Pelvic floor disorders are common in women, and as the population ages, these disorders may be seen more frequently by health care providers (Nygaard et al., 2008). When pelvic symptoms are associated with loss of structural support of the pelvic organs and vagina, vaginal support pessaries offer an important option for relief (American College of Obstetricians & Gynecologists [ACOG], 2007).

Historically, vaginal pessaries have been used to manage pelvic floor relaxation and were made from a variety of materials, including fruit, metal, porcelain, rubber, and acrylic (Shah, Sultan, & Thakar, 2006). Modern pessaries are made from silicone, acrylic, latex, or rubber. Flexible, medical-grade silicone pessaries are the primary subject of this article and series because they offer many advantages over other materials. For example, flexible, medical-grade pessaries are pliable, long-lasting, non-absorbent (related to odor and secretions), biologically inert, non-allergenic, non-carcinogenic, and washable, and can generally be sterilized using an autoclave, boiling water, or a cold sterilization product (Cooper Surgical, 2008; Personalmed, 2012).

Support pessaries are experiencing a renaissance and are currently recommended as a first-line, low-risk treatment option for a variety of prolapse-related symptoms (ACOG, 2007; Clemons, Aquilar, Sokol, Jackson, & Myers, 2004). However, to provide satisfactory treatment of symptoms of pelvic organ prolapse, this first article in a three-part series summarizes clinical recommendations and current evidence related to pessary indications, choice, and fitting.

Key Words: Pelvic organ prolapse, pessary, indications, fitting.

Objectives:
1. List the symptoms of pelvic organ prolapse that may be successfully treated with a vaginal support pessary.
2. Discuss the various types of pessaries and their uses to treat pelvic organ prolapse.
3. Outline the pessary selection process and steps to pessary fitting.
Table 1.

Pessary Indications

<table>
<thead>
<tr>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relief of prolapse symptoms</td>
</tr>
<tr>
<td>Convenience in scheduling surgery</td>
</tr>
<tr>
<td>Surgical avoidance</td>
</tr>
<tr>
<td>Diagnostic tool, as in identifying occult stress incontinence</td>
</tr>
<tr>
<td>Prediction tool to clarify likely surgical outcomes</td>
</tr>
<tr>
<td>Prevention of future increasing prolapse and related morbidity</td>
</tr>
</tbody>
</table>

Symptom Improvement

Symptoms of pelvic organ prolapse (POP) may include pelvic pressure, vaginal bulge, irritative voiding symptoms, urinary incontinence (UI), fecal incontinence, dyspareunia, constipation, and difficulty emptying both the bladder and bowels. Many trials have reported significant improvement of common symptoms, including urinary urgency and frequency, and urgency UI; vaginal bulge; pelvic and abdominal heaviness and pressure; incomplete or difficult bowel emptying; flatal incontinence; and fecal urgency and incontinence (Barber, Walters, Cundiff, & the PESSRI Trial Group, 2006; Clemens, Aguilar, Tillinghast, Jackson, & Myers, 2004a; Fernando, Thakar, Sultan, Shah, & Jones, 2006; Komesu et al., 2007, 2008). Improved bladder emptying subsequent to reduction of POP and urethral obstruction may prevent many causes of ongoing morbidity or mortality, including recurrent urinary tract infection, acute urinary retention, and renal injury (Micha et al., 2008). Both stress and mixed UI were improved with pessary use in approximately 50% of women in two separate trials (Donnelly, Powell-Morgan, Olsen, & Nygaard, 2004; Richter et al., 2010). Additionally, overall body image improves in many successful pessary users (Patel, Mellen, O’Sullivan, & LaSala, 2010).

Care, health care providers must effectively evaluate pelvic symptoms and related health attitudes; assess vaginal size, shape, and support; select a comfortable and effective pessary; and provide health education and appropriate follow up. This article addresses basic information essential to prescribing pessaries to women, including an overview of current patterns of clinical use, a review of existing evidence, and suggestions for ongoing research.

Pessary Indications

Pessaries are a low-risk option for treatment of pelvic floor disorders with few absolute contraindications. Typically, providers are advised to use caution if pessary candidates have an active vaginal infection, persisting vaginal erosion or ulceration, or severe vaginal atrophy (Weber & Richter, 2005). In addition, non-compliance with follow up can be problematic because it may result in late recognition of complications; therefore, providers are advised to weigh risks, family support, and alternative options carefully before providing pessaries to women with dementia or other conditions that may lead to irregular follow up or pessary neglect (Weber & Richter, 2005). Common indications for the use of support pessaries include relief of symptoms, avoidance of surgery, diagnosis and surgical outcome prediction, and prevention (see Table 1).
Surgical Avoidance or Scheduling Convenience

Conservative management with a pessary, either on a temporary or long-term basis, may be the optimum choice for many women for a variety of reasons. Although evidence is sparse, clinical examples of indications include fear of surgery or anesthesia, significant co-morbidities that preclude surgery, or prior failed surgery with resultant higher risk of poor surgical outcome. Temporary use of a support pessary may improve comfort for women delaying surgery due to career or family priorities, or for women who have been advised to defer vaginal reconstruction until child bearing is completed.

Diagnostic Assessment And Prediction of Surgical Outcomes

A pessary trial can provide an opportunity to explore likely symptom improvement or the potential for onset of new adverse effects, and help women develop realistic expectations during pre-operative treatment planning. In a classic study, researchers used a trial with a lever pessary to successfully predict surgical cure of stress incontinence via retropubic urethropexy. In this trial, 24 of 26 women with stress UI became continent with a supine stress test after pessary insertion, and all patients remained continent after a retropubic urethropexy was performed (Bhatia & Bergman, 1985). In another study, de novo stress incontinence, which can occur when an otherwise deficient urethra is straightened during repair of the prolapsed anterior compartment, was shown to be a major reason for post-treatment dissatisfaction (Clemons, Aguilar, Tillinghast et al., 2004a).

Post-surgical expectations have also been explored with women reporting two common symptoms often attributed to POP – lower abdominal pressure and low back pain (Heit, Culligan, Rosenquist, & Shott, 2002). In that study, participant-rated symptom severity using visual analog scales, \( n = 152 \) was compared with objective prolapse determination and demonstrated no significant association. Therefore, because prolapse may not be the cause of some symptoms, a pessary trial can play a role in clarifying treatment expectations during pre-operative decision-making.

Pessaries have also been useful in predicting successful outcomes in cases of pre-operative elevated post-void residual (PVR) due to urethral obstruction. A retrospective chart review of women with pre-operative PVR greater than 100 cc \( n = 24 \) found that pessary use normalized PVR in 75% \( n = 19 \) of the women, with only one woman subsequently experiencing elevated PVR three months post-operatively. A trial pessary reduction was found to be a reliable tool in predicting improvement in urinary retention (Lazarou, Scotti, Mikhail, Zhou, & Powers, 2004).

Prevention of Progressive Prolapse

Emerging evidence also suggests a potential preventative role for pessaries. Handa and Jones (2002) observed a significant improvement in stage of POP in 19 women following one year of successful pessary use, suggesting a therapeutic effect associated with the use of a supportive pessary. In addition, in an observational cohort study of women using pessaries for three months \( n = 90 \), measurement of the genital hiatus decreased, leading the authors to postulate that pessary use allows recovery of the levator ani muscles (Jones et al., 2008). In another small case series \( n = 6 \), prolapse regressed to normal after a median duration of pessary use of 27.5 months and remained resolved for a median of 42.0 months of follow up (Matsubara & Ohki, 2010). Whether this observed prolapse improvement is due to temporary physiologic tissue response to reduced strain and/or has potential long-term preventive ramifications is currently unclear.

Pessary Selection

Modern silicone pessaries come in a variety of shapes and sizes; therefore, selection is primarily determined by the lifestyle of the potential wearer, as well as findings on physical examination. Both providers and patients are likely to benefit if pessary success could be predicted because counseling would be improved, time would be saved, and needless discomfort would be eliminated; however, predictive parameters for pessary choice and fitting success have proven difficult to quantify (Cundiff et al., 2007). For that reason, expert opinion from clinical observation continues to inform both patient and pessary selection and is included here for the potential benefit of novice providers.

Patient-Specific Factors

Several recent studies concluded that the majority of women can be successfully fitted with a pessary, with POP-reduction success rates ranging from 63% to 86% (Clemons, Aguilar, Tillinghast et al., 2004b; Hanson, Schulz, Flood, Cooley, & Tam, 2006; Maito, Quam, Craig, Danner, & Rogers, 2006; Mutone, Terry, Hale, & Benson, 2005; Nyguen & Jones, 2005; Wu, Farrell, Baskett, & Flowerdew, 1997). However, specific factors that might predict successful fitting have not been consistently identified. Some studies have suggested that patient satisfaction is higher in women who are older, have had no prior pelvic surgery (including hysterectomy), have higher parity or less severe prolapse, and have no UI.
Hanson et al. (2006) assessed the importance of estrogen therapy to successful pessary fitting, reporting that women using vaginal estrogen, with or without systemic hormone replacement therapy (HRT), had higher fitting success compared to both systemic-only and non-HRT users. Maito et al. (2006) reported presence of mild posterior compartment prolapse as a positive predictor of fitting success, and history of a prior prolapse procedure or hysterectomy as negative predictors. Clemons, Aguilar, Tillinghast et al. (2004b) also found a shortened vaginal length (≤ 6 cm) and wide genital hiatus (4 finger-breadths) to be predictive of unsuccessful pessary fitting. Other researchers have reported no significant predictive value regarding age, weight, vaginal length, size of genital hiatus, compartment of prolapse, stage of prolapse, or hormone use (Maito et al., 2006; Mutone et al., 2005; Nyguyen & Jones, 2005; Wu et al., 1997). Because of this lack of consistent predictors, a pessary trial may be appropriate for any woman seeking treatment for prolapse-related symptoms (ACOG, 2007; Clemons, Aguilar, Sokol et al., 2004).

Factors related to patient preference, lifestyle, and ability may guide pessary choice. For example, some pessaries may be easier to self-remove and self-insert. This may affect choice related to patient comfort with self-touch, interest in performing self-care, and desire to have vaginal intercourse. Clinical experience suggests that arthritis, mobility impairment, and obesity may limit successful self-care, even in very motivated women. Women who are not doing self-care will need to wear their pessary continuously between the periodic office visits for removal and cleaning.

With the appropriate pessary, a sexually active woman has a few options. The pessary can be removed for intercourse either by the woman or her partner. If she prefers leaving the pessary in place, some styles (for example, Ring pessaries) are more likely to be comfortable for both partners during intercourse. However, there is little research to assess this specifically, and clinical reports from individual couples vary greatly. Overall, sexual function has been shown to improve with pessary use, including frequency and satisfaction (Fernando et al., 2006), desire, orgasm, and lubrication (Kuhn, Bapst, Stadlmayr, Vits, & Mueller, 2009). Additionally, one study found sexually active women were more likely to continue pessary use compared to women who were not sexually active (Brincat, Kenton, Fitzgerald, & Brubaker, 2004). Overall, pessary use may be acceptable to many sexually active women.

Pessary-Related Factors

Many pessary styles and sizes are available, and new styles continue to be designed. Figure 1 displays a variety of current pessaries. While successfully fitted pessaries offer a high likelihood of symptom and quality-of-life improvement for most users, no specific shape of pessary is best for all women. In one crossover study comparing two different pessaries (Ring and Gellhorn), both shapes were effective for the majority of women and significantly improved urinary, bowel, and prolapse symptoms (n = 134, mean age 61 years, median prolapse Stage 3 – descent halfway beyond the hymen, satisfaction rates – Ring 80%, Gellhorn 76%) (Cundiff et al., 2007).

Because no quantitative measures have been identified to direct pessary choice and fitting, providers must continue to rely on manufacturer guidelines, expert opinion, product availability, clinical judgment, and provider or patient preferences when choosing initial pessary shape and style.

One way to conceptualize support pessary options is to categorize them by their functional design. Using that paradigm, flexible silicone pessaries fall into three categories: those that need some support from the woman’s own introital integrity.
to stay in place (basic support pessaries), pessaries
with concavities that make them relatively self-
retaining (self-retaining pessaries), and pessaries
with additional urethral support designed to
improve stress incontinence (incontinence pes-
saries). Use of these classifications to guide initial
choice is summarized in Table 2.

In the authors’ experience, pessaries retained by
introital integrity can be folded or deflated to ease
insertion through the introitus. Examples include
the Ring (see Figure 2), Donut (see Figure 3), and
Inflatable Donut (see Figure 4), and the Shaatz and
lever pessaries (not pictured separately). Those that
have a relatively slim profile and fit along the length
of the vaginal shaft, such as the Ring pessary, are
most likely to be comfortable when left in place dur-
ing vaginal intercourse. Others, such as Donut pes-
saries, which are sometimes referred to as space-fill-
ing pessaries because they occupy more of the vagi-
nal width, may preclude intercourse when in situ.
Pessaries designed to easily fold or deflate may also
be most amenable to self-insertion and removal.

In contrast, self-retaining pessaries are general-
ly concave in shape. The vaginal walls conform to
these areas, allowing the pessaries to stay in place in
women with minimal or no introital strength. These
include the Gellhorn (see Figure 5) and Cube pes-
saries (see Figure 6). These are traditionally consid-
ered more likely to support advanced POP but may
also increase the risk of mechanical injury to the
vaginal epithelium. They may also be more difficult
for both the patient and provider to remove and re-
insert. Incontinence pessaries include a knob that fits
behind the pubic symphysis, supporting the urethra
during times of increased abdominal pressure to
diminish stress incontinence (see Figure 7).

Although the topic is not well studied, when a
pessary is worn over time (longer than 24 hours),

Table 2.
Sample Simple Pessary Selection Guide Based
on a Woman’s Planned Coital Activity
and Introital Integrity

<table>
<thead>
<tr>
<th>Sexual Activity Planned</th>
<th>Introital Integrity Present</th>
<th>Introital Laxity Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned</td>
<td>Ring*</td>
<td>Cube</td>
</tr>
<tr>
<td></td>
<td>Oval</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lever Pessary*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inflatable Donut</td>
<td></td>
</tr>
<tr>
<td>Acoital</td>
<td>Donut</td>
<td>Gellhorn Cube</td>
</tr>
</tbody>
</table>

Note: If stress incontinence increases or continues with pes-
sary use, an incontinence pessary can be used,* but coitally
active women will need to be able to do self-care.

*Pessaries that have a stress urinary incontinence support option.
Presence of drainage holes should allow continuous drainage of normal vaginal epithelial shedding and discharge. Retained discharge may act as a medium for bacterial overgrowth, increasing infection risk, and/or odor. For this reason, pessary styles with optional drainage holes (such as Cube pessaries) are typically preferred whenever possible.

Providers often prefer to use a limited selection of available pessaries. For example, in a survey of urogynecologists, the majority reported using Ring pessaries for anterior and apical defects, space-filling pessaries (such as a Donut) for women who have introital integrity and posterior defects, and self-retaining pessaries (such as the Gellhorn) for severe prolapse (Cundiff, Weidner, Visco, Bump, & Addison, 2000). General gynecologists reportedly also used Ring pessaries most frequently, deeming them easiest to use, with Gellhorn pessaries used most commonly for advanced prolapse (Pott-Grinstein & Newcomer, 2001). The latter respondents rated Donut pessaries the least easy to wear and Gellhorn pessaries most difficult to remove. Generally, providers’ choice of styles of pessary to stock and fit appears to be based on the individual’s training, experience, and product availability.

Pessary size selection is also currently guided by experience because no specific vaginal measures have predicted successful fit. In one study, Pelvic Organ Prolapse Quantification (POP-Q) parameters were tested as a potential objective predictor but were not found to predict pessary size; however, women with a shorter total vaginal length were less likely to be successfully fitted (Nager et al., 2009). Thus, pessary fitting remains an art, with some reliance on trial and error.

**Pessary Fitting**

Because there has been little success in identifying objective evidence to improve pessary choice, new providers must rely on expert opinion and mentorship. Pessary manufacturers provide recommendations to help the novice match pessary styles with patient findings (Bioteque of America, 2011). Successful fitting also depends on clinician experience and training. Few nursing or medical programs spend time teaching pessary use (Pott-Grinstein & Newcomer, 2001). However, with a sound general background of women’s health care, even in the absence of optimal mentorship, clinicians can educate themselves to become competent and safe providers of this low-risk intervention.

The goal of fitting is to find a pessary that improves the target pelvic floor symptoms, is comfortable for the patient, is retained during activity and toileting, and does not obstruct voiding or defecation, or cause vaginal irritation. Suggestions for improving fitting outcomes are listed in Table 3.
Although definitive measurements have not been identified to aid size and style choice, experienced providers typically note several digital measurements and assess pelvic muscle tone and support during pelvic examination (see Figure 8). These determinations can help the provider develop a mental image of the vaginal size, shape, and support. The initial pessary attempt can then be made using the pessary that fits this visual image. Table 4 lists suggested steps in pessary fitting based on clinical experience and expert opinion.

The average number of pessaries tried during a successful pessary fitting is two to three, typically at a single session; however, up to two follow-up fitting sessions have been reported prior to successful fitting (Jones et al., 2008; Komesu et al., 2007; Maito et al., 2006; Robert & Mainprize, 2002; Wu et al., 1997). Women unable to retain a pessary at an initial fitting are less likely to be successful at subsequent fittings (Maito et al., 2006), but persistence may pay off. Clemons, Aguilar, Tillinghast et al. (2004b) found 22 of 49 women who could not be fit at the first visit were successfully fit on the second visit. In that study, a Gellhorn pessary was more likely to require refitting than a Ring, suggesting Ring pessaries are easier for providers to size correctly. For women who prefer pessary treatment but have difficulty retaining any single pessary, occasional use of double pessaries, including a Donut with Gellhorn or double Ring, has been reported (Myers, LaSala, & Murphy, 1998; Singh & Reid, 2002).

Prior to fitting, women should be informed that the risk of a pessary trial is minimal, while the potential symptom-relief can be great. It may be helpful to be optimistic, normalizing the fitting situation, while informing the woman prior to fitting that an appropriate pessary may not be identified. Clinicians also need to remember that successful fitting after three or

---

**Table 3.**

Pessary Selection and Fitting Tips

| Assess for and treat causes of vaginal tenderness prior to fitting (infection, lesions, or tension myalgia). |
| Familiarize the woman with the pessary before fitting (let her see, feel, and fold it; use visual aids, such as pelvic models or charts, to show how it will stay in her vagina). |
| Fitting will be more comfortable if the woman has an empty bladder and bowel; however, to test for stress incontinence, fitting with the bladder full will facilitate assessment. If the bowel is full and cannot be emptied voluntarily, an enema onsite or rescheduling the appointment may be most helpful. |
| Autoclavable fitting kits are available, but keeping a small stock of silicone pessaries in commonly used sizes and shapes may offer a more true-to-life fitting experience. |
| Refitting may be necessary after weight loss or weight gain, any period of temporary removal, or during long-term use if atrophic tissue change continues (increased stenosis or decreased support). |
| During post-fitting pessary testing, placement of a urine receptacle (“Hat”) in the commode will ease retrieval if the pessary is expelled. Otherwise, instruct the woman not to flush the pessary into the plumbing system. |
| A pessary that is comfortable and retained except during bowel movements may be a success if the woman chooses to either remove the pessary for defecation or support it digitally during evacuation. |
| If the pessary is easily expelled, try a larger size or different style. If the pessary is uncomfortable or the patient feels pressure, try a smaller size or different style. Successfully sized, the pessary should be comfortable; women often say, “I can’t even tell it’s there!” |
| Make sure a system is in place to identify missed pessary follow-up visits to avoid potential problems related to pessary neglect. |

**Figure 8.**

Illustration of Digital Measurement of the Vagina, a Potential Aid to Initial Pessary Choice

Notes: Line A: The vaginal length from posterior symphysis to apex or posterior fornix can be useful for sizing Ring and Donut pessaries, or the length of a Gellhorn neck. Line B: The vaginal width at the apex can be useful when considering the diameter of the Gellhorn dish. Line C: The diameter of the introitus and vaginal shaft can help in making an initial Cube choice.
Table 4.
Steps to Pessary Fitting

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Review treatment goals and expectations.</td>
</tr>
<tr>
<td>2.</td>
<td>Ask the woman to empty her bladder and bowels.</td>
</tr>
<tr>
<td>3.</td>
<td>Ask the woman to assume Semi-Fowler position, a position that is generally comfortable and offers her a view of the fitting if desired.</td>
</tr>
<tr>
<td>4.</td>
<td>Gently replace any vault eversion or procidentia prior to sizing.</td>
</tr>
<tr>
<td>5.</td>
<td>After amply applying water-based lubricant to the vaginal introitus, digitally assess vaginal size, shape, and support, and for any relative contraindications to the fitting (pain with palpation, vaginal infection or lesions, full rectum).</td>
</tr>
<tr>
<td>6.</td>
<td>Select the appropriate stocked pessary or fitting kit model, and clean it with soap, rinsing well with water.</td>
</tr>
<tr>
<td>7.</td>
<td>Apply additional water-based lubricant to the leading edge of the pessary if needed.</td>
</tr>
<tr>
<td>8.</td>
<td>Insert the pessary, applying pressure gently toward the posterior vaginal wall and/or obliquely (at 11:00 and 5:00 positions related to the introitus) in the largest diameter, avoiding pressure on the sensitive urethra.</td>
</tr>
<tr>
<td>9.</td>
<td>To check initial fit, ask the woman to Valsalva and cough (in lithotomy and standing positions) – the correct pessary should be comfortable and may advance toward the introitus with pressure and recede with relaxation, but it should not pass through the introitus. The examiner should be able to gently rock the pessary in place, demonstrating that it is not pressing too tightly on the vaginal walls.</td>
</tr>
<tr>
<td>10.</td>
<td>Ask the woman to stand, move about the examination room, and simulate activities she would normally do (walking, bending to pick up objects on the floor, changing from standing to sitting) and report any discomfort.</td>
</tr>
<tr>
<td>11.</td>
<td>Ask the woman to sit on the toilet, void, and Valsalva gently, simulating defecation. For actual defecation, it may be helpful for her to support the pessary digitally.</td>
</tr>
<tr>
<td>12.</td>
<td>If the fitting is successful to this point, review expectations and schedule a return visit. If the pessary is expelled or uncomfortable, start the fitting process again.</td>
</tr>
<tr>
<td>13.</td>
<td>Whether or not the fitting is successful, document any shape and size of pessary used to avoid repeat attempts at subsequent visits.</td>
</tr>
</tbody>
</table>

four attempts is less likely. To aid understanding of current pessary choices, the following sections look more specifically at commonly used pessary options.

Insertion and Removal of Specific Pessaries for Women With Introtial Support

Ring with and without support membrane. The Ring pessary and Ring with support membrane (see Figure 2) are common first-line choices for most types of POP. They typically include a rigid, hinged nylon ring that fits into the length of the vagina, providing support for the anterior, posterior, and apical walls. The optional support membrane may add additional support if anterior or posterior compartment prolapse are present (such as cystocele or rectocele). The position of the hinge is marked either by notches in a Ring or finger-sized holes in the Ring with support membrane. To retain this type of pessary, the introitus and/or pelvic floor must provide enough support to contain the pessary.

Ring pessaries tend to be easiest for both clinicians and patients to use. Many women are able to remove and replace a Ring pessary without difficulty. Even when a Ring pessary is in place, coitus may be comfortable for both partners. Ring pessaries with or without support are also available with a urethral support knob for the treatment of stress UI.

To fit a Ring pessary, the vagina is measured digitally or with a vaginal measuring instrument to assess the depth, obtaining a general idea of the shape and size of the intra-vaginal space (see Figure 8). To insert the pessary, lubrication of the vagina or a hinged edge of the pessary and not the gloved exam fingers will facilitate a grip on the folded pessary. The pessary is folded in half at the hinge and inserted through the introital opening, while applying gentle downward posterior or perineal pressure to avoid the sensitive urethral area. Once inside the vagina, the pessary will open spontaneously. This pessary follows the length of the vagina, from loosely behind the symphysis to the vaginal apex or posterior fornix. A Ring pessary can be rotated 90 degrees while in-place, which may help prevent spontaneous expulsion by placing the hinge transversely to the introitus. A well-fit Ring pessary will stay in place without applying undue pressure on the sidewalls, apex, or introitus, and will not be noticeable by the patient. If the woman describes discomfort from the pessary fitting too near the introitus during movement, it is either too large or there is insufficient introital support to hold the pessary in place. Removal and digital re-sizing may suggest whether a larger or smaller pessary may work better. If two or three tries are not effective, a self-retaining pessary, such as a Gellhorn or Cube, may be a better option.

To remove a Ring pessary, lubricate the introitus, put an examining finger through the finger-size hole or at a hinge notch, rotate the pessary to bring the hinge anteriorly to the introi-
tus, and gently pull downward, diagonally, and out. The vaginal walls will help to fold the pessary as it exits. Atrophic or scarred tissue may fissure at the posterior fornix with removal. Increased lubrication, moisturization, or estrogenation may ease future use. The most common sizes of Ring pessary are 2 through 5 (whole numbers).

**Donut and Inflatable-Donut pessaries.** If a Ring pessary is not successful, but there is some introital support, a Donut or Inflatable-Donut pessary may be an option (see Figures 3 and 4). Donut pessaries are essentially thicker Rings and may fill a vagina enlarged by loss of elasticity more completely; however, these pessaries are in more complete contact with the vaginal epithelium, which may increase the risk of mechanical tissue injury or discharge production and retention. Some women may be able to remove and replace traditional Donut pessaries themselves, but comfortable vaginal intercourse is unlikely. Inflatable Donut pessaries, which are a silicone variation of an older latex inflatable pessary called the Inflato-ball, have a stem and valve for inflation and deflation like a balloon, and are designed to be inserted and removed at frequent intervals (within 48 hours). Manufacturer instructions should be reviewed before attempting to autoclave Donut pessaries because of their air-filled core.

During fitting, digital examination is used to assess both the depth and width of the vagina. Introital stretching and discomfort is more likely with a traditional Donut, and with either type, adequate lubrication is essential. With firm digital pressure, a traditional Donut pessary may be compressed somewhat to slip through the introitus more comfortably. Additionally, some Donut pessaries can be deflated using a needle and syringe to ease future use. The most common sizes of Ring pessary are 2 through 5 (whole numbers).

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To remove a traditional Donut pessary, the introitus is lubricated, and with the examination finger in the Donut center, the pessary is pulled gently downward at a diagonal angle. Some Donut pessaries can be carefully deflated *in situ* using a needle and syringe to ease removal, and the Inflatable Donut pessary should also be deflated prior to removal.

Other support pessaries require introital integrity, with indications based on clinical experience. They include the Oval (which may be useful with a narrow vaginal width); the Hodge and Smith Lever pessary (which may be more comfortable in women with a narrow vaginal introitus); the Gehring Arch (which may be effective in women who have an isolated anterior or posterior wall prolapse), and the Shaatz (which is a disc, similar to the Ring, but may offer firmer support). Fitting for these pessaries is very similar to fitting of the Ring pessary. Manufacturers typically include fitting instructions with each pessary. If these types of pessaries cannot be retained, a self-retaining pessary may be appropriate.

**Insertion and Removal Of Self-Retaining Pessaries**

**Gellhorn.** The flexible Gellhorn pessary is an option in women who cannot retain Ring or similar pessaries due to introital laxity (see Figure 5). The shape of the Gellhorn pessary allows the lateral vaginal walls to in-fold under the top dish, while the concave dish itself may create a suction-like action against the proximal vagina, facilitating pessary retention. The stem of the Gellhorn follows the shaft of the vagina, maintaining correct alignment. The option of two different stem lengths (short and long) allows optimal fitting even in women with a shortened vagina, such as post-hysterectomy women. Although the ability of the Gellhorn to be somewhat self-retaining can be a considerable advantage, it also makes this pessary more difficult for clinicians and patients to remove. In addition, the Gellhorn pessary may be more likely to cause mechanical trauma to the vaginal tissue. As with other pessaries, Gellhorn fitting involves measurement of the vagina, in this case, assessing both the diameter of the introitus and the apex to approximate the correct size of the dish and of the vaginal length to determine whether a long or short neck is appropriate (see Figure 8).

To insert the flexible Gellhorn, the stem can be bent down to the dish and the dish folded, with the edge of the dish inserted first. The pessary is then corkscrewed gently down toward the perineum to avoid the urethra, then upward to bring the dish perpendicular to the vaginal vault. The pessary can then be pushed gently upward using the index finger on the knob at the end of the neck, placing the dish into the vaginal apex. The woman can then bear down as an initial assessment of the likelihood of retention. If two to three adjustments in the size of the pessary do not work, a Cube pessary may be an option.

Removal of a flexible Gellhorn is generally achieved by lubricating the introitus, pulling the knob at the end of the pessary neck gently downward (toward the introitus) and laterally (toward a thigh), and using the index finger to hook and bend down the edge of the dish. When the knob cannot be easily grasped, a carefully placed tenaculum or ring forceps may be helpful to assist removal. Gellhorn pessaries are sized in quarter-inch intervals by the dish diameter, with common sizes generally ranging from 1.75 to 3 inches.

**Cube.** The Cube pessary can also be considered self-retaining...
(see Figure 6). Compared to a Gellhorn pessary, a smaller size can be used; however, Cube use may also result in mechanical tissue injury. Cube pessaries are held in place because the concavities in the six sides allow vaginal tissue to conform to the pessary shape. Because large amounts of epithelium are in contact with the pessary, drainage holes are important to allow desquamated cells and vaginal discharge to drain. The Cube is designed for self-care, but like the Gellhorn, some women and providers find it difficult to remove due to the suction. Softness and compressibility of the silicone used vary by manufacturer. Softer Cubes can be easier to insert, but firmer devices may be more likely to be retained, and choice is typically based on provider experience. The Cube pessary can be placed at different depths in the vagina, which may offer an advantage when a woman has an isolated or site-specific prolapse.

Size is estimated by digitally measuring the diameter of the vaginal shaft and vault. To insert, lubricate the pessary and introitus, compress the pessary, part the introitus gently, and insert the pessary to the depth that best corrects the bulge and is most comfortable for the patient. Commonly used sizes range from 1 to 4.

To remove, lubricate the introitus, apply gentle traction on the pessary cord to stabilize and bring the device toward the introitus, and then insert the tip of the index finger up above the Cube to release it and pull it gently out of the vagina. Pulling too hard on the cord alone will break the cord. If removal is difficult, a tenaculum, ring forceps, pessary remover or crochet hook, or dental tape tied through several holes can be used to facilitate bringing the Cube to the introitus.

Incontinence Pessary Options

Incontinence pessaries help stabilize the urethra and the urethral vesicle junction to prevent leakage during times of increased abdominal pressure. Options include the Incontinence Ring or Dish, which are similar to regular Ring pessaries but offer less vaginal support; and standard Ring, Arch (Gehrung), or Lever (Smith-Hodge) pessaries with an optional incontinence support knob. Most of these pessaries are fitted similarly to a standard Ring pessary. While some women use incontinence pessaries only during exercise, others use them continuously. Generally, the incontinence knob pessaries are fitted more snugly behind the symphysis, beneath the urethra. A pessary that is too loose will not decrease stress UI and may rotate in the vagina. Too much pressure may cause discomfort, epithelial injury, and urinary retention. If the woman plans to use the pessary only intermittently or during exercise, it may be fitted more snugly to retain urine. Although pessaries are typically fitted with an empty bladder, fitting an incontinence pessary in a woman with a full bladder may facilitate testing of both stress UI treatment during exercise and voiding adequacy.

Suggestins for Future Research

Although the evidence base for pessary use has been building in recent years, much of practice continues to be based predominantly on expert-opinion. Practicing providers may fill some of these gaps through their own observations and inventiveness, as well as in formal clinical trials in their own practice. Nurses involved in pessary care may be interested in studying ways to improve patient satisfaction and experience. Questions may include looking at changes in sexual function; testing appropriate pre-trial, goal-setting models; comparing methods of providing information about pessary options for individuals and lay groups; and evaluating symptom relief when pessaries are used in conjunction with other modalities, such as anticholinergic medications or urethral bulking agents. Expert opinion regarding indications for specific pessary types should be tested in additional crossover or head-to-head clinical pessary trials. Cost analyses related to different aspects of pessary use are needed. For example, comparison of costs of pessary use over time versus surgery, and analysis of potential savings from morbidity prevention may be useful both to inform individuals making treatment choices and public policy related to reimbursement.

Conclusion

Support pessaries are an important option for treatment of many pelvic floor symptoms. Currently, providers new to the field continue to learn pessary indications, selection, and fitting strategies from a relatively small evidence base, and occasionally, from conflicting expert opinion. This article has summarized basic concepts related to initiating pessary use. Other articles in this series will discuss pessary follow up and business strategies.

References

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