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**Research Shows Laser Effectively Treats Children's Painful
Vascular Malformations**
*Interventional Radiologists Offer Non-Surgical Treatment for
Painful and Disfiguring Genetic "Birthmarks"*

Toronto, Ontario (April 3, 2006) – Research presented today at the Society of Interventional Radiology's 31st Annual Scientific Meeting in Toronto shows interventional radiologists can treat low-flow vascular malformations in children non-surgically with a laser. In the study, 100 percent of the laser ablations were technically successful, 96 percent of the patients had their pain eliminated or reduced, and there were no major complications from the procedure. Additionally, the new laser technique is less painful for the patient than existing therapies. Venous malformations are spongy, mass-like lesions composed of abnormal veins—veins with a relative lack of smooth muscle cells in their walls. Venous malformations can be visible, causing deformity. Those occurring in the arms and legs can be extremely painful and eventually some cause nerve damage and pulmonary emboli. They are generally treated for pain relief or to prevent pulmonary emboli, which are potentially life-threatening.

"As a pediatric vascular specialist, I am constantly trying to improve the care I can give children. This new laser treatment allows us to treat a child's venous malformation and reduce their everyday pain with a less painful procedure," explained interventional radiologist and study author Patricia Burrows, M.D., from Boston Children's Hospital. Interventional radiologists adapted existing non-surgical laser technology that is already approved for use in varicose veins to treat this vein malformation.

The swelling and pain from venous malformations is caused by the deficient muscle in the veins' wall. The veins cannot contract and continue to get larger, which causes the tissues to swell resulting in pain. The pain is similar to when a finger is smashed – throbbing pain that gets worse when you use the affected limb and it can become debilitating with time. Venous malformations, commonly and erroneously called "cavernous hemangiomas," probably exist in a high percentage of the general population. Most of them are unrecognized because they are tiny and asymptomatic. Others are not diagnosed because of their deep locations in the body.

Current treatment involves serial or repetitive sclerotherapy, a procedure in which an irritative solution is injected into the abnormal veins to cause them to shrink. Most patients undergo a series of three to six procedures to treat their venous malformation because the faulty veins re-open and swelling prevents access to the entire malformation. Sclerotherapy is an effective treatment. However, large venous malformations may be

difficult to treat with sclerotherapy alone, due to the large amount of the sclerosing solution needed to treat the whole malformation. Complications related to the swelling can occur, and recovery can be prolonged due to pain, especially for venous malformations of the limbs.

During the new treatment, the interventional radiologist uses a laser fiber within a catheter to seal closed the largest abnormal veins. The procedure is not always effective in completely closing the veins, and some patients receive some sclerosant as well. Since the amount of sclerosant injected is less than the treatment using sclerosant alone, there usually is less swelling and pain after the procedure, and faster recovery and return to school and activities. Although the laser treatment is performed to reduce a patient's pain, there is some esthetic benefit as well, because the "bluish" skin color caused by the malformation can diminish. "It's tough for a child to face a repeat treatment that's painful. The laser is a significant advance in patient care, because it is highly effective but much less painful than the current treatments, especially for malformations containing large veins," says Burrows.

"Although vascular malformations have been successfully treated for decades using sclerotherapy with ethanol and detergents, these procedures occasionally result in serious local and embolic complications, especially when very large venous channels are treated," Burrows added. "Our research showed that endovenous laser ablation is a well tolerated and safe non-surgical treatment for children, without serious side effects."

About the Study

In the Boston Children's Hospital study, 24 patients' low-flow vascular malformations were treated with 38 endovascular laser ablations, 37 of which were followed with sclerotherapy. The volume of sclerosant was reduced by at least one-third in these patients. The vascular malformations were located on patient's face and tongue (6), neck (2), chest wall (1), upper extremity (2) and lower extremity (17). Patients were followed up for pain and their imaging studies were compared. One hundred percent of the laser ablations were technically successful. Twenty-three patients reported no pain or a decrease in pain following the laser ablation. There were no major complications. Prospective follow-up showed a reduction in the abnormal outflow channels. Long venous anomalies due to Klippel Trenaunay Syndrome were amenable to the new laser treatment.

Abstract 154 can be found at www.SIRmeeting.org.

About the Society of Interventional Radiology

Interventional radiologists are board-certified physicians who specialize in minimally invasive, targeted treatments. They use X-rays, MRI and other imaging to advance a catheter in the body, usually in an artery, to treat at the source of the disease non-surgically. They are certified in both Diagnostic Radiology and Vascular & Interventional Radiology. As the inventors of angioplasty and the catheter-delivered stent, interventional radiologists pioneered minimally invasive modern medicine, and provide treatments that offer less risk, less pain and less recovery time compared to open surgery. More information can be found at www.SIRweb.org.

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