Osteotomy rules to correct mal-alignment and joint mal-orientation of the LL

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Mechanical Axis of a bone

• A straight line connecting the joint center points of the proximal and distal joints
Mechanical Axis of a bone

• A straight line connecting the joint center points of the proximal and distal joints
Anatomical axis

• Mid diaphyseal line
Mechanical Axis of lower limb

- The mechanical axes of the tibia and femur are collinear
- Line from the center of the hip to the center of the ankle passing though the center of the knee
MAD

• Medial Mechanical Axis Deviation
MAD

- Lateral Mechanical Axis Deviation
• Does normal mechanical axis mean normal alignment?
Normal LL =

Normal mechanical axis +
Normal joints orientation
Joint orientation lines
Ankle
Knee
Apex of deformity

• CORA = Center Of Rotation of Angulation
tBL = transverse Bisector Line
Types of osteotomies

- Open wedge
- Closing wedge
- Dome
- Others

- Angulation only
- Angulation + translation
Objective

• When to do

• Angulation only ?

• When to do

• Angulation + translation?
Closing wedge

tBL
Angulation and translation
Angulation and translation
Angulation and translation
Angulation only

• If the osteotomy pass through any point of the tBL
Angulation + translation

- If the osteotomy does not pass through any point of tBL
- The osteotomy should rotate around any point of tBL
mLDFA = 87°
Mag = 30°
MPTA = 87°
LDTA = 90°
30°
mLDFA = 87°
Mag = 30°
MPTA = 87°
LDTA = 90°
mLDFA = 87°
Mag = 30°
MPTA = 87°
LDTA = 90°
mLDFA = 87°

Mag = 37°

LDTA = 90°
mLDFA = 87°

Mag = 37°

LDTA = 90°
mLDFA = 87°
Mag = 37°
LDTA = 90°
mL DFA = 87°
Mag = 37°
LDTA = 90°

37°
mLDFA = 87°
Mag = 37°
LDTA = 90°

5-18c iv
mLDFA = 87°

Mag = 37°

LDTA = 90°

5-18d ii

MAD
mLDFA = 87°
Mag = 37°
LDTA = 90°

5-18d iv

37°
Mag = 30°
Proper corrective ost.

- Determine the CORA
- Determine the tBL
- Do the osteotomy wherever you like
- But……………
- Rotate around the CORA or any point of the tBL
Thank you