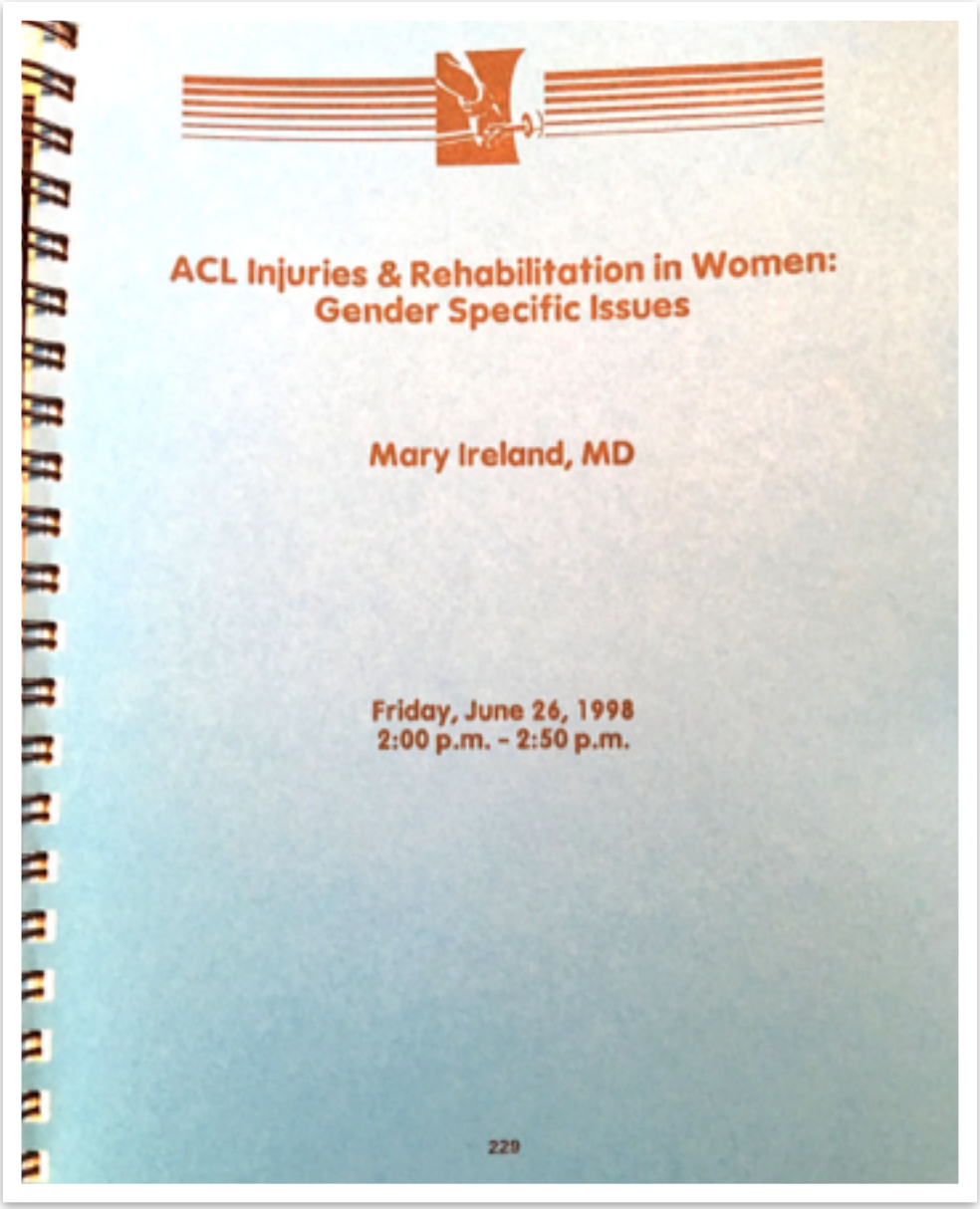
Thigh Compartment Syndrome in a Factor VII Deficient High School Football Player

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2016 American College of Sports Medicine Annual Meeting



ACL Injuries & Rehabilitation in Women: Gender Specific Issues

Mary Ireland, MD

Friday, June 26, 1998
2:00 p.m. - 2:50 p.m.

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HISTORY & PHYSICAL

- CC: Thigh pain and swelling
- History: 16 year old high school male football athlete presented to ER with 3 days of worsening thigh pain
  - Previous direct blow to thigh 1 week prior
  - Initially had minor pain and swelling that resolved the next day
  - Returned to play 4 days prior to presentation (actually played in football game and practice)
  - Woke up the next morning with thigh pain and swelling, which had progressively worsened over the last 3 days
  - He now said he couldn't walk because of the intense pain

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PHYSICAL EXAM

- Swelling and palpable fullness of anterior thigh
- Knee ROM 0-20
- 1/5 Quad Strength, 5/5 Distally
- Decreased subjective sensation over anteromedial thigh and knee
- Extreme pain with passive stretch
- 2+ DP/PT pulses, symmetric with contralateral side

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LABORATORY TESTS

- Hemogram
  - WBC: 14.2
  - Hemoglobin: 12.4
  - Hematocrit: 37.3
- Coags:
  - PT/INR: 16.6/1.6
  - PTT: 33

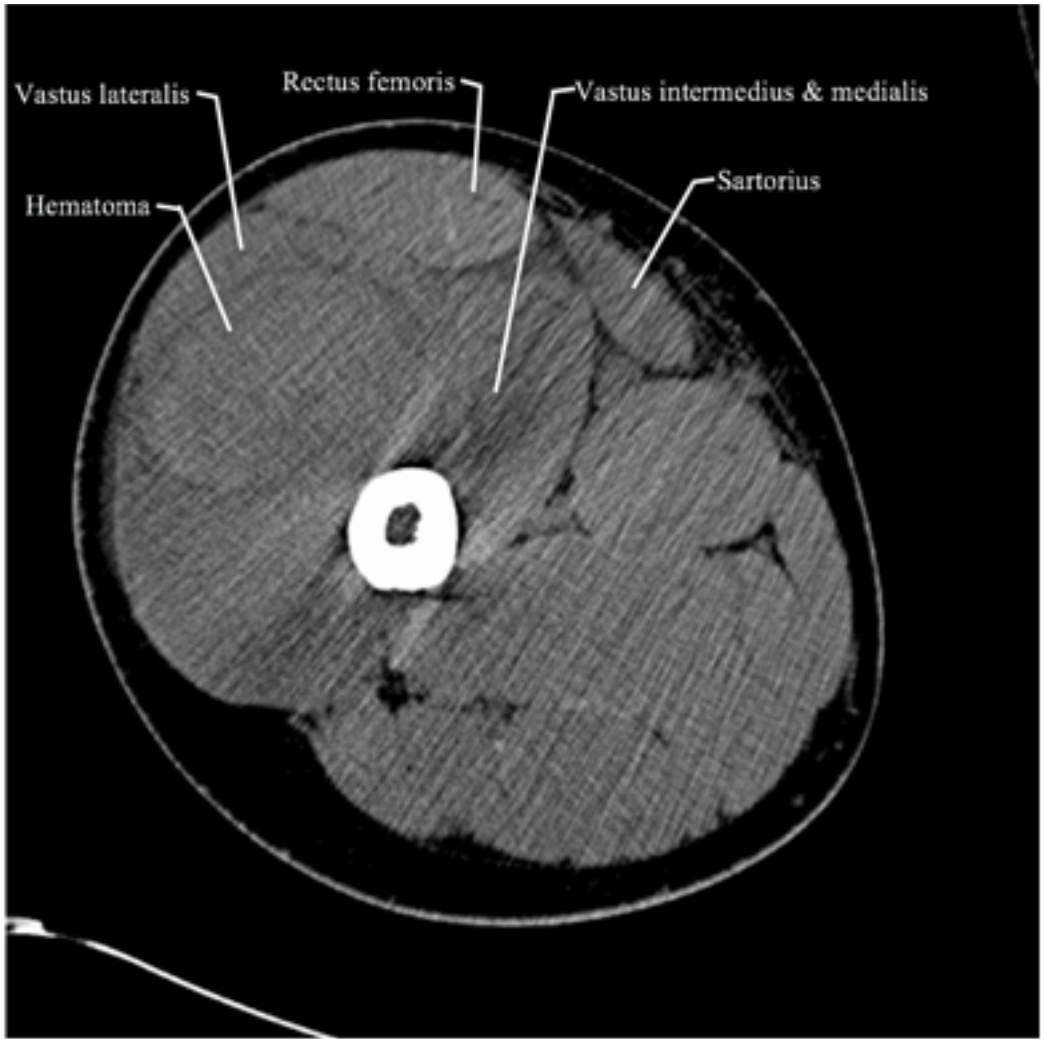
IMAGING







IMAGING


Vastus lateralis
Rectus femoris
Vastus intermedius & medialis
Hematoma
Sartorius

DISCUSSION

DIFFERENTIAL DIAGNOSIS

- Simple contusion
- Thigh hematoma
- Quadriceps muscle strain
- Anterior cruciate ligament injury
- Femur fracture
- Delayed onset compartment syndrome

TREATMENT

- Decompressive Fasciotomy

INTRAOPERATIVE FINDINGS



LITERATURE



Thigh compartment syndrome in a football athlete: a case report and review of the literature

ANGELO J. COLOSIMO and MARY LLOYD IRELAND

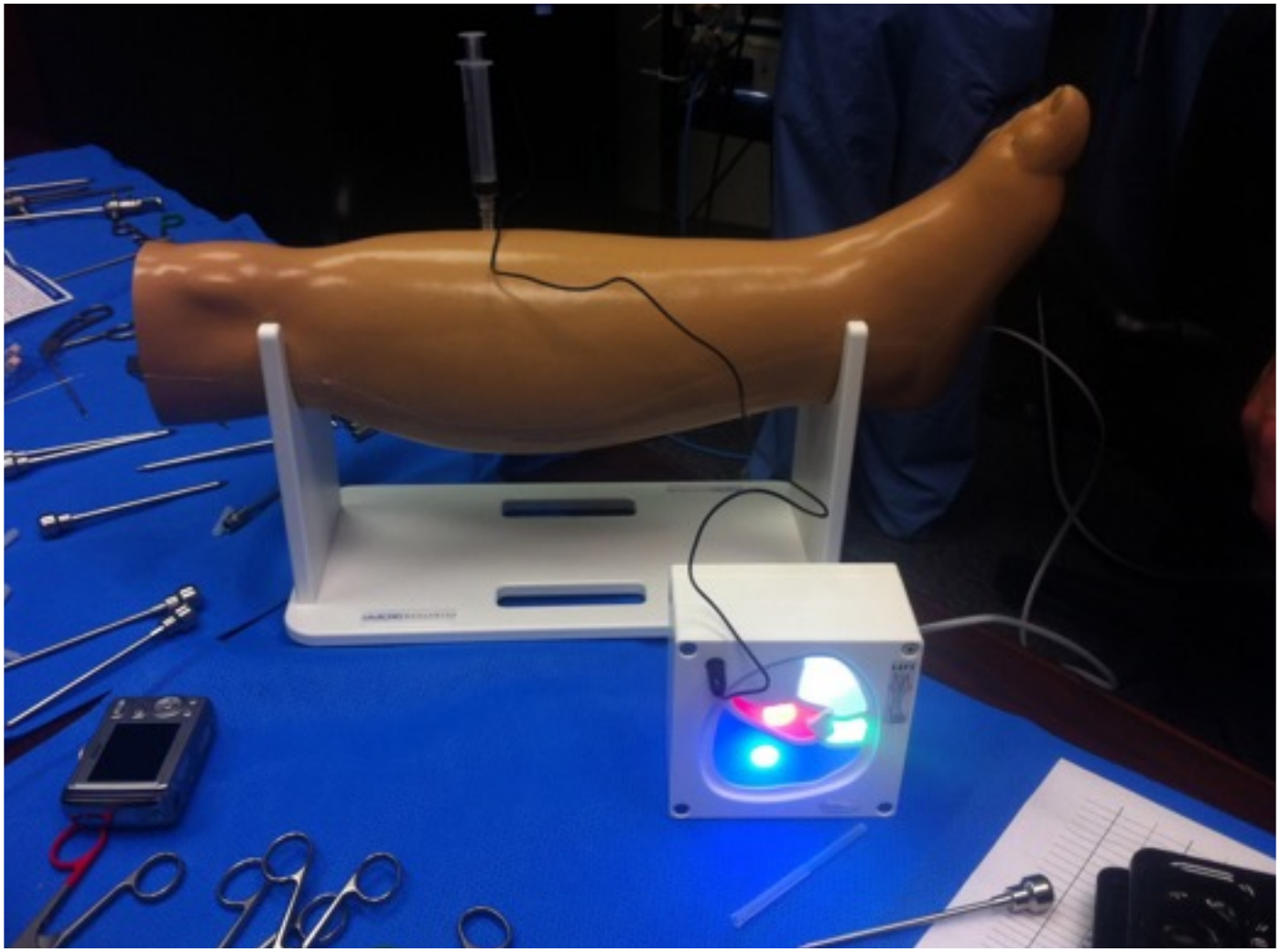
- 17 year old male, direct blow to thigh
- 24 hours later, exam in the ER demonstrated “tense, rock-hard anterior thigh” and “10-50 degrees of flexion”
- Sensation decreased over anteromedial thigh
- “Thigh compartment syndrome should be considered when any athlete suffers a direct blow to the anterior thigh with subsequent swelling, unrelenting pain, and loss of knee range of motion.”

COMPARTMENT SYNDROME

- The **“True Orthopaedic Emergency”**
- Intracompartmental pressure exceeds perfusion pressure
- 6 P’s of Compartment Syndrome
  - Pallor
  - Pain
  - Paresthesias
  - Paralysis
  - Poikilothermia
  - Pulselessness

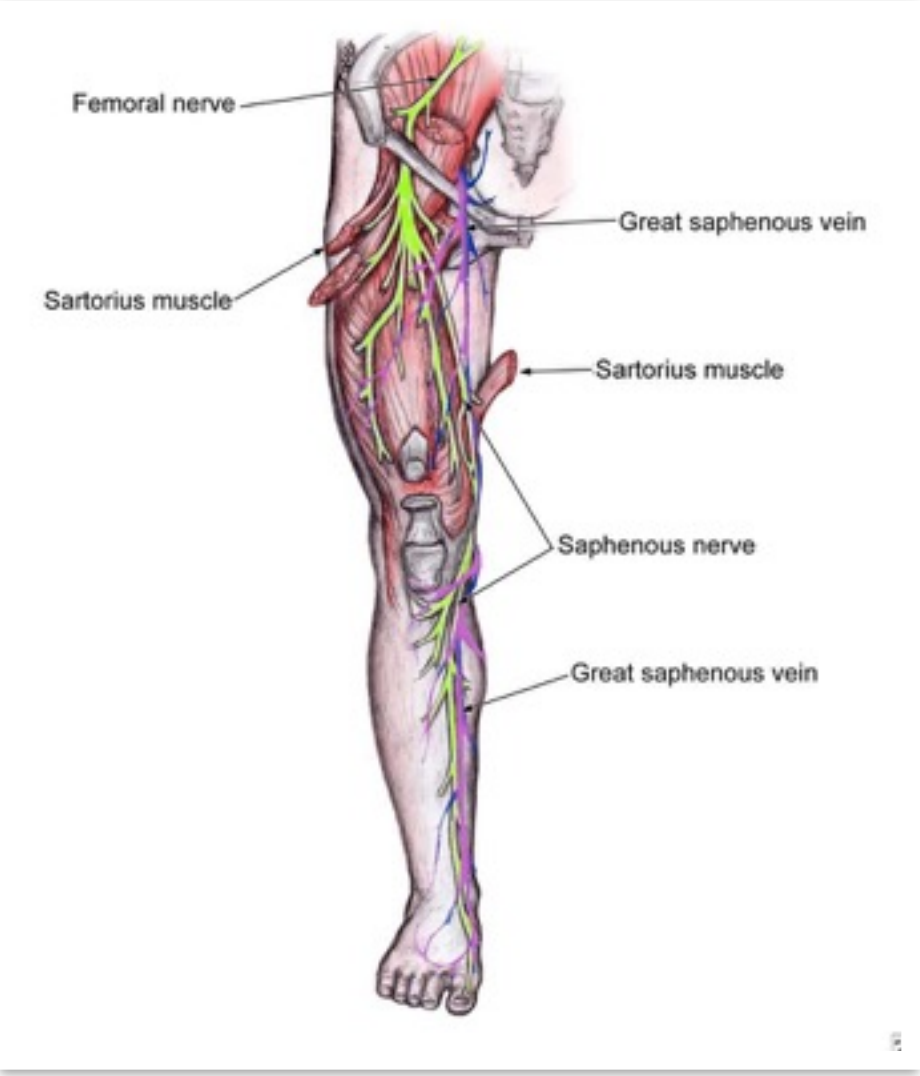
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COMPARTMENT SYNDROME

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COMPARTMENT SYNDROME



Drawing courtesy of Medscape

LITERATURE



Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury

Review

Compartment syndrome of the thigh: A systematic review

Nwakile I. Ojike [a], Craig S. Roberts [a,*], Peter V. Giannoudis [b]

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[b] University of Leeds, Department of Orthopaedic Surgery, Beckett Street, Leeds LS9 7TF, United Kingdom

- 41% from MVC or MCC
- 49% had femur fractures
- 21% had coagulation deficiencies

FURTHER WORK-UP

- Pediatric Heme-Onc Consulted
  - Coagulopathy Panel Ordered
  - vWF: Normal
  - Platelet Function: Normal
  - Factor IX: Normal
  - Factor VIII: Normal
  - INR: 1.6
  - Thrombin Clot Time: 24.6 (Elevated)
  - Factor VII: 15% (Normal 67-143%)

CLOTTING CASCADE

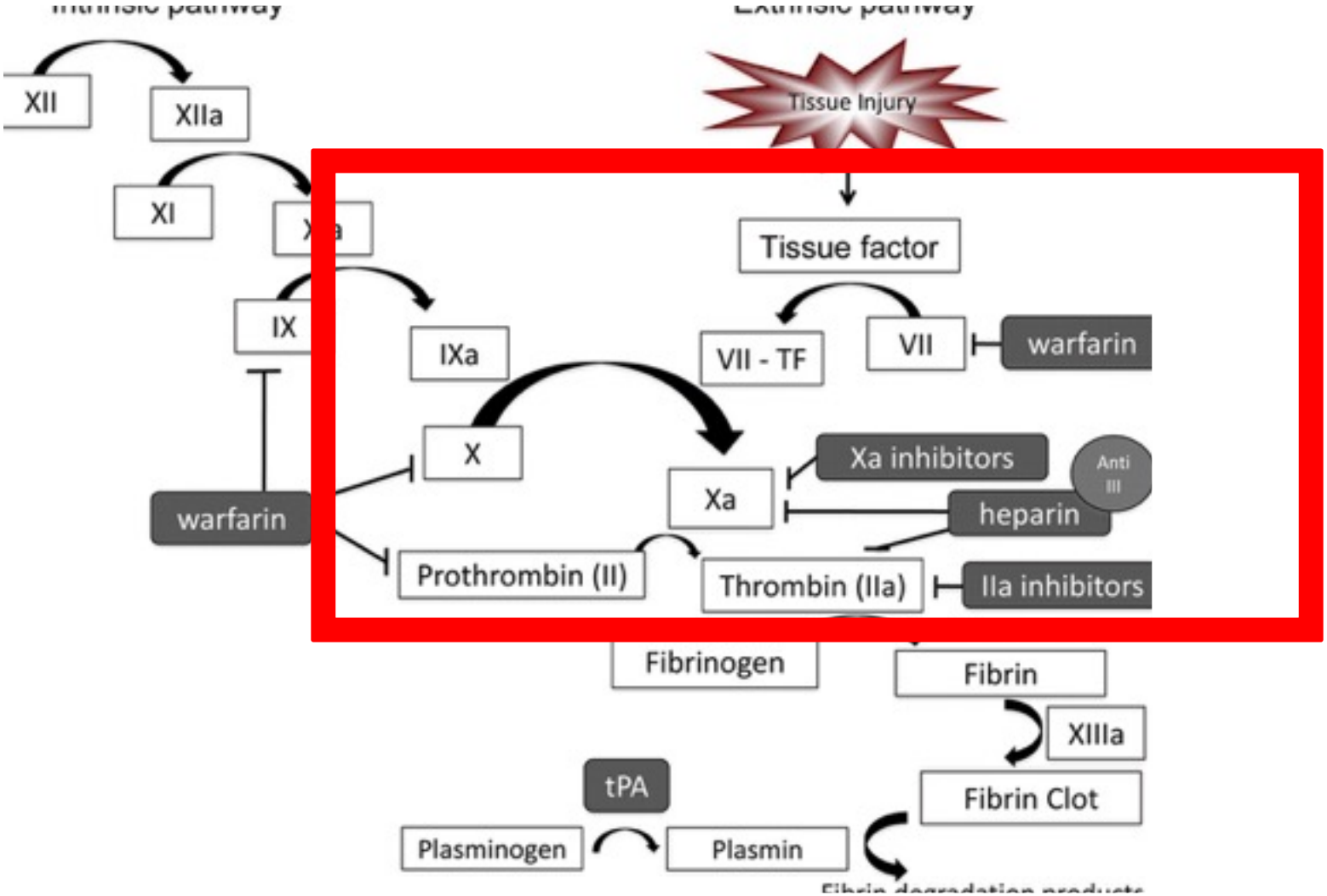


Figure courtesy of Neurology.org

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COMMON BLEEDING DISORDERS

Deficient Factor/Disease Name	Inheritance	Prevalence in General Population	Laboratory Values aPTT	PT	Treatment
vWF (Von Willebrand Disease)	Types 1 &2: AD Type 3: AR	1 in 100	+	-	DDAVP Aminocaproic acid Tranexamic acid
Factor VIII (Hemophilia A)	X-linked	1 in 5,000	+	-	FVIII concentrates
Factor IX (Hemophilia B)	X-linked	1 in 30,000	+	-	FIX concentrates
Factor VII	AR	1 in 500,000	-	+	FFP, FVII concentrates, PCC
Factor V	AR	1 in 1,000,000	+/-	+/-	FFP
Factor X	AR	1 in 1,000,000	+/-	+/-	FFP, PCC
Factor XII	AR	1 in 1,000,000	+	-	FFP
Fibrinogen	AR	1 in 1,000,000	+	+	Cryoprecipitate
Prothrombin	AR	1 in 2,000,000	+	+	FFP, PCC
Factor XIII	AR	1 in 2,000,000	-	-	Cryoprecipitate/FXIII concentrates

6 MONTH FOLLOW-UP

- Walking normally
- 4+/5 Quad strength, everything else 5/5
- Normal sensation
- No Pain
- Wants to return to football next fall

KEY POINTS

- “Thigh compartment syndrome should be considered when any athlete suffers a direct blow to the anterior thigh with subsequent swelling, unrelenting pain, and loss of knee range of motion.” *Colosimo & Ireland 1992*
- Return to contact sports?

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THANK YOU

