

slow infusion rate and its inability to adequately disseminate anesthetic to adjacent soft tissue and sensory nerve fibers. In fact, we are unaware of any infusion pump device that can safely deliver a therapeutic—though nonlethal—dose of local anesthetic throughout the entire periprosthetic area.

Our frustrations led us to search for an alternative. In the early 1990s, we designed a prospective study that evaluated the efficacy of a single 400-mg dose of celecoxib administered 30 to 60 minutes before subpectoral breast augmentation.² The analgesic effects of celecoxib, a selective COX-2 inhibitor and member of the nonsteroidal antiinflammatory drug family, are attributable to its inhibition of cyclooxygenase, an enzyme involved in the conversion of plasma membrane-derived arachidonic acid into prostaglandins and thromboxanes. Prostaglandins, along with bradykinin and histamine, initiate the first phase of inflammation by multiple mechanisms and further induce a state of hyperalgesia.² Our study, which included nearly 700 patients, found a significant opioid-sparing efficacy in the preoperative administration of this dose of celecoxib.² Other studies have produced similar findings.^{3,4}

In 2005, we began another study that combined a 1200-mg dose of gabapentin in combination with a 400-mg dose of celecoxib. Gabapentin, an agent used as both an anticonvulsant and an antihyperalgesic in the treatment of neuropathic pain, is thought to function by binding to presynaptic voltage-gated calcium channels, affecting analgesia through a myriad of proposed mechanisms.^{5,6} We have found that our regimen of 400 mg of celecoxib combined with 1200 mg of gabapentin not only significantly reduces both postoperative pain and opioid requirements but also is significantly superior to the preoperative administration of celecoxib alone. Furthermore, preoperative patient education with respect to basic pain pathways and the theory of endogenous endorphins is obligatory for both patient compliance and analgesic efficacy.

We have completely abandoned the use of local anesthetics for postoperative analgesia. We currently recommend the preoperative administration of celecoxib (400 mg) and gabapentin (1200 mg) for patients undergoing cosmetic breast augmentation or any comparable cosmetic procedure.

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Reply

Sir:

I appreciate the comments of Dr. Parsa et al. Although pain pumps seem to work well for *some* operations in *some* situations, the combination of a necessarily small dose and large space probably is at fault in the insignificant results in our study. Beyond that, our patients simply do not like the cumbersome nature and awkwardness that the pump devices caused. I find the suggestions regarding celecoxib and gabapentin intriguing and may give them a trial.

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The Reverse Radial Forearm Flap in Reconstruction of the Hand

Sir:

We read with great interest the article “Soft-Tissue Coverage of the Hand following Sarcoma Resection” by Talbot et al.¹ published recently in the *Journal*. Dr. Talbot and colleagues should be congratulated for focusing attention on this very difficult area for reconstruction.

One of the flaps most commonly used in their series was the reverse radial forearm flap (20 percent of cases). We have used the reverse radial forearm flap in various reconstructive problems of the hand² and would like to offer our thoughts on the subject and interest the readers in this very interesting flap.

The reverse radial forearm flap has been proven to be a very reliable solution for reconstruction of the hand without necessitating the use of a microvascular flap. When the forearm flap is used as an island flap pedicled distally, its blood supply is based on a retrograde flow from the ulnar artery through the deep palmar arch. One could argue that ligating the radial artery could compromise the hand's blood supply. It has been established, however, that the main blood supply of the hand comes through the ulnar artery and the deep palmar arch, whereas the radial and interosseous arteries are potential nutrient arteries of the hand. Provided that the ulnar artery is intact and well functioning, there are no functional or vascular consequences to the hand. Venous return has also been established to be retrograde through the venae comitantes. These have numerous valves, which are often at the same level between the two comitantes. This raises the unavoidable question of how immediate reverse flow through the veins can occur. There are three factors that make this backflow possible:

1. When a distally based radial forearm flap is raised, the deep veins are denervated.
2. Venous pressure in these veins is increased after ligation of their proximal ends.
3. The veins are kept filled by blood from the wrist and hand.

Each of these three factors alone, or even two of them together, would not be sufficient to allow backflow, but if all three factors are present simultaneously, as in a distally based radial forearm flap, immediate reverse flow through a venous valve can occur. This finely balanced combination of three necessary factors may explain why some distally based flaps become edematous or even require additional venous drainage.

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Reply

Sir:

I thank Drs. Zambacos and Mandrekas for their letter regarding the use of the reverse radial forearm flap in reconstruction of the hand. The rationale for this flap in the setting of an intact palmar arch is sound and the flap is reliable. The thoughts presented by Drs. Zambacos and Mandrekas regarding the reverse flow venous drainage are interesting and plausible. Dr. Chang et al. performed anatomical, experimental, and clinical studies on this flap. They found that the cephalic vein has no positive role for venous drainage in distally based flaps; instead, venous outflow is dependent on the venae comitantes.¹

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Radial Forearm Flaps for Reconstruction of the Elbow, Wrist, and Hand

Sir:

Dr. Jones et al.¹ reported a large series of pedicled or free radial forearm flaps for reconstruction of the upper extremity. They reported 24 dorsal and 12 palmar soft-tissue defects of the wrist that were covered with radial forearm flaps, but they did not present any postoperative photographs of donor sites. They also reported that nine pedicled groin flaps were used to cover wrist defects. However, we were disappointed that they did not comment or provide references concerning radial adipofascial flaps with radial artery preservation in their latest article (though they did previously report a case of a pedicled adipofascial flap for radioulnar synostosis²). Surgeons are aware that upper extremity reconstruction should be accomplished using the simplest means possible, and thus we consider that radial adipofascial turnover flaps with radial artery preservation should not be overlooked in terms of wrist defect reconstruction. As Dr. Jones wrote in a previous article,² radial adipofascial flaps are straightforward and less time-consuming, and the one-stage operative procedure involved allows early physical rehabilitation.³ Moreover, as compared with other flaps, adipofascial flaps are thinner and introduce less bulk to the recipient site, and thus, their use is associated with minimal aesthetic sequelae at donor sites. In this regard, although pedicled or free radial forearm flaps are optimal under some conditions where functional problems are a concern, we consider that radial artery preservation should also be considered, because the adipofas-