



**Zimmer®
M/L Taper Hip
Prosthesis with
Kinectiv® Technology**



Case Studies with Kinectiv Technology

The following clinical cases show how the M/L Taper with *Kinectiv* Technology provides superior intraoperative flexibility and range of head centers to help surgeons address a wide range of patient anatomy and clinical situations.

Case Study 1 – Leg length

Clinical Situation: Higher neck cut than templated, results in a higher stem position than planned, lengthening the leg.

Current Treatment: With traditional stems, surgeons may remove more bone with a lower neck cut or resort to shorter head length.

Implications: Adjustments can be time-consuming or result in decreased stability.

Kinectiv Solution: Allows the surgeon to

- Simply decrease leg length by changing the neck
- Without undesired decrease in offset
- And no additional bone removal



Case Study 2 – Varus anatomy

Clinical Situation: This female patient presents with a varus, low head-center anatomy which is one of the most challenging to reconstruct, as reported in a survey of 97 surgeons¹

Current Treatment: With traditional stems, surgeons may make adjustments to fit this patient to the implant.

- Lower, additional neck cut (one or more)
- Increase head length to achieve offset and stability

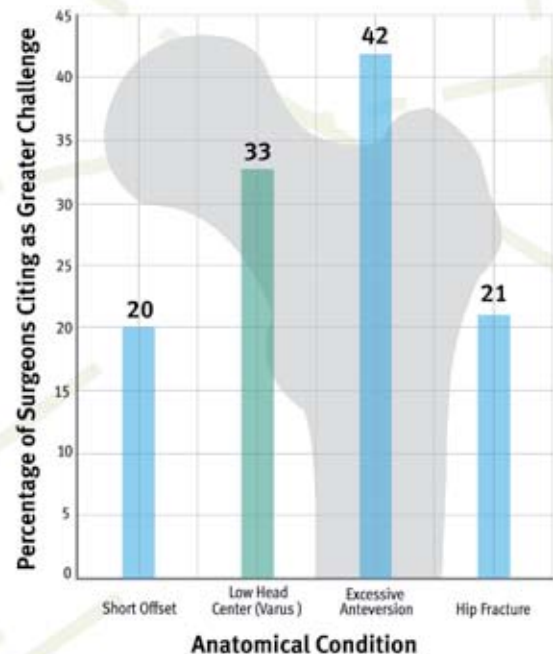
Implications:

- Time-consuming adjustments
- Removal of viable bone
- Excessive leg lengthening

Kinectiv Solution: Allows the surgeon to

- Preserve viable bone
- Make fewer time-consuming adjustments to match patient anatomy
- Achieve desired offset and leg length

Surgeon Survey



Case Study 3 – Valgus anatomy

Clinical Situation: Patient with a valgus neck anatomy.

Current Treatment: With traditional stems, surgeons may use a longer head length to restore patient leg length.

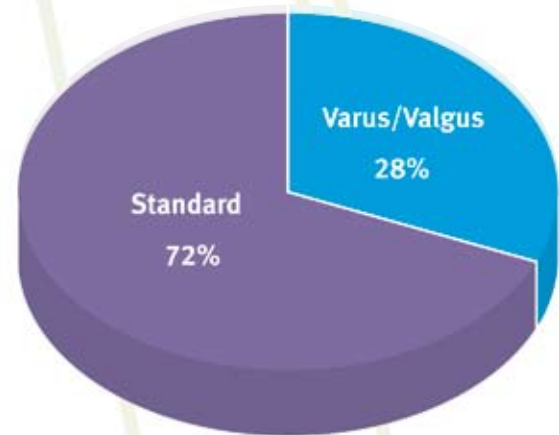
Implications: Challenge in reconstructing the valgus neck anatomy with conventional stems:

- Changing head length to lengthen the leg also increases femoral offset.
- Clinical considerations of excessive offset include trochanteric bursitis and patient dissatisfaction.²

Kinectiv Solution: Allows the surgeon to

- Fit the stem in the femur at the desired level
- Achieve desired leg length without excessive offset

Neck implant distribution



Standard vs. varus/valgus neck implant distribution for over 6,000 consecutive cases¹

Case Study 4 – Version

Clinical Situation: Femoral version is often not appreciated until the neck is cut during surgery.

Current Treatment: With traditional stems, surgeons may attempt to match the version by

- Rotating stem within the femur
- Repositioning cup to alleviate impingement

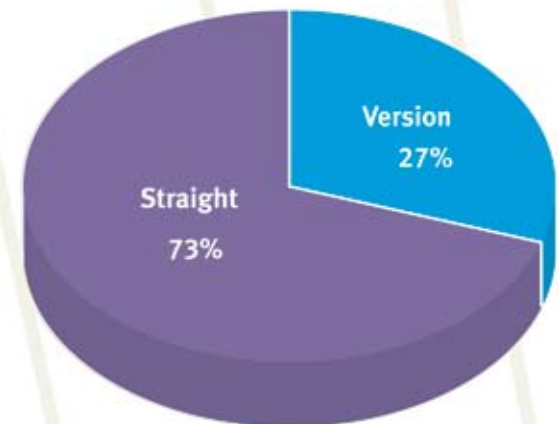
Implications:

- Potential increased risk of femoral fracture/ stem instability
- Time-consuming adjustments to component position

Kinectiv Solution: Allows the surgeon to

- Fit the stem to the femoral anatomy
- Achieve the desired version by simply selecting the anteverted or retroverted neck implant

Neck implant distribution



Straight vs. version neck implant distribution for over 6,000 consecutive cases¹



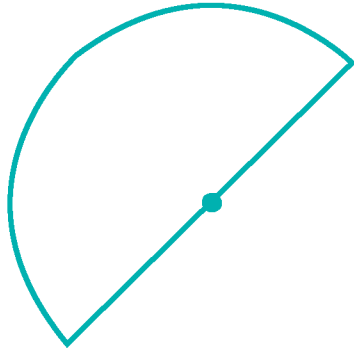
Leg Length Adjustment

Clinical Information

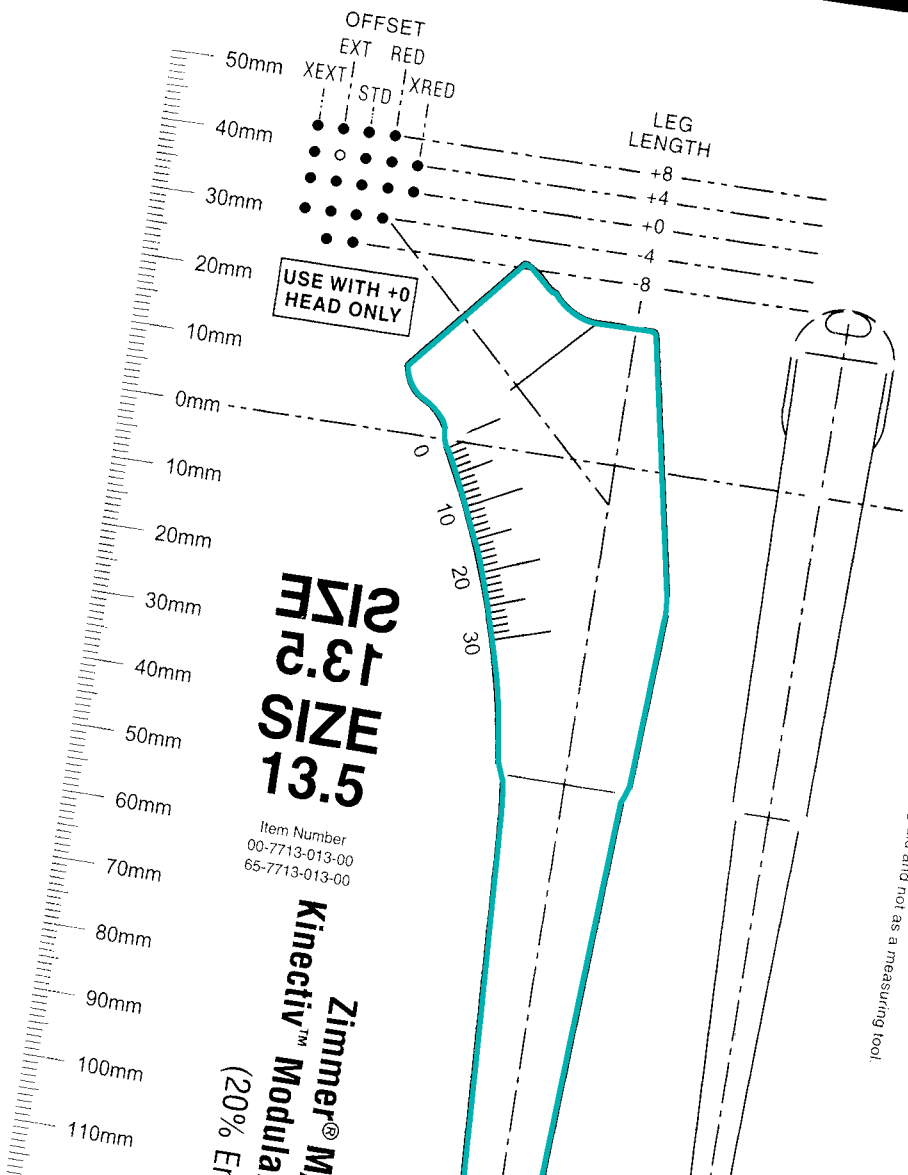
Age	59
Gender	Male
Preoperative Diagnosis	Osteoarthritis
Operative Side	Left
Procedure	MIS Posterior

Implant Information

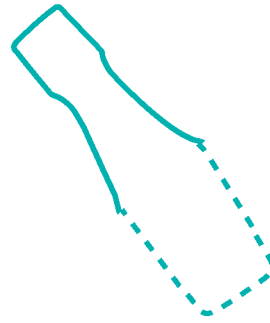
Acetabular Cup (Size)
Femoral Implant (Size)
Femoral Head Implant
<i>Kinectiv</i> Neck



Trilogy® Acetabular Cluster Holed Shell (60mm)



M/L Taper with Kinectiv Technology (Size 13.5)



CoCr Femoral Head 40mm, +0
+0 Leg Length/Extended Offset (G neck)*

**+0 Leg Length/Extended Offset (G Neck) selected intraoperatively to optimize leg length without affecting offset — see post-operative conclusions*

Case Study 1 – Conclusions



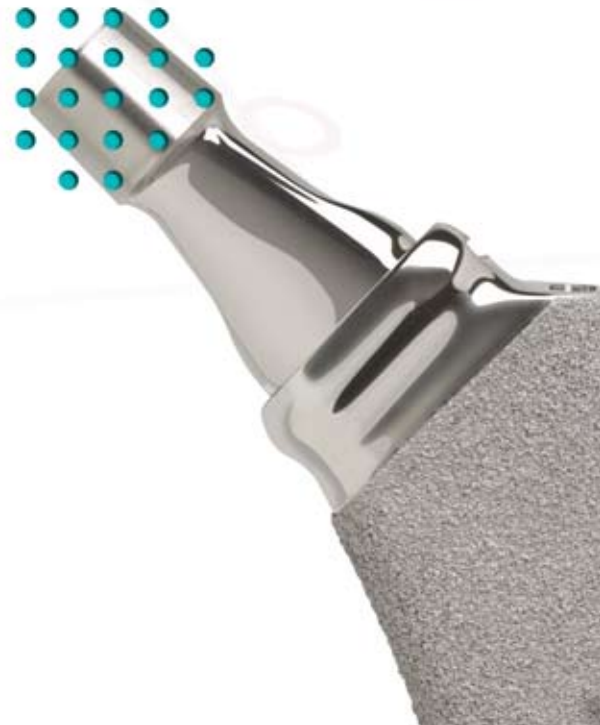
Case study 1 postoperative x-ray

Summary

- Templated to +4 leg length/Extended offset neck implant (C neck)
- Slightly higher neck osteotomy than templated
- Implant +0 leg length/Extended offset neck (G neck) to decrease leg length without affecting offset

Conclusion

- Intraoperative flexibility to readily respond to implant position and optimize hip reconstruction



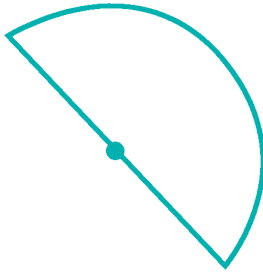


Varus Neck

Clinical Information	
Age	73
Gender	Female
Preoperative Diagnosis	Osteoarthritis
Operative Side	Left
Procedure	MIS Anterior Supine

Implant Information

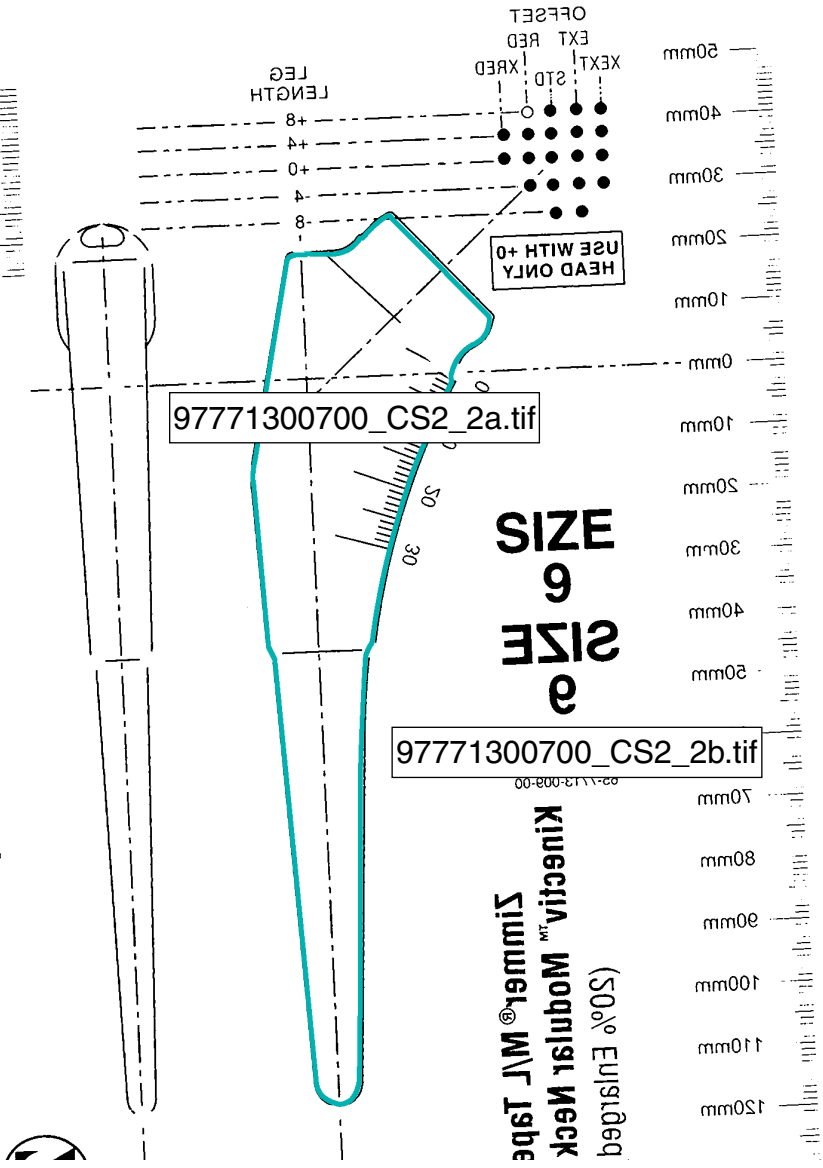
Acetabular Cup (Size)	
Femoral Implant (Size)	
Femoral Head Implant	
<i>Kinectiv</i> Neck	



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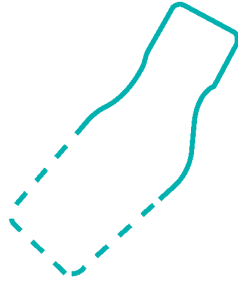
M/L Taper
mm

NOTE: This chart is based on the standard taper of the neck. For more information, please refer to the product literature.



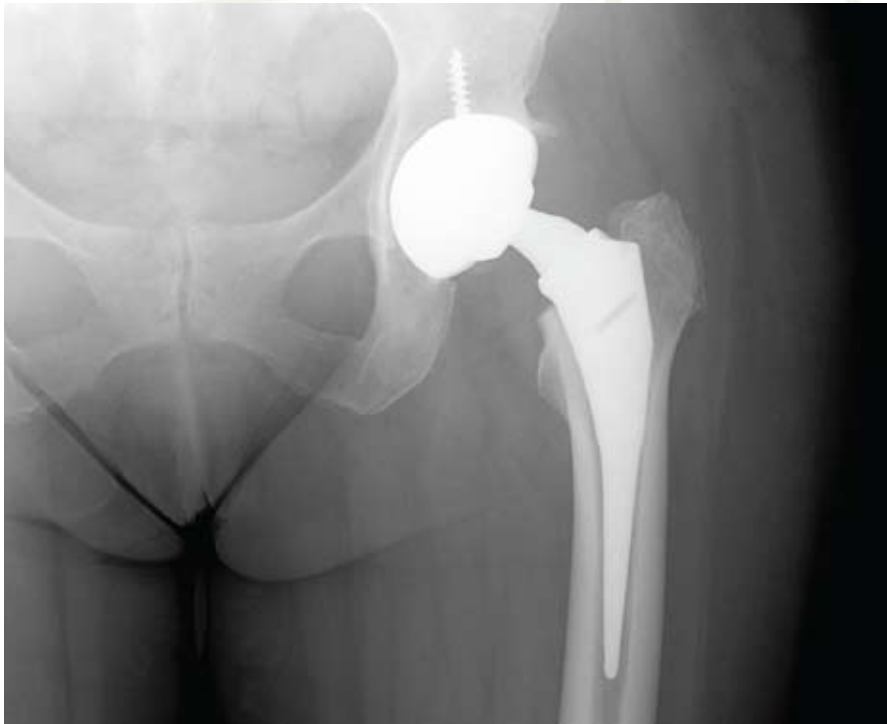
SIZE 6
SIZE 9

(50% Enlarged)
Kinectiv™ Modular Neck
Zimmer® M/L Taper



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Case Study 2 – Conclusions



Case study 2 postoperative x-ray

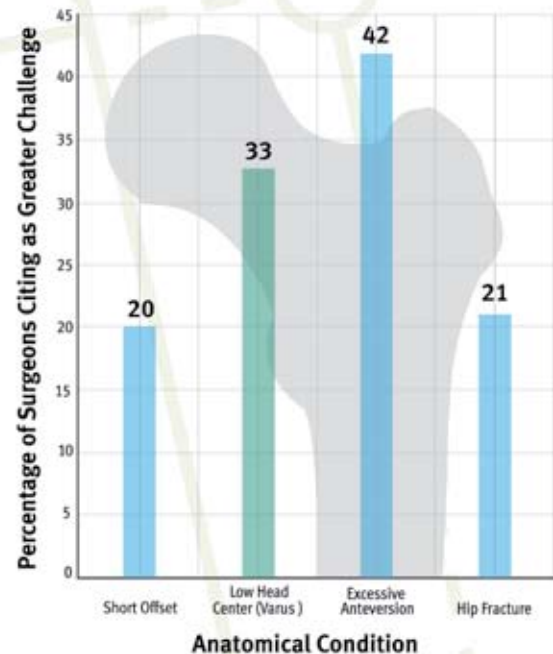
Summary

- Varus neck and small femoral anatomy
- Implant X Neck -4 leg length/Extra extended offset (X neck) to optimize offset without increasing leg length

Conclusion

- Broad range of head centers allows surgeon to efficiently reconstruct hip kinematics in challenging anatomical situations

Surgeon Survey



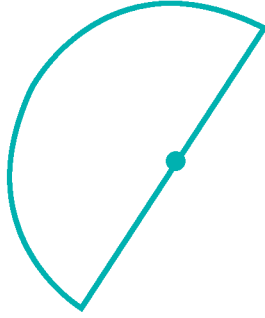


Valgus Neck

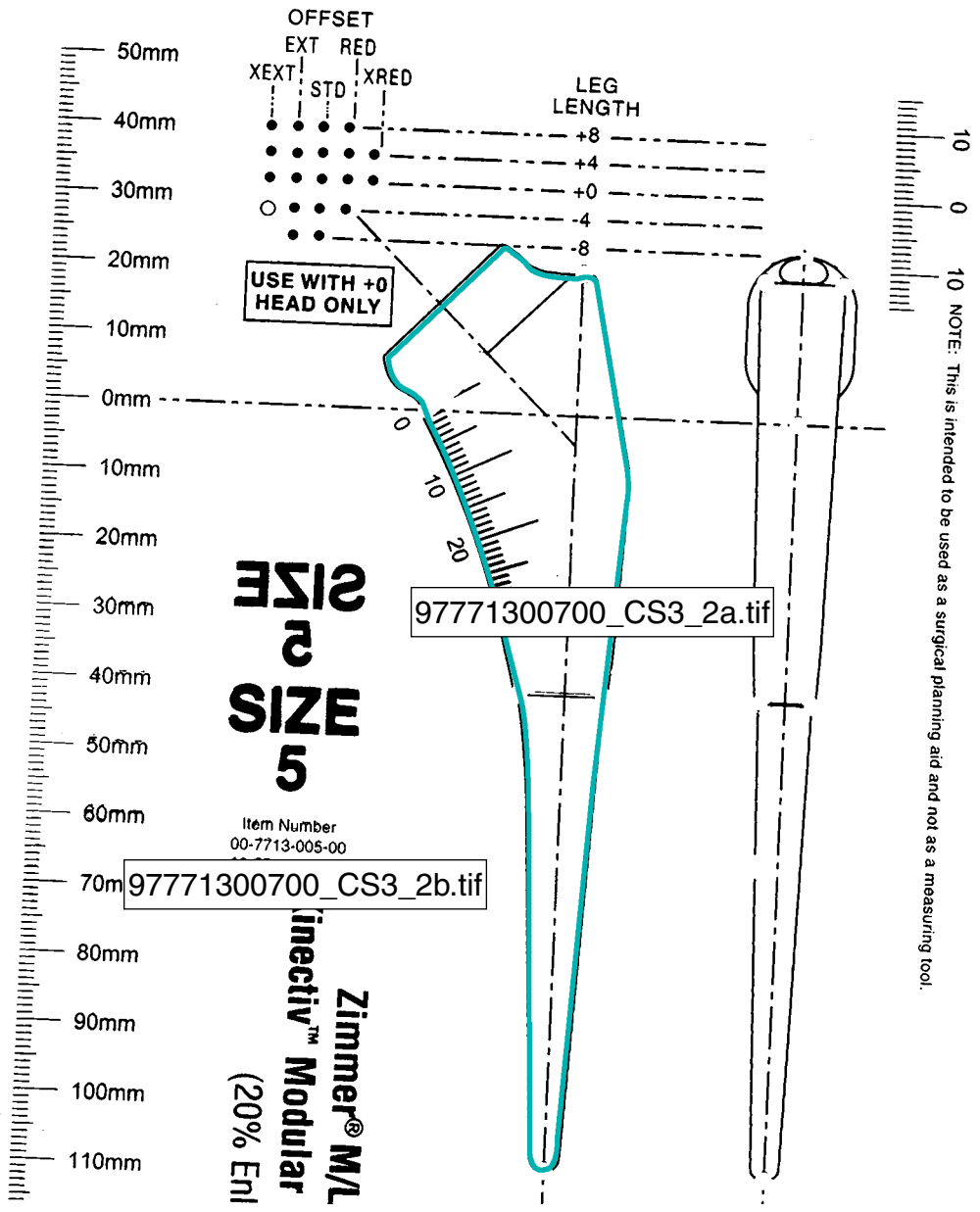
Clinical Information	
Age	59
Gender	Male
Preoperative Diagnosis	Osteoarthritis
Operative Side	Right
Procedure	MIS Posterior

Implant Information

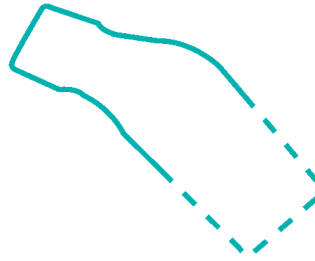
Acetabular Cup (Size)	
Femoral Implant (Size)	
Femoral Head Implant	
<i>Kinectiv</i> Neck	



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M/L Taper with *Kinectiv* Technology (Size 5)



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Case Study 3 – Conclusions



Case study 3 postoperative x-ray

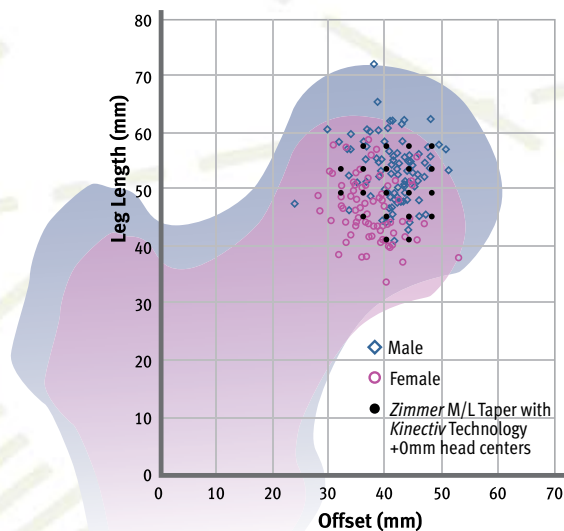
Summary

- Valgus neck anatomy
- Implant +8 leg length/Reduced offset (X Neck) to achieve leg length without excessive offset

Conclusion

- Broad range of head centers allows surgeon to match patient's anatomy
- Varus/valgus neck implants account for 28% of implantations

Head center data





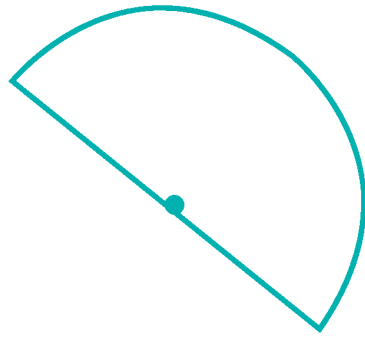
Anteverted Neck

Clinical Information

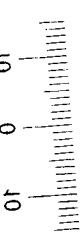
Age	63
Gender	Female
Preoperative Diagnosis	Osteoarthritis
Operative Side	Right
Procedure	MIS Posterior

Implant Information

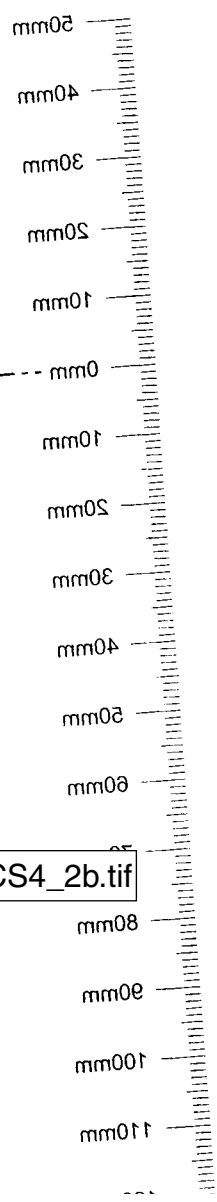
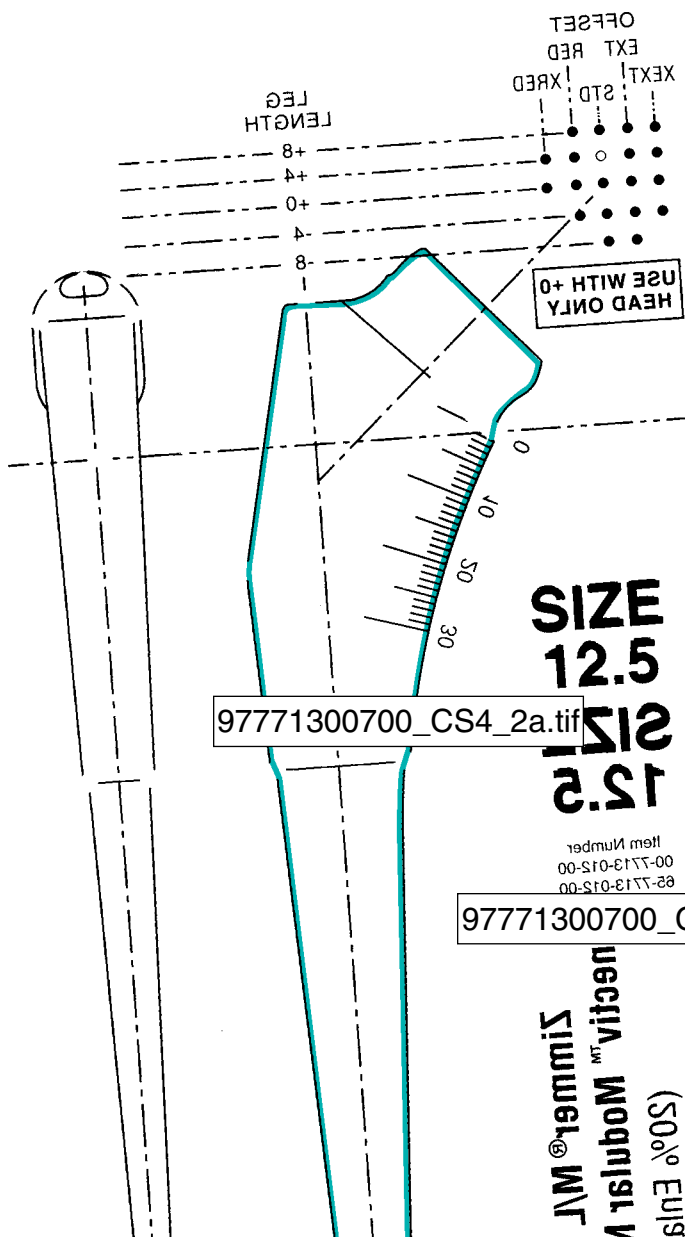
Acetabular Cup (Size)
Femoral Implant (Size)
Femoral Head Implant
<i>Kinectiv</i> Neck



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NOTE: This is intended to be used as a reference only and not as a manufacturing tool.

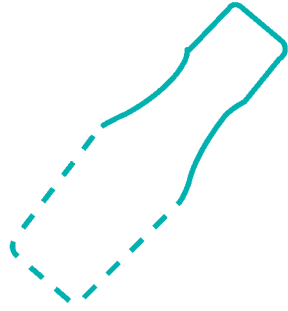


SIZE 12.5

Item Number 00-2213-015-00

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(50% EU) Kinectiv™ Mognis V Simmer® W/T



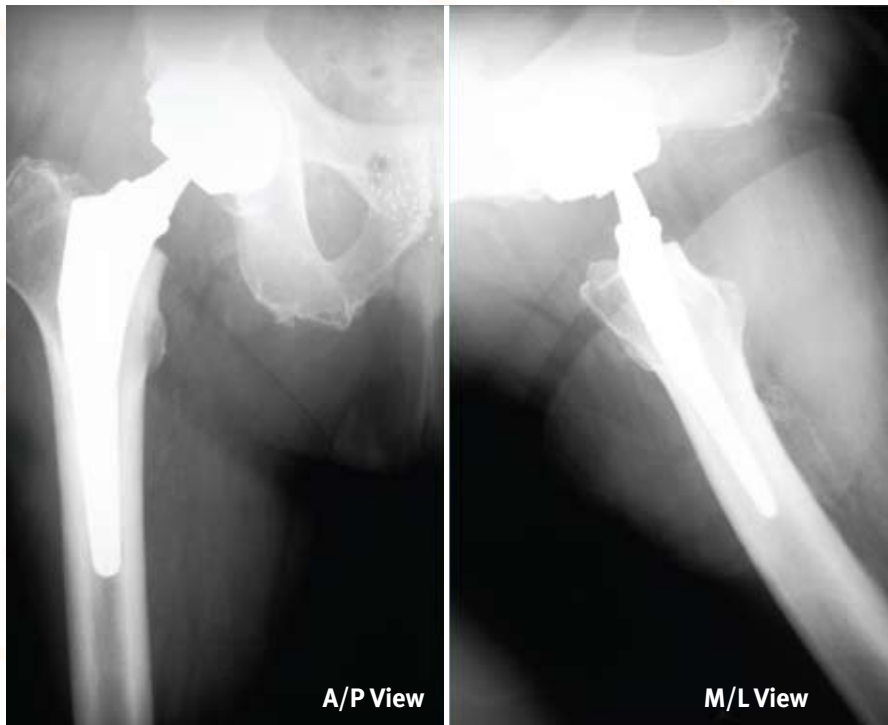
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Ceramic *Biolox*^{®11} Femoral Head 36mm, +0
+4 Leg Length/Extended Offset (CC neck)*

**Extended offset and anteverted neck (CC neck) selected intraoperatively to optimize joint stability without changing leg length*

¹¹Trademark of CeramTec AG

Case Study 4 – Conclusions



Case study 4 postoperative x-ray

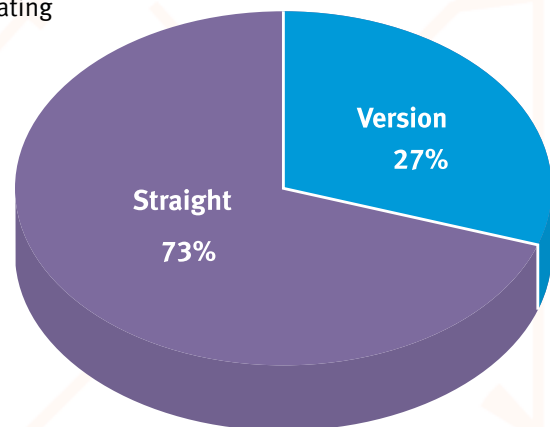
Summary

- Templated to +4 leg length/Standard offset (G Neck)
- Hip contracture limits internal rotation for pre-op x-ray templating
- Neck version not fully appreciated until neck osteotomy is performed
- Implant +4 leg length/Extended offset/Anteverted (CC Neck) to optimize offset and range of motion without affecting leg length

Conclusion

- Independent offset adjustment to optimize stability without affecting leg length
- Anteverted/retroverted neck to optimize stem fit in femur and total version of hip reconstruction for desired range of motion
- Nearly 30% of over 6,000 consecutive *Kinectiv* Technology implantations are anteverted or retroverted neck constructs.¹

Neck implant distribution





To address today's clinical situations

Case study 1: Leg length

Case study 2: Varus neck anatomy

Case study 3: Valgus neck anatomy

Case study 4: Version

the solution is

The *Zimmer M/L Taper Hip Prosthesis with Kinectiv Technology* which provides the **intraoperative flexibility** to help the surgeon restore the natural hip joint center by addressing leg length, offset, and version independently. The **broad array of neck options** efficiently targets a wide range of patient anatomies.

References

1. Data on file at Zimmer.
2. Iorio R, Healy, WL, Warren PD, Appleby D. Lateral trochanteric pain following primary total hip arthroplasty. *J Arthroplasty*. 2006;21:233-236.
3. Data on file at Zimmer. University of Tennessee Center for Musculoskeletal Research. Femoral Bone Atlas.

Contact your Zimmer representative or visit us at www.zimmer.com



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