WOUND CLOSURE IN-SERVICE

Month __, 20__

Title

Presenter name
NEEDLES OVERVIEW
The best surgical needles are

- Made of high quality stainless steel (or alloy).
- As slim as possible without compromising strength.
- Stable in the grasp of a needleholder.
- Able to carry suture material through tissue with minimal trauma.
- Sharp enough to penetrate tissue with minimal resistance.
- Rigid enough to resist bending, yet ductile enough to resist breaking during surgery.
- Sterile and corrosion-resistant to prevent introduction of microorganisms or foreign materials into the wound.
SECTIONS OF A NEEDLE

- Point
- Eye (Swaged end)
- Body
ANATOMY OF A NEEDLE

Needle point

Chord length

Swage

Needle radius

Needle length

Needle body

Needle diameter
TYPES OF NEEDLE EYES

THE NEEDLE EYE

Closed eye

French eye

Swaged

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NEEDLES OVERVIEW
# NEEDLE SHAPES

<table>
<thead>
<tr>
<th>Shape</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight</td>
<td>Gastrointestinal tract, nasal cavity, nerve, oral cavity, pharynx, skin, tendon, vessels</td>
</tr>
<tr>
<td>Half Curved</td>
<td>Skin (rarely used), laparoscopy</td>
</tr>
<tr>
<td>1/4 circle</td>
<td>Eye (primary application) microsurgery</td>
</tr>
<tr>
<td>3/8 circle</td>
<td>Aponeurosis, biliary tract, cardiovascular system, dura, eye, gastrointestinal tract, muscle, myocardium, nerve, perichondrium, periosteum, pleura, skin, tendon, urogenital tract, vessels</td>
</tr>
</tbody>
</table>
# NEEDLE SHAPES

<table>
<thead>
<tr>
<th>Shape</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 circle</td>
<td>Biliary tract, cardiovascular system, eye, fascia, gastrointestinal tract, muscle, nasal cavity, oral cavity, pelvis, peritoneum, parynx, pleura, respiratory tract, skin, tendon, subcutaneous fat, urogenital tract</td>
</tr>
<tr>
<td>5/8 circle</td>
<td>Anal (hemorrhoidectomy), nasal cavity, pelvis, urogenital tract (primary application)</td>
</tr>
<tr>
<td>Compound curve</td>
<td>Eye (anterior segment), laparoscopy</td>
</tr>
</tbody>
</table>
## NEEDLE TYPES

<table>
<thead>
<tr>
<th>Needle Type</th>
<th>Description</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taperpoint Needle</td>
<td>For soft, easily penetrated tissues.</td>
<td>BV, CT, MO, RB, SH, UR, TF</td>
</tr>
<tr>
<td>Conventional Cutting Needle</td>
<td>Two opposing cutting edges, with a third on inside curve. Change in cross-section from a triangle cutting tip to a flattened body.</td>
<td>CCS</td>
</tr>
<tr>
<td>TAPERCUT* Surgical Needle</td>
<td>Cutting tip, taper body. For tough tissue, like 2 needles in one.</td>
<td>CC, V</td>
</tr>
<tr>
<td>Precision Cosmetic-</td>
<td>For delicate plastic or cosmetic surgery. Conventional cutting tip and PRIME geometry for increased sharpness.</td>
<td>PC</td>
</tr>
<tr>
<td>Conventional Cutting PC PRIME* Needle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1: [http://ecatalog.ethicon.com](http://ecatalog.ethicon.com); Wound Closure Manual page 48

*Trademark

**NEEDLES OVERVIEW**
## NEEDLE TYPES

<table>
<thead>
<tr>
<th><strong>POINTER</strong></th>
<th><strong>Conventional Spatula Needle</strong></th>
<th>Visibility of the point at bottom provides control of depth penetration.</th>
<th><strong>S</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POINTER</strong></td>
<td><strong>CS ULTIMA</strong> Ophthalmic Needles</td>
<td>Reduced edge-angles provide better penetration. Readily facilitates knot rotation in ophthalmic surgery.</td>
<td><strong>CS, CSB, CTC</strong></td>
</tr>
<tr>
<td><strong>POINTER</strong></td>
<td><strong>VISI-BLACK</strong> Surgical Needle</td>
<td>Slim taperpoint needles with a black finish for improved visibility and penetration.</td>
<td><strong>BV-1, C-1, RB-1</strong></td>
</tr>
<tr>
<td><strong>POINTER</strong></td>
<td><strong>Reverse Cutting MICRO-POINT</strong> Surgical Needle</td>
<td>Cutting edge on outer curve. Extremely smooth. Extremely sharp for ophthalmic surgery.</td>
<td><strong>G</strong></td>
</tr>
<tr>
<td><strong>POINTER</strong></td>
<td><strong>ETHIGUARD</strong> Blunt Point Needle</td>
<td>Taper body. For blunt dissection and suturing friable tissue.</td>
<td><strong>CTB, SHB</strong></td>
</tr>
</tbody>
</table>

1: [http://ecatalog.ethicon.com](http://ecatalog.ethicon.com); Wound Closure Manual page 48

*Trademark

**NEEDLES OVERVIEW**
## NEEDLE TYPES

<table>
<thead>
<tr>
<th>Needle Type</th>
<th>Description</th>
<th>Code(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserve Cutting Needle</td>
<td>Cutting edge on outer curve. For tough, difficult-to-penetrate tissues.</td>
<td>C, FS, M, OS</td>
</tr>
<tr>
<td>Precision Point Needle</td>
<td>For delicate plastic or cosmetic surgery. Cutting tip electropolished for added sharpness.</td>
<td>P, PS</td>
</tr>
<tr>
<td>MICRO-POINT* Surgical Needle</td>
<td>Thin, flat profile. Specially designed for ophthalmic anterior segment surgery.</td>
<td>TG</td>
</tr>
<tr>
<td>SABRELOC* Spatula Needle</td>
<td>Side-cutting spatula shaped edges. For layers of scleral or corneal tissue. Spatulated needle point is centered for maximum needle stability in thin sclera. Four equidistant and properly defined edges provide greater control.</td>
<td>S, SM</td>
</tr>
</tbody>
</table>

1: [http://ecatalog.ethicon.com](http://ecatalog.ethicon.com); Wound Closure Manual page 48

*Trademark

**NEEDLES OVERVIEW**
ADVANCED NEEDLE DESIGN
NEEDLE EVOLUTION

Why Ethicon Continues to Innovate?

Intraoperative Tip Damage on a Slim Taperpoint Needle
Three key elements of advanced needle design:

• Alloy
• Geometry
  – Tip and body
• Coating

The combination of these 3 attributes is the Ethicon MULTIPASS* Needles technology
ETHALLOY* Needle Alloy

- Ductile to prevent breakage\(^1\)
- Strong to resist bending - 40% stronger than needles made of 300 series stainless steel\(^1\)
- Improved tissue penetration
- Smoother needle-to-suture transition
- Better flow through tissue

1. Wound Closure Manual, page 42

* Trademark

ADVANCED NEEDLE DESIGN
PC PRIME* Needle Geometry

- Designed with less mass to enhance control and needle passage\(^1\)
- Requires less penetration force to minimize tissue trauma\(^1\)
- Predictable needle penetration for increased confidence
- Square or I-Beam body design for more stability in needle holder

1. Wound Closure Manual, page 42
*Trademark
ADVANCED NEEDLE DESIGN
Advanced Needle Coating

- Patented MULTIPASS coating helps to maintain needle sharpness pass after pass and consistency from needle to needle\(^1\)\(^-\)\(^3\)
- Covers entire needle, tip to swage, for consistently smooth passage through tissue
- Enhances needle control and placement

1. Wound Closure Manual, page 42
2. EP08-0005 MULTIPASS P-3 Plastic Surgery Needle Evaluation

*Trademark

ADVANCED NEEDLE DESIGN
MULTIPASS* NEEDLES

Sharper
• Significantly sharper than competitive needles, and designed to stay that way - pass after pass after pass

Exceptionally Strong
• Ductile to prevent breakage
• Strong to resist bending

Better Control
• Innovative needle coating and reduced-mass design minimize the penetration force required

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1. Wound Closure Manual, page 42
2. EP08-0005 MULTIPASS P-3 Plastic Surgery Needle Evaluation

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ETHICON MULTIPASS* NEEDLES

• PS (Plastic Surgery) series
  – PS-1, PS-2, PS-3, PS-4

• PC (Precision Cosmetic) series
  – PC-1, PC-3, PC-5

• P (Prime) series
  – P-3

• BV175 (Blood Vessel) series
  – BV175-6, BV175-7, BV175-8, BV130-5
ETHIGUARD* BLUNT POINT NEEDLES

Protection from needlestick injuries, without compromising on performance\(^1\)

Decreases the incidence of injury
- Blunt-point geometry allows for easy soft-tissue penetration

Improves precision
- A ribbed and flattened body affords stability in the needle holder, for improved protection against slipping.

1. EP08-0016 ETHIGUARD Needle Assessment

*Trademark
ADVANCED NEEDLE DESIGN
ETHIGUARD* BLUNT POINT NEEDLES

Use with ease
- Proven to be effective and user-friendly¹

Minimize bleeding and tissue trauma
- Does not cause any additional bleeding or patient trauma compared to a conventional taper needle¹
- Its heat-treated, stainless steel alloy delivers optimal strength and ductility to resist bending and breaking

ETHIGUARD* BLUNT POINT NEEDLES SERIES

• CTB (Circle Taper Blunt) series
  – CTB, CTB-1, CTB-2

• CTXB (Circle Taper Extra Large Blunt) series
  – CTX-B

• SHB (Small Half Blunt)
  – SHB
COMMONLY USED NEEDLES BY SPECIALTY
GENERAL SURGERY - COMMONLY USED NEEDLES

- **SH**: Small Half - ½ Circle Taperpoint needles
- **CT-1**: Circle Taper - ½ Circle Taperpoint – Control Release needles
- **PS-1**: Plastic Surgery - 3/8 Circle Precision point - Reverse cutting needles
- **TP-1**: Taper Pericostal / Point – ½ Circle Taperpoint
ADVANCED CV NEEDLES

• Anastomotic needles
  – MULTIPASS* Needles: BV175, BV130-5, CC, CC-1
  – VISI-BLACK* Surgical Needles: C-1, BV-1

• Valve needles
  – TAPERCUT* Needles: V-5, V-7

• Consistently beat or meet the needle penetration performance of corresponding competitive needles\textsuperscript{1-5}
  – Pass-after-Pass; Needle-to-Needle; Box-to-Box
  – For up to 30+ needle passes

1. CT09-005 BV130-5 Competitive Assessment
2. EP08-0017 BV175 Double Dip Cardio Needle Assessment
3. EP07-0003 Fine Size Cardio Needle Evaluation
4. CT09-0001 V-5 / RB-1 Competitive Assessment
5. CT09-0006 SH / V-7 Competitive Assessment

* Trademark
**ROUNDED I-BEAM GEOMETRY**

**Rounded I-BEAM**

**Regular geometry**

**I-BEAM geometry**

- Enables secure needle arming in needle holder
- Allows surgeon to arm the needle at any angle
CV VALVE NEEDLES

Procedure Need
Needle penetration through calcified annuli to place biological or mechanical prosthesis for valve replacements; or annular rings for valve repairs with less force than taperpoint needles

Base Needles:
RB-1
• 17 mm; ½ circle
• Aortic Valve Replacements

SH
• 26 mm, ½ circle
• Mitral Valve Repairs

Enhanced Needles:
V-5
• 17 mm; ½ circle
• Aortic Valve Replacements

V-7
• 26 mm, ½ circle
• Mitral Valve Repairs
CV VALVE NEEDLES – V SERIES

V-Series Needles – Designed for VALVE Surgery

- Round Corner I-Beam Geometry
  - Better needle stability when working in tight spaces
  - Flexibility in needle arming
- Exclusive ETHALLOY* Needle Alloy
  - Strong to penetrate tough annulus tissue
- Ribbed needle grasp zone
  - Reduces rotation and movement in the needle holder
- Point tip design
  - Designed for tough calcified tissue and sewing rings
  - Requires less penetration force compared to traditional tapered needles1-2

1. CT09-0001 V-5 / RB-1 Competitive Assessment
2. CT09-0006 SH / V-7 Competitive Assessment

*Trademark

COMMONLY USED NEEDLES BY SPECIALTY

Healthy Annulus         Calcified Annulus

1-2
V-5, V-7 TAPERCUT* Surgical Needles

- Specially designed for improved penetration of tough, calcified annuli.
- Ribbed and Round Corner I-Beam needle grasp zone reduce rotation and movement in the needle holder.
- Point tip design requires less penetration force compared to traditional tapered needles.
- Provide superior penetration when compared to the tapercut needles of the leading competitor.

COMMONLY USED NEEDLES BY SPECIALTY

1. CT09-0001 V-5 / RB-1 Competitive Assessment
2. CT09-0006 SH / V-7 Competitive Assessment

*Trademark
ANASTOMOTIC NEEDLES – BV-175, BV-130 SERIES\textsuperscript{1-2}

- Optimal needle diameter
  - 24\% thinner than BV-1 series
  - Closer to 1:1 suture-to-needle ratio
  - 44\% smaller hole than BV-1

- Easy penetration through tissue
  - Up to 38\% less penetration force required vs BV-1
  - Up to 55\% less force required vs leading BV-1 competitor

- MULTIPASS* Needles coating
  - Smooth penetration, pass after pass

- Exclusive Rounded I-beam geometry
  - Stability in the needle holder

1. CT09-005 BV130-5 Competitive Assessment
2. EP08-0017 BV175 Double Dip Cardio Needle Assessment
3. EP07-0003 Fine Size Cardio Needle Evaluation

* Trademark

COMMONLY USED NEEDLES BY SPECIALTY
CV ANASTOMOSIS NEEDLES

BV-1
suture size 7/0

BV-175
suture size 7/0
CV ANASTOMOSIS NEEDLES – POINT

New Technology

- Damage-resistant point with a 45° angle tip
- More coating at the point

Old Technology

Laboratory-induced needle tip damage on 22-degree tip geometry

Same test on new Ethicon tip design — improved resistance to point damage

1. BV 175 Needle Specification, Data on file, Ethicon, Inc.

* Trademark

COMMONLY USED NEEDLES BY SPECIALTY
PERIPHERAL VASCULAR

C-1 (Cardiovascular)

CC (Calcified Coronary)

BV100-4 (Blood vessel)
  – MULTIPASS* Needles

V-7, V-5 (Tapercut)

* Trademark

COMMONLY USED NEEDLES BY SPECIALTY
CC AND HEMO-SEAL* NEEDLE SUTURE

HEMO-SEAL Suture
For avoiding needlehose bleeding

CC needle point
For easily penetrating heavily calcified vessels
PLASTIC SURGERY

PS-1 (Plastic surgery)
- Ribbed for enhanced grip
- MULTIPASS* Needles
- Prime geometry

CT-1 (Circle taper)
- 1/2 Circle Taperpoint

PC-3 (Plastic)
- Precision point
- 3/8 Circle Reverse Cutting

* Trademark

COMMONLY USED NEEDLES BY SPECIALTY
ORTHOPEDIC SURGERY

OS-4 (Orthopedic surgery)
- 1/2 Circle Reverse Cutting

CT-1 / CP-1 (Cutting point)
- 1/2 Circle Reverse Cutting

V34, V37 (Tapercut)
- 1/2 Circle Tapercut
NEUROSURGERY

RB-1 (Renal bypass)
- 1/2 Circle Taperpoint

SH (Small half)

CT-1 (Circle taper)
- 1/2 Circle Taperpoint
OB/GYN

Taperpoint needles
– CT-1 (Circle Taper), CTX (Extra Large)
– MO-4 (Mayo)
– SH (Small half)

Straight cutting needles
– KS (Keith Straight)

ETHIGUARD* Blunt Point Needles
– CTB (Circle Taper Blunt)
– CTX-B (Extra Large Blunt)

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COMMONLY USED NEEDLES BY SPECIALTY
UROLOGY

UR-6 (Urology) series
  – 5/8 Circle Taperpoint

BV100-4 series
  – 1/4 Circle Tapercut

RB-1 (Renal bypass)
  – 1/2 Circle Taperpoint

SH (Small half)
PC-1 (Precision Cosmetic)
- MULTIPASS* Needles
- 3/8 Circle Precision Cosmetic
- PC PRIME* needles

PC-3 (Plastic) series
- Precision point
- 3/8 Circle Reverse Cutting

SC-1 (Straight Cutting)
OPHTHALMIC

TG140-8 series (Transverse Ground)
  – MICRO-POINT* Needle Spatula

SABRELOC* Spatula Needle
  – Spatula
  – Conventional spatula
  – Center-point spatula

* Trademark
BARIATRICS

SH (Small Half)

CT-1 (Circle taper)
– 1/2 Circle Taperpoint
Thank you