



Penn Orthoplastic Limb Salvage Center Update

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The Penn Orthoplastic Limb Salvage Center (POLSC) has taken off after its official program launch in July 2018. This unique program is headed by Dr. L. Scott Levin, Dr. Stephen Kovach, and Dr. Samir Mehta. Similar subspecialties are not only rare across the nation, but also not formally combined. The POLSC is a niche collaboration between orthopedics and plastic reconstructive surgery with the incorporation of complex microvascular surgical techniques.

The number one goal of the program is to preserve limb function to patients at risk for amputation or loss of limb function due to complex trauma, bone loss, soft tissue compromise, infection, vascular compromise, mal-union and non-union, or complicated sarcomas. There is an individual multi-team collaboration for each case to ensure there is adequate healthy tissue coverage to maintain wound closure and avoid infections, while also correcting boney injuries. This includes treatments such as vascularized free muscle and bone grafts, limb lengthening, and tendon and nerve transfers.

Since the official launch of POLSC, community outreach has been increasing, bringing in more patients looking for limb salvage evaluation. Awareness of the program has led to increased internal, as well as external referrals from other healthcare organizations in the surrounding areas. We are promoting ourselves as an additional resource to those health care centers who do not have access to the skilled techniques we can offer here at Penn. There has also been an increase in public awareness that has led to individual patients finding us online and through word of mouth.

The program's clinical staff is also growing with the addition of two new clinical roles. In December, the POLSC has added a full-time registered nurse to assist in these complex patient cases to manage their care and promote the program. There will also be a dedicated orthoplastic and limb salvage fellow starting in August of 2019. The fellow will learn different surgical approaches for managing bone trauma, soft tissue trauma, infection, tendon injury and transfers, acquired conditions, and microsurgery (including nerve repair and reconstruction, free soft tissue transfer, vascularized bone

grafts, upper extremity replantation/ allotransplantation, and brachial plexus surgery). The addition of these two clinical roles will lead to the growth of the POLSC with hopes to develop dedicated limb salvage clinic time slots. These combined roles will increase continuity in the complex care these patients require.

The program extends beyond these complex reconstructive cases. Another component of POLSC includes the Total Aesthetic Limb Lengthening & Extremity Reconstruction (TALLER). Headed by Dr. Samir Mehta, The TALLER program is one of only a handful in the world and is ideal for people who want a discreet, less-invasive way to increase their height. TALLER involves using the advanced NUVASIVE technology which stimulates bone growth with an internal fixation and the assistance of an external magnetic device patients can use at home daily to lengthen their lower extremities. This technique is already being used with great success within POLSC to treat patients who have suffered significant bone loss and require bone lengthening, usually in addition to a free vascularized bone autograft.

Additionally, POLSC includes our forearm vascularized composite allograft (VCA) recipients in our hand transplant program. So far, all transplant patients we have done at Penn have received bilateral hand transplants with 100% success. This program encompasses a large team that spends countless hours evaluating, preparing, and caring for recipients of hand transplants. These are life-long patients who will continue to be under our care from here on out. This continues to be a very active program as we are constantly evaluating, listing, and treating these patients.

POLSC will continue to grow and develop, leading the nation on the forefront of what microvascular surgery can accomplish. The annual Penn Flap course will continue to increase training residents and fellows, who will go on to discover more ways to restore limb function through microvascular surgery. Using a multidisciplinary approach, we ensure the patient is treated as a whole and restore dignity and function back to our patients.



Figure 1. Dr. Stephen Kovach performs a microvascular procedure for limb salvage.



Figure 2. Images depicts before and after of a microvascular salvage procedure; Patient underwent a debridement of all necrotic tissue, then a lateral arm microvascular flap composed of skin, soft tissue and blood vessels was harvested and transferred to both feet. This microanastomosis (microsurgical attachment) of flap vessels to the recipient vessels was performed using the operating microscope.