

Interventional Radiology at Virginia Mason

Working Together for Better Outcomes

Vascular Malformations of the Face & Neck

Vascular malformations of the face and neck include a number of different entities, all of which are rare. These abnormalities usually occur in children or young adults. These patients may present with cosmetic problems, pain, or functional problems related to the mass of abnormal vascular structures. Specific pathologies include high flow arteriovenous malformations (with abnormal, direct communication between arteries and veins), and low flow lesions including hemangioma, capillary malformations, venous malformations, and lymphatic malformations. Combined, complex lesions can occur with mixed elements. Although these abnormalities are often collected under the general term "hemangioma", this term actually describes a specific benign vascular *tumor*, which occurs in *very young children* and most often regresses as the child ages. If a true hemangioma does not go away on its own, or grows rapidly, it may require treatment, which may include embolization, surgical removal, or a combination of the two. The more common lesion encountered in young adults are best called venolymphatic malformations, because they are not tumors at all, but congenital (present at birth) malformations of vascular elements which may have venous and or lymphatic components. The term "cystic hygroma" is used to describe a largely cystic venolymphatic malformation (mostly lymphatic) of the lower neck, which is usually apparent at birth. These patients frequently undergo surgical debulking in early childhood, but are often left with residual malformations that represent in childhood or young adulthood.

Slow flow venolymphatic malformations, contain venous and lymphatic elements. These are the most common of the vascular malformations in the head and neck, and are therefore the most

common lesions to be imprecisely referred to as a "hemangiomas." Venolymphatic, slow-flow vascular malformations of the face, and neck usually present in late childhood or early adulthood as cosmetic blemishes such as discoloration or swelling of the face, or as a firm mass which may be confused with a tumor. These abnormalities usually pose little risk of bleeding or severe loss of function; however, they can cause pain or functional problems related to mass effect, and may have an adverse psychological impact on the patient (sometimes at an important phase in their social development). Although these lesions are sometimes quite extensive and diffuse, and they can be difficult to completely eradicate, many of these lesions can be well controlled or nearly eliminated, with relatively safety, via direct puncture of the lesions and injection of materials directly into the vascular malformation. Although surgical treatment combined with embolization is not an uncommon approach to these vexing lesions, surgical treatment alone is often disappointing for both the patient and surgeon, and surgery has higher risk and higher morbidity (injury, scarring, pain etc.) compared to direct percutaneous puncture and sclerotherapy. Absolute ethanol (alcohol), is a powerful sclerosing (scarring) agent, and is the most commonly used agent for percutaneous (through the skin) sclerotherapy of venolymphatic vascular malformations at experienced centers. This is the same form of alcohol found in alcoholic beverages, but in a very concentrated form, which is quite toxic to tissues, and for this reason is very effective at "stripping" the normal lining of vascular spaces, resulting in thrombosis (clotting) of the vascular spaces, and ultimately scarring and withering away of the abnormal vascular or lymphatic channels. Some of this alcohol does enter the blood stream during this therapy though patients rarely feel intoxicated by it. Rarely severe systemic reactions to ethanol can occur. Since no treatment is without risk, judgment is required in deciding when further treatment would be unlikely to improve the cosmetic outcome, or when the expected benefit may not be worth the risk of injury to the skin, eyes, nerves or other normal structures adjacent to the lesion being targeted by the therapy

Arteriovenous malformations are short circuits between the arteries and veins with no capillaries in between them to slow the blood flow and to carry out the normal cellular processes. These lesions may cause cosmetic deformity; which may involve the tongue, facial bones or eye, affecting their function. They may also present with bleeding, at times uncontrollable, from the nose, mouth or face. These lesions may be affected by hormonal changes occurring with puberty or pregnancy. Embolization is usually required and should be

considered prior to surgical excision or "tying-off" of vessel feeding the abnormality. In the embolization procedure, an arteriogram is performed, and the arteries supplying the lesion are plugged from within the vessel by injecting material through a very small piece of tubing steered into the vessel from a small arterial puncture made in the groin area. Surgery may be necessary to completely remove these lesions following embolization in order to eliminate the risk of further bleeding.

What to expect following Ethanol Sclerotherapy

Patients and their caregivers should expect *significant* swelling of the treated area following ethanol sclerotherapy. The treated area will feel full and quite firm. As a general rule, the swelling peaks at two-five days post embolization, with volume of the lesion returning to baseline by two-three weeks, and then with the lesion continuing to shrink, with a new baseline volume established by 6-8 weeks. The severity and duration of the swelling depends on the volume of the lesion treated, with larger volume lesions demonstrating a greater extent of swelling, which last longer, compared with small volume lesions. With small volume lesions, patient may go home the same day as the procedure, with larger volume lesions overnight hospitalization is common.

The treating doctor will prescribe post embolization medications. These usually include an anti-swelling medicine (commonly prednisone, a corticosteroid, at a dose of 5-10mg by mouth three times per day for three days, then twice a day for three days, then once a day for three days), and an oral pain medication such as Percocet or Vicadin. Some discomfort related to the swelling is common. This pain should be well controlled with the prescribed oral pain medications. Some transient, focal decrease in sensation of the skin over the treated area is not uncommon. In such cases normal sensation usually returns. This may take a few days, a few weeks or a few months, depending on the cause of the loss of sensation (and/or facial muscle function). Skin bruising ("echymosis") is also not uncommon, and also generally resolves.

Things to look for and to notify your doctor about include marked skin discoloration (blackened or white-blue skin which appears to have reduced blood flow), fluid collections under the skin, or skin blistering.

Skin ulceration (on the outside surface or the mucosal surface inside the mouth) can occur, and will heal in time, but may in some cases need to be followed by surgical revision for a better cosmetic appearance. Large areas of skin loss are very uncommon. If the patient does develop ulceration / skin loss, specific instructions for wound care will be provide on follow-up visits.

Follow-up Visits and Imaging

The patient will be provided with specific instructions regarding follow-up. Generally, it is a good idea to see your treating doctor (and or the referring specialist) about one week after the treatment, to make sure things are proceeding as expected. Follow-up imaging is usually not done until 6-8 weeks after the treatment session. A follow-up MRI is commonly obtained, to assess the effectiveness of the therapy, and the configuration and extent of any residual vascular malformation. It is common for a patient to undergo more than one session of sclerotherapy. The decision to undergo additional treatments will be up to you and your treating physician.

Who To Contact with Questions / Problems

Virginia Mason Interventional Radiology Clinic: (206) 341-0495

Voice mail for Dr. David H. Robinson, MD: (206) 341-0935

Virginia Mason Radiology: (206) 223-6851;

Virginia Mason Emergency Room: (206) 583-6433

Your referring physician's office: _____