Comments from surgeons who have used Atrium’s new Self-Forming Plug can be summarized as follows:

- “The Atrium Self-forming plug fits the defect.”
- “I like the center tab for ease of placement.”
- “This is the first self-expanding mesh plug we’ve used that actually fits the hole, instead of the hole having to fit a preselected size.”
- “Works well, even on “massole” hernias.”
- “Generally, we’ve found one size plug can be used on a wide variety of both large and petite patients.”
- “This plug requires no extra dissection.”
- “You can be sure the plug is in place, no deployment is necessary.”
- “The Atrium Plug and onlay is much softer - I like it.”
- “Atrium’s new Hernia Mesh is cost effective and quite easy to standardize on a few selected universal sizes.”

References

Self-Forming Plug

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Description/Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1010202-01</td>
<td>Medium Plug Depth - 1.0&quot; (2.5 cm) Onlay - 2&quot; x 4&quot; (5 x 10 cm)</td>
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<tr>
<td>1010303-01</td>
<td>Large Depth - 1.5&quot; (3.8 cm) Onlay - 2&quot; x 4&quot; (5 x 10 cm)</td>
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<tr>
<td>1010404-01</td>
<td>Extra Large Depth - 1.75&quot; (4.4 cm) Onlay - 2&quot; x 5&quot; (5 x 12.5 cm)</td>
</tr>
</tbody>
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Hernia Repair with A New Self-Forming Mesh Plug

Introduction

Indirect hernia repair is the most common surgical intervention performed by general surgeons. Since the introduction of Marlex® inguinal hernioplasty techniques are performed annually in the U.S. and worldwide.

During the past 30 years various forms of polypropylene mesh plugs have become an accepted method to repair primary and recurrent hernias. Preformed polypropylene mesh plugs have been formed by rolling flat mesh into a cylindrical shape or shaping it with a preset shape, the surgeon must carefully select the proper size and shape and size of the defect and completely fill the defect. Hence, traditional conical shaped plugs such as PerFix and HerniaFix™ both can limit their ability to completely fill certain defects, especially if one were to use the same shape and size as the defect. The new Ethicon/Pfizer Hernia System includes a unique “three-in-one” design, combining a preattached onlay patch and bottom underlay patch with a “ball-in-a-pocket” connector made of mesh to prevent migration.

Preformed Plug Designs

The shape and design of the mesh plug has been an area of investigation. Previously described mesh plugs have been formed by rolling that mesh into a cylindrical shape or shaping it into a conical shape. Today there are a number of “pre-formed” polypropylene mesh plugs available such as the Marlex® HerniaFix™ plug (C.R. Bard), Surgilon® Herniguard™ (United States Surgical) and Preformed Hernia System (Ethicon Inc.—Johnson & Johnson). Both the Marlex® HerniaFix™ and Surgilon® Herniguard™ conical mesh plug designs and after space with internal layers to help increase bulk (or can be trimmed to the proper size to help reduce bulk). The patented preformed cone design of these preformed mesh plugs lend themselves to complete the defect. Essentially the “hole must fit the pre-prepared plug.” Since most “preshaped” cone plugs can easily be compressed, the amount of overall dissection and results in diminished patient discomfort during insertion.

FIGURE 1

The mechanics of repairing a hernia with a mesh plug is relatively simple. The plug replacement or reconstruction of the structural defect created during the dissection of the hernia. The plug can also be a “reverse” conical plug. Placement of the cut edge perpendicular to the structural defect created during the dissection of the hernia. Use of a “reverse” conical plug can reduce the volume or bulk of the plug for smaller, tighter defects. If necessary, it is easy to reduce the depth of the plug simply by cutting a section of the mesh plug with a pair of scissors or cautery. The plug is trimmed down to the desired volume. By removing material from the circumference, the overall shape of the plug remains constant, and no additional dissection is required. The novel Atrium Self-Forming Plug “fits the hole” for a more uniform and anatomical shape that expands into and conforms to the entire shape and space of the defect. It is important that the weld seams remain intact to maintain the integrity of the Self-Forming Plug.

FIGURE 2

The Atrium Self-Forming Plug “fits the hole” for a more uniform and anatomical shape that expands into and conforms to the entire shape and space of the defect. It is important that the weld seams remain intact to maintain the integrity of the Self-Forming Plug.

FIGURE 3

Novel Self-Forming Plug Design

Mesh plugs perform best when tissue is in direct contact with a smooth wall of mesh material. It is perhaps equally important for the polypropylene mesh plug to conform to the anatomical shape and size of the hernia repair. The ideal mesh plug should fill the entire space and remain fixed within the defect without the need for suture and provide an excellent contact surface as possible.

A new Self-Forming Plug design developed by Arterial Medical Corporation is the most logical design, as it is truly the first self-forming plug that expands into the entire shape and space of the defect (Figure 1). When this unique self-forming plug is inserted it fills the defect more completely, with a faster bridge for better abdominal wall containment and better comfort. It is the only peel away mesh construct allowing the surrounding tissue to encompass the mesh without the softness of a preformed plug. The unique design allows for immediate fixation to the surrounding tissue and the avoidance of mesh migration. The novel Atrium Self-Forming Plug allows for maximum containment of the polypropylene mesh in any defect, but has limited ability to conform to the defect, with less channels than more preformed plugs. More mesh surface area comes in contact with the defect, so migration of the mesh material is further reduced and quickly more completely. After insertion, the Self-Forming plug presents a more natural shape that fits relation to maintain the integrity of the hernia sac. No further dissection is needed to accommodate the preformed shaped plug that included multiple layers of pleated polypropylene Marlex® mesh, to provide ease of insertion and provide more material within the defect. The pleated cone shape includes layers or petals of polypropylene mesh to provide additional bulk for filling the defect.” Because this plug is performed in two steps, with a present shape, the surgeon must carefully select the proper size to fill and center the defect. Essentially “the hole must fit the pre-prepared plug.” Since most “preshaped” cone plugs can easily be compressed, the amount of overall dissection and results in diminished patient discomfort during insertion.

FIGURE 2

Center the Self-Forming Plug over the defect and gently push it into the defect. The plug should be slightly larger than the defect. (extra space shouldn't be there).

FIGURE 3

The contour of the new Atrium Self-Forming Plug allows for maximum containment of the polypropylene mesh in any defect, but has limited ability to conform to the defect, with less channels than more preformed plugs. More mesh surface area comes in contact with the defect, so migration of the mesh material is further reduced.