



Complex Knee Trauma

Definition

- simultaneous severe injury of more than one structural element
- Structures are : distal femur, proximal tibia, ligaments, soft tissue cover, vessels, nerves

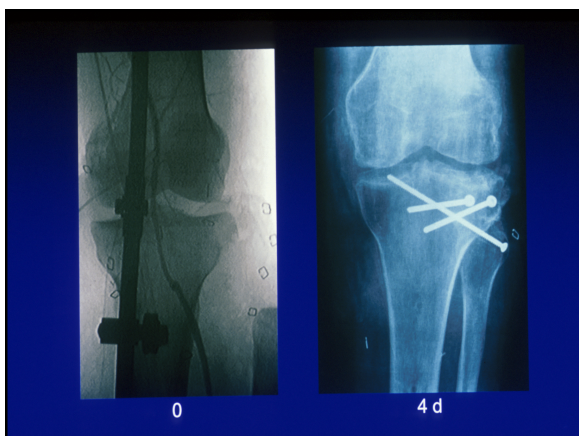
Lobenhoffer Orthopäde 1998

Complex Knee Trauma (n=90)

Definition

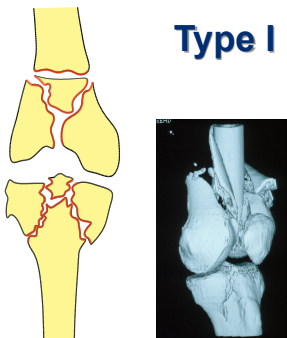
- High velocity trauma
- Specific treatment algorithmus
- Interdisciplinary approach
- Multiple injury sites
- Limited prognosis

D., A., 26 J., Tk-Lux.Fx. OIIIIB



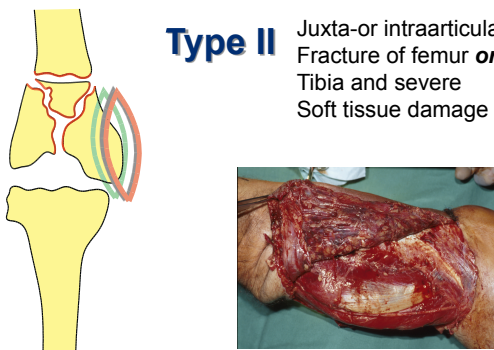
Complex Knee Trauma

Type I juxta – and intraarticular fracture of femur **and** tibia



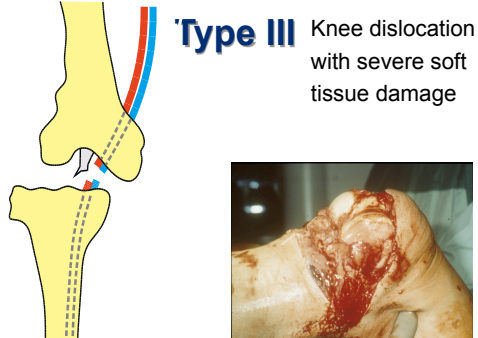
Complex Knee Trauma

Type II Juxta-or intraarticular Fracture of femur **or** Tibia and severe Soft tissue damage



Complex Knee Trauma

Type III Knee dislocation with severe soft tissue damage



Complex Knee Trauma Incidence MHH Unfallchirurgie

| | % Complex Trauma |
|----------------------|------------------|
| 197 Distal Femur Fx | 114 (60%) |
| 249 Prox. Tibia Fx. | 74 (30%) |
| 37 Knee Dislocations | 11 (30%) |

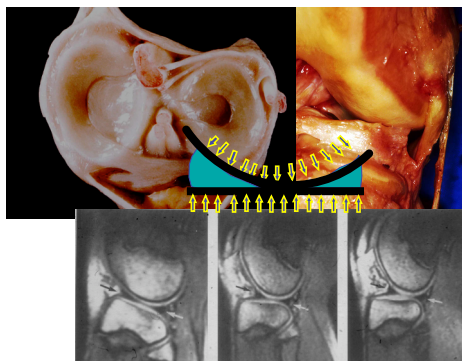
Complex Knee Trauma Prognosis

446 distal Femur- and proximal Tibia Fx.

| Fracture type | Infection | Amput./ A'desis | Neer/ Lysholm-Score |
|----------------|-----------|-----------------|---------------------|
| 188 complex Fx | 9%* | 10%* | 77 |
| 258 simple Fx | 3% | 3% | 87* |

* p<0.05

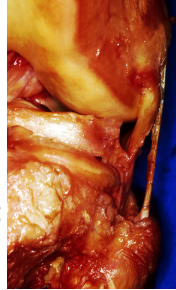
Meniscus



Meniscus

Lateral meniscus lesion

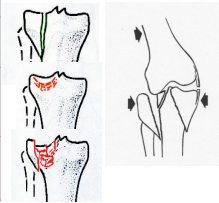
- covers 50% of lateral plateau
- major load transmitter
- must be preserved
- incidence of meniscus lesions: **6-39%** in tibial plateau fractures



Lateral meniscus lesion

Incidence of **meniscus** tear in lateral tibial plateau fractures
135 cases ORIF 1988 - 1995

| Type | meniscus tear |
|------|---------------|
| B1 | 14% |
| B2 | 17% |
| B3 | 34% |



Type of meniscus tear in lateral tibial plateau fracture

- all lesions found in open surgery were peripheral longitudinal tears
- all tears red-white or red-red zone
- no structural tears
- most tears shear mechanism over intact plateau rim



Cruciate ligament tear

Incidence of cruciate lig. tear in lateral tibial plateau fractures
135 cases ORIF 1988 - 1995

| Type | Cruc. Lig. tear |
|------|-----------------|
| B1 | 0% |
| B2 | 0% |
| B3 | 6% |



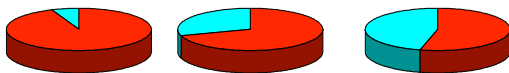
Tibial Plateau Fractures

Ligament and meniscus lesions

Cruciate lig.

Coll..ligaments

meniscus

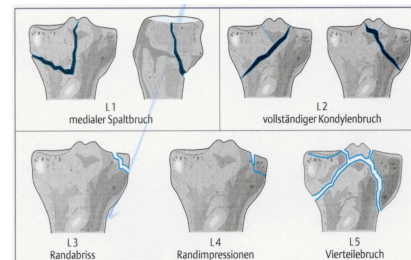


□ Plateau-Fx.

■ Fracture-Disloc.

MHH, 808 cases of prox tibia fx

Proximal tibia fractures Fracture-dislocations



T.Moore CORR1981, Tscherny et al Unfallchirurg 1984, Tscherny, Lobenhoffer CORR1993

Proximal tibia fractures Fracture-dislocations

ACL, LCL, lat capsule ACL, lat. capsule

Treat like ligament injuries

Proximal tibia fractures Fracture-dislocations

Treat only bony avulsions

Collateral ligament tear

Ipsilateral side:

- Bony avulsions included in fracture stabilisation

Contralateral side:

- Medial side tends to heal
- Lateral side can need repair

Extensor Mechanism Injury

- Quadriceps tendon rupture
- Patella tendon rupture
- Patella fracture

Extensor Mechanism Injury

| | | |
|--|---------------------------|---------------------------|
| Patella tendon rupture | Quadriceps tendon rupture | Patella Fx |
| | | |
| | | |
| Repair, Cerclage or patello-tibial fixator | Suture plus PDS-Cerclage | Screws (+tension banding) |