

We strongly agree with the authors that extensor tendon complications can be minimized by reconstructing the extensor retinaculum over the plate, thereby preventing direct contact between the tendons and the hardware. However, they do not clearly state whether or not this had been performed in their cases with tendon rupture. Despite preserving the extensor retinaculum, we have noted a high incidence of extensor tenosynovitis and tendon rupture in patients treated with the dorsal Pi plate (Fig. 1). A study performed by the senior author (P.K.B.) examined 28 patients in whom either a dorsal Pi plate (high-profile plate) or a low-profile dorsal plate had been used. Nine patients (32 percent) required reoperation for hardware removal or extensor tendon reconstruction, and all nine patients had been treated with a dorsal Pi plate ($p < 0.025$).⁵ Although this was a small study, the significant difference in outcomes between the two plating systems studied cannot be dismissed.

Given the long-term, significant difference in the rates of extensor tendon rupture between the Pi plate and low-profile plates, we have stopped using the Pi plate entirely for unstable fractures of the distal radius. Although we agree with the authors that to date there is no perfect implant for use in these challenging cases, we do not believe that the Pi plate remains an acceptable option given its relatively high rate of extensor tendon rupture.

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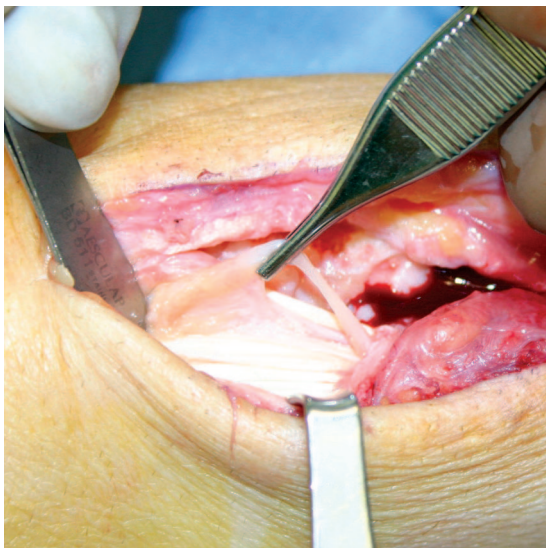


Fig. 1. Tenosynovitis after dorsal Pi plate for fracture of the distal radius.

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Complication Rates in Inferior Pedicle Reduction Mammoplasty

Sir:

We read with great interest the article entitled "A Comparison of Complication Rates in Large and Small Inferior Pedicle Reduction Mammoplasty" by O'Grady et al. (*Plast. Reconstr. Surg.* 115: 736, 2005). We commend the authors for dealing with this matter, and also for producing a very valuable report. We would like to present our own experience on the matter, focusing on some of the complications mentioned in the article and their etiologic factors. It is very interesting that the only complication with a statistically significant difference between small and large reductions was wound healing in general (encompassing wound infection, wound dehiscence, and delayed healing, which in our view are all interrelated).

The issue of nipple/areola necrosis (0.4 percent overall incidence in the article) depends more on the length and base width of the pedicle than on any other variable. Although the inframammary fold-to-nipple distance was one of the variables collected in this study, the authors did not comment on the relationship between this distance and nipple survival. Our own experience is that this is the most significant factor in predicting and avoiding this complication and that, irrespective of the predicted resection weight, pedicle length (as predicted by inframammary fold-to-nipple distance) should be measured in all patients and taken

into account in the process of technique selection and pedicle design.

Wound dehiscence, especially at the T junction, depends on various factors, the most important being wound infection and tension of the wound edges. The authors' overall dehiscence rate was 8.6 percent (6.9 percent for small reductions and 16 percent for larger reductions). Our own wound dehiscence rate was 4.6 percent in a series of 371 patients,¹ with a mean resection weight of 790 g per breast. We believe that the difference lies in the appreciation of the role of tension at the T junction. We believe that leaving a small triangle of skin at the inframammary fold helps reduce the tension and thus minimizes the incidence of this complication.

Wound infection was found to be significantly different between the two groups, but we would like to draw attention to a variable that we believe plays a critical role in infection: duration of surgery. Large breasts consist mainly of fatty tissue, and prolonged operative times (often associated with large reductions) result in drying out of fat at the wound edges with resultant higher infection rates. We believe that keeping the flaps and the pedicle moist (i.e., with saline-soaked packs) deals with this problem quite efficiently.

The overall incidence of hematoma in this article was 4.1 percent (3.7 percent in small reductions and 6 percent in large reductions), 10-fold the incidence found in our own series (0.3 percent).¹ Although use of preoperative infiltration with an epinephrine-containing solution is not commented on in this article, we believe that it is most effective in minimizing bleeding and hematoma formation, and we certainly attribute our own low incidence to it.²

Fat necrosis is a result of dubious blood supply to areas of fat, and in our view, it results from a combination of infection and bad surgical technique, with smoking obviously playing a role as well. Our own fat necrosis incidence is similar to the incidence observed in the article (0.8 percent versus 1.5 percent).^{1,3} The way to minimize the problem is careful patient selection and careful surgical technique, avoiding leaving areas of loose fat during flap and pedicle dissection.

Loss of nipple sensation (5.6 percent overall incidence in the article) depends largely on technique. The nerve supply to the nipple is derived from perforating branches of the third through fifth intercostal nerves, which penetrate the pectoralis major muscle and course along the muscle surface before entering the gland.^{4,5} The nerves tend to stay close to the layer of the deep fascia on the anterior surface of the pectoralis major muscle, passing at first through the deepest part of the subcutaneous tissue and then into the base of the breast. They only incline superficially toward the nipple as they approach their destination. In light of these findings, we leave 0.5 to 1 cm of fat and breast tissue on the pectoralis major, starting from the base of the pedicle and extending upward along the whole length of the muscle and laterally until we reach the lateral flaps. We believe

this is the main reason for the low incidence of loss of nipple sensation in our own series.^{1,6}

Again, we congratulate the authors on their excellent publication, and we hope that our own experience can be of some use to the reader.

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Reply

Sir:

Thank you for the opportunity to reply to Drs. Zambacos and Mandrekas' comments. We thank them for their comments and appreciate their sharing of their considerable experience in this field.

Drs. Zambacos and Mandrekas state that the issue of nipple/areola necrosis depends more on the length and base width of the pedicle. Although in general we agree with this assertion, in our article this complication was rare (one patient developed partial necrosis in one breast and went on to heal uneventfully without another intervention). In the absence of a substantial number of target "end-points" (i.e., nipple necroses), it is difficult to translate this general belief as an evidence-based conclusion.

It is a well-known plastic surgery principle that random flap viability depends on the length-to-width ratio of the pedicle. This varies in some flaps from as little as 2:1 in areas of poor blood supply to as great as 5:1 or 6:1 in areas of robust vascularity, such as the head and neck region. Where the breast lies in this range is

unclear. The pedicle width that was used in all of the reductions in our study measured between 6 and 8 cm. When the pedicle is long, some plastic surgeons recommend other techniques, most notably free nipple grafting. Jackson and colleagues addressed the importance of pedicle length some 5 years ago.¹ They found that although the distance from the suprasternal notch to the nipple was dispersed over a wide range with a trimodal distribution, with peaks at the intervals of 23 to 27 cm, 28 to 33 cm, and 34 to 45 cm, the values of the nipple-to-inframammary fold distance showed a normal distribution pattern, with a peak at 14 cm. On the basis of the constant distance from the inframammary fold to the nipple, these authors concluded that free nipple grafting is never indicated. Our experience supports this statement. The senior author (A.T.) has not used the free nipple graft in more than 20 years of practice, despite having to resect on occasions 2 kg per breast. At these extremes, admittedly, closing the incision without tension can be challenging. It is on these occasions that we have also used a small triangle of skin at the inframammary fold to relieve the tension, as mentioned by Drs. Zambacos and Mandrekas.

In our group, we are not as much concerned with the length of the pedicle as we are concerned with the width and thickness of the parenchymal base. The width and thickness of the parenchymal base are more likely to ensure the "capture" of adequate perforators to maintain the viability of the nipple.

Certainly wound dehiscence at the inverted T junction remains one of the most common problems after reduction mammoplasty. We agree that tension is perhaps the most important factor in determining the degree to which normal healing occurs in this area. We have demonstrated a significant difference in wound dehiscence rates (16.0 percent versus 6.9 percent) between our large and small reductions (average weight, 1310 g versus 534 g). One plausible explanation is the greater tension at the T junction in larger reductions. This may lead to impaired vascularity, as suggested in our article.

The hematoma rate that was reported in our study consisted of all hematomas that required surgical drainage, including aspiration in a clinic setting. It is worth noting that only one of our patients had to return to the operating room for operative intervention. This reduces our rate to 0.4 percent, which is in keeping with rates reported by Drs. Zambacos and Mandrekas. All patients in our study received infiltration with dilute epinephrine solution. We, too, have found this to be invaluable in reducing the blood loss in this procedure and agree with our colleagues that this is an effective technique. We believe that this is now the standard of care.

We could not agree more that careful patient selection and meticulous surgical technique are imperative to a satisfactory outcome for both patient and surgeon. In addition to Drs. Zambacos and Mandrekas' suggestion to keep the breasts moist, we routinely rinse the surgical field with saline solution before closure, to

remove any small pieces of fat globules that have divided from their blood supply. We believe that this helps to minimize our rates of infection.

With regard to nipple sensory preservation, we agree totally with Drs. Zambacos and Mandrekas' recommendations of leaving a layer of fat above the pectoralis major. Exposure of the pectoralis muscle during routine reduction mammoplasty is more likely to impair the sensation of the nipple than when one does not encounter the pectoralis at all.

As this was a retrospective study, we cannot comment on the sensitivity of the nipple-areola complexes. We can only state that our patients experienced a subjective difference in only 5.6 percent of reductions overall. The most interesting finding from our study was the salutary effect of extended antibiotic coverage. This needs to be corroborated by other investigators.

Overall, it is clear that the experience of inferior pedicle reduction mammoplasty is similar in many jurisdictions. There is a possibility that the observed variation in complication rates in different reported studies may be due to ascertainment bias rather than to variations in surgical technique.

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Deepithelialization of Pedicle in Breast Reduction: The Maze Technique

Sir:

I enjoyed reading the article by Khan and Oudit entitled "Deepithelialization of Breasts with Scissors."¹ Though this has been described previously,² I would like to compliment the authors on a concise, well-presented, and well-illustrated point of technique.

In my experience, this technique is very practical and useful, particularly when one is operating with only the scrub nurse as an assistant. The only downside is that each strip that is held in the pair of forceps is difficult to get rid of, because it sticks to the toothed forceps. To get rid of this problem, I suggest that, instead of making