There have been numerous advances during the past two decades in the treatment of birthmarks, concerning both efficacy and safety. Although initial results of laser treatment for portwine stains are encouraging, there remain unanswered questions about the long term benefits. The response of other birthmarks to laser therapy is variable, and much work still remains to be done.

**PORTWINE STAINS**

Laser treatment has become the standard of care for the management of portwine stains. The past two decades have witnessed the progression of these devices from crude, non-selective forms of treatment to highly sophisticated lasers capable of selective photothermolysis. In spite of this, the results of treatment leave much to be desired. Although the vast majority of portwine stains lighten significantly with treatment, only 15–20% clearly completely. Moreover, a recent disturbing report revealed what many of us had suspected for some time: portwine stains can recur after treatment. The implications of this are yet to be determined. These findings lead to several important questions: why are we not able to clear more lesions and have there been any recent developments to improve our results?

**Vessel depth**

Two of the most important considerations are the depth of the vessels and their diameter. For some time, we have known that there is a significant variation in the depth of the vessels in portwine stains. Given the limited depth of penetration of yellow light (1–2 mm at 585 nm), our inability to effectively treat lesions of penetration of yellow light (1–2 mm at 585 nm), our inability to effectively treat portwine stains can recur after treatment. The implications of this are yet to be determined. These findings lead to several important questions: why are we not able to clear more lesions and have there been any recent developments to improve our results?

**Vessel diameter**

The diameter of the vessels also seems to play a critical role in whether or not the lesion will respond to treatment. Dierickx *et al.* showed that pulsewidths in the millisecond domain would be more appropriate than the standard 500 µs pulsewidth available on most pulsed dye lasers. This was based on the calculated thermal relaxation times of the vessels that make up these lesions. Therefore, in order to improve our ability to treat larger vessels, the pulse width needed to be increased from 500 µs to the millisecond range.

**Surface cooling**

The next advance came in the form of surface cooling. Nelson *et al.* showed that cooling the skin surface with a cryogen spray just prior to the delivery of the laser pulse will accomplish two major advantages. Firstly, the likelihood of epidermal damage is reduced; and secondly, the pain of treatment is diminished. A third advantage in the form of surface cooling is that published clinical data will likely follow. The most recent generation of pulsed dye lasers with all of the above features as well as a pulsewidth in the millisecond domain (up to 50 ms) has become available. There are clear theoretical advantages to the longer millisecond pulsewidth, but whether or not these will translate into better clinical efficacy remains to be seen. Other devices are also useful. These include KTP lasers and Nd:YAG lasers; more recently a source of non-coherent intense pulsed light has been used with some success.

KTP lasers emit a wavelength of 532 nm (green light) which is as well absorbed by oxyhaemoglobin as light at 585 nm, but unfortunately there is

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**Recent developments in lasers and the treatment of birthmarks**

M Waner

Despite rapid advances during the past two decades there are still unanswered questions.
LEADING ARTICLE

A clinical approach

Pulsed dye lasers are the most widely used lasers in this field. Their efficacy with grade IV lesions and lesions with cobblestone formation is poor, probably because of the fact that the vessels that make up these lesions have diameters that require millisecond exposure times. Although the addition of surface cooling and higher fluences may well change this, at this point, KTP lasers and intense pulsed light sources are useful for grade IV lesions. In the presence of cobblestone formation, Nd:YAG lasers are useful, but if the cobblestones have been present for several years, surgical excision may be necessary. Surgical correction of soft tissue hypertrophy is occasionally helpful, especially with lip and eyelid hypertrophy. Surgical excision and full thickness skin grafting is, however, no longer warranted and given the success of laser treatment, this should be strongly discouraged.

Congenital nevi

The results of treatment with Q-switched ruby lasers have been disappointing. All appear to eventually recur.

REFERENCES


www.archdischild.com
A leap into the unknown—working overseas

Like most of these things, the opportunity to work for a year in Brisbane came about by chance, one in a series, in a lifetime filled with lucky circumstances.

I had already decided, with my wife, to take six months of unpaid leave in order to see a bit of the world. More about this another time. The chance to work in Brisbane came up and we rapidly combined it with our travel plans. It is usually hard for doctors working in a March/September system to fit in with doctors working in a January/January system without upsetting someone. Our plans for time out to travel gave us much needed flexibility to reconcile this.

Part of me would have liked to work in the developing world, but for complicated personal reasons this was not possible. So, the question arises: What is the point of working in another developed country? Will the experience be significantly different from staying at home? To try to address this valid point, I set myself some goals and some questions that I wanted to try to answer by the end of my time in Australia. I’ve had varying success.

Firstly I wanted to get a feel for which of the problems with NHS are the consequence of it being the NHS, and which are common to any health monolith. Clearly I only have an n of 2, but I do have a better feel for what we do because that is what we’ve always done, and I’ve seen some of the problems we share with Australia solved in different ways.

Secondly I was keen to experience some branches of paediatrics my region or country couldn’t offer me—or could only offer me with greater commitment than I could give in a five year training programme. Thus, I’ve had short periods of experience in paediatric intensive care, with fixed wing and helicopter retrieval, in oncology, and in rural and (extremely) remote paediatrics. I’ve also been the Chief Resident, a role which isn’t currently found in any hospital in the UK.

And thirdly I wanted to find out more about some of the specific issues I’ve written about here—the 40 hour week, obesity, teenage smoking, aboriginal health, and so on.

What are the downsides of working overseas?

Well, there are conflicting messages about the amount of time that will be counted towards your CCST when you spend time out of rotation. At various times I was told anything between one and two years of my total two years working overseas. The postgraduate deans are currently under pressure to move SpRs through the system, and so now there is a trend to include more out of programme time. I’d have to be honest and say that the issue didn’t really worry me greatly; so I might be a consultant for a year less in the grand scheme of things—where’s the hurry? Oddly enough the Royal Australian College of Physicians allows up to six of the total seven training years spent outside Australia. This causes a little anxiety among some senior members, who argue that this isn’t really an Australian training at all. There must be some happy—although entirely arbitrary—middle ground. Unless the supervising body had confused training with service, of course ...

It’s been expensive too. Oh, I’ve earned loads, but being on the other side of the world from your usual home gives you a different perspective. It would rude to go all that way and not see the place properly, wouldn’t it? It does, however, leave my pension in a terrible mess.

Lastly the stresses involved in dealing with a whole different set of regulating bodies—from immigration, through registration to colleges, and the health monoliths themselves—can be huge. We got married a few months before leaving for Australia, and I can honestly say—with no disrespect to the institution—that the wedding was a breeze compared with the rest of it.

At the end of it all, in answering the question “Was it worth it?” I would have to say yes, emphatically and without hesitation.

A few tips for anyone considering anything similar. Firstly don’t underestimate the disruption and cost. Do the old backpackers’ technique for estimation of expenses: work out how much you’ll need, and then double it. If you are used to backpacking, then double it again. Secondly, establish and use clear lines of communication. Get an account with a telecom company offering cheap phone calls to wherever you are going. Follow up post; send items by international registered mail if they are at all important, and make a polite phone call after two weeks if you’ve heard nothing. Email can make this easier, but people have varying levels of ability with this tool, and you need to remain contactable.

Lastly, if you think you would like to do it, then you should. I doubt very much you will regret it.

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Recent developments in lasers and the treatment of birthmarks

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