

IRC Rectification Procedure

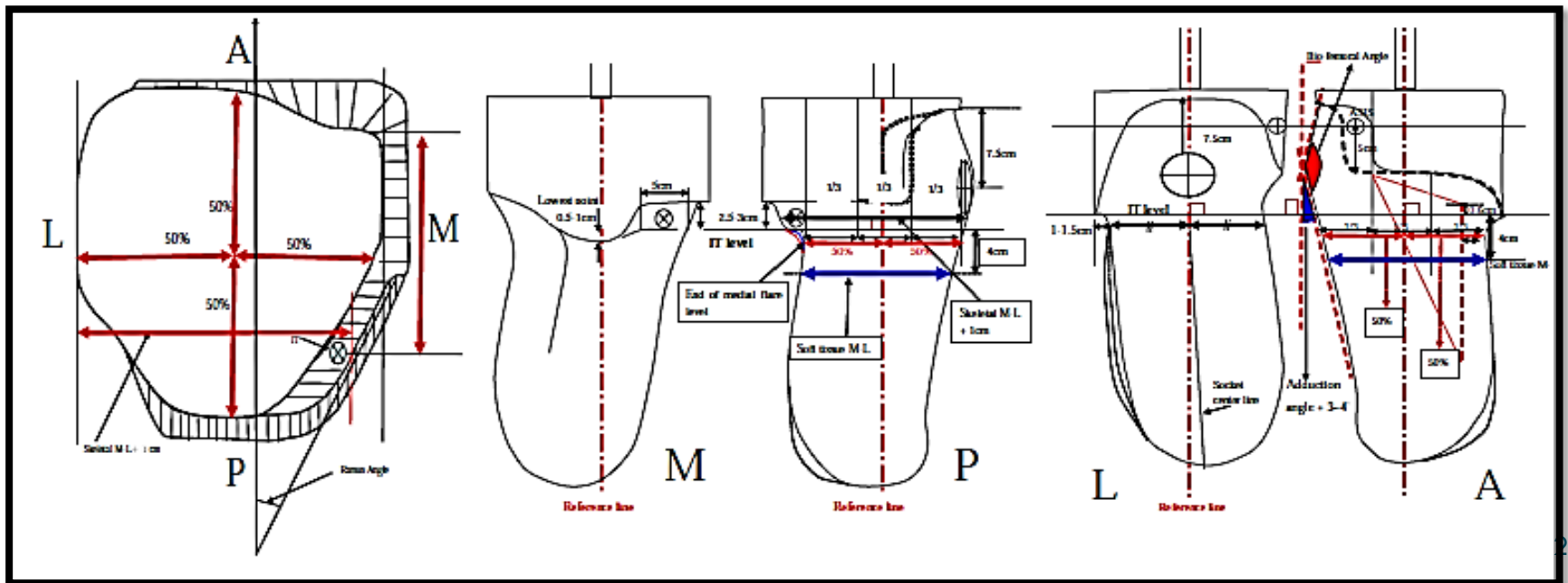


Objective

To understand the

❧ The Procedure of IRC shape for IRC rectification

❧ The overall characteristics of the shape of IRC socket



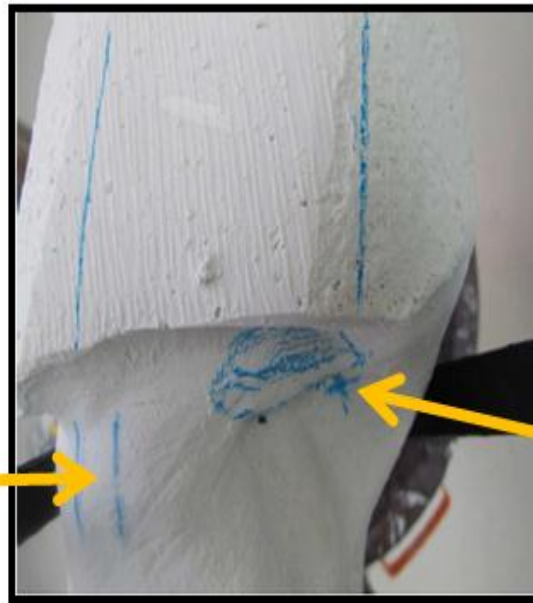
Transfer and Preserve the marks

- ∞ Transfer the alignment lines through the plaster wrap
- ∞ Establish the line of progression on the positive model as well as the apex of the greater trochanter , ischial level



Transfer and Preserve the marks

- ∞ Mark AL tendon and IT
- ∞ Re-establish the circumference marks using the patient's length measurements



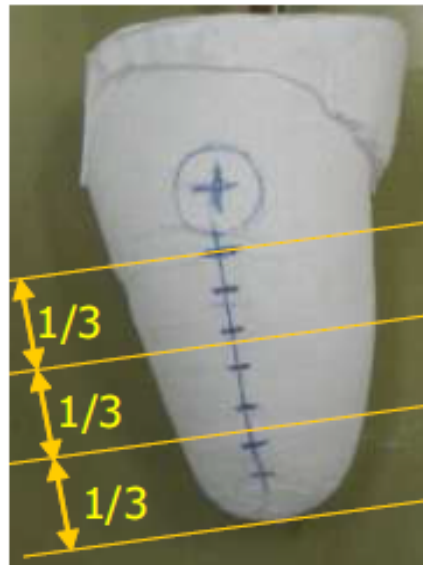
Adductor longus tendon

Ischial Tuberosity



Determine the Compression value

- Calculate the target circumference of the positive model and the amounts of plaster removal according to the compression value chart. Compression values should be set from the maximum at IT level to 0% at the 2/3 the length of the positive model



Ischial level
(Compression Max)

Compression
0%

Compression Value chart (Ischial level)		Stump length		
		Long	Medium	Short
Soft tissue consistency	Firm	3%	4%	5%
	Average	4%	5%	6%
	Soft	5%	6%	7%

Determine the Compression value

Determine the compression value

	Distance below ischium (cm)	Circumference of stump	Tensions (If 5%)	Goal circumference	Circumference of positive model	Plaster to be removed
0	0	500		×	×	×
1	2.5	480			490	
2	5.0	475			485	
3	7.5	455			465	
4	10.0	435			440	
5	12.5	405			410	
6	15.0	380	0		390	
7	17.5	-	-	-	-	-
8	20.0	-	-	-	-	-

stamp length = 180mm: Medium

Soft tissue consistency: Average

Distal 1/3=120mm:Compression 0 %

Establishment of the Shelf

☞ Flatten the medial shelf proximal to the trim line so that it is parallel to the line of progression

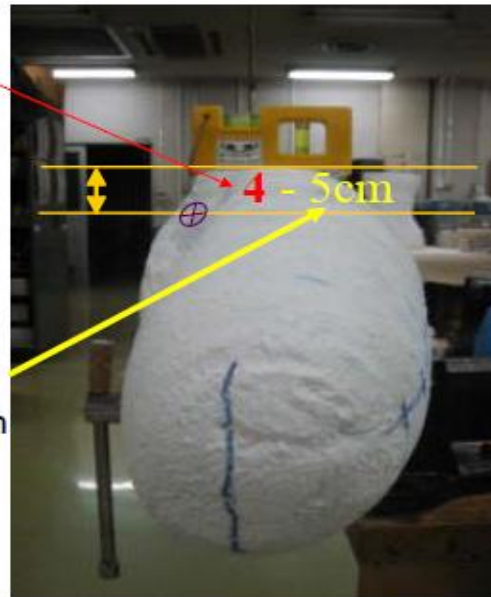


Establishment of the Shelf

- Flatten the anterior and posterior overhangs proximal to the wrap line so that they are perpendicular to the previously modified medial wall

If AP is less than 10cm, it takes 4cm

If AP is 10 cm or more, it takes 5cm



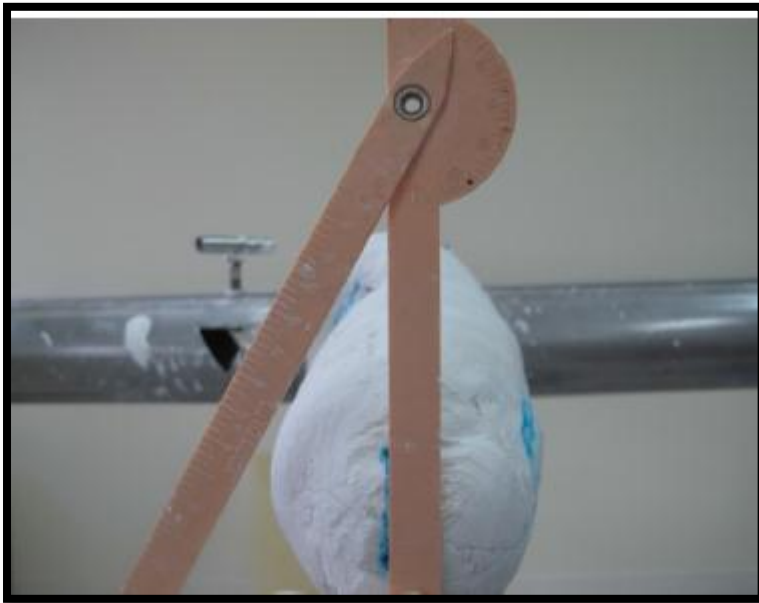
Posterior wall



Anterior wall

Ischial Ramus angle and LOP

- ☞ Evaluate if the ramus angle and LOP are achieved correctly or not
- ☞ If they are NOT, we need to modify the ramus angle artificially afterward



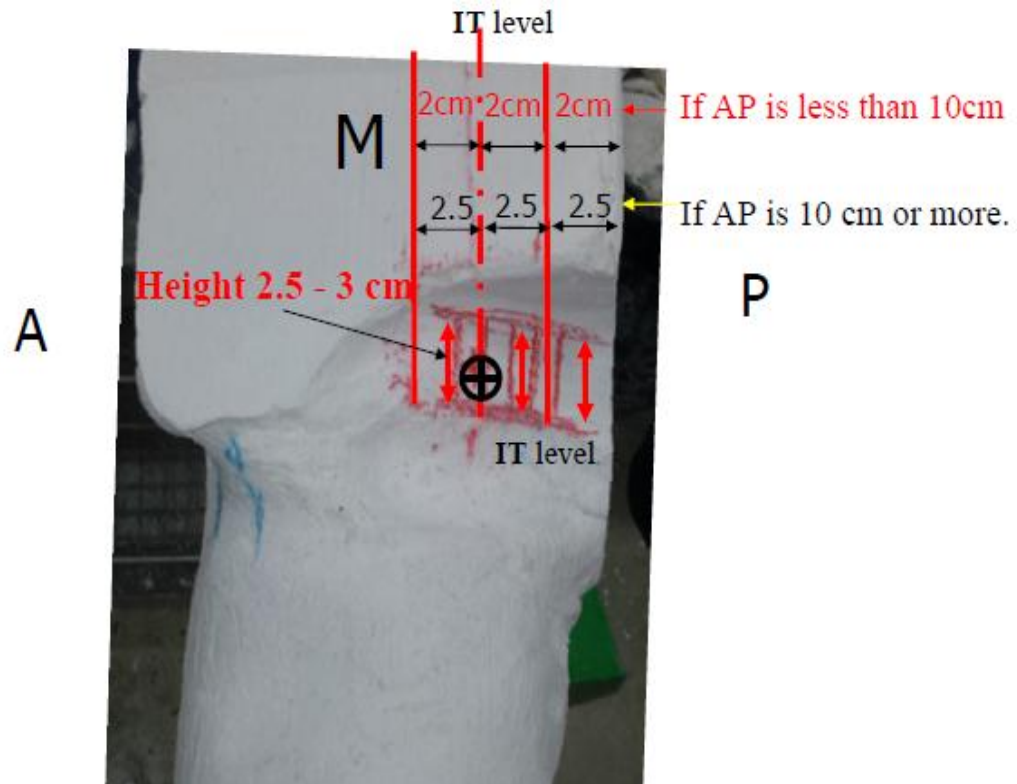
- ☞ Draw the ischial ramus angle which you measured on the patient



Ischial Ramus Area



- Height and width of the containment wall
- The medial brim must cover the ischium 25mm-30mm higher than Ischial level for the containment



Ischial Ramus area (frontal inclination angle)

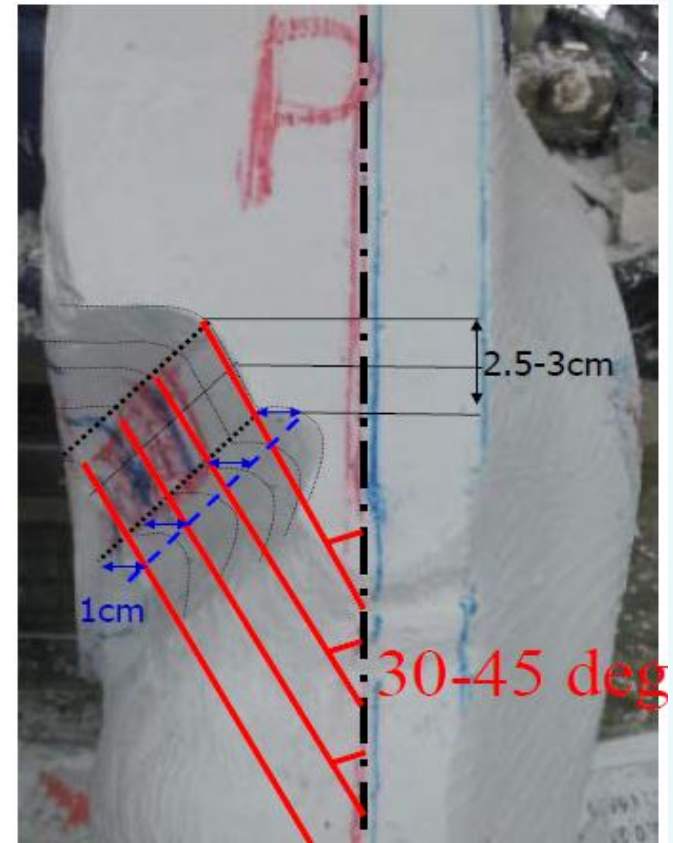


☞ Medial brim at the Ischial tuberosity area to be sloped at 30-45 degrees of angle at the beginning

☞ Skinny: 30-35

☞ Average: 35-40

☞ Muscular: 40-45



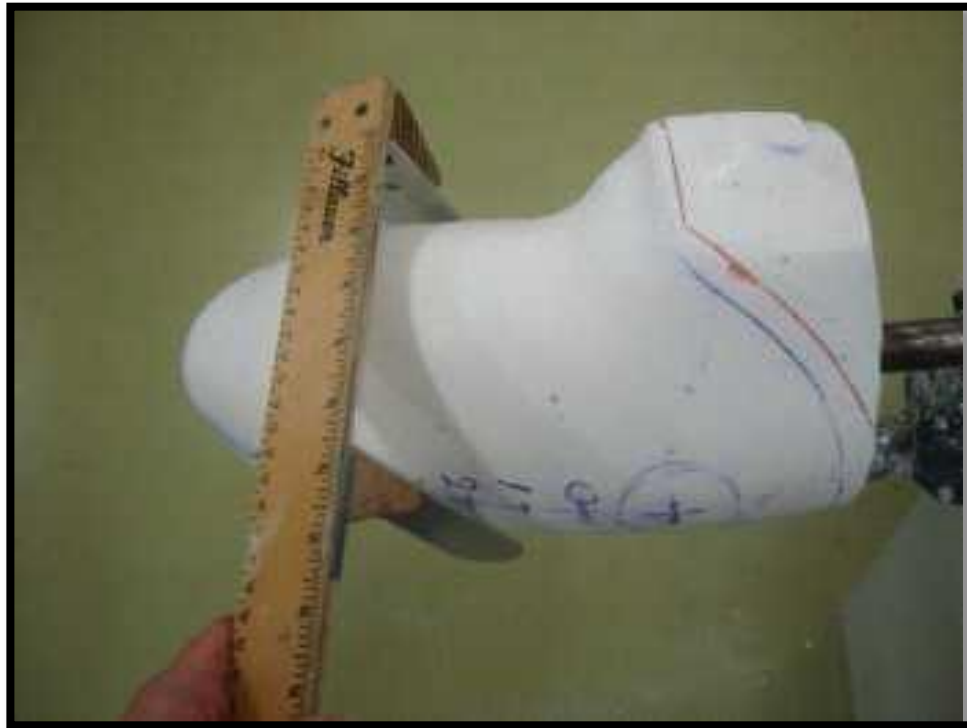
Skeletal ML goal measurements

- ✧ Since modification according to the value of the skeletal M-L dimension on the measurement form causes complaints of discomfort while walking,
- ✧ Therefore the target value of the skeletal M-L dimension should be 1.0 cm in excess of the measured skeletal ML dimension



Soft tissue M-L goal measurements

- Modify the lateral wall until the target value of the soft tissue M-L dimension on the measurement form is obtained



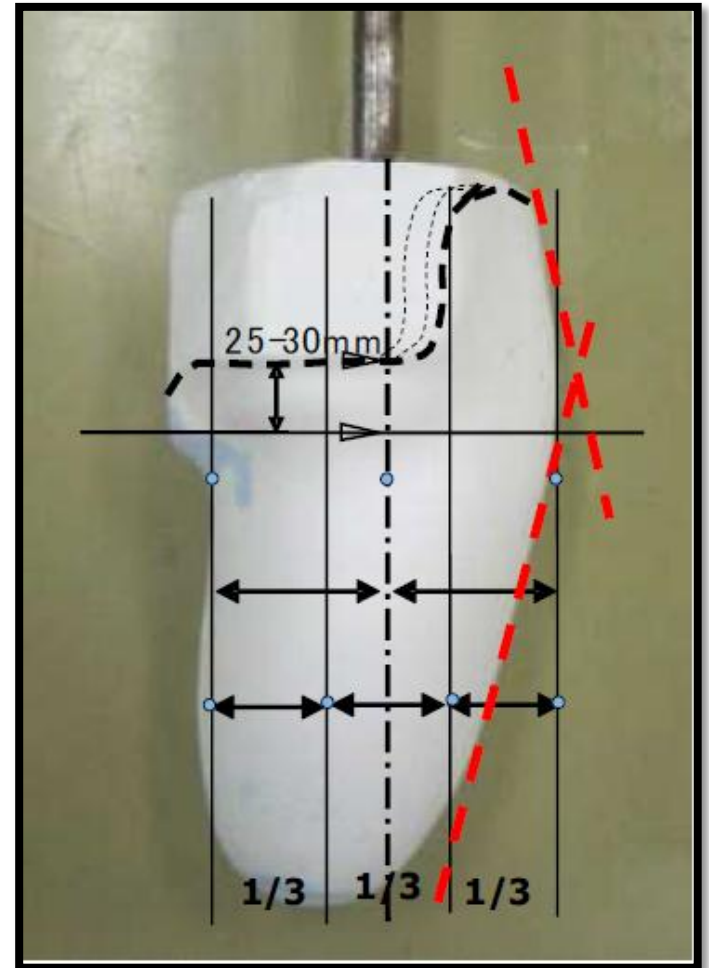
Iliofemoral angle

☞ With the apex of the goniometer on the greater trochanter and one arm along the femoral shaft, establish the Iliofemoral angle by removing plaster proximal to the GT



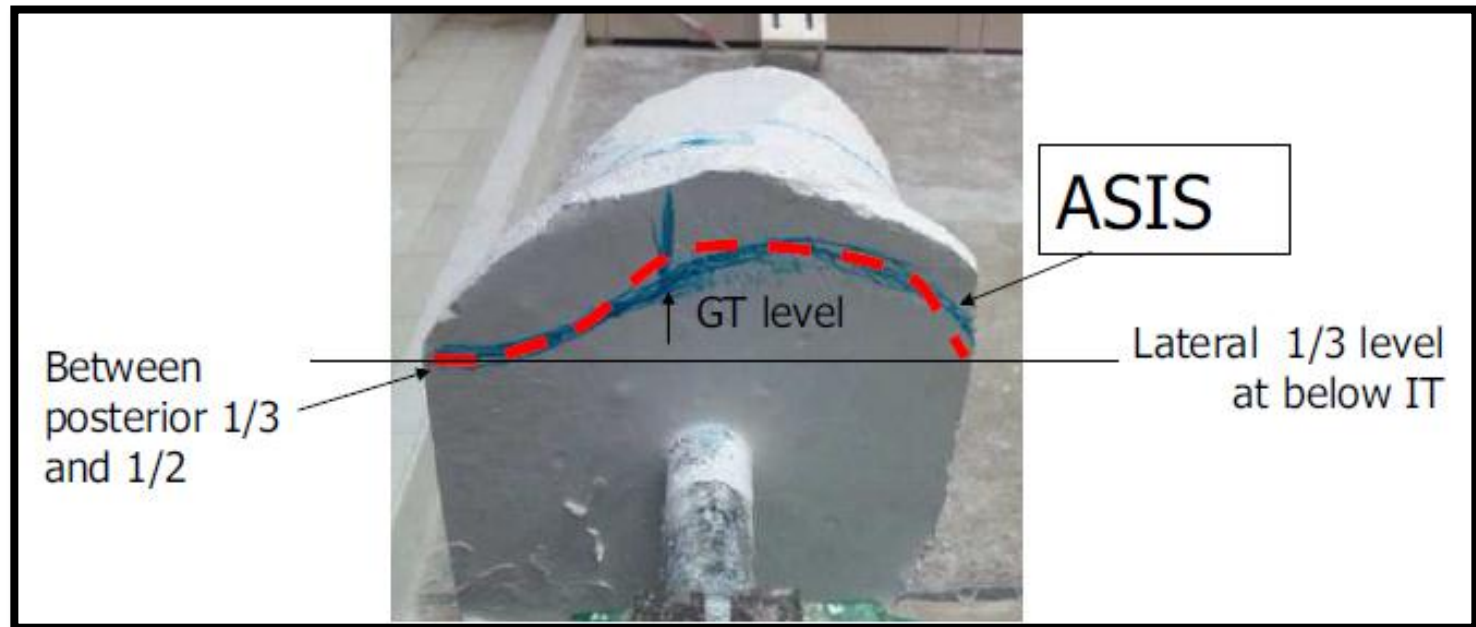
Ilio-femoral angle

- Once the desired Ilio-femoral angle has been obtained, remove this sharp apex on the GT to provide a more 'normal' graduated contour between the ilium and femur
- The amount of plaster needing to be removed will depend on the prominence of the GT



Iliofemoral angle

- ∞ The modification should be performed according to the shapes of the ilium, as seen from the horizontal plane
- ∞ More plaster is removed posteriorly to the greater trochanter



Medial wall modification

- ☞ Shape the medial wall by removing only bumps and ridges from the cast
- ☞ Maintain the gradual contours of the positive model

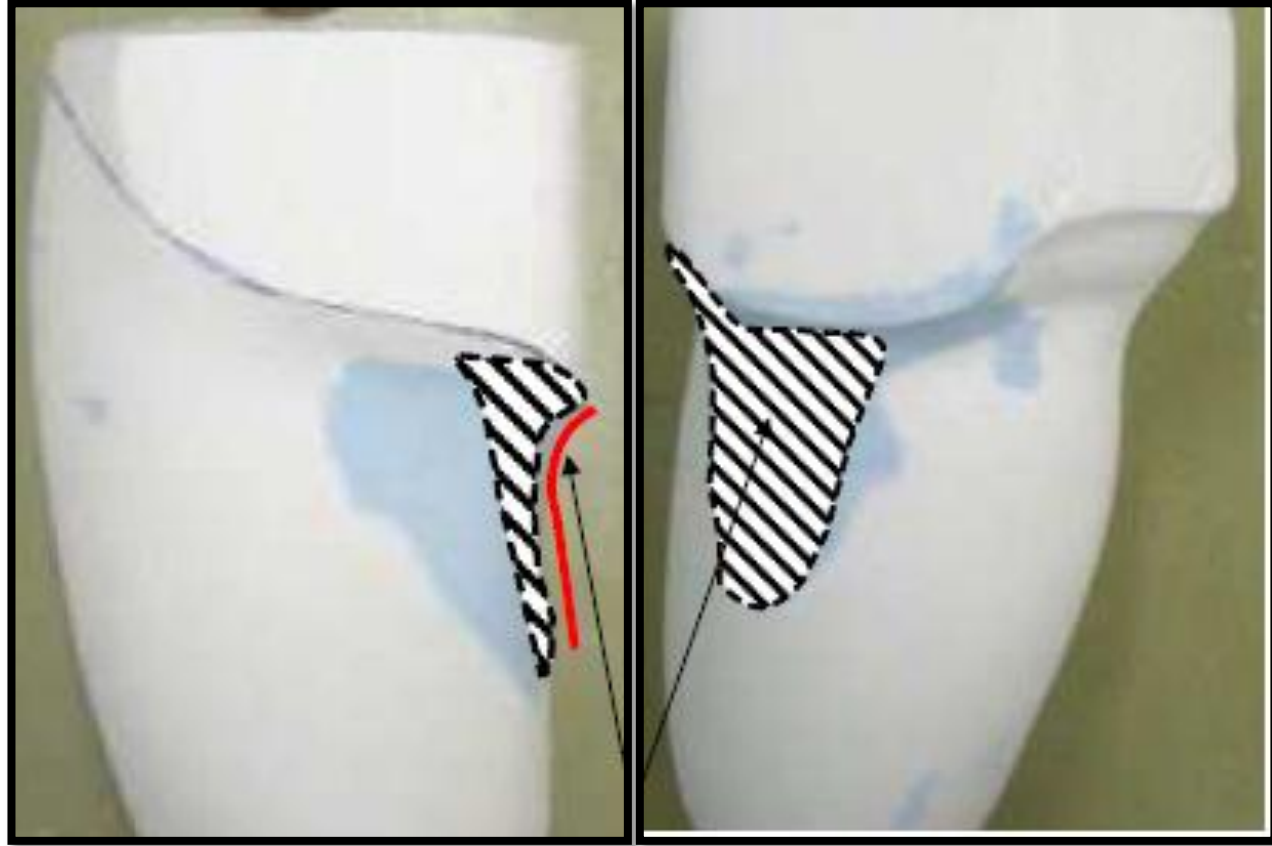
Adductor longus tendon

Ischial tuberosity



Medial wall modification

- ☞ Make a large flare at the proximal- anteromedial aspect, to prevent the compression to the adductor longus tendon



Anterior wall modification

- ✎ Create the Scarpa's triangle in the same manner as for the quadrilateral socket
- ✎ The Scarpa's triangle in an IC socket is much less aggressive than for a QL socket



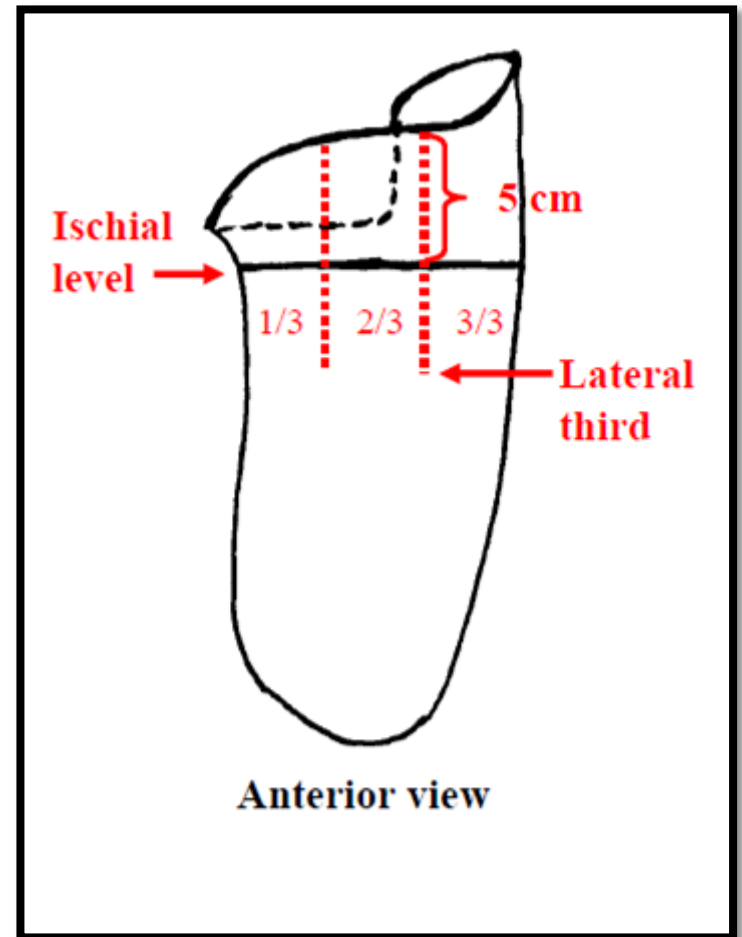
Scarpa's Triangle

- ❧ The purpose of the Scarpa's triangle is to apply pressure against the femoral bundle and to provide rotational control
- ❧ It also helps to keep the ischium in position, but it is not as critical as it is in the quadrilateral socket
- ❧ In the IC socket, this function of the Scarpa's triangle is accomplished primarily by the anterior-lateral quadrant



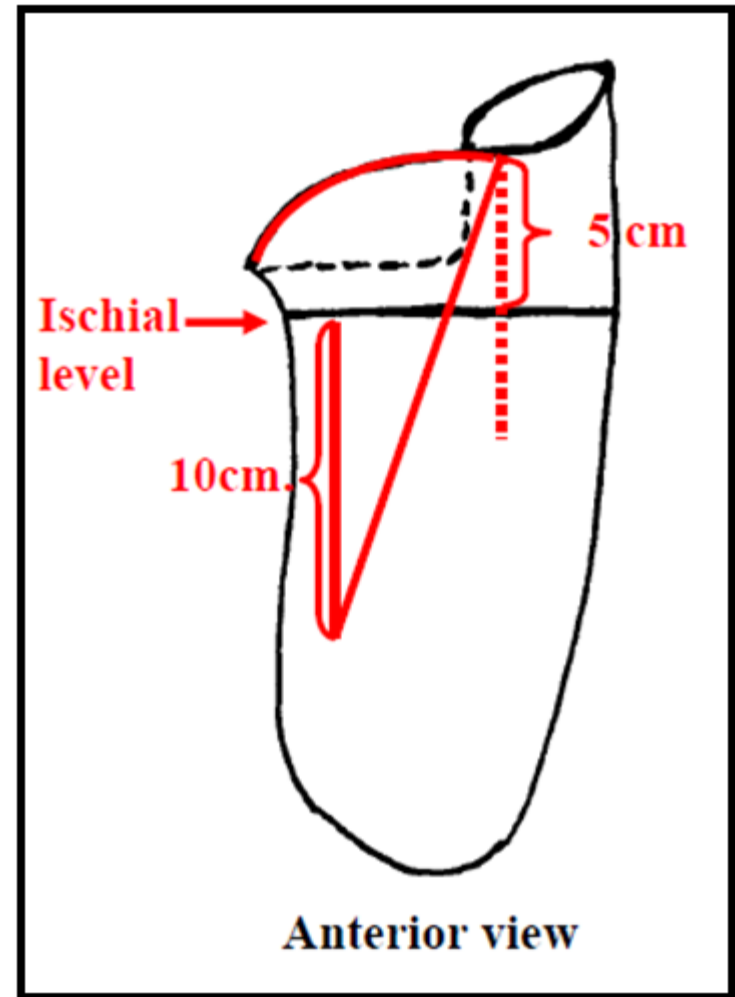
Scarpa's Triangle

- ⌘ Begin by establishing the ischial level on the anterior surface with an indelible pencil
- ⌘ Divide the anterior aspect of the plaster model into thirds and delineate on the ischial line
- ⌘ Project the lateral third delineation proximally 5cm. to the established trim line.



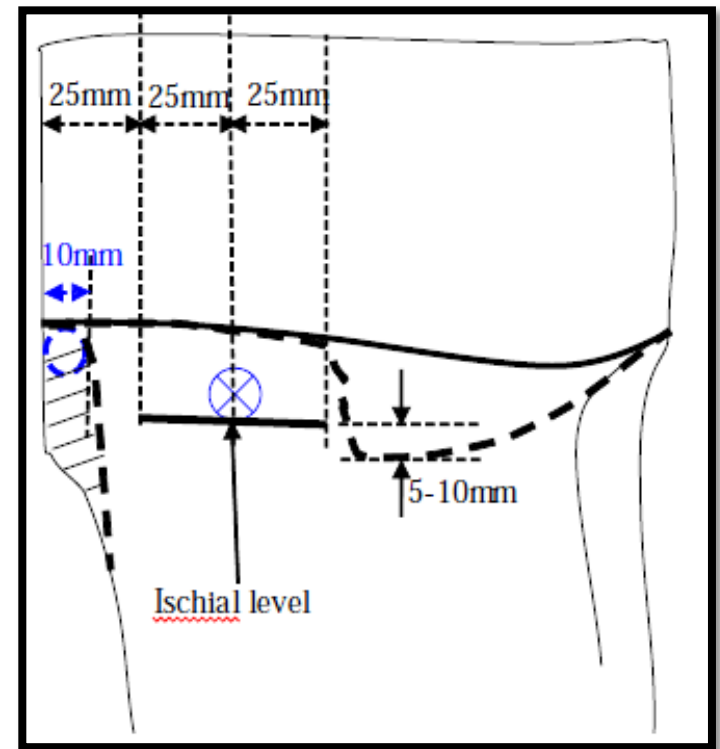
Scarpa's Triangle

- From a point 2.5cm. lateral to the anterior medial corner and at ischial level, draw a line 10cm. distal and perpendicular to the ischial line
- Connect the end points of the lines drawn in the previous two steps
- From the lateral third proximal delineation draw a line with a gradual descent to the anterior medial corner
- These lines indicate the boundaries of the femoral triangle and serve as a guide for shaping the area to a smooth contour



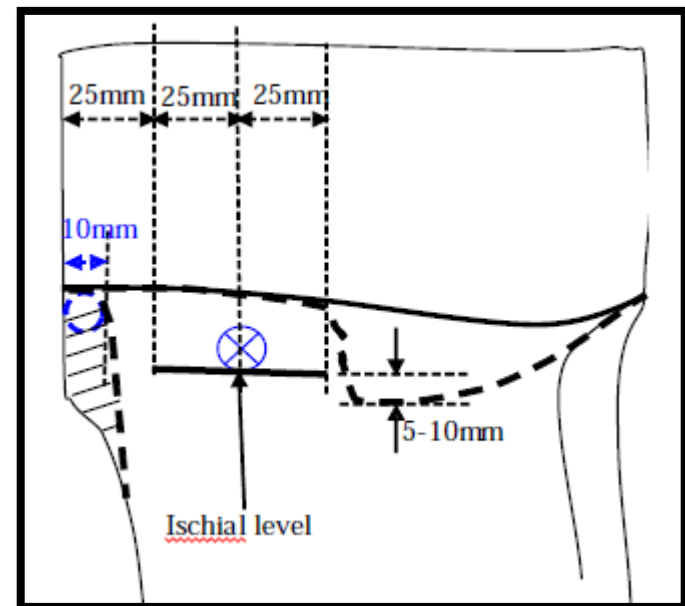
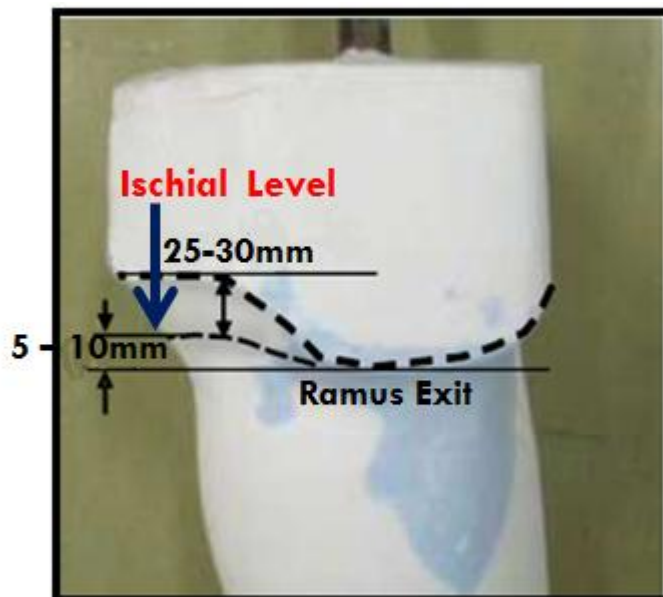
Posterior wall modification

☞ When the target circumference value has not yet been achieved, modification should be performed by removing the shaded area in the figure above



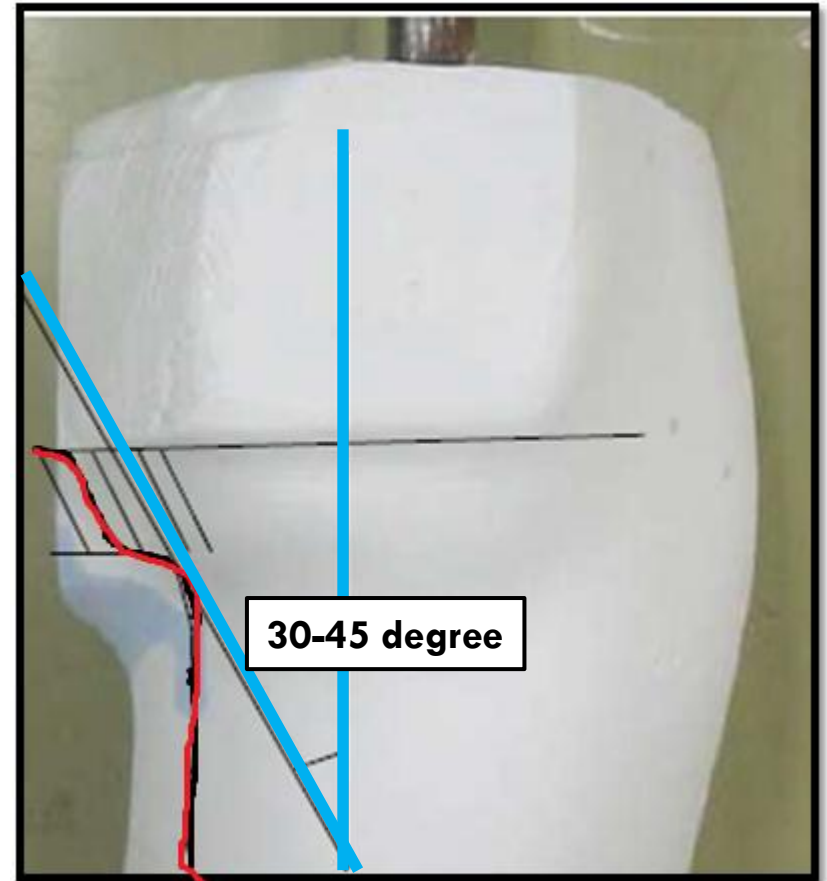
Drawing the trim lines

- ☞ The medial brim must cover the ischium 25 -30mm higher than ischial level for the containment. Leave it high until fitting
- ☞ The lowest point of the medial wall will be where the ramus exits the socket – approximately mid-AP
- ☞ The trim line should be 5-10mm lower than ischial level at this point



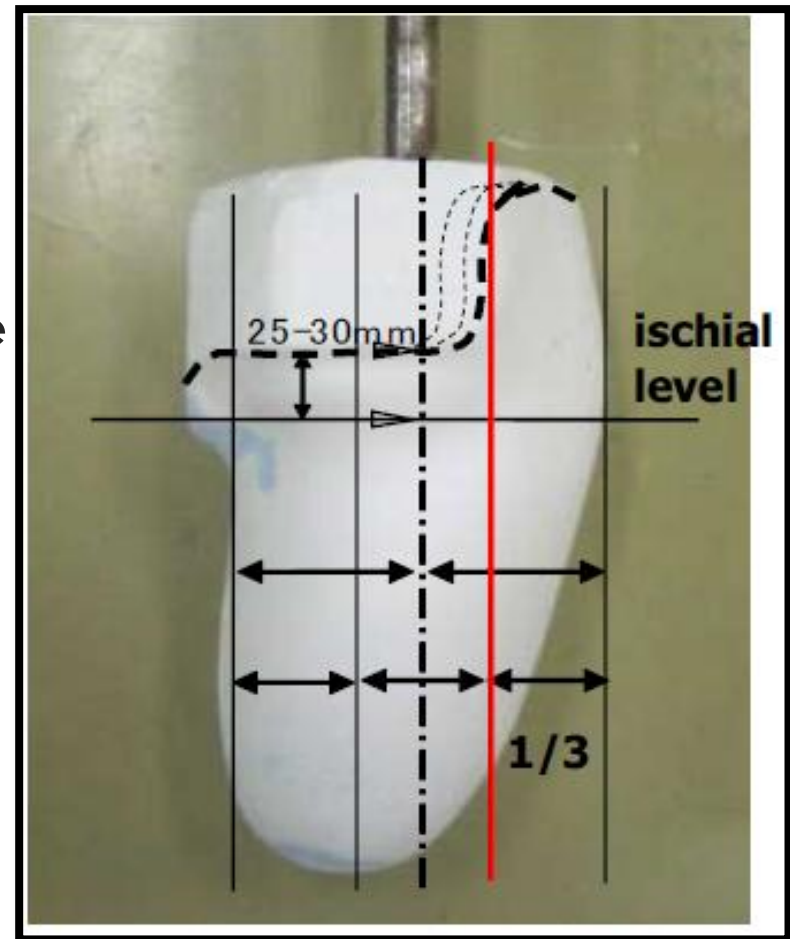
Inclination angle

- ☞ Medial brim at ischial tuberosity area to be sloped at 30-45 degrees angle at beginning
- ☞ It should NOT be concave, but slightly convex at area.



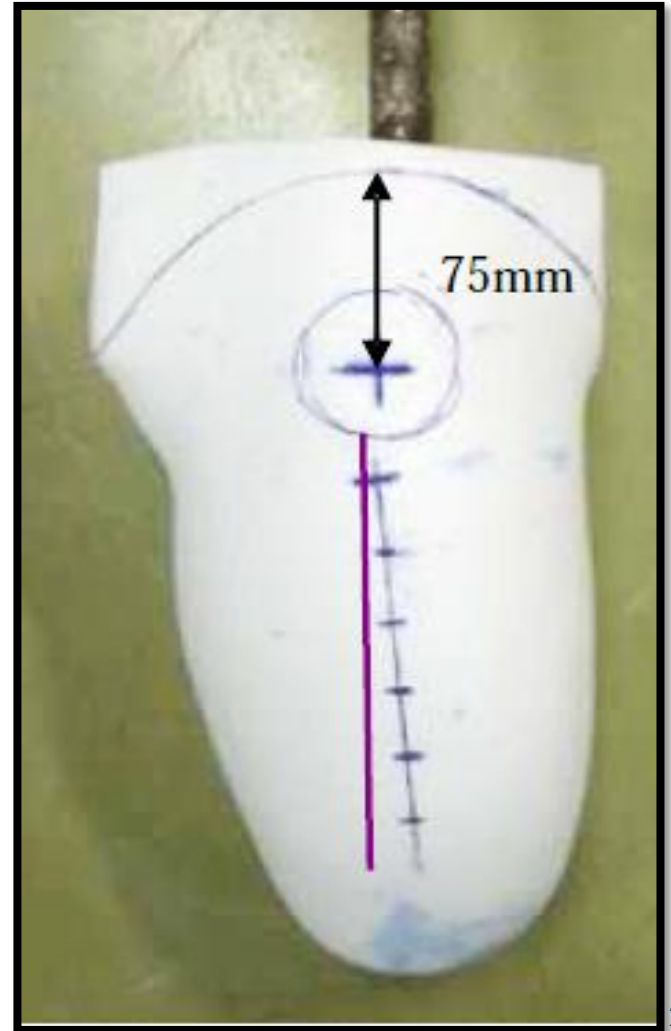
Posterior brim

- Posterior brim should be 25- 30mm above ischial level to support gluteal tissues
- If this is not needed or desired you can cut the posterior brim down to the gluteal fold level
- Potero-lateral brim to be at somewhere between $\frac{1}{3}$ lateral and mid socket line
- Join the lateral trim line to the posterior trim line



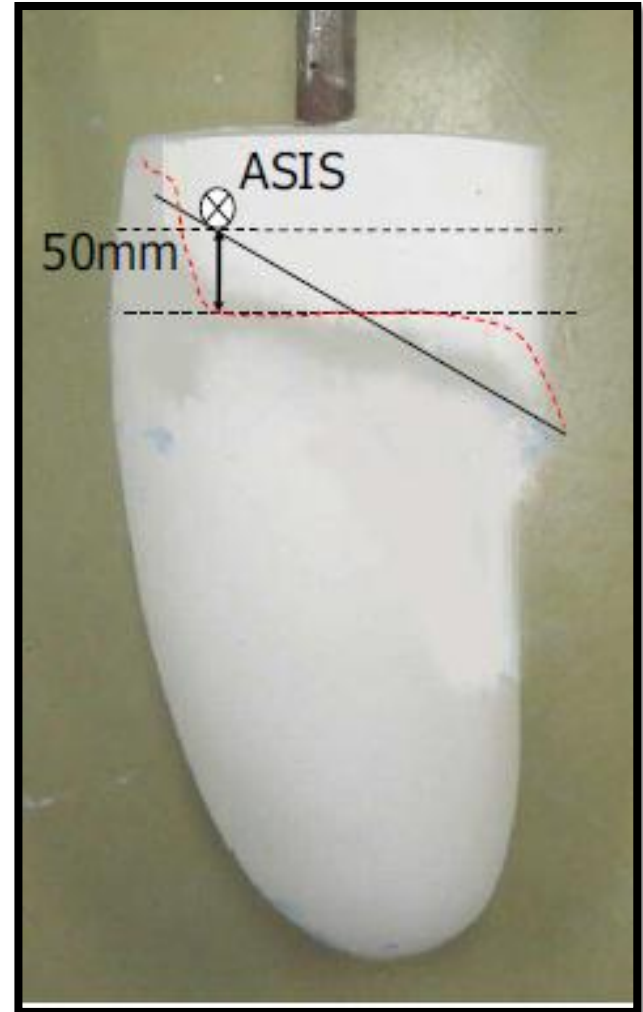
Lateral brim

- ∞ Lateral brim varies depending on stump length
- ∞ Start with 75mm above the apex of the GT



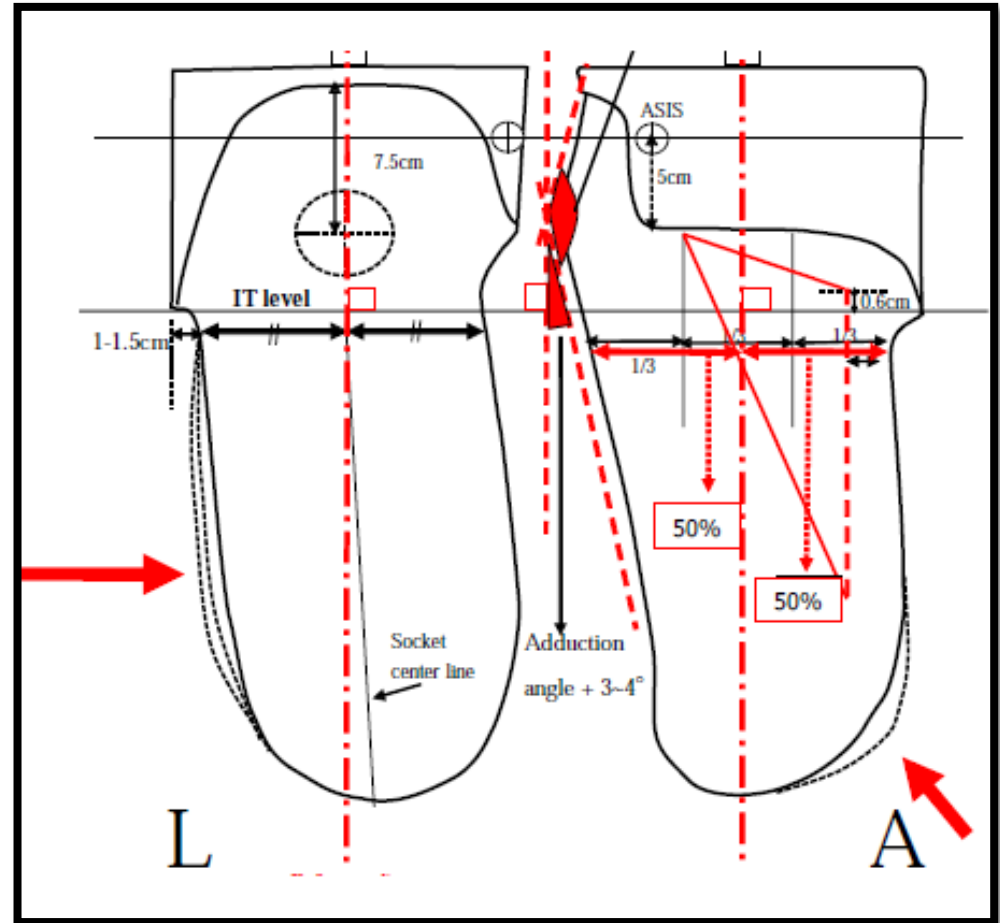
Anterior brim

- ∞ The anterior trimming line should be at the level of the line of the inguinal crease
- ∞ Especially, the Antero-lateral trimming line should clear the ASIS while sitting

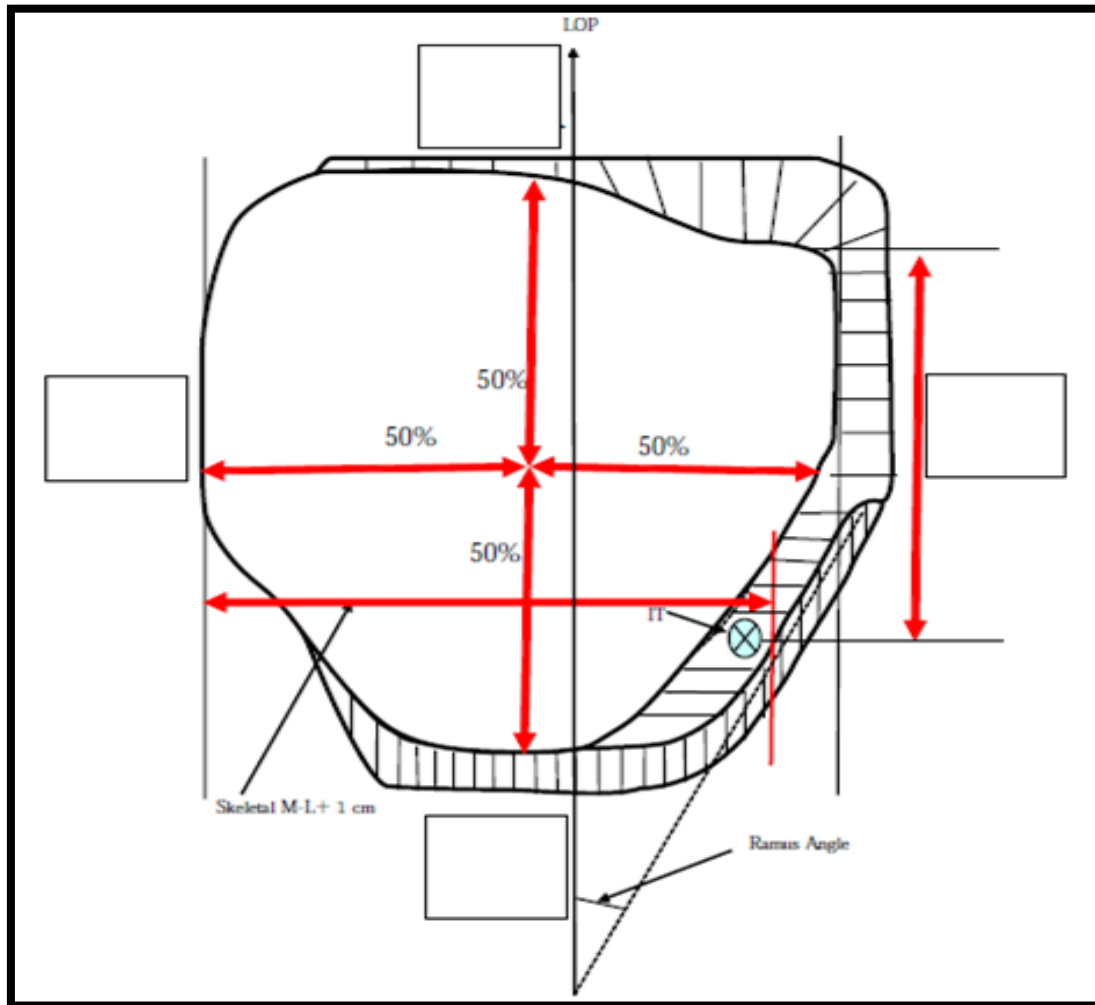


Re-check the measurements

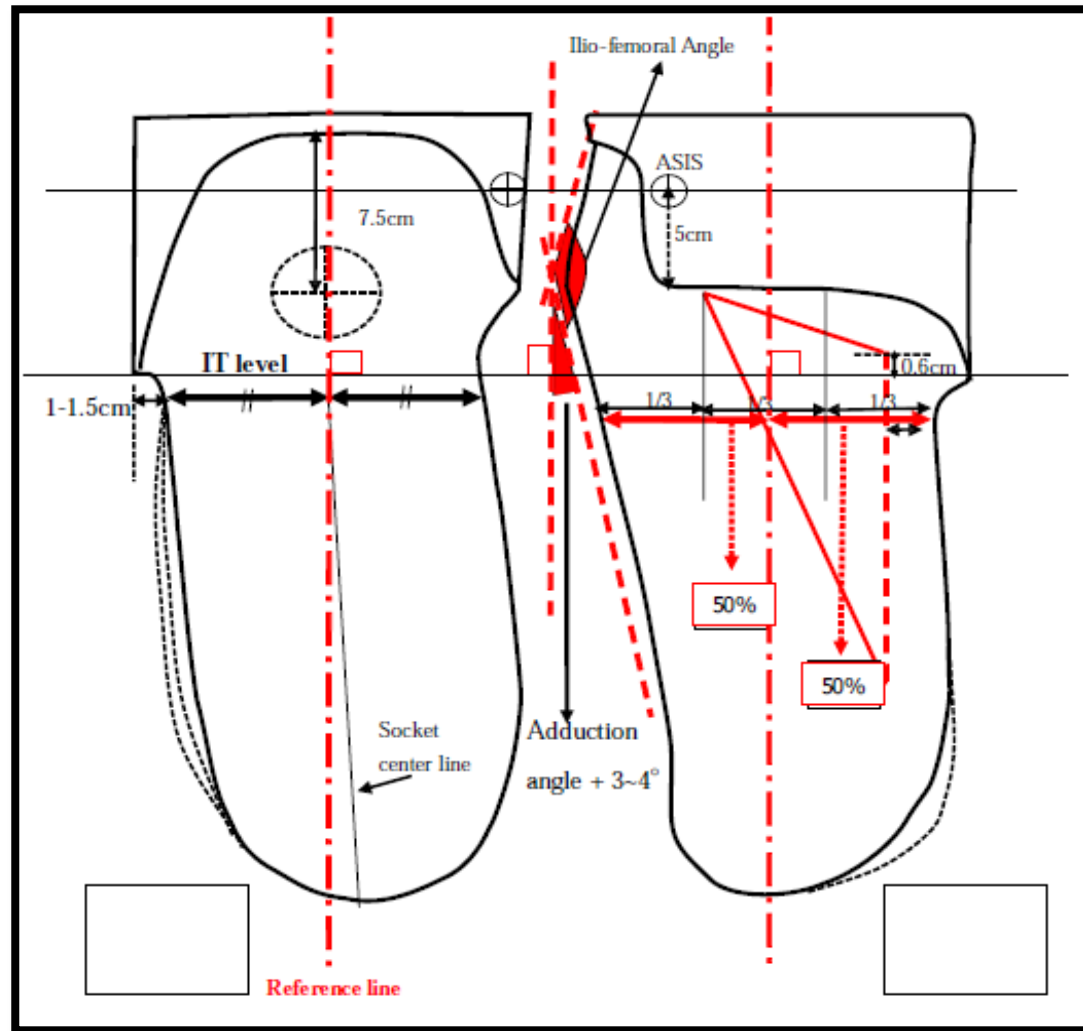
- Re-check all relative measurements including skeletal ML, soft tissue ML, circumferences, AP diameter, iliofemoral angle, etc
- If your plaster model is still bigger than the goal value, you can modify at the posterior and the medio-distal area



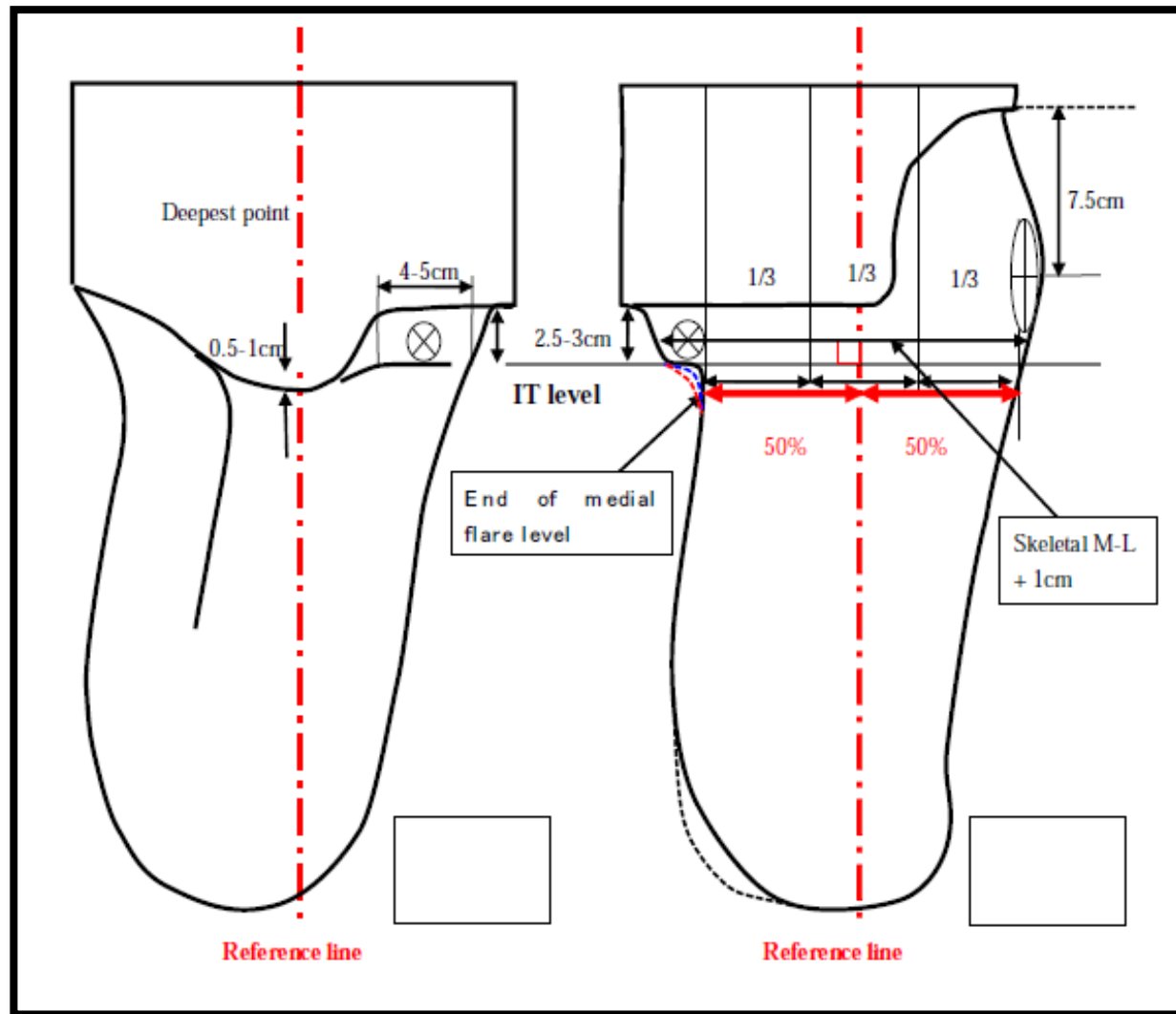
Check out- transverse plane



Check out- Anterior and Lateral



Check out-Posterior and Medial



References

- ❧ Christopher Hoyt, Benefits of ischial containment, seminar at Mahidol University, 2008
- ❧ The Ischial Ramal Containment (IRC) Transfemoral Prosthesis ~ Rectification ~
- ❧ La Trobe University, Ischial Containment Socket for Transfemoral Amputees, 2006

Questions?



Thank you