The amount reported in this brochure refers to the U.S. market only.

Reduce radial artery spasm

Reduce the risk of radial Sheath-to-Artery Ratio access complications

Increase first-pass artery occlusions

Minimize vascular complications

Good Closure

Good Access

• Improved patient satisfaction
• Opportunity for same-day discharge

Choose the most appropriate approach – Cost savings up to $3,500

in achieving Good Closure results

2.1%

1 < MINUTEMINUTES

Micropuncture vs. Tactile

Micropuncture

Indian Heart J (n=2,074)   Manolis S.

Seamless Sheath Transitions

JACC. 2011 (n=1,475)   Daggubati RB. FAMOUS.

reduce time to ambulation potential for same-day discharge.

Femoral Approach

vascular access trauma

Reduce vascular access

Minimize or eliminate

All Procedures PCI

Rapid and reliable Good Closure

Reduce bleeding complications with

Reduce bleeding

reduce the time to ambulation, and increase the

Micropuncture

Active Closure

Ultrasound

Compared to tactile access, using a micropuncture needle

Achieve rapid & reliable hemostasis and

Active closure vs. Other hemostasis methods

complications, such as bleeding or the need for transfusion.

Proven to reduce complications that may enable same-day discharge

Ultrasound vs. Fluoroscopy

% Major

% Minor

Reduce complications with

vascular complications

seamless sheath transitions

reduce time to ambulation, and increase the

Compared to conventional sheaths, seamless sheath-to-dilator transitions may minimize or

reduce the time to ambulation, and increase the

Reduce radial artery occlusion (RAO)

Compared to uncoated sheaths, hydrophilic coated

Reduce radial artery spasm avoidance

Patent hemostasis technique

Patent hemostasis minimizes evidence of radial

Proven to reduce bleeding rates, in-hospital mortality and related hospital costs

Ultrasound vs. Palpation

Can’t Accept

6 Fr  27.4%

7 Fr  59.7%

6 Fr  12.3%

7 Fr  28.5%

Optimal Sheath-to-Artery Ratio

Difficult procedures defined as requiring

5 attempts

†

with a significantly

with Palpation

43.9%

†

with Ultrasound

6 Fr  12.3%

7 Fr  28.5%

Optimal Sheath-to-Artery Ratio

1999 Cathet Cardiovasc Intervent. (n=250)   Saito S.

Reduce complications with

vascular complications

Minimize or greater than the inner diameter of the patient’s

radial artery may cause distal flow reduction and

Proven to reduce complications that may enable same-day discharge

Ultrasound vs. Palpation

Achieve rapid & reliable hemostasis and

Active closure vs. Other hemostasis methods

complications, such as bleeding or the need for transfusion.

Proven to reduce complications that may enable same-day discharge

Ultrasound vs. Fluoroscopy

% Major

% Minor

Reduce complications with

vascular complications

seamless sheath transitions

reduce time to ambulation, and increase the

Compared to conventional sheaths, seamless sheath-to-dilator transitions may minimize or
RECOGNIZE THE RATE OF
VASCULAR ACCESS COMPLICATIONS

1 out of every 17

patients will have a vascular bleeding complication¹

Leading to significant consequences

Increased length of stay

Average increase in patient length of stay (LOS) associated with complications is 4 to 6 days²

Marso S. JAMA. 2010

Up to 6 days

Reduced profitability

Average increase in facility costs per patient associated with complications and longer LOS¹

Marso S. JAMA. 2010

Up to $8,000

REDUCE COMPLICATIONS WITH
RADIAL AND FEMORAL SOLUTIONS

PATIENT SELECTION
Choose the most appropriate approach

Radial Approach

Good Access

Ultrasound
Increase first-pass success rate²

Hydrophilic Sheath
Reduce radial artery spasm disruptions⁴

Sheath-to-Artery Ratio
Reduce the risk of radial artery occlusions⁶

Femoral Approach

Good Access

Ultrasound
Reduce vascular access complications³

Micropuncture
Reduce bleeding complications⁵

Seamless Sheath Transitions
Minimize or eliminate vascular access trauma⁷

Good Access techniques are important factors in achieving Good Closure results

Good Closure

Patent Hemostasis
Minimize vascular access complications⁸

Active Closure
Rapid and reliable hemostasis⁹

Reduced Access Site Complications

- Opportunity for same-day discharge
  - Cost savings up to $3,500¹⁰
  - Improved patient satisfaction⁹,¹¹,¹²

The amount reported in this brochure refers to the U.S. market only.
**RADIAL SOLUTIONS**

Proven to reduce bleeding rates, in-hospital mortality and related hospital costs\(^{13,14}\)*

---

**Increase first-pass success rate**
(n=698) Seto A. RAUST. JACC. 2015

- **Ultrasound vs. Palpation**
  - 64.8% with Ultrasound
  - 43.9% with Palpation

Compared to palpation, ultrasound reduces the number of difficult procedures\(^1\) with a significantly higher first-pass success rate.\(^2\)

\(^1\)Difficult procedures defined as requiring ≥5 attempts

---

**Reduce radial artery spasm with hydrophilic coated sheaths**
(n=790) Rathore S. JACC. 2010

- Hydrophilic coated sheaths vs. Uncoated sheaths
  - 81% Success rate
  - 61.1% Success rate

Radial artery spasm avoidance

Compared to uncoated sheaths, hydrophilic coated sheaths reduce the incidence of radial artery spasm which may lead to procedural disruption, patient discomfort and procedural failure.\(^4\)

---

**Reduce the risk of radial artery occlusions (RAO) with the right-sized sheath**
(n=250) Saito S. Catheter Cardiovasc Intervent. 1999

- Optimal Sheath-to-Artery Ratio

<table>
<thead>
<tr>
<th>Sheath</th>
<th>Artery</th>
<th>6 Fr</th>
<th>7 Fr</th>
<th>1.5 Fr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can’t Accept</td>
<td></td>
<td>12.3%</td>
<td>28.5%</td>
<td>59.7%</td>
</tr>
<tr>
<td>6 Fr</td>
<td></td>
<td>27.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Fr</td>
<td>2.7 Fr</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sheaths with an outer diameter that is equal to or greater than the inner diameter of the patient’s radial artery may cause distal flow reduction and be a factor in radial artery occlusion.\(^5\)

---

**Reduce radial artery occlusion (RAO) with patent hemostasis technique**

- Patent hemostasis vs. Traditional compression technique

<table>
<thead>
<tr>
<th>Patent hemostasis</th>
<th>Traditional compression technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8% Success rate</td>
<td>7% Success rate</td>
</tr>
</tbody>
</table>

% of patients developed evidence of RAO

Compared to traditional compression techniques, patent hemostasis minimizes evidence of radial artery occlusion and vascular access complications.\(^8\)

---

**Reduced Access Site Complications**

- Opportunity for same-day discharge
- Improved patient satisfaction\(^{11,12}\)

---

\(*\)Compared to femoral access
Reduce the risk of radial artery occlusions

Compared to palpation, ultrasound reduces the radial artery may cause distal flow reduction and (RAO) with the right-sized sheath

Increase first-pass success rate

≥ 1999

(n=250) Saito S. Cathet Cardiovasc Intervent. Optimal Sheath-to-Artery Ratio

be a factor in radial artery occlusion. 6

<table>
<thead>
<tr>
<th>Sheath Size</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 Fr</td>
<td>64.8%</td>
</tr>
<tr>
<td>6 Fr</td>
<td>28.5%</td>
</tr>
<tr>
<td></td>
<td>12.3%</td>
</tr>
</tbody>
</table>

Reduce vascular complications with ultrasound technology

(n=1,004) Seta AH. JAUST. JACC. 2010

Ultrasound vs. Fluoroscopy

<table>
<thead>
<tr>
<th>Ultrasound</th>
<th>Fluoroscopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 people with vascular complications</td>
<td>17 people with vascular complications</td>
</tr>
</tbody>
</table>

Compared to fluoroscopy, real-time ultrasound guidance reduces number of attempts, time to access, and improved first-pass success—leading to reduced vascular complications. 3

Reduce complications with seamless sheath transitions

(n=189) Allie D. Cath Lab Digest. 2009

Seamless sheath transition vs. Conventional sheath

<table>
<thead>
<tr>
<th>Sealed Sheath</th>
<th>Conventional Sheath</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Major complications</td>
<td>0.0</td>
</tr>
<tr>
<td>% Minor hematoma</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Compared to conventional sheaths, seamless sheath-to-dilator transitions may minimize or even eliminate vascular access trauma. 2

Reduce bleeding complications with micropuncture needle technology

(n=1,475) Daggubati RB. FAMOUS. JACC. 2011

<table>
<thead>
<tr>
<th>All Procedures</th>
<th>PCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding events within 72 hours</td>
<td></td>
</tr>
<tr>
<td>1.5%</td>
<td>2.7%</td>
</tr>
<tr>
<td>2.1%</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

Active closure vs. Other hemostasis methods

Active closure can provide immediate hemostasis, reduce the time to ambulation, and increase the potential for same-day discharge. 15

Reduce vascular complications with ultrasound technology

≥ 1999

(n=2,074) Manolis S. Indian Heart J. 2016

<table>
<thead>
<tr>
<th>Good Access</th>
<th>Good Closure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrasound</td>
<td>Micropuncture</td>
</tr>
</tbody>
</table>

Seamless Sheath Transitions

Active Closure

Achieve rapid & reliable hemostasis and reduce time to ambulation

(n=2,074) Manolis S. Indian Heart J. 2016

<table>
<thead>
<tr>
<th>Active closure</th>
<th>Other hemostasis methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding events within 72 hours</td>
<td></td>
</tr>
<tr>
<td>&lt;1 MINUTE to Hemostasis</td>
<td>&gt;20 MINUTES to Hemostasis</td>
</tr>
</tbody>
</table>

Reduced Access Site Complications

Opportunity for same-day discharge

Improved patient satisfaction 9
Unique thin-wall sheath design combined with hydrophilic coating proven to enable transradial access without compromise

Optimal sheath-to-artery ratio with the smallest option for procedures requiring 5, 6, and 7 Fr sheaths

Hydrophilic coating may reduce the risk of radial arterial spasm and occlusion

The outer diameter of the introducer sheath is reduced by one Fr size with thin-wall technology to maintain larger inner-diameter equivalent.

The #1 preferred radial access sheath on the global market*

PROVEN AT THE POINT OF ACCESS
Global leader in arterial access and closure

*Data on file.

References:
Precise compression with innovative design proven to achieve hemostasis

Hemostasis achieved at low pressures, minimizing the chances of applying occlusive force

Air titration provides a more precise way of applying pressure to the radial artery

Dual balloon technology provides precise compression of the radial artery without compromising local nerve structure

The preferred radial access sheath on the global market*
Smooth atraumatic access proven to help reduce complications and enable same-day discharge\(^1\)

**Pinnacle Precision**
Access System

Seamless sheath transition with Total Integrated Fit Technology (TIF) minimizes trauma and supports uncomplicated closing\(^2\)

Micropuncture needle features tapered transitions from 21G tip to 19G shaft for better blood return\(^2\)

Ultrasound guidance is facilitated by the enhanced visibility of the spiral echogenic tip. The needle tip also features back bevel cuts which help to ensure a straighter entry\(^2\)

The #1 vascular access sheaths on the global market*

PROVEN AT THE POINT OF ACCESS
Global leader in arterial access and closure

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*Data on file.

References:
Active closure for rapid and reliable hemostasis proven to accelerate patient mobility and enable same-day discharge¹

Resorbable components provide immediate closure with uncompromised blood flow¹⁻³

Lower bleeding complication rates compared to other hemostasis strategies⁴

Manual compression not required for reinforcement of the closure

Active closure using bioabsorbable anchor and collagen with 99.7% deployment success⁵

Bioabsorbable ANGIO-SEAL is no longer visible 30 days following implantation*

The #1 vascular closure device on the global market†


†Data on file.

Indications:
The Angio-Seal Vascular Closure Device product family, including the STS Plus, VIP and Evolution platforms, is indicated for use in closing and reducing time to hemostasis of the femoral arterial puncture site in patients who have undergone diagnostic angiography procedures or interventional procedures using an 8 French or smaller procedural sheath for the 8 F Angio-Seal device and a 6 French or smaller procedural sheath for the 6 F Angio-Seal device. The Angio-Seal STS Plus, VIP and Evolution platform devices are also indicated for use to allow patients who have undergone diagnostic angiography to safely ambulate as soon as possible after sheath removal and device placement, as well as to allow patients who have undergone an interventional procedure to safely ambulate after sheath removal and device placement.

Important Safety Information:
Possible adverse events for vascular closure devices include, but are not limited to: bleeding or hematoma, AV fistula or pseudoaneurysm, infection, allergic reaction, foreign body reaction, inflammation or edema. This device should only be used by a licensed physician (or other health care professional authorized by or under the direction of such physician) possessing adequate instruction in the use of the device, e.g., participation in an Angio-Seal physician instruction program or equivalent.

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References:
3. Angio-Seal™ STS Plus, Angio-Seal™ VIP and Angio-Seal™ Evolution Instructions for Use.

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References:

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Terumo Interventional Systems is committed to your success with innovative procedural solutions and ongoing support for your most challenging cases.

We are relentlessly seeking new ways to help you apply effective solutions and achieve better outcomes for more patients.

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