Introduction:
THA continues to improve but complications still occur. Dislocation and osteolysis continues to be a significant problem. The causes for dislocation can be multi-factorial, and include: mal-positioned components, soft tissue laxity, and impingement of component-on-component or on fixed obstructions such as osteophytes. Weakness of the abductor muscles due to improper reconstruction can also be a contributing factor. In countering these factors, stability is often achieved at the expense of limb lengthening.

What are the Goals of THA?
- **Eliminate Pain**
  - New Hip
- **Restore Function**
  - Reproduce Hip Mechanics
  1. Femoral Offset
  2. Neck Length
  3. Version Angle

Two Remaining Significant Problems in THA
- **Dislocation**
  - Reports from 2-8%
  - Higher in Posterior Approach
  - Higher in Sm. Dia. Heads
  - Higher in Revisions >20%
- **Osteolysis**
  - Eccentric Poly Wear
  - Result Lytic Lesion (4 year post-op)

Discussion:

Current Dislocation Costs
Estimating a conservative 2% dislocation rate, there would be a corresponding 6,000 dislocated hips each year.

- **Non-operatively treated** - 4,500 (75%) - $6,000
  - Cost: relocation, brace, x-rays, rehabilitation
- **Operatively treated** - 1,500 (25%) - $25,000
  - Cost: operation, brace, and rehabilitation

$6,000 x 4,500 = $27 million
$25,000 x 1,500 = $37.5 million
Total cost of dislocations per year in the United States. $64.5 million

“Despite a number of improvements in femoral stem neck geometry and increasing femoral head sizes up to 36mm, dislocation continues to be a significant problem after THA”
- Dr. Amstutz

Intrinsic Modular Indexable Neck (IMINTM)

**Stem Designs**
- R-120™ - Cemented
- Alpha II™ - Cementless

**IMINTM Modular Neck Design**
- 3 neck lengths
  - 32, 35, 38 mm
- 2 neck angles
  - 8° & 12°

**Neck Positions for 8°**

Surgical Technique:

Technique is the same as any standard fixed neck cement or cementless stem.

**Option**
- Stem First - Then Cup
  - Benefit: blood loss reduction

**Posterior Approach**
- Trial stem in place

**Dislocation Treatment Trends**
- Big Heads
- Constrained Sockets
- Navigation

Big heads are helpful for impingement problems, however do not aid in soft tissue laxity. Constrained sockets are indicated for soft tissue laxity but not indicated for mechanical instability. Surgical navigation is promising to reduce implant alignment problems and dual offset stems are helpful for restoring joint mechanics but increase inventory costs.

**“Wright Medical Web Site”**
Surgical Technique: continued

Anterior Mini-Dual Incision

Implant orientation is a significant part of surgical technique. The mini-incision places a higher demand on implant positions. Proximal modular stems provide adjustments reducing the risk of implant discrepancy, and soft tissue laxity.

Fine Tuning Joint Mechanics

The Advantage of Proximal Modular Necks: With the trials in place the surgeon can verify joint stability and range of motion without disrupting the implant/bone interface. If necessary, the surgeon can also fine tune the joint mechanics by adjusting the modular neck.

Variable Femoral Offset

Valgus Neck Shaft Angle 147º (position 6)
Varus Neck Shaft Angle 123º (position 0)
(Same pt., same implants, different neck positions)

Joint Stability Range of Motion

The insertion of neck & head can be done by assembling head onto neck and inserting as a single unit.

Another approach is to insert the modular neck first then assemble the head onto the neck then impacting both.

Ways to Reduce Dislocation

• Restore Hip Mechanics
• Modular Necks Aid in Restoration
• Anterior or Direct Lateral Approach
• 32 mm Dia. Head or Larger
• Do not use skirted necks or modular trunnion necks
• Constrained sockets (not indicated for impingement problems)
• Reduse Use of Angled Poly Inserts
• Navigation System (Digital $60,000 / Image 250,000)

Summary

• This modular neck design aids in fine tuning joint mechanics
• Works with all surgical approaches
• Allows for femoral stem insertion first (aids in reducing blood loss)
• Allows for ease and access in case of revisions
• Allows for replacement of ceramic heads by replacement of modular neck
• Reduces chances of mechanical impingement of implants especially with mini-incision surgical approaches

Clinical Summary

Primary Total Hips
270 stems implanted since 1/02
• (136 cementless / 134 cemented)
3 Revisions
• 1 traumatic fx. Greater Trochanter
• 1 cup revision (mod. neck removed for access)
• 1 dislocation (mod. neck revised and indexed)
0 Stem Revisions
0 intra-op fractures
2 GI Bleeds
0 infections
No significant leg length inequalities (+/- 5mm)
+50% indexed to positions other than 0

Early Clinical/Surgical Impressions

No long term data available at this point, however, we are extremely encouraged that this device will aid in reducing post-op dislocations and help restore joint mechanics.