

Breast Lymphatic Mapping Using Blue Dye and Radiocolloid

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I read Dr Kern's article on the technique of subareolar blue dye injection with great interest. I was also interested in Dr Kern's reply to the letter by Dr Ahmad Shatila. I was particularly intrigued by the comment made by Dr Kern that the sentinel lymphatic channels provide access to the same sentinel lymph nodes that receive lymph flow from peritumoral injections, and most importantly, that "we know this because of our 0% false-negative rate achieved in our first study. . . ."¹

I found Dr Kern's first study² compelling but hardly proof-positive that subareolar injections are 100% accurate as claimed. This study included only 40 patients, with 39 having successful mapping. Most importantly, only 15 patients harbored positive nodes. Because all patients with negative nodes will theoretically have a successful mapping, it is only these 15 patients from whom we can draw conclusions concerning the accuracy of the technique. As Dr Kern has demonstrated, the technique of subareolar injection is relatively easy and, most importantly, solves a number of troublesome logistical problems. Accurate injections in patients with deep-lying tiny clusters of microcalcifications and in those with multicentric disease are clearly problematic. Hopefully, further studies will confirm the utility and accuracy of this technique. Although the technique may in fact be highly accurate, I do not believe that we should rush to make sweeping statements based on the study of such small numbers.

REFERENCES

1. Kern KA. Breast lymphatic mapping using subareolar injections of blue dye and radiocolloid: illustrated technique. *J Am Coll Surg* 2001;192:545-550.
2. Kern KA. Sentinel lymph node mapping in breast cancer using subareolar injection of blue dye. *J Am Coll Surg* 1999;189:539-545.

Reply

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I appreciate Dr Stolier's response to my photographically illustrated article on the technique of subareolar (SA) injections of blue dye and radiocolloid.¹ Dr Stolier questions the accuracy of SA injections of blue dye and radiocolloid because my false-negative rate of 0% (a figure calculated from my initial study in 1999 of 40 cases using SA blue dye injections) was based on only 15 patients who were node-positive.² Dr Stolier suggests that these 15 node-positive patients represent an insufficient sample size on which to validate the SA technique. To increase the statistical power of this analysis, I am now completing a correlative study of 225 cases of sentinel lymphadenectomies performed by injection of SA blue dye and radiocolloid. Nonetheless, the sample size of 15 node-positive cases in my 1999 dye-only study using SA injections was similar to the sample size of 10 other studies during this same time period, in which important validation decisions were made regarding peritumoral (PT) injections of dye, radiocolloid, or both.

Between 1996 and 1999, 10 validation studies in which there were 21 or fewer node-positive patients were published in support of the accuracy of PT injections. These 10 studies, listed in Table 1, contained an average of 16 node-positive patients per series (range 5 to 21, SD 6). The false-negative rate of these studies ranged between 0% and 19%, and averaged 6%. Three of the studies had 0% false-negative rates, derived respectively from 15, 18, and 20 node-positive patients. None of these studies with 0% false-negative rates were considered invalid because of their low number of node-positive patients.

In 1997, Giuliano and associates³ published a seminal study of sentinel node biopsy using PT injections of blue dye alone. This article established the standard for this technique, because these investigators reached a 0% false-negative rate accompanied by a 100% rate of specificity and sensitivity. Following this study, Giuliano's group no longer performed completion axillary dissections in sentinel node-negative patients.⁴ Yet this study