



Percutaneous Mechanical Thrombectomy with the Inari ClotTrievers Device in a Pediatric Population

Ian Rumball¹, Kan Chen¹, Nicholas Voutsinas², Amir Noor³

¹Department of Radiology, Zucker School of Medicine at Hofstra University/Northwell Health, New Hyde Park, NY; ²Department of Radiology, Vanderbilt University Medical Center, Nashville, TN; ³Department of Radiology, NYU Langone Health, New York, NY



DONALD AND BARBARA
ZUCKER SCHOOL of MEDICINE
AT HOFSTRA/NORTHWELL

Purpose

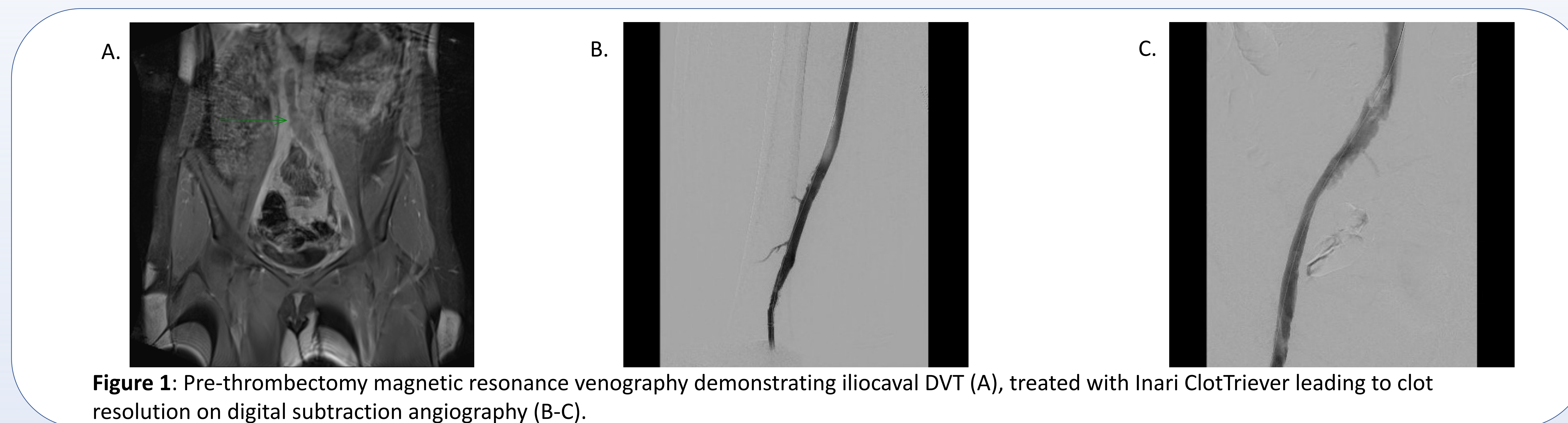
- Pediatric deep venous thrombosis (DVT) is rare, resulting in significant morbidity due to post-thrombotic syndrome (PTS).
- Catheter directed therapy (CDT) and percutaneous mechanical thrombectomy (PMT) can decrease PTS severity in iliofemoral DVT, and have been described in pediatric population, usually reserved for limb-threatening cases.¹⁻³
- Inari ClotTrievers (Inari Medical, Irvine, CA) is a large-bore PMT device described for DVT removal in adults⁴. We describe its use in a pediatric population.

Materials & Methods

- We reviewed three cases of patients who underwent ClotTrievers PMT at our pediatric hospital 2020-2021.
- Iliofemoral DVT was diagnosed using ultrasound and MRV or CTV, which showed no extrinsic compression.

Results

- **Case 1:** 17-year-old on oral contraceptive pills (OCP) with left leg pain, found to have left iliofemoral DVT (**Figure 1a**). Patient failed to improve after 5 days of systemic anticoagulation. After unsuccessful overnight CDT and rheolytic PMT, patient was treated with ClotTrievers device and overnight CDT, with clot resolution on final venogram (**Figure 1b-c**). No acute bleeding complications occurred. Patient was discharged on apixaban (Eliquis). On 3-month follow-up, patient had improved symptoms and imaging demonstrating patent left lower-extremity veins. Long-term follow-up ultrasound and MRI showed no evidence of ilio caval thrombosis or clinical symptoms of post-thrombotic syndrome.



- **Case 2:** 11-year-old on OCP with right leg pain, found to have right iliofemoral DVT. Patient failed to improve after 4 days of systemic anticoagulation and thrombolysis. After unsuccessful rheolytic PMT, patient was treated with ClotTrievers device, with clot resolution on final venogram. No acute bleeding complications occurred. Patient was discharged on apixaban (Eliquis). Patient had symptom resolution on 6-month follow-up. Subsequently, patient was lost to follow-up.
- **Case 3:** 15-year-old with PCOS on OCP with right leg pain and dyspnea, found to have right iliofemoral DVT and segmental pulmonary embolism. Patient was started on systemic anticoagulation overnight and treated with single session ClotTrievers PMT with an embolic protection device, with near-total resolution of clot burden on final venogram. No acute bleeding complications occurred. Patient was discharged on subcutaneous enoxaparin (Lovenox) after improvement in symptoms. 2-month follow-up imaging demonstrated decreased clot burden with residual chronic thrombus and clinical symptoms improved from initial presentation.

Conclusion

- We describe the safety and feasibility for large-bore PMT with Inari ClotTrievers in the pediatric population for acute iliofemoral DVT.
- Further research should explore the safety and efficacy of this device in the pediatric population.

References

1. Comerota AJ, Kearon C, Gu CS, Julian JA, Goldhaber SZ, Kahn SR, Jaff MR, Razavi MK, Kindzelski AL, Bashir R, Patel P, Sharafuddin M, Sichlau MJ, Saad WE, Assi Z, Hofmann LV, Kennedy M, Vedantham S; ATTRACT Trial Investigators. Endovascular Thrombus Removal for Acute Iliofemoral Deep Vein Thrombosis. *Circulation*. 2019 Feb 26;139(9):1162-1173. doi: 10.1161/CIRCULATIONAHA.118.037425.
2. Goldenberg NA, Branchford B, Wang M, Ray C Jr, Durham JD, Manco-Johnson MJ. Percutaneous mechanical and pharmacomechanical thrombolysis for occlusive deep vein thrombosis of the proximal limb in adolescent subjects: findings from an institution-based prospective inception cohort study of pediatric venous thromboembolism. *J Vasc Interv Radiol*. 2011 Feb;22(2):121-32. doi: 10.1016/j.jvir.2010.10.013. Epub 2011 Jan 8.
3. Witmer C, Raffini L. Treatment of venous thromboembolism in pediatric patients. *Blood*. 2020 Jan 30;135(5):335-343. doi: 10.1182/blood.2019001847.
4. Benarroch-Gampel J, Pujari A, Aizpuru M, Rajani RR, Jordan WD, Crawford R. Technical success and short-term outcomes after treatment of lower extremity deep vein thrombosis with the ClotTrievers system: A preliminary experience. *J Vasc Surg Venous Lymphat Disord*. 2020 Mar;8(2):174-181. doi: 10.1016/j.jvsv.2019.10.024. Epub 2019 Dec 14.