

# **Tibial Morphology for Proper Adjustment of Metal Augmentation in Revision Total Knee Arthroplasty**

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# **Faculty Disclosure**

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**I have no relationships with for-profit or not-for-profit organizations.**



**Metal augmentation** is good option for tibial bone defect.

But it has **different shape** and **tilt** for each manufacturer.

# Purpose

Limited information about **tapering angle** of proximal tibia.

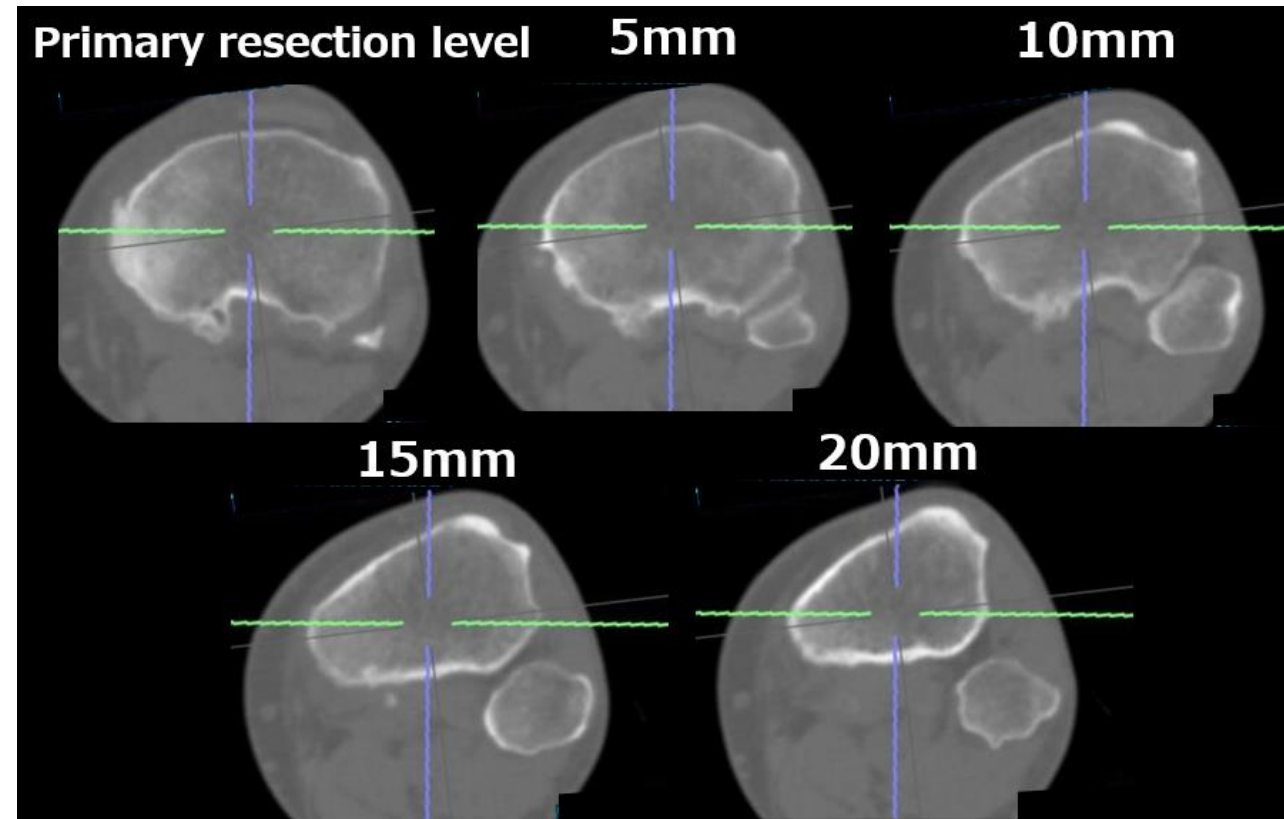
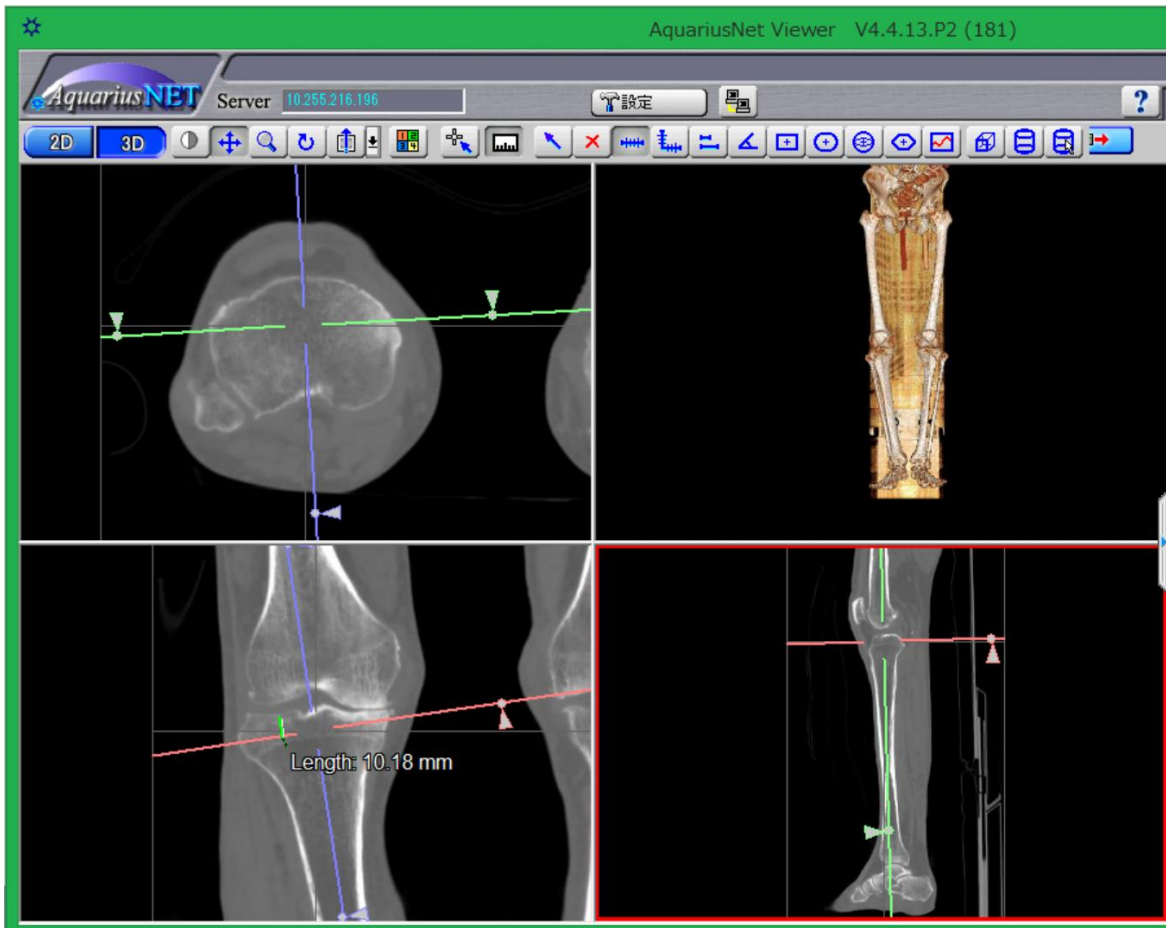
- Analyze bony contour of proximal tibia at different levels
- Measure angle of taper for each resection surface
- Suggest proper tapering angle for metal augmentation.

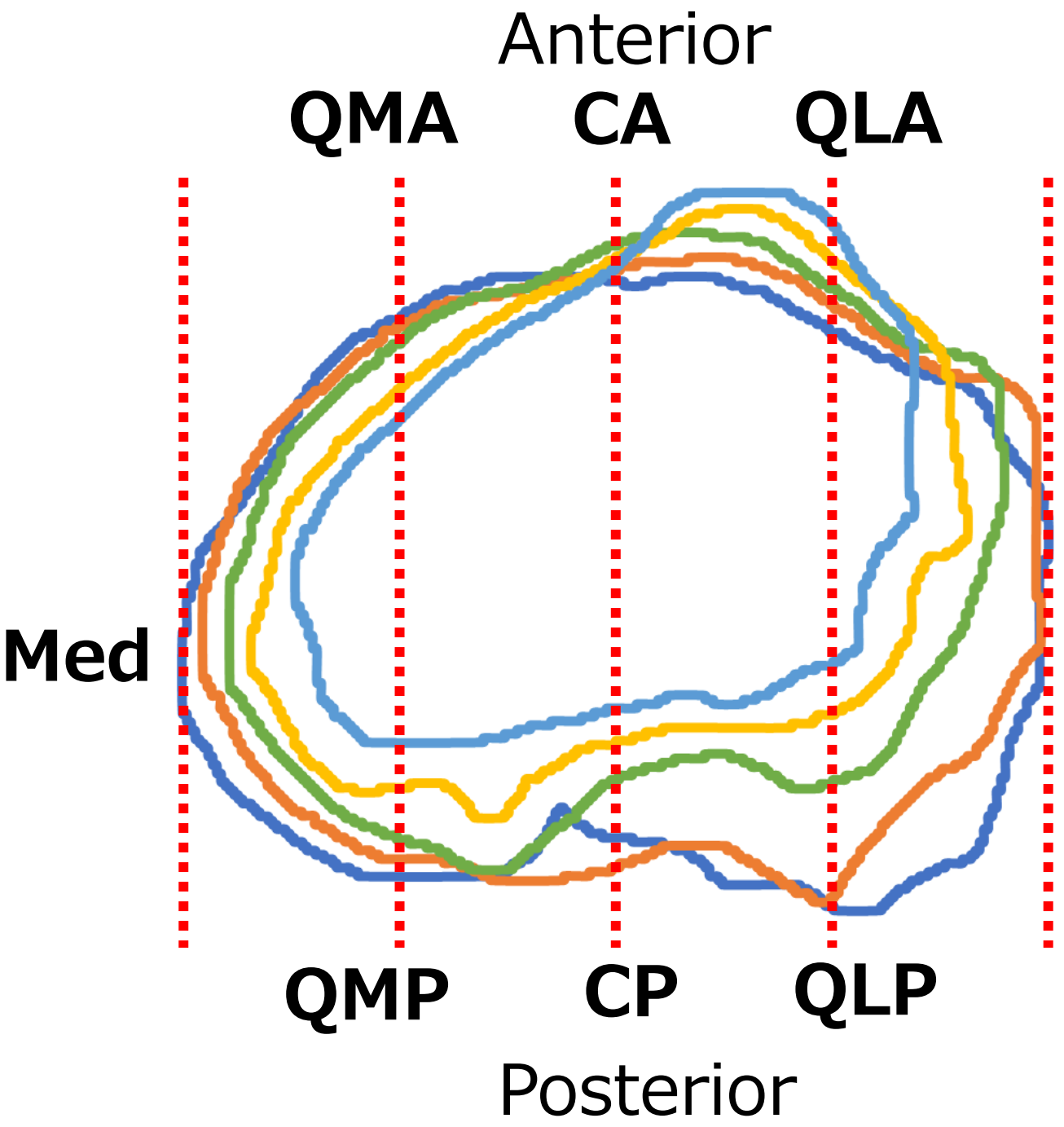


# Materials and Methods

## Preoperative CT of 100 primary TKA

Set **10** mm below lateral tibial plateau as primary resection level





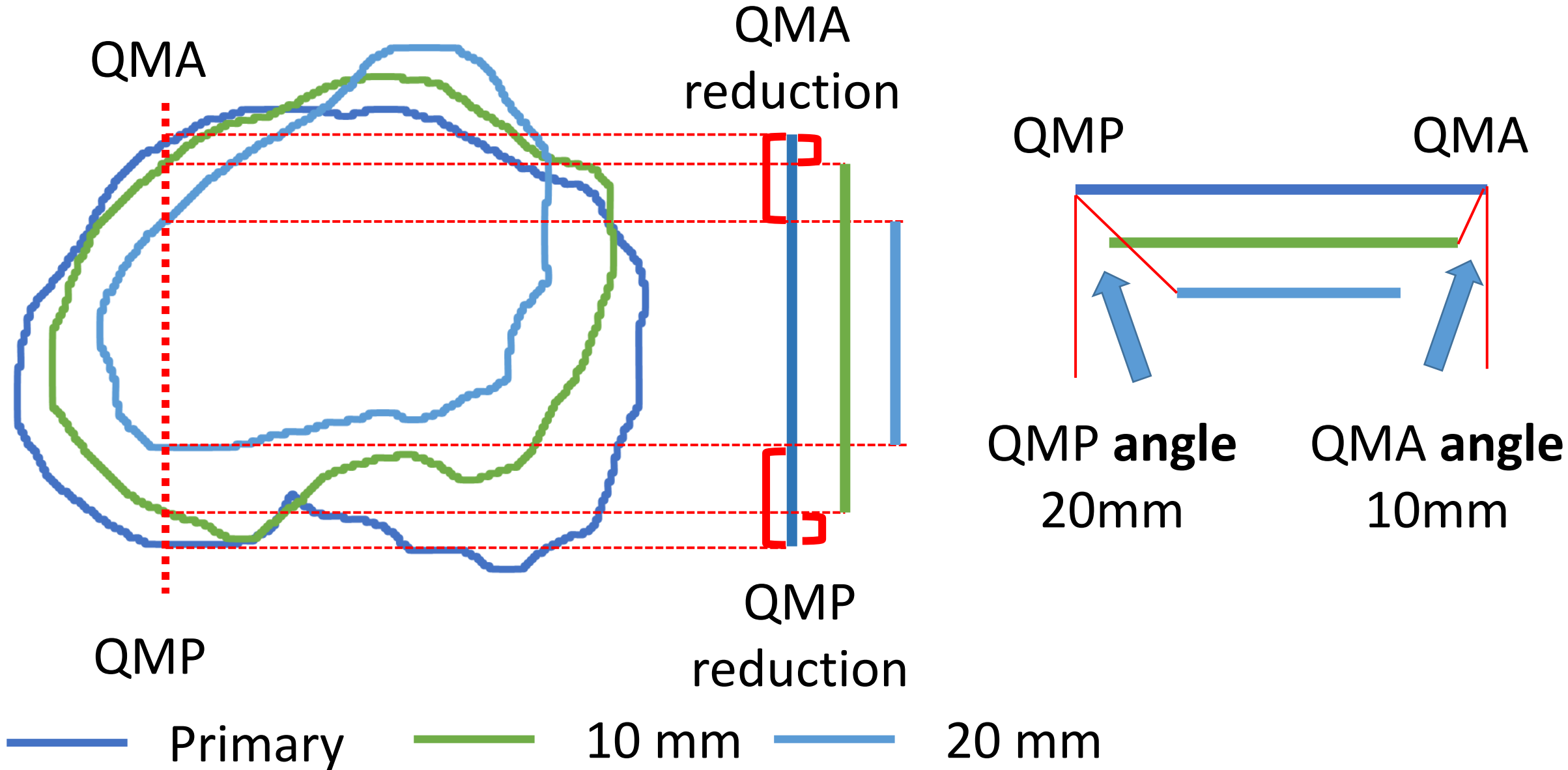
**Quadrisectioned** length between most medial point (Med) and most lateral point (Lat)

Named six intersection points

**Lat**

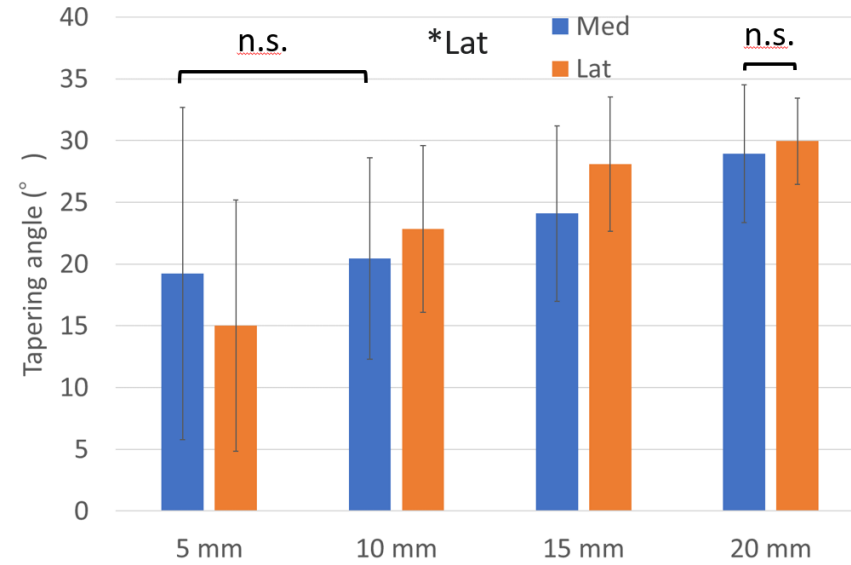
- Primary
- 5 mm
- 10 mm
- 15 mm
- 20 mm

# Calculation of tapering angle

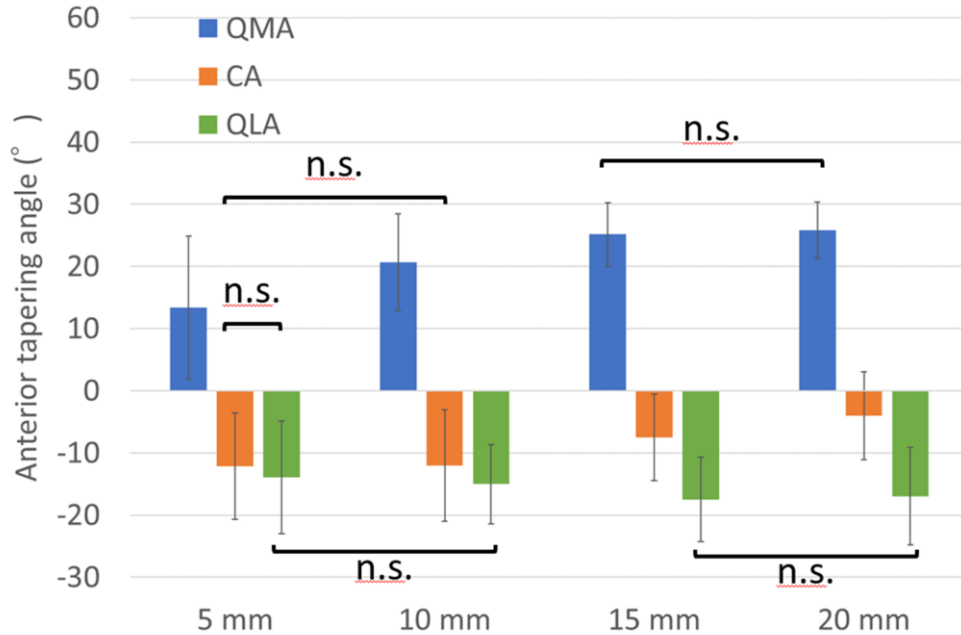


# Results

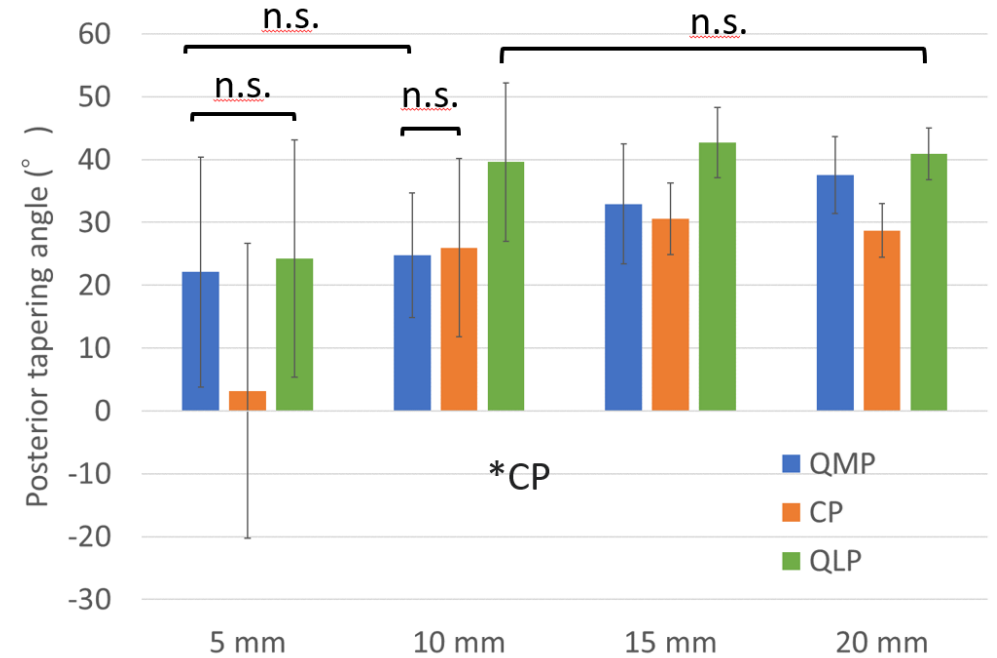
## Med-Lat



## Anterior



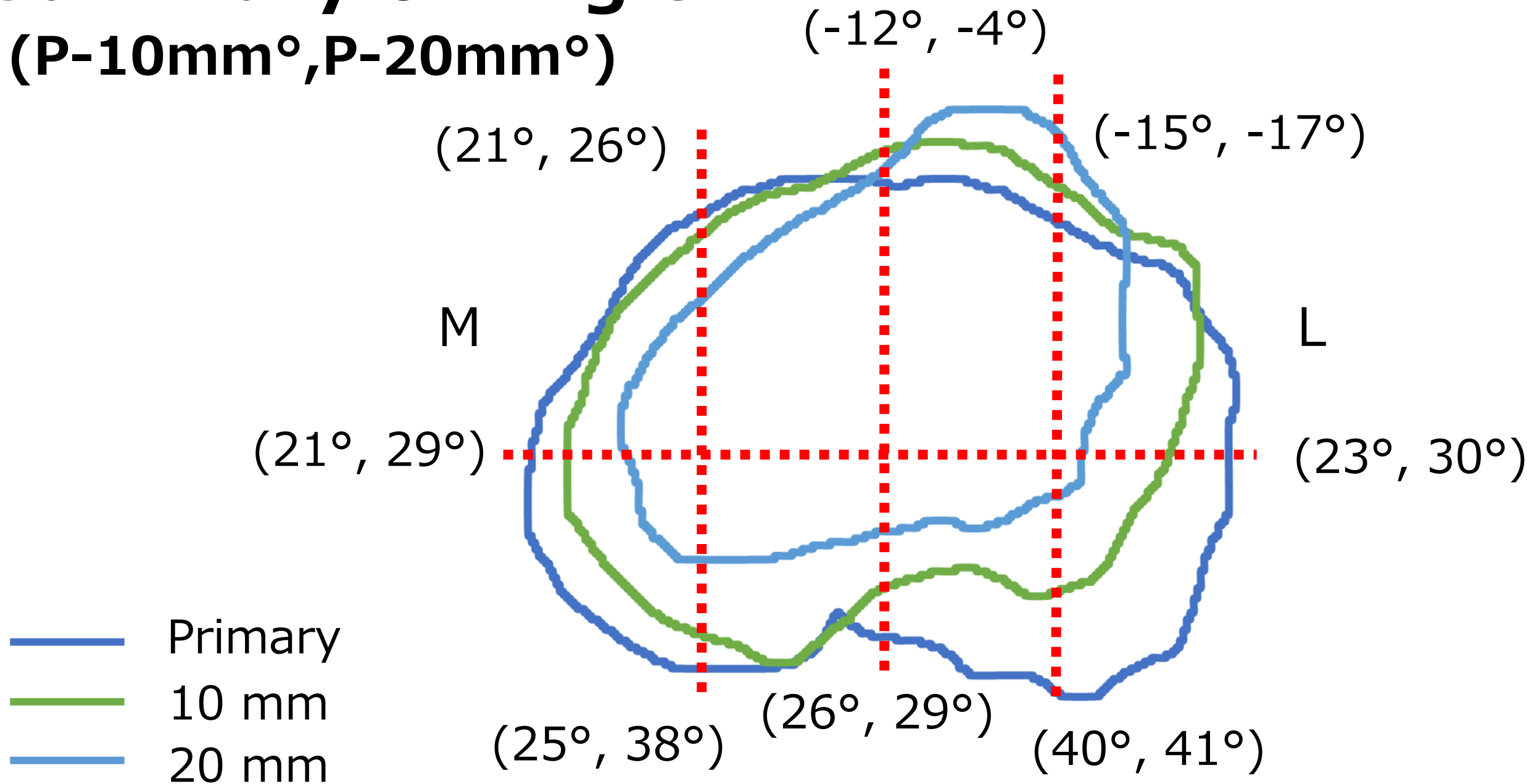
## Posterior





# Summary of Angle

(P-10mm°, P-20mm°)



# Discussion

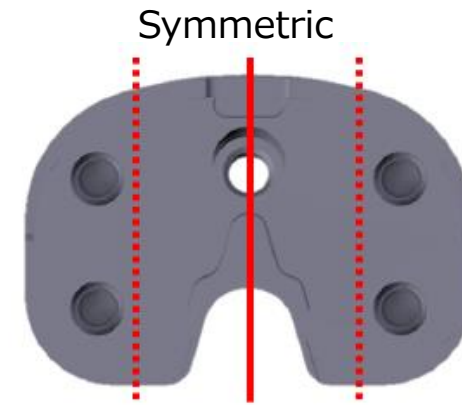
Tapering angles were different between anterior/posterior, medial/lateral, resection levels.

Tilts of conventional metal augmentation were smaller than tibial tapering angles.

	Medial	Lateral	Anterior	Posterior Medial	Posterior Lateral
NexGen 20mm	19(29)	19(30)	0(-7)	7(38)	7(41)
Persona 10mm	8 (21)	18(23)	0(-12)	0(25)	0-35(40)
Persona 15mm	5-22(24)	25(28)	0(-8)	5-20(33)	0-48(43)

(Current study)

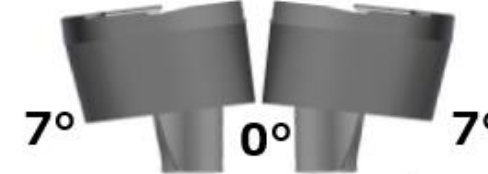
NexGen 20mm



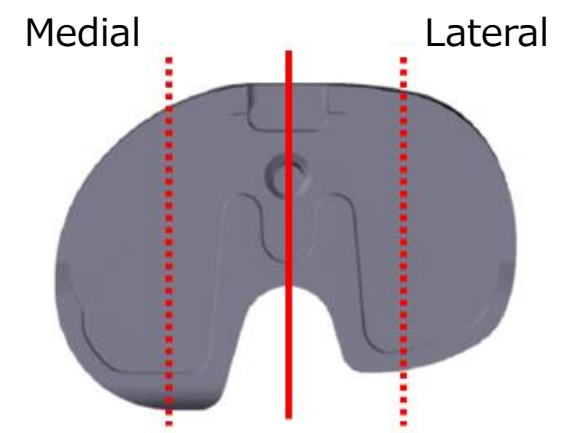
Medial Lateral



Post. Ant. Post.



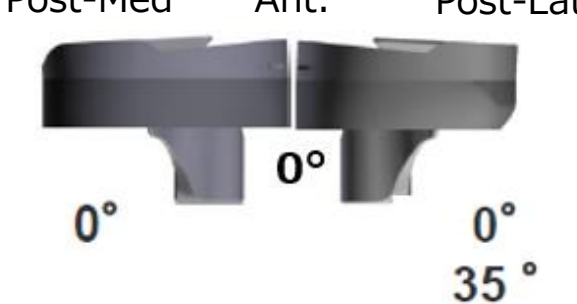
Persona 10mm



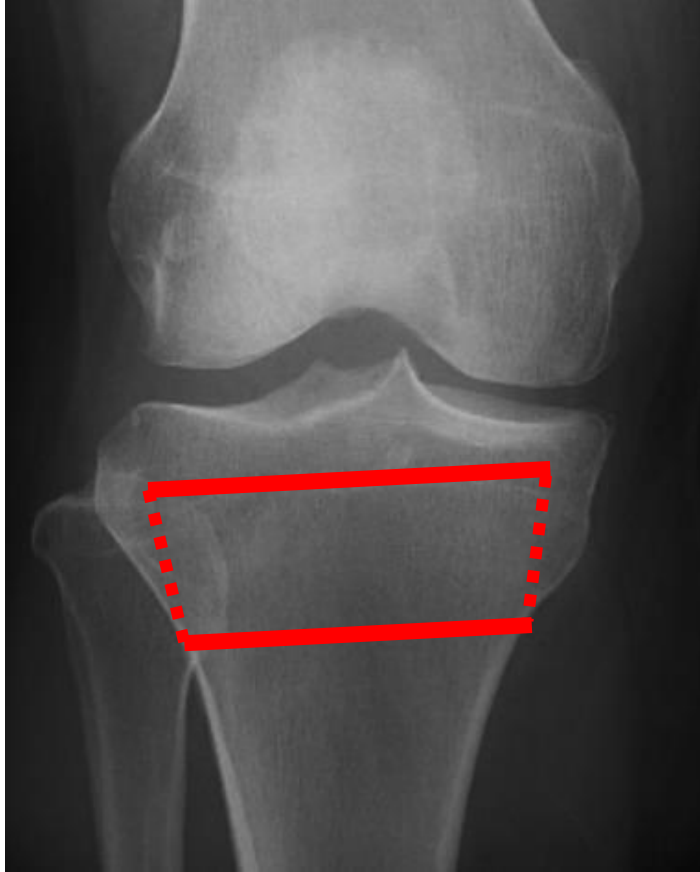
Medial Lateral



Post-Med Ant. Post-Lat

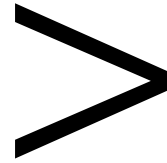
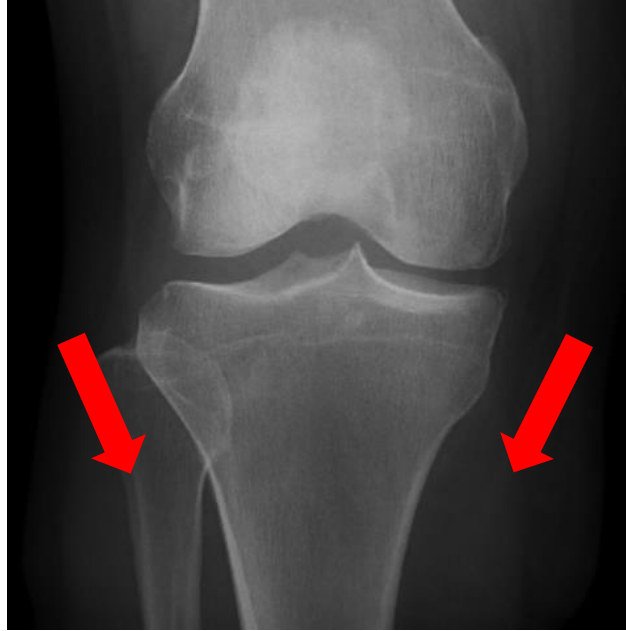


# Size mismatch of components



When tilt of metal augmentation is smaller than tapering angle of tibia, **size mismatch** of femoral and tibial components might happen, especially for revision TKA with thick augmentation.

# Conclusion



Tapering angles of proximal tibia can be larger than tilts of metal augmentation.  
Surgeons should pay attention to size mismatch of components.