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 surgeons.

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.

Kinectiv Solution: Allows the surgeon to
- Fit the stem in the femur at the desired level
- Achieve desired leg length without excessive offset

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
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<td>Age</td>
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<td><strong>Kinectiv Neck</strong></td>
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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

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**
- **Kinectiv Neck**
Case Study 2 — Conclusions

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
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Ceramic Femoral Head 32mm, +0
-4 Leg Length/Extra Extended Offset (X neck)
Case Study 3 — Conclusions

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

Plotting head height and offset reveals the wide range of head center locations among men and women.
Anteverted Neck

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Ceramic Biolox® 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

**Trademark of CeramTec AG
Case Study 4 — Conclusions

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
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.