SuperCable™ Iso-Elastic™ Cerclage System
SuperCable™ Iso-Elastic™ Cerclage System

What is it?

- The world's only polymer cerclage cabling system

- Cable is made with Nylon core and UHMWPe sheath (non-resorbable)

- Clasp is made from Ti 6Al/4V

- Cable diameter = 1.5mm x 2 strands
SuperCable *Iso-Elastic* Cerclage System

Why polymer instead of metal?

- Metal cables have high rates of fatigue failure (Ritter – 32.5% breakage)
- Broken cables result in fixation loss and can be painful and can require additional surgery for removal.
Features and Benefits

Why polymer instead of metal?

• Failed metal cable migrating through the skin

Photos and x-ray courtesy of Tom Norris, MD
San Francisco, CA
SuperCable Iso-Elastic Cerclage System

Why polymer instead of metal?

- Metal cables liberate metal particle debris

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**DISCUSSION**

Although wire breakage is often viewed as an inconsequential radiographic finding, in reality it has been and remains a major problem in orthopaedic surgery. The estimated rates of breakage of monofilament wire used for reattachment of the greater trochanter during total hip arthroplasty vary from 17% to 32% (6). In addition to the problems of non-union, delayed union, and loss of trochanteric position, these broken wires pose a significant threat of migrating into the joint resulting in significant third body wear (1,3,6). Sir John Charnley recog-
SuperCable Iso-Elastic Cerclage System

Why polymer instead of metal?

- UHMWPe has superior fatigue strength and abrasion resistance as compared to metal cable
- Wear/Fatigue test described on brochure
- SuperCable provides a super tough, super durable cerclage system
SuperCable Iso-Elastic Cerclage System

Why polymer instead of metal?

“Iso-Elastic™”

- SuperCable has engineered elasticity
- Elasticity provides dynamic compression across construct offering the possibility of improved healing
SuperCable Iso-Elastic Cerclage System

Why polymer instead of metal?

"Iso-Elastic™"

- Metal cables dig into bone
- Metal cables then become lose and micromotion ensues
- SuperCable can compensate due to elastic energy stored
Features and Benefits

Other Features:

Each cable provides two strands instead of one

• Spreads the compressive load over twice the area

• This “snowshoe” effect may reduce the bone cutting or grooving often seen with metal
Features and Benefits

Why polymer instead of metal?

• No sharp cable ends to irritate patient tissue

• May require revision surgery for cable removal
Features and Benefits

Why polymer instead of metal?

• No sharp cable ends to cut surgeons gloves
• Can be dangerous for surgeon finding and removing broken cables
Features and Benefits

Why polymer instead of metal?

- No sharp cable ends to cut surgeons gloves
- Sharp cable ends can be dangerous during placement
- Exposes surgeon and patient to increased infection risk
Features and Benefits

Sharp frayed end of previously placed metal cable
Features and Benefits

Great Instrumentation

• Simple, quick and easy to use

• Cable tensioner is also the cable locking device
Features and Benefits

Great Instrumentation

- Cables can easily be retightened after locking
- Faster, simpler system eliminates cumbersome tension retaining devices
**SuperCable Iso-Elastic Cerclage System**

**Indications:**
- Fixation of fractures and osteotomies in long bones
Typical Uses

- Revision THR – trochanteric osteotomy
- Revision THR – femoral osteotomy
- Revision THR – onlay grafting
- Revision SR – onlay grafting
- Periprosthetic fractures (hip, shoulder, knee)
- Olecrenon fracture
- Patella fracture
Selling Strategies

Evaluation surgery tips

- Perform a quick “sawbones” demo with surgeon before the case so he/she understands details of instrument usage!
- Teach proper orientation of cable passer
- Teach proper orientation of cable clasp
- Allow surgeon to use tensioning instrument to tighten and lock a cable on a sawbones
Frequently Asked Questions

Won’t the UHMWPe sheath result in poly wear debris?

• No, the gel-spun poly sheath is extremely resistant to wear as shown by testing to 1 million cycles over metal plate

• In this extreme test there is very little loss of poly as compared to the volumes lost in total joint implants
SuperCable Iso-Elastic Cerclage System

Why polymer instead of metal?

- SuperCable can be placed over metal implants

(sharp edges are to be avoided)
Frequently Asked Questions

How does the strength of SuperCable compare to metal cable systems?

• Strength can be measured in two ways:
  • tensile strength (single max load) and
  • fatigue strength (repetitive load)

• Breakage in cabling systems are generally caused by fatigue failure not tensile failures!
Frequently Asked Questions

How does the strength of SuperCable compare to metal cable systems

• The chart below compares **fatigue** strength (cycles to failure) of SuperCable to that of metal cables and wires.
• The figures for metal cerclage systems were taken from the literature and those from SuperCable from in-house testing described here and on the brochure.
• All metal systems started seeing failure at 100,000 cycles while SuperCable saw none at 1 million cycles with higher loading!

<table>
<thead>
<tr>
<th>Cerclage Type</th>
<th>Cyclic Load</th>
<th>Cycles to Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuperCable</td>
<td>100 pounds</td>
<td>No failures at 1 million cycles</td>
</tr>
<tr>
<td>Stainless steel wire</td>
<td>35 – 80 pounds</td>
<td>100,000 cycles</td>
</tr>
<tr>
<td>Titanium alloy cable</td>
<td>20 – 50 pounds</td>
<td>100,000 – 1 million cycles</td>
</tr>
<tr>
<td>Cobalt-chrome alloy cable</td>
<td>20 – 50 pounds</td>
<td>100,000 – 1 million cycles</td>
</tr>
</tbody>
</table>
Frequently Asked Questions

How does the strength of SuperCable compare to metal cable systems

- For the record, the chart alongside compares tensile strength of SuperCable to metal cables and wires
- Remember though – it is not tensile failures that are a problem - **fatigue** failure causes breakage of metal cerclage!

<table>
<thead>
<tr>
<th>Cerclage Type</th>
<th>Tensile Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuperCable</td>
<td>~250 pounds</td>
</tr>
<tr>
<td>Stainless steel wire</td>
<td>70 – 150 pounds</td>
</tr>
<tr>
<td>Titanium alloy cable</td>
<td>250 – 460 pounds</td>
</tr>
<tr>
<td>Cobalt-chrome alloy cable</td>
<td>300 – 700 pounds</td>
</tr>
</tbody>
</table>
Frequently Asked Questions

How much bone compression is applied at the “low” and “high” marks on the tensioning knob?

- “Low” mark = approximately 80 lbs. (360N) of compressive force
- “High” mark = approximately 120 lbs. (530N) of compressive force
How do I determine if I should tension to “low” vs. “high” when applying the cable

• “Low” may be appropriate for patients that have compromised bone strength (osteopenia, etc.)

• “High” may be appropriate for large bones in high load areas in patients with good bone strength

• In all cases the surgeon should exercise his/her clinical judgment when tensioning the cable
Frequently Asked Questions

I can see where the “Iso-Elastic” stored energy in the SuperCable may provide greatly improved fixation and stability but could there be too much energy stored leading to bone necrosis?

- This has not been seen in the clinical follow-up we have collected (see Clinical Data PP)

- The SuperCable also relaxes and loses a portion of its compressive load over time
Frequently Asked Questions

Tell me more about this cable relaxation – won’t this result in loss of fixation?

• No, compressive force remains despite some cable relaxation

• This is in marked contrast to a non-elastic metal cable that can lose all compressive force as soon as the cable grooves into the bone!
Frequently Asked Questions

How quickly does this relaxation occur?

- Relaxation tests show that initial cable tension decreases by approximately 40% after 8 weeks of static loading.

- The majority of loss occurs after the first day and only 1% of the total loss occurs during the final 30 days of the test.

- Steady-state tension is reached and maintained after a relatively short period of time.