#52 High Rate of Deep Vein Thrombosis following Multiligament Knee Injury Prior to Reconstruction

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DISCLOSURE(S) OF INTEREST

I (and/or my co-authors) disclose that:

Étienne Belzile receives consulting fees from BodyCad, Victhom and Pendopharm and speaker bureaus from Stryker, ConMed and Depuy Synthes.

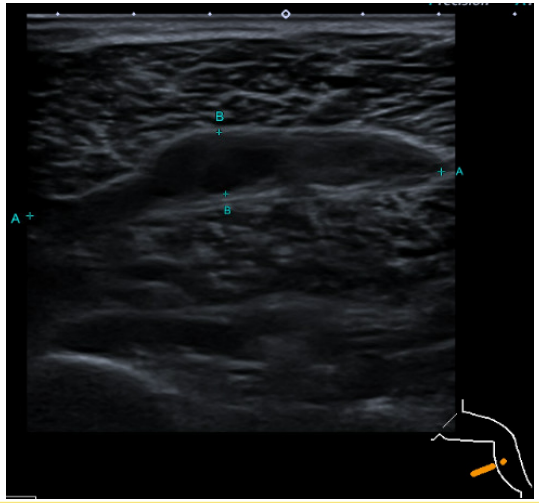
Bogdan A. Matache receives consulting fees from Arthrex and speaker bureaus from Pendopharm.

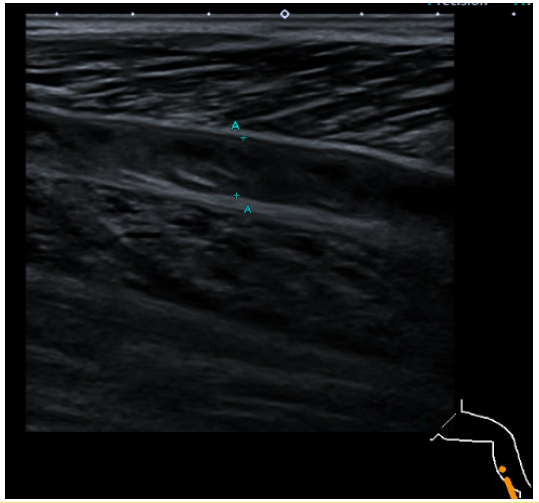
Objective

- Multiligament knee injuries (MLKIs) generally occur as a result of high-energy sport or motor vehicle accidents.
- MLKIs are known to be associated with significant neurovascular injury.[2,3]
- Common peroneal nerve injuries can occur and may influence the outcomes of MLKI reconstruction.[5]
- Vascular injuries occur concomitant to MLKIs in 32–50% of patients with bicruciate tears.[5] Consequently, post-traumatic deep vein thrombosis (DVT) can occur as well, but the rate at which this occurs following these injuries has not yet been defined in the literature.[5]

Objective

- The purpose of this study was to determine the rate of post-injury deep vein thrombosis following multiligament knee injury.
- We also sought to assess the risk factors for post-injury deep vein thrombosis in this patient population.





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Materials and Methods

- This was a retrospective cohort study performed at a Level I trauma center.
- Patients who underwent surgery following multiligament knee injury between January 1st, 2012 and May1st, 2022 were identified from our database.
- It was common practice for some surgeons at our institution to obtain pre-operative doppler ultrasonography on all patients presenting with an acute MLKI.
- Knee-dislocation severity was graded using the Schenck Knee-Dislocation (K-D) classification.[7]

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Materials and Methods

- Inclusion criteria were: ≥18 years of age, K-D ≥2, and presence of a post-injury lower extremity doppler ultrasound.
- Patients with single-ligament injury and without post-injury doppler ultrasonography were excluded. Presence of DVT on post-injury doppler ultrasonography was noted, and the location of the thrombus (below/above knee) was recorded as well.
- Bivariate analysis using the Pearson coefficient was performed.

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Results and Conclusions

Table 1. Patients Demographics	n = 46
Age at surgery (years)	38.3 ± 29.74
Sex (%)	
Male	73.9
Female	26.1
BMI	27
Schenck Knee-Dislocation classification	
Grade II	18/46
Grade III	19/46
Grade IV	5/46
Grade V	4/46
Polytraumatized (%)	19.6
Smoker	14
Diabetes	1
Hypertension	6
Cardiovascular Disease	0
Peripheral Vascular Disease	0

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Results and Conclusions

- Overall, there was a 35% rate of post-injury DVT in the entire cohort.
- 1/16 DVTs were located above-knee.
- There was a significant association between polytraumatized patients and post-injury DVT ($p=0.025$).
- DVT was not independently associated with patient age, BMI, diabetes, smoking status, hypertension, or injury severity ($p>0.05$).

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Significance of the Findings

- Multiligament knee injuries are often associated with concomitant lower extremity injuries including long-bone fractures, common peroneal nerve palsy, and vascular injuries.[8,9]
- Given the degree of associated soft-tissue injury to the knee and the pro-inflammatory state produced, patients may also develop deep vein thrombosis, which is important to recognize given the risk of progression to pulmonary embolism.[10]

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Significance of the Findings

- The principal finding of this study is that there is a high rate of DVT following MLKI.
- Additionally, we identified that polytraumatized patients are particularly at risk.
- Lastly, we showed that other patient demographic risk factors for vascular disease (age, BMI, diabetes, smoking status, hypertension) were not independent risk factors for DVT following MLKI.
- Greater severity of knee injury as graded by the Schenck classification was not associated with an increased risk of post-injury DVT.

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