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CORR Insights®: Can Vascular Injury be Appropriately Assessed With Physical Examination After Knee Dislocation?

Burak Beksaç MD

Where Are We Now?

Traumatic knee dislocation is a rare but catastrophic injury that carries with it a high risk of neurovascular damage. The challenge in the management of traumatic knee dislocation is making a prompt and accurate diagnosis. Dislocations often reduce spontaneously, which can result in delayed or missed diagnoses [2], and these can result in ischemia, permanent nerve damage, compartment syndrome, or even amputation. Although generally a consequence of high-velocity trauma, some research suggests that traumatic knee dislocation can occur following even low-energy injuries like sprains [1]. Patients with morbid obesity have an increased likelihood of a traumatic knee dislocation following such low-velocity trauma. This adds to the diagnostic dilemma, as sedentary patients with knee sprains are likely to be last in line in the emergency department.

The current study by Weinberg and colleagues highlights the use of vigilant clinical examination parameters to diagnose vascular injuries [4]. These parameters include palpable dorsalis pedis, posterior tibial pulses, and the presence of an ankle-brachial index (ABI) of 0.9 or greater. No single physical examination was sensitive enough to diagnose vascular injury. However, when combined, these parameters could rule out vascular injury. Weinberg and colleagues also found that increased BMI and the presence of open dislocation were associated with a greater risk for vascular injury following traumatic knee dislocation.

Where Do We Need To Go?

Most physicians try to find the right balance between using high-level diagnostic technologies and cost-cutting measures. In this context, we have to ask ourselves whether ordering a CT or conventional angiography for every patient with suspected traumatic knee dislocation is entirely appropriate. An angiography is not also without risks, such as hematoma, pseudoaneurysm, arteriovenous fistula formation, as well as contrast-induced nephropathy and false-positive results [3]. Although with some inherent limitations, Weinberg and colleagues suggested an

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B. Beksaç MD (✉)
Acıbadem University School of Medicine, Acıbadem Maslak Hospital, 40 Buyukdere Cad., Istanbul, Sarıyer 34457, Turkey
e-mail: bbeksac@gmail.com

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algorithmic approach for patients with traumatic knee dislocation, recommending observation if the combined presence of dorsalis pedis and posterior tibial artery pulses + ABI ≥ 0.9; angiography was recommended if any one of the three parameters could not be fulfilled. One should keep in mind that other physical exam parameters, such as confirmed or suspected posterior dislocation or fibular nerve symptoms could be as important to pursue as a Doppler ultrasound or an angiography.

How Do We Get There?

Traumatic knee dislocations with vascular compromise are scarce occurrences. Unfortunately, the coordination of an ideal prospective, multicenter (Level 1 trauma centers) algorithmic study with enough power and evidence would be resource-intensive and time-consuming. However, to consolidate our approach to these potentially devastating injuries, we should try to assess what other physical examination parameters might be the indicators of vascular injury. Suspected posterior dislocations and fibular paresthesia are signs demonstrated to be co existent with vascular injuries [3]. Although operator dependent, Doppler ultrasonography is one of the noninvasive and less-expensive studies to consider when there are inconsistent findings. Finally, the patient selected for observation should also receive a physical examination parameters check to rule out late developing thrombosis.

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