Initiating an Acute DVT Program at Arnot

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Introduction

Deep Vein Thrombosis (DVT) is a blood clot that forms in the deep veins of the body. Acute DVT can present with edema, leg pain, erythema, and tenderness, and the current mainstay of therapy involves anticoagulation (Heparin, LMWH, fondaparinux). Recently, advances in endovascular therapy allow for interventionists to treat and reduce the duration of DVTs as well as reduce the risk of PE and decrease the chance of subsequent venous thromboembolism (VTE).

With rapid advancements in VTE treatments, Arnot Ogden Medical Center (AOMC) was purported to benefit from a system specific for venous clot removal, purported to have overall increased clot removal compared to the Indigo System. The "INARI ClotTriever Thrombectomy System" is indicated for the non surgical removal of soft emboli and thrombi from vessels using a mechanical thrombectomy system/CDT that removes large clots within a single or multiple sessions without the use of thrombolytic drugs and extended ICU use.

Assessment of Volume

Retrospective data was gathered in order to estimate the number of patients that would be benefitted by an acute DVT program at AOMC. Lower extremity venous ultrasound were reviewed for the year of 2018, with studies that were positive were screened via the inclusions and exclusion criteria recommended for the device (**Figure 2**). This review demonstrated that 75 patients in 2018 appear to have been ideal candidates for acute DVT treatment. The monthly distribution of these results are noted in **Figure 1.**

Discussion

Post Thrombotic Syndrome (PTS) is a complication of DVT due to venous hypertension and is both debilitating and burdensome. **Even when adequately coagulated 20 to 50% of patients with DVT develop PTS. While anticoagulation may not prevent PTS, thrombectomy of the acute DVT reduced the chance of developing this process to effectively zero.** Symptoms include chronic leg pain/heaviness, intractable edema, and leg ulcers. Clinical signs include rubor, dusky cyanosis, edema, stasis hyperpigmentation, varicose veins, perimalleolar telangectasia, and lipodermoscloerosis.

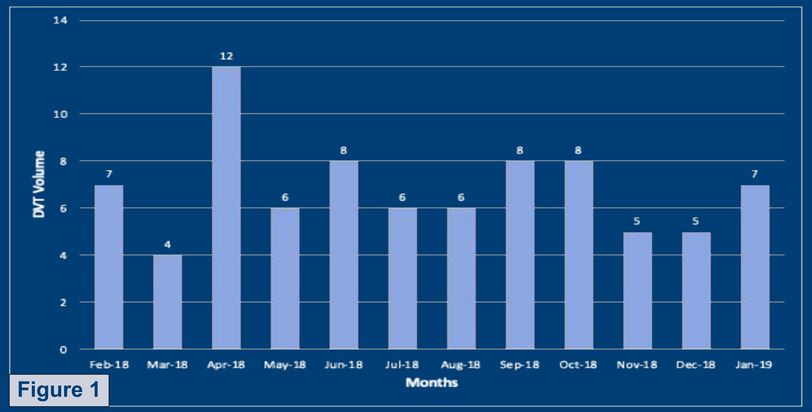

Figure 1

Retrospective data in the form of lower extremity ultrasounds positive for DVT and for patients meeting inclusion criteria from 2018 was analyzed to gain an understanding of potential volume of procedures (**Figure 1**). This demonstrates that there is adequate volume, with peak volume in the spring and otherwise steady flow of patients throughout the year that would benefit from intervention.

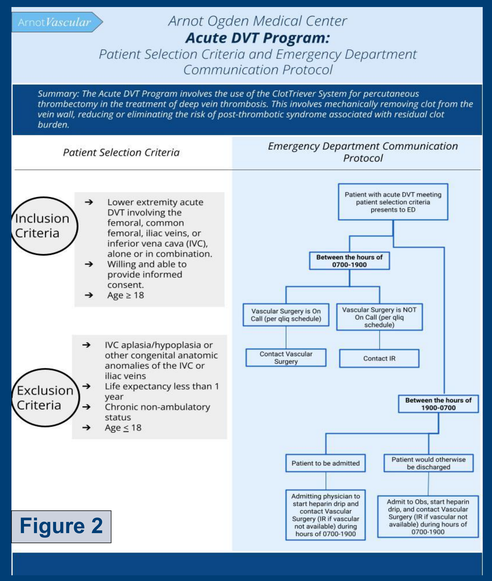

Figure 2

Following device approval and acquisition, a communication protocol was designed to streamline patient recruitment from the Emergency Department to the Interventional suite (**Figure 2**).

Discussion (cont.)

At Arnot Ogden Medical Center, the main catheter directed thrombolysis (CDT) device used is the "Penumbra Indigo System" which has been predominantly used in our practice to remove emboli in arterial systems. A study was done from 2016 to 2017 to assess the success of resolution of iliofemoral or central DVTs with the Indigo System. This study exhibited technical success of 60% for both acute iliofemoral and central DVTs achieving definitive success in one setting. Mechanical power aspiration with the Indigo system has increased single session procedures, reduced the use of thrombolytic therapy, and reduced kidney injury resulting in better outcomes for patients compared to the previous conventional treatment options for DVT. Many studies have demonstrated that catheter-directed thrombolysis is superior to anticoagulation alone in acute DVT treatment. Patients have fewer recurrences of DVT when a high degree of clot lysis is achieved.

ClotTriever is designed to core, capture, and remove large clots from large vessels. In comparison, aspiration is an inefficient method of removing large venous clots as they have a collagen matrix and adhere to the venous walls. Thus, aspiration could lead to a residual thrombus which increases the chances of recurrent VTEs and post-thrombotic syndrome (PTS). Both Penumbra and ClotTriver do not require thrombolytics, therefore decreasing potential side effects. The serious adverse effect rate of both systems is comparably low.

Benefits of ClotTriever	
1. Reduced Procedure Time (37 min)	2. Reduced ICU stays
3. Do not require thrombolytics	4. Decreased Incidence of Post-Thrombotic Syndrome

References

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