

## Case Discussion

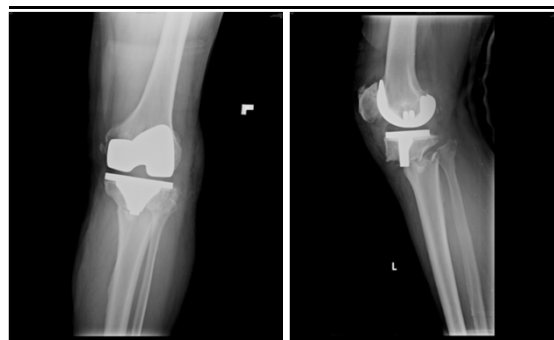
### History

- 81 y/o male
- left knee painful disability after a fall from bicycle in a traffic accident this morning
- No ILOC, no neurogenic deficit, no other complains
- Past history
  - HTN under medical control
  - DM under medical control
  - COPD
  - OP history: s/p bilateral TKR 3 years ago

### Physical Examination

- Extremities:
  - left knee
  - swelling tenderness, echymosis
  - Left lower leg blisters formation
  - left knee abrasion wound
- Sensory: intact
- Motor: intact
- Left dorsal pedis and posterior tibialis artery pulsation (+)

### Pre-OP x-ray



### 1<sup>st</sup> OP (on that day)

- Spinal anesthesia
- Abrasion wound debridement and aspiration of blisters
- Close reduction with calcaneal traction

### x-ray in calcaneal traction



## 2<sup>nd</sup> OP (7 days later)

- Double Locking Plate
- Anatomic Reduction, Rigid Fixation
- No Soft Tissue Stripping
- Osteoset implant
- Preserve Skin as much as possible

## Post-OP xray



## Discussion

About tibial periprosthetic fracture

## Periprosthetic fracture of TKA

- **Incidence: 0.3–2.5%**  
More rare in tibial component (0.4%)
- **the femur, tibia, or patella**
- **Supracondylar periprosthetic fractures**  
15 cm of the knee joint line or within 5 cm of the proximal end of the implant

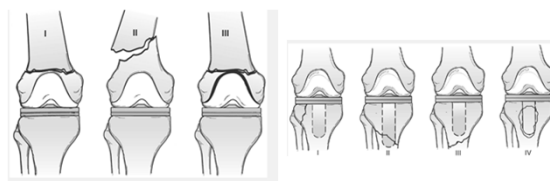
## Risk factors

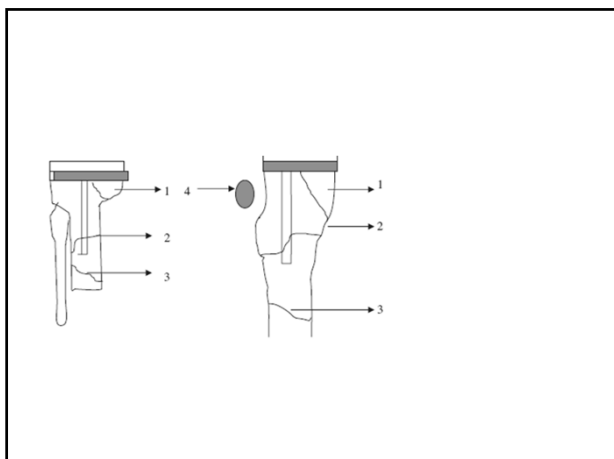
- **Poor bone stock:**
  - Old age
  - Chronic use of corticosteroids
  - Rheumatoid arthritis
- **Stress riser**
  - screw holes around the knee
  - local osteolysis
  - stiff knee
  - Anterior femoral notching

## Scheme Classification

Femoral component

Tibial component





Classification	Type I	Type II		Type III		Type III
Fracture displacement	Undisplaced	Displaced		Undisplaced		Displaced
Implant	Well fixed	Well fixed		Loose or failing (significant polyethylene or metal wear)		
Bone quality	Good	Good	Poor	Good	Poor	Good
Treatment options	Closed treatment	Internal fixation: intramedullary rod 95 degree dynamic condylar screw plate Standard condylar plate Locking condylar plate LISS		Stemmed revision Internal fixation Bone graft		Allograft composite Rotating-hinge prosthesis

### Treatment for tibial periprosthetic fracture

- Cast with protected weight bearing
- Open reduction with internal fixation
- revision arthroplasty with a long-stemmed tibial prosthesis
- bone graft or modular augments

F. Rayan, Current Orthopaedics (2008) 22, 52-61

### Classification of Postoperative Periprosthetic Tibial Fractures

Major Anatomic Pattern	Subcategory
I. Tibial plateau	A. Well fixed prosthesis
II. Adjacent to stem	B. Loose prosthesis
III. Distal to prosthesis	C. Intraoperative
IV. Tibial tubercle	

*Clin Orthop Relat Res. 1997;345:113-124*

Main Category	Type I			Type II		
	Tibial Plateau			Adjacent to Stem		
Fracture position						
Subcategory:						
A <input type="checkbox"/> Prosthesis well-fixed	A	B	C	A	B	C
B <input type="checkbox"/> Prosthesis loose						
C <input type="checkbox"/> Intraoperative						
Classification	IA	IB	IC	IIA	IIB	IIC
Incidence*		50%	11%	5%	10%	7%
Treatment options	Nondisplaced: Bracing and limited weight-bearing Displaced: Reduction, screw fixation or	Revision; Impaction grafting of allograft chips into cavitory defects	Screw fixation; locking plate	Locking plate; LISS	Revision with long stem; locking plate fixation	Bypass with longer stem; locking plate fixation

Rockwood 6<sup>th</sup>

Type III			Type IV		
Distal to Prosthesis			Tibial Tubercle		
A	B	C	A	B	C
IIIA	IIIB	IIIC	IVA	IVB	IVC
LISS; locking plate	Revision with long stem; locking plate fixation	Bypass with long stem	Intact extensor mechanism; brace immobilization in extension. Disrupted extensor mechanism: repair	Revision of components; fracture fixation	Repair

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