sup>

We prefer the subglandular approach for ptotic breasts, breasts with adequate glandular tissue, and tubular breasts.<sup>6</sup> For breasts with inadequate glandular tissue,



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**Figure 1.** Preoperative markings made with the patient standing.



**Figure 2.** Red spots indicate nerve blockade in the parasternal area, marked 1 to 1.5 cm from the middle line (green spots).



**Figure 3.** Injection of 0.25% bupivacaine into red spots.



**Figure 4.** Infiltration of local anesthesia.

**Table. Indications for breast augmentation**

Indication	No. of patients*
Idiopathic involution	493
Asymmetry	244
Aplasia	66
Hypoplasia	280
Tuberous breasts	99

\* Some patients had more than 1 indication for augmentation.

aplasia, and severe hypoplasia, we prefer the submuscular approach.

After the pocket is dissected, perform electrocautery hemostasis with a fiberoptic retractor, then change to powderless gloves to insert the implant (already moistened with saline solution) into the pocket. Suture the defect without any tension in 2 layers with Vicryl 4-0 and Monocryl 5-0 (Ethicon, Inc., Somerville, NJ), then apply sterile surgical tape.

### Results

Among our patients, recovery time ranged from 30 to 60 minutes, depending on the duration of the proce-

ture, the intraoperative doses of fentanyl and propofol administered, and the age of the patient. We encountered no instances of pulmonary embolism, cardiovascular complications, or postoperative infection. Nausea and emesis occurred in fewer than 0.01% of patients. All patients were discharged 2 to 3 hours after surgery (depending on the duration of the operation) and encouraged to return to normal activity within 2 days.

Nausea, vomiting, hospital-acquired infections, and cardiovascular and pulmonary complications are factors that usually prevent patients from returning to normal activity soon after surgery. These complications have been reported in other studies involving general or another form of sedation,<sup>7,8</sup> depending on the duration of the operation and the type and dose of intraoperative sedative used.<sup>9</sup> Compared with general anesthesia, monitored sedation anesthesia results in a shorter recovery time and a decreased incidence and severity of cardiopulmonary complications such as deep vein thrombosis and pulmonary embolism.<sup>4,10,11</sup> Our clinical experience indicates that well-monitored sedation anesthesia offers safety and convenience with fewer complications and less postoperative discomfort, resulting in a briefer recovery period and predictable return to full normal activity within 48 hours. ■

## References

- Handel N, Jenson J A, Black Q, et al. The fate of breast implants: a critical analysis of complications and outcomes. *Plast Reconstr Surg* 1995;96:1521-1523.
- Bohmert H, Gabka CH. Aesthetic plastic surgery of the breast. In: *Plastic and Reconstructive Surgery of the Breast*, 1st ed. New York, NY: Thieme; 1997:17-19.
- Meridy HW. Criteria for selection of ambulatory surgical patients and guidelines for anaesthetic management: a retrospective study of 1553 cases. *Anesth Analg* 1982;61:921-926.
- Pratt JM Jr. Analgesics and sedation in plastic surgery. *Clin Plast Surg* 1985;12:73-81.
- Tebbetts JB. Patient evaluation, operative planning, and surgical techniques to increase control and decrease morbidity and reoperations in breast augmentation. *Clin Plast Surg* 2001;28:501-521.
- Dinner M J, Dowden RV. The tubular/tubuleros breast syndrome. *Ann Plast Surg* 1987;19:414-420.
- Friedberg BL. Propofol-ketamine technique. *Aesthetic Plast Surg* 1993;17:297-300.
- Sneyd JR, Carr AD, Byrom WD, et al. A meta analysis of nausea and vomiting following maintenance of anaesthesia with Propofol or inhalation agents. *Eur J Anaesthesiol* 1998;15:433-435.
- Stein JM. Factors affecting nausea and vomiting in the plastic surgery patient. *Plast Reconstr Surg* 1982;70:505-511.
- Reinisch JF, Rosso RF, Bresnick SD. Deep venous thrombosis and pulmonary embolus following facelift: a study of incidence and prophylaxis. In: *Proceedings of the 67th Annual Meeting of the American Society of Plastic and Reconstructive Surgeons*. Boston, MA: American Society of Plastic and Reconstructive Surgeons; October 3-7, 1998.
- Reinisch JF, Rosso RF, Bresnick SD, et al. Deep venous thrombosis and pulmonary embolus following facelift: a study of incidence and prophylaxis. *Plast Surg Forum* 1998;21:159.

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doi:10.1016/j.asj.2004.02.006