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Laser Treatment of Red Birthmarks

What are the main types of red birthmarks?

The two primary types of red birthmarks are the **hemangioma** and the **port wine stain**. By far the most common is the **hemangioma** which effects almost 10% of newborns starting sometime in the first weeks of life. The **port wine stain** occurs in about 3 out of one thousand newborns and is invariably present at birth.

Hemangioma

What is a hemangioma?

A hemangioma represents an abnormal growth and expansion of blood vessels on the skin surface. The growth may not be present at birth and may simply appear as a small red dot that expands in the first weeks and months of life. The rate of growth is variable and most require no treatment.

What is the natural history of a hemangioma and which ones may require treatment?

Many hemangiomas start off inconspicuously but some may grow at an alarming rate over the first weeks and months of life. The rate of growth is highly variable, which makes it imperative that you have your baby checked at frequent intervals to prevent any future problems. Lesions typically will undergo a relatively rapid growth phase in the first 2-8 months of life, after which they usually stabilize, slowly shrink and largely resolve during the second to fifth year of life. The lesions will often leave a few red vessels, some loose redundant skin or scarring once the lesions have involuted or in large part resolved.

Some hemangiomas that are in critical areas (around the eye, mouth, neck, or nose) can cause some degree of permanent deformity or more importantly can interfere with critical functions, especially vision in lesions around the eye. If the lesion is expanding rapidly, treatment can be undertaken to slow or arrest the growth of these lesions in the critical window where intervention can prevent functional loss or deformity.

Can a hemangioma be associated with other conditions?

The vast majority of hemangiomas are single lesions, which are skin problems only. On occasion, if there are multiple lesions, there can be an association with internal organ involvement. Large facial lesions are occasionally associated with problems in the brain. There are other unusual patterns which could signal other systemic problems but they are rare and Dr. Goldberg will work with your Pediatrician or Primary Care Provider to discuss with you if any additional testing is necessary.

What are the treatment options for a hemangioma?

While close observation is usually adequate in lesions of the face and neck, or in non-critical areas, treatment with topical, oral or injected steroids are often the most immediately effective treatment. There are side effects to steroids that are significant and therefore the goal is to treat for as short a time and at the lowest dose necessary to avoid complication. Other treatments such as the Pulsed Dye Laser can be used to change the growth pattern, and to arrest some of the rapid growth and usually will decrease the ultimate size of the lesion. The Laser treatments allow a more rapid shrinkage, and enable us to use a lower and/or shorter course of steroid therapy. These treatments can be done together in a complementary manner as well. Often the treatments are at approximate 2-6 week intervals and several treatments are usually required for optimal improvement, during the rapid growth phase in critical areas of concern.

Once the hemangioma has receded what can be done to get rid of residual red blood vessels or scarred and/or redundant skin?

It is quite common for the skin to be imperfect after it has been stretched significantly during infancy. Typically, if the remaining vessels are of concern they are very effectively treated in our office Laser center with a series of treatments using the **VBeam Laser** or the **Versapulse** green light Laser. Scars or loose skin can be treated surgically often in consultation with a Plastic Surgeon.

Port Wine Stain

What is a Port Wine Stain?

A Port Wine Stain (PWS) is a pink to purple birthmark composed of an abnormal collection or network of dilated blood vessels present beneath the skin. The PWS was named because the skin appears as a red, pink, or purple liquid, such as port wine, had been poured over it.

What causes Port Wine Stains?

The cause of the PWS is unknown. The dense network of vessels is a remainder of extra blood vessel tissue that was present during the first month of embryonic life. There is no significant genetic or inherited tendency. There is also no factor during pregnancy that is known to cause or predispose one to develop a PWS.

What is the natural history of the Port Wine Stain?

Port Wine Stains are present on the skin at birth and appear to grow at the same rate as the surrounding tissues. The birthmarks often appear as flat, pink blanchable stains through the first two decades of life, but often subsequently darken and thicken in the third through fifth decades of life. The surface of the PWS which may have been quite smooth during the first decade of life, can develop an irregular and lumpy cobblestone appearance by the time the patient is in their 40's, 50's or 60's. These lesions may break down, bleed, or be a source for infection, and potentially become more physically and emotionally deforming.

Can a Port Wine Stain be associated with other problems?

Port Wine Stains on the face can be associated with significant problems. A modest percentage of Port Wine Stains located over the eye and central forehead are associated with glaucoma and/or problems in the brain resulting in seizures or mental retardation. This association of facial Port Wine Stain and glaucoma and/or seizures is called the Sturge-Weber Syndrome. An extensive PWS on an extremity can lead to an enlargement of the extremity relative to an unaffected limb (Klippel-Trenaunay Syndrome).

What treatments are available for PWS?

Many forms of therapy have been used to treat PWS in the past. Most forms of therapy such as surgery, radiation, X-ray, dry ice, or tattooing have been abandoned because these treatments often leave deformities as undesirable as the PWS itself. The current gold standard of treatment is the Pulsed Dye Laser.

What forms of Laser therapy are available?

The Pulsed Dye Laser (PDL) is the gold standard for PWS treatment and offers several distinctive advantages over other systems. It was specially designed for treatment of the PWS, and for other skin lesions with prominent red blood vessels. This Laser can often be used without anesthesia, has a very low risk of scarring, and is safe and effective for use in infants, children as well as adults. We have almost two decades of experience with five generations of pulsed dye Lasers. The current fifth generation device, the Vbeam Perfecta is equipped with a synchronized dynamic cooling device to protect the skin surface so that higher energies can be delivered to the skin safely and also to minimize pain with treatment. This Laser also has the capacity to deliver longer pulses to allow the energy more effectively to heat and destroy larger vessel targets and also to treat the skin without bruising. The Vbeam has a slightly longer wavelength as well as larger spot sizes, which allow deeper Laser penetration, and has higher energies to more effectively remove and lighten the vessel targets.

What other conditions can be treated with the PDL?

Besides the PWS the Dye Laser is very effective for conditions with prominent red blood vessels such as, dilated facial veins seen in facial Rosacea (the W.C. Fields nose). Spider veins of the face are effectively eradicated often with one treatment session. This Laser is useful for blush-like, diffuse areas of redness on the face, which is seen in some types of Rosacea. The red discoloration and pigmentary abnormalities on the neck from sun-damage is also amenable to therapy. Some resistant small leg spider veins which can not be treated by injection can be effectively treated with the Vbeam Laser. The rapidly enlarging hemangioma or ulcerated hemangioma birthmark in the infant and newborn are other conditions which are being shown to be effectively managed if treated early when the birthmark is still relatively flat. After the birthmark has regressed the Vbeam Laser is a very effective modality to remove unwanted residual red blood vessels.

How does the Pulsed Dye Laser work?

The Dye Laser generates a very powerful yellow light. The Laser carries enormous energy which is briefly flashed in short pulses, slightly greater than a thousandth of a second and is selectively absorbed by the red hemoglobin pigment in red blood cells. The energy heats up the blood and the lining of the blood vessels, causing them to slowly and permanently seal shut. The selective absorption of this intensive finely pulsed yellow light by red lesions allows for selective injury to the blood vessels with very little change to the overlying skin. This makes the risk of scarring, skin texture, and color change extremely small.

What happens during the treatment?

A brief, bright flash of light occurs at the skin site treated and will immediately develop a purple spot about 1/2 inch in diameter. The skin stings for a few seconds as if you have been snapped by a rubber band, and then itches for 3 to 5 minutes. The purple spot lasts for 7 to 10 days, and then the spots treated become redder for 10 more days. At about one month, the treated site begins to fade and will continue to lighten for 2 to 3 months after which clearing can be seen and evaluated.

Once a decision to treat has been made, a small test site may be done to ascertain the optimal energy level to clear the lesion as well as patient tolerance of the treatment. Several small representative sites will be selected as well as various Laser energy levels. The patient will return at 6-8 weeks to evaluate the test areas and the optimal energy level is then selected and a laser area treated. In most cases, depending on the size of the lesion, the entire lesion can be treated at each visit. Most treatment sessions last 15-30 minutes which will usually be sufficient time to treat a palm sized area or greater depending on lesion location and patient cooperation.

When is the best time to treat a PWS?

The Dye Laser has been used safely in newborns, infants, children and adults. In general, the earlier the treatment of a PWS, the better the results. Lesions that are pink, flat and blanchable respond the best. Lesions on the head, neck and proximal extremities tend to respond better than lesions near the hands and feet. Because the lesion is quite flat and superficial in infancy, they are ideally suited for treatment. In addition, because these lesions tend to expand in proportion to the child's growth, the smaller the lesion, the fewer pulses required to complete treatment. Our goal is to treat during the first year of life, whenever possible, and/or to clear most of the PWS prior to school entry.

How long will it take to complete treatment?

While the Pulsed Dye Laser is effective and safe, it will not remove the majority of PWS in one session. The darker and thicker the lesion, the slower the response and greater number of treatments necessary. Lesions over the temple and forehead respond better than on the cheek and around the lips. Lesions on the arms and legs respond the most slowly and incompletely. Most Port Wine Stains require from four to ten or more repeat treatments to each area with at least a 6-8 week interval between each treatment. A large PWS could take a year to several years to remove completely. Patience with treatment is essential for best results.

What about pain medications prior to and during the treatment?

While most adults and many children are able to tolerate the discomfort of treatment without any pain medication, some infants and children will require mild sedation or rarely a brief general anesthetic, especially when treating large areas. We routinely use a topically applied local anesthetic cream such as ELA-MAX under occlusion one to two hours before the scheduled treatment to decrease the discomfort associated with the procedure. You will be given a tube of this cream as well as instructions on its use after consultation in the office. Pain medication is available after treatment sessions as needed and desired. Dr. Goldberg is a Board Certified Pediatrician and Dermatologist, skilled in handling infants, children as well as adults. He will strive to tailor a treatment program with as little discomfort as possible and without incurring the added risk of general anesthesia whenever possible.

What are the potential complications of treatment?

The Pulsed Dye Laser is the safest modality for treatment of PWS. There is less than 1% risk of scarring and texture change with treatment. Dark skinned patients can absorb more of the Laser energy and will be at increased risk for hypo-pigmentation or skin lightening after treatment. It is important to realize that the Laser may not completely eliminate the birthmark. At best, the Laser may cause a marked lightening or change the birthmark from dark red to light pink, making it easier to cover with a more normal light make up. It is also impossible to predict what long-term undesirable or unknown side effects could occur as a result of this relatively new modality of Laser treatment since it has only been in use since the mid 1980's. We have seen a partial return of the birthmark after significant clearing making maintenance treatments important over the years following treatment.

What precautions need to be taken before and after treatment?

It is essential that the skin over the PWS to be treated is as pale as possible prior to treatment. Broad-spectrum sunscreens (SPF 30 or higher) need to be applied routinely before and after therapy. Postoperative care is simple and requires that you not rub or create any friction over the area. The treated area should be cleaned with gentle soap and water and the application of an antibacterial ointment such as Polysporin ointment two to three times daily for the first seven to ten days after therapy.

Does insurance pay for treatment?

We have had fairly extensive discussions with multiple insurance carriers and many still cover treatments in whole or part. Recently BCBS, as well as several managed care plans and HMO's have been denying claims. Children's Rehabilitative Services are among some of the agencies that do cover therapy. Our Insurance Coordinator and Dr. Goldberg will work with you and help you obtain whatever benefits you are entitled to under your insurance plan. It is important that photographs of how the PWS has changed over time be available to send into the insurance company, and it is advisable that whenever applicable, you obtain pre-certification for tests and regular treatments prior to the initiation of treatment.

What are the costs of treatment?

Laser technology is moderately expensive. The physician fee varies between \$175.00 to \$1200.00 or more depending on the time spent, number of pulses of the Laser used, the area treated, as well as the location and the difficulty of the procedure.

If I choose not to have treatment, what can I do to cover my PWS?

There are a number of excellent products available to cover-up PWS lesions such as Covermark (by Lydia O'Leary) and Dermablend and are available at better department stores. There are other skilled cosmetologists and estheticians who can instruct you on their proper use. In addition, several patients who have lived with their PWS for many years are available to help as well.

Is there a support group for people like myself with a PWS?

Yes! There is a national organization entitled the Sturge-Weber Foundation and can be found at www.sturge-weber.org. They also distribute a regular newsletter and can be contacted for further information.

Other sources on the web: www.birthmark.org and www.birthmark.com

Dr. Goldberg and our staff will ask you to bring in representative photographs illustrating how your birthmark has changed or grown in the proceeding weeks, months or years. Photographs will be taken to document your baseline, for insurance purposes, as well as your progress with therapy.

For additional information contact Monica or Carla at 520-795-7729

Please visit our website at www.pimaderm.com for before and after photos of results.