

# Treatment Update of Port-Wine Stain

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## INTRODUCTION

We read with great interest the recent publication by Fölster-Holst et al<sup>1</sup> in the May issue of *Journal of Drugs in Dermatology*, which offered a brief update on the treatment of port-wine stains. However, we felt this topic deserved greater attention and readers required additional details on several points. We have extensive experience treating these lesions in our clinic, have helped to develop the ever-changing guidelines, and contributed to many clinical recommendations over the years. Our contributions should help to further inform readers.

Firstly, we are in support of changing the common naming of port-wine stains to port-wine birthmarks (PWBs). This has also been echoed by other eminent dermatologists in the field. This name can help to provide clarity, as these lesions are present at birth and its naming should reflect this. This also removes the unnecessary and incorrect referral of these lesions as ‘stains’, which they understandably may have resembled when this name was introduced. The change to PWB also helps to remove stigma associated with the lesion, as society can learn to see it as a birthmark like many other more common nevi. In our experience, the associated psychosocial stigma can be great, especially as PWBs grow, darken, and become nodular without any treatment.<sup>2</sup>

Secondly, some of the information offered in this publication detailed the use of cosmetic camouflage. Although this can be a helpful strategy, especially for those who decline laser treatment, we regularly, consistently, and predictably achieve remarkable improvement after a series of pulsed dye laser (PDL) treatments. There was mention of cosmetic tattooing to conceal the PWB, which we strongly disagree with. Since we can achieve impressive outcomes with our current options, when treated appropriately, there should be no role for permanent tattoos, which are unnecessary, can make lesions appear worse, and offer very low patient satisfaction. The tattoo ink typically doesn't cover lesions in their entirety and can appear blotchy, especially as nodules develop. The presence of tattoo ink may also make PDL treatment more difficult. There have been instances of oxidation and darkening of tattoo ink when exposed to PDL.

Additionally, we had issue with the mentioned low rate (19–27%) of patients who achieve significant clearance. In our experience, we have had high rates of complete clearance and near-complete clearance when appropriate parameters and regimens are

used. In our clinic, we routinely treat with PDL to achieve purpura as the clinical endpoint and include the 1,064 nm Nd:YAG laser for vascular blebs.<sup>3</sup> We also treat at 2-3 week intervals and have demonstrated high rates of near-complete clearance (75–87.5%).<sup>4</sup> We start treating patients at as early an age as possible, preferably as a newborn or infant, which has demonstrated to have 88.6% average clearance after 1 year.<sup>5</sup> In our larger published cohort, 25.9% had 100% clearance, and an additional 41.1% had 76–99% clearance.<sup>6</sup> Treating at an earlier age can help to avoid any growth, deepening, and color change of the lesion and can also prevent any psychosocial stigma when children start attending daycare and school.

Treating infants generally requires no anesthesia. The elimination of general anesthesia and intravenous sedation can avoid unnecessary dangers, including those warned by the FDA, such as neurotoxic concerns with the repeated use of general anesthesia in children younger than 3 years.<sup>7</sup> Infants can generally be soothed and return to baseline within minutes following treatment.<sup>8</sup> In-office treatment may also offer total cost savings of over \$18,000-24,000 with a typical treatment plan that incorporates 6–8 treatment sessions.<sup>9</sup>

In regard to the future of PWB treatments, we would like to also include the use of dynamic optical coherence tomography (OCT). OCT is a high-resolution, non-invasive imaging technology that can assess vascular characteristics in real-time, such as the diameter, density, and depth of superficial blood vessels. In collaboration with several other laser and PWB experts in the country, we have examined its advantages in the assessment and laser treatment of PWB. For example, we have investigated how the color and location of lesions can each be associated with certain vascular characteristics. This data should be readily available soon to the field. The selection of PDL parameters can also be updated based on OCT findings.<sup>10</sup> This offers tremendous potential for the future treatment of PWB.

## DISCLOSURES

The authors have no relevant conflict of interest to declare.

## REFERENCES

1. Fölster-Holst R, Shukla R, Kassir M, et al. Treatment update of port-wine stain: A narrative review. *J Drugs Dermatol.* 2021;20(5):515-518.
2. Minkis K, Geronemus RG, Hale EK. Port wine stain progression: A potential consequence of delayed and inadequate treatment? *Lasers Surg Med.* 2009;41(6):423-426.

3. Brauer JA, Geronemus RG. Single-treatment resolution of vascular blebs within port wine stains using a novel 1,064-nm neodymium-doped yttrium aluminum garnet laser. *Dermatol Surg.* 2013;39(7):1113-1115.
4. Anolik R, Newlove T, Weiss ET, et al. Investigation into optimal treatment intervals of facial port-wine stains using the pulsed dye laser. *J Am Acad Dermatol.* 2012;67(5):985-990.
5. Chapas AM, Eickhorst K, Geronemus RG. Efficacy of early treatment of facial port wine stains in newborns: A review of 49 cases. *Lasers Surg Med.* 2007;39(7):563-568.
6. Jeon H, Bernstein LJ, Belkin DA, et al. Pulsed dye laser treatment of port-wine stains in infancy without the need for general anesthesia. *JAMA Dermatol.* 2019;155(4):435-441.
7. Geronemus RG, Jeon H, Bernstein LJ. Avoiding general anesthesia in treating port-wine stains in infants to avoid neurotoxic events-Reply. *JAMA Dermatol.* 2019;155(8):984.
8. Feng H, Materne G, Ghalili S, et al. Assessment of treatment tolerance and parental perspective of outpatient pulsed-dye laser treatment for port-wine birthmark without general anesthesia in infants and toddlers. *J Am Acad Dermatol.* 2020. Epub ahead of print.
9. Wang JV, Albornoz CA, Geronemus RG. Cost savings of in-office pulsed dye laser treatment of port-wine birthmarks without general anesthesia. *Dermatol Surg.* 2021. Epub ahead of print.
10. Christman MP, Feng H, Holmes J, Geronemus RG. Treating port wine stain birthmarks using dynamic optical coherence tomography-guided settings. *J Am Acad Dermatol.* 2019. Epub ahead of print.

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