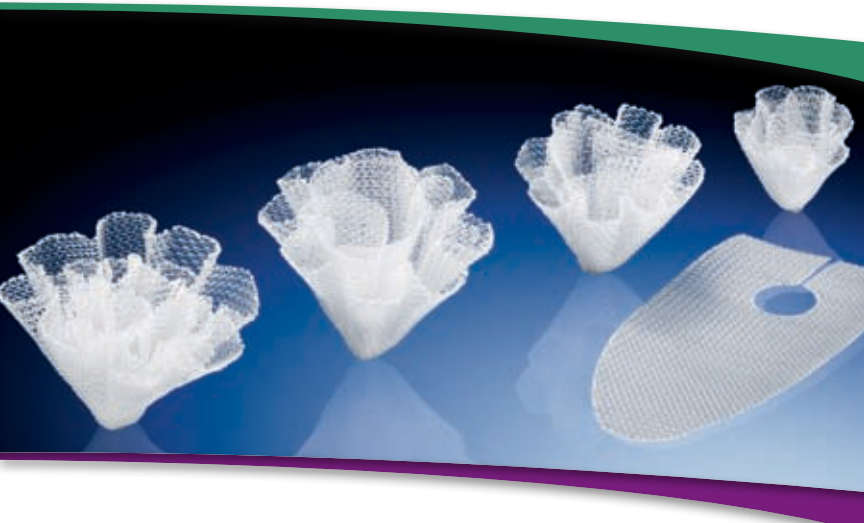


A Modified Technique with the

# Bard\* PerFix\* Plug



A quick and simple preperitoneal underlay  
Modified Technique for the repair of groin hernias

## Technique Guide

Open Inguinal Hernia Repair

**BAIRD**

DAVOL INC.

TECHNOLOGY  
TECHNIQUE  
TRAINING  
TRUST



This technique, as shown, has been developed based on the published work of Doctors Keith Millikan and Alexander Doolas.

The technique presented herein is for informational purposes only and the decision of which technique to use in a particular surgical application should be made by the surgeon based on the individual facts and circumstances of the patient and previous surgical experience.



The Bard® PerFix® Plug may be used in a tension-free preperitoneal repair technique. In the Modified Technique, the outer cone of the Bard® PerFix® Plug, used as an underlay patch, is placed in the preperitoneal plane so that it lies flat against the posterior aspect of the transversalis fascia, assisted by intra-abdominal pressure. This technique provides extended posterior coverage of the defect.

---

**SPECIAL THANKS TO**

*Keith Millikan, M.D., F.A.C.S. for his contributions  
to the advancement of hernia repair.*

<sup>†</sup>Dr. Millikan has a consulting relationship with Bard.

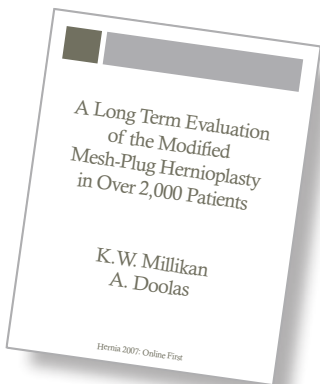
---

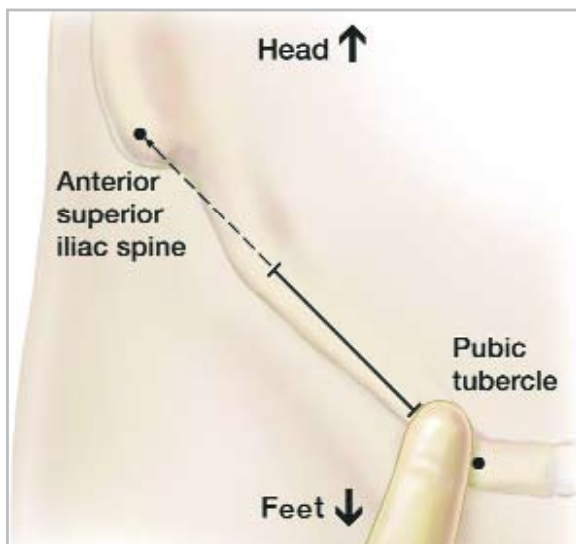
## Clinical Results

Doctors Keith Millikan and Alexander Doolas performed a prospective analysis of 2038 unilateral procedures over 8 years using a Modified Technique with the Bard® PerFix® Plug<sup>1</sup>:

- 99% follow-up based on physical evaluation at 1 week and 1 to 2 years post-op
- Average operating time was 28 minutes
- Average recovery room time was 47 minutes
- 95% of the patients returned to normal activities within 3 days
- 0.15% recurrence rate
- Only 18% of the patients required prescription pain medication
- Low complication rate - 0 mesh infections or mesh migration

To read this study, visit  
[www.davol.com/success](http://www.davol.com/success)

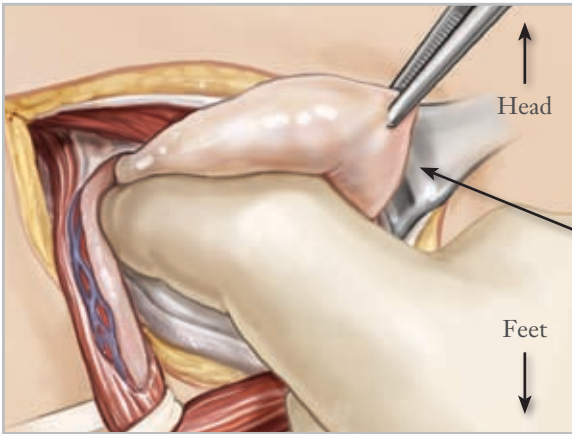




## 1

### Access To Inguinal Canal

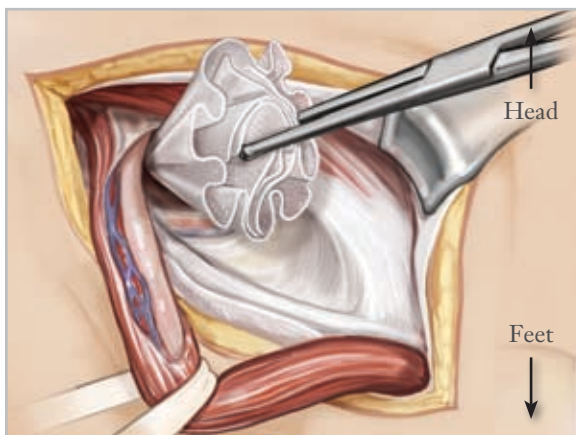
Using local anesthesia, make a 4-5cm incision beginning one finger width away from the pubic tubercle extending towards the anterior superior iliac spine. Enter the inguinal canal through the external oblique.



## 2

### Indirect Hernias

- Mobilize the spermatic cord and separate the cremasteric fibers.
- Dissect the hernia sac from the cord structure to the level of the internal ring, using a high dissection, not a high ligation.
- Reduce the hernia sac through the internal ring.

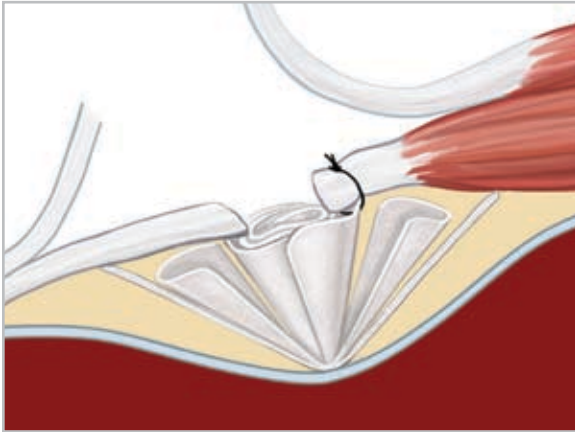


## 2a

- Trim inner petals of the Bard® PerFix® Plug if less mesh is required for smaller defects.
- Using an Allis clamp, grasp the inner petals of the Bard® PerFix® Plug (not the outer cone) and insert the plug through the internal ring, deep into the preperitoneal space.

*Note: The Bard® PerFix® Plug is available in four sizes: small, medium, large and extra large. The small, medium and large plugs have eight inner petals.*

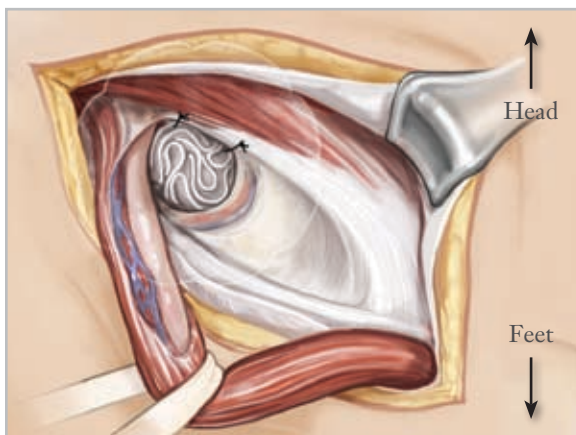
*In the extra large plug, the inner petals are configured into three inner cones. For each size, the petals may be trimmed to conform to the size of the defect.*



## 2b

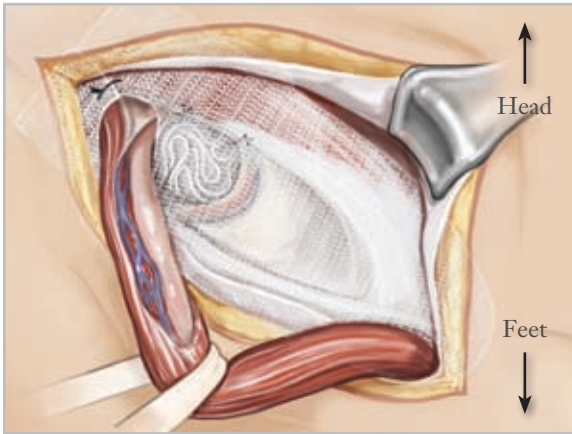
When placed correctly, the outer cone of the plug will spread open beneath the transversalis fascia in the preperitoneal space to form an underlay patch.





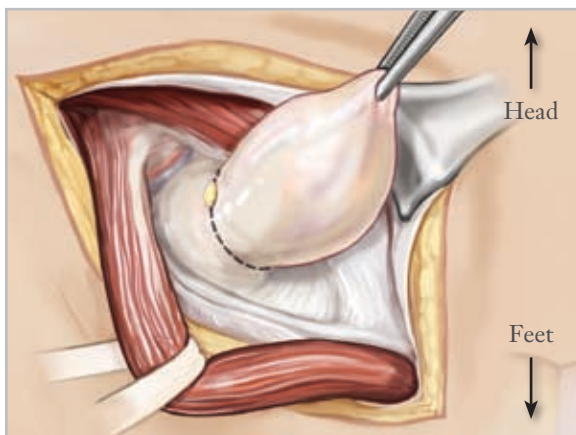
## 2c

Suture any of the inside petals with 2-3 absorbable sutures along the internal oblique muscle. It is not necessary to select certain petals or to suture all of the petals to secure the plug. For a large internal ring, place an additional suture through an inside petal, securing it to the lateral shelving edge of the inguinal ligament.



## 2d

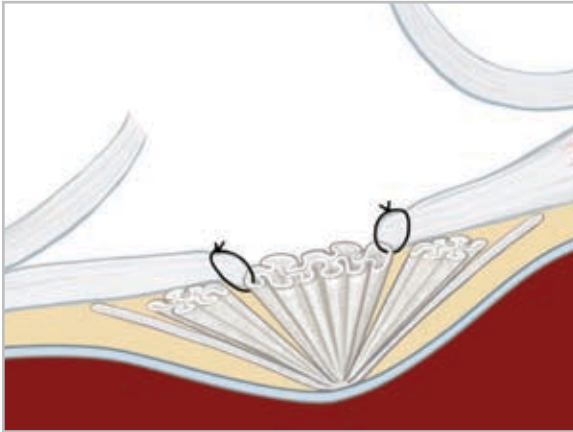
An onlay patch is used to reinforce the potentially weakened area over Hesselbach's triangle. Secure the tails of the patch loosely around the spermatic cord with one or two tacking sutures then lay the patch on top of the inguinal floor. It is not necessary to suture the onlay patch to the transversalis fascia.



### 3

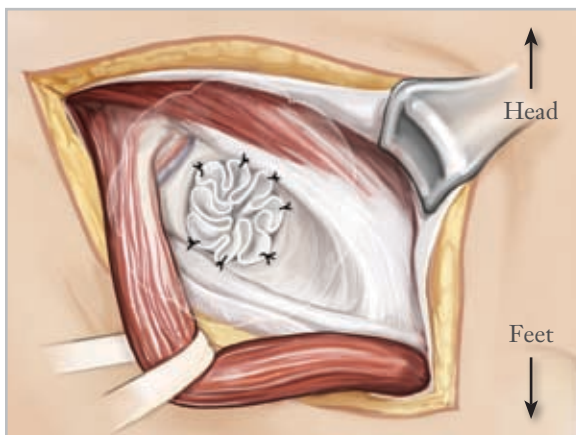
## Direct Hernias

- Circumferentially incise the transversalis fascia at the base of the hernia sac to allow the plug to be placed in the preperitoneal space.
- Invaginate the hernia sac into the preperitoneal plane.



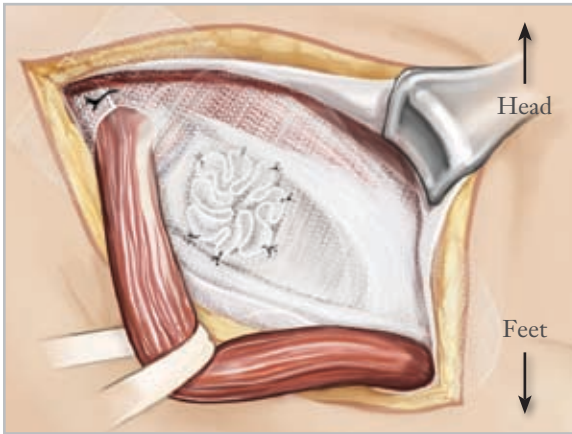
### 3a

- Place a suture through the middle inner cone of an extra large Bard® PerFix® Plug to facilitate suture placement once the plug is in place.
- Using an Allis clamp, grasp the inner cone and seat the plug deep into the preperitoneal space, allowing the outer cones of the plug to spread in the preperitoneal space and cover the posterior aspect of the defect.



## 3b

Secure the middle cone of the Bard® PerFix® Plug to the conjoined tendon, Cooper's ligament and the shelving margin of the inguinal ligament. Depending on the size of the defect, 5-10 sutures may be required. The fluted cone of the Bard® PerFix® Plug allows for expansion and contraction of the mesh for a tension-free repair.



### 3c

An onlay patch is used to reinforce the potentially weakened indirect space. Secure the tails of the patch loosely around the spermatic cord with one or two tacking sutures, then lay the patch on top of the inguinal floor. It is not necessary to suture the onlay patch to the transversalis fascia.

## Indications:

This product is indicated for the repair of groin hernia defects.

## Contraindications:

1. Literature reports that there may be a possibility for adhesion formation when Bard® mesh is placed in direct contact with the bowel or viscera.
2. Do not use the Bard® PerFix® Plug in infants or children, whereby future growth will be compromised by use of such mesh material.

## Warnings:

1. Although Bard® mesh remains unaffected by infection, the use of any nonabsorbable mesh in a contaminated or infected wound could lead to fistula formation and/or extrusion of the mesh.
2. If an infection develops, treat the infection aggressively. The prosthesis may not have to be removed. An unresolved infection however, may require removal of the prosthesis.
3. This device is supplied sterile in an unopened, intact package. Please inspect packaging for damage prior to use.
4. This device is for single use only. Resterilization is not recommended.

## Precautions:

1. Only physicians qualified in the appropriate surgical techniques should use this prosthesis.
2. Please read all instructions prior to use.
3. Sutures are recommended to secure the prosthesis in place.

Catalog Number	Quantity	Size	Diameter	
0112750	2/cs.	Small	1.0" x 1.35" (2.5 cm x 3.4 cm)	<input type="checkbox"/>
0112760	2/cs.	Medium	1.3" x 1.55" (3.3 cm x 3.9 cm)	<input type="checkbox"/>
0112770	2/cs.	Large	1.6" x 1.90" (4.1 cm x 4.8 cm)	<input type="checkbox"/>
0112780	2/cs.	Extra Large	1.6" x 2.0" (4.1 cm x 5.0 cm)	<input type="checkbox"/>
0112950	6/cs.	Small	1.0" x 1.35" (2.5 cm x 3.4 cm)	<input type="checkbox"/>
0112960	6/cs.	Medium	1.3" x 1.55" (3.3 cm x 3.9 cm)	<input type="checkbox"/>
0112970	6/cs.	Large	1.6" x 1.90" (4.1 cm x 4.8 cm)	<input type="checkbox"/>
0112980	6/cs.	Extra Large	1.6" x 2.0" (4.1 cm x 5.0 cm)	<input type="checkbox"/>

Please add the Bard® PerFix® Plug to my preference card.

I would like to have the Bard® PerFix® Plug in stock.

Surgeon's Signature \_\_\_\_\_

Purchase Order Number \_\_\_\_\_

Catalog Number \_\_\_\_\_

Date \_\_\_\_\_ Quantity \_\_\_\_\_

The technique presented herein is for informational purposes only. The decision of which technique to use in a surgical application lies with the surgeon based on patient profile and previous surgical experience.

Davol Inc. • Subsidiary of C. R. Bard, Inc. • 100 Crossings Boulevard  
Warwick, RI 02886 • 1.800.556.6275 • [www.davol.com](http://www.davol.com)

Medical Services & Support 1.800.562.0027

**References:**

<sup>1</sup>Millikan K.W., Doolas A. A Long-Term Evaluation of the Modified Mesh-Plug Hernioplasty in Over 2,000 Patients. *Hernia*. 2008 Jun; 12(3): 257-260.

\*Bard, Davol, and PerFix are trademarks and/or registered trademarks of C. R. Bard Inc., or an affiliate.

Please consult product labels and inserts for any indications, contraindications, hazards, warnings, precautions and instructions for use.

<sup>1</sup>Dr. Millikan has a consulting relationship with Bard.

**BAIRD**

DAVOL INC.