



## FOR PELVIC ORGAN PROLAPSE

# Colpocleisis: A simple, effective, and underutilized procedure

⏴ OR time, hospitalization, recovery are brief; the success rate is high. As part of the outcome, the patient must forego coitus.

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### CASE 1

#### Problematic prolapse, but no incontinence

An 81-year-old multiparous woman, who has a history of recurrent stage-III pelvic organ prolapse (POP), reports worsening discomfort that makes it difficult for her to care for her ailing husband. She also has “trouble” with bladder emptying and constipation, but denies any loss of urine. She has not had vaginal intercourse in more than a decade because of her husband’s medical condition.

Aside from health issues—she suffers from obesity, coronary artery disease, hypertension, and diabetes—the patient is content with her marriage of 58 years.

Urodynamic testing fails to demonstrate detrusor over-activity, stress urinary incontinence, or intrinsic sphincteric deficiency. A cough stress test is repeated after reduction of her prolapse using a large cotton swab, and confirms the findings of the urodynamic tests.

Is reconstructive surgery appropriate for this patient?

**T**raditional reconstructive surgical procedures for treating POP fail in as many as 30% of patients, and new approaches—some involving grafts—are proposed every day, often without much data behind them.<sup>1</sup>

Regardless of the approach, reconstructive surgery is a lengthy procedure that subjects patients who are already medically compromised to significant risk, including bleeding, infection, and fluid shifts. Delayed return to normal activity may be especially costly among elderly women because of the risk of venous thromboembolism.

Because of the high failure rate, slow recovery, and risk of complications, reconstructive surgery may not be

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Do you offer colpocleisis as an alternative to reconstructive surgery?

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**TABLE Requirements for colpocleisis**

**Both of the following must be present**

- No desire for or likelihood of future coital activity
- Stage-III or -IV pelvic organ prolapse

**Plus at least one of the following**

- Severe coronary artery disease
- Severe pulmonary disease
- Severe dementia
- Advanced-stage cancer
- Multiple surgical failures

as appropriate as colpocleisis for the woman described above. Colpocleisis—suturing the inside walls of the vagina together—has an efficacy rate exceeding 90%.<sup>2</sup> This relatively simple operation has been around for almost two centuries and has a good track record, but is often overlooked when counseling a patient about her options.

Any frail, elderly woman who has stage-III or -IV POP who does not desire to preserve coital ability is a candidate for colpocleisis (TABLE). Advantages include:

- a short operating time
- few complications
- amenability of local anesthesia
- short hospitalization
- speedy recovery
- high success rate
- low rate of regret.<sup>2-5</sup>

Because it precludes coital activity, however, colpocleisis may cause problems with self-image. It also may lead to de novo or worsening urinary incontinence and complicate or delay the diagnosis of cervical and endometrial pathology.

This article explores these issues through a case-based discussion of colpocleisis, including a detailed description of surgical technique.

**Why colpocleisis?**

Colpocleisis, as noted, entails suturing the inside walls of the vagina together. It is con-

troversial because of its impact on coital activity. With careful patient selection, however, colpocleisis is considered a valid option for frail and elderly women who have POP and do not desire or foresee the possibility of future vaginal intercourse. Such women may represent a surprising percentage of the elderly population. A community-based survey found that 78% of married women 70 to 79 years old are not sexually active,<sup>6</sup> and a study from The Netherlands found a prevalence of symptomatic POP of 11.4% among white women 45 to 85 years old.<sup>7</sup>

The fundamental reason for choosing an obliterative procedure such as colpocleisis over total pelvic reconstruction is to treat the prolapse with the least invasive technique in the shortest time. Hysterectomy, which often adds 30 to 80 minutes to the procedure, should therefore be performed only in patients who have a suspicious finding upon initial evaluation. For the same reason, partial colpocleisis—performed using the LeFort technique with limited dissection—has become the most popular obliterative approach. We try to avoid a total colpocleisis procedure—also known as colpectomy—in which the entire vaginal epithelium is stripped, because it is feasible only when the uterus is already absent or scheduled to be removed concomitantly.

(Note: The term vaginectomy should be reserved for gynecologic oncology procedures performed to remove vaginal cancer. Vaginectomy entails full-thickness excision of the vaginal walls, including the fibromuscular layer, as opposed to excision of the epithelial layer only, as in colpocleisis. In this article, we present the LeFort method, a partial colpocleisis technique, because we believe it is more easily adapted by the general gynecologist.<sup>8</sup>)

**CASE 1 RESOLVED**

After detailed counseling, which includes family members, the patient opts to undergo colpocleisis. The procedure takes 45 minutes. She is discharged on postoperative Day 1, and reports substantially improved quality of life.



**Frail women with stage-III or -IV pelvic organ prolapse who don't wish to preserve coital ability are candidates for colpocleisis**

## CASE 2

### Recurrent prolapse and problems with a pessary

A 72-year-old multiparous, widowed woman experiences recurrent stage-III isolated apical prolapse. She has already undergone two reconstructive procedures, and was discouraged from undergoing a third because of her chronic obstructive lung disease. She tried to use a Gellhorn-type pessary, which required a doctor's intervention to insert and remove. Frustrated by the many office visits involved in having the pessary checked, she now demands surgical therapy. Another gynecologist has offered to repair the prolapse using mesh, but the patient has concerns about the safety and efficacy of the procedure because it is a relatively new approach.

In addition to the recurrent prolapse, she loses urine with stress and urge. She often has a postvoid residual volume >100 cc; urodynamic assessment confirms mixed urinary incontinence. The patient does not foresee any change in her social status (unmarried, sexually inactive).

Is colpocleisis a reasonable option?

Although the pessary is a helpful conservative alternative for women who are either unable or unwilling to undergo complex surgical pelvic repair and is considered first-line treatment by a majority of urogynecologists, it sometimes becomes more difficult to maintain than the patient is willing to tolerate.<sup>9</sup> When a woman cannot remove and reinsert the device herself, the pessary requires a lifelong commitment to doctor's visits every 2 or 3 months. This commitment is especially problematic for patients who become unable to drive or who lack social support.

Maintenance of the pessary becomes more frustrating as the patient becomes more dependent. Many gynecologists have seen a patient who developed a serious complication such as vesicovaginal or rectovaginal fistula because of a neglected pessary.<sup>10</sup>

In Case 2, the patient appears to be a potential candidate for colpocleisis, given her age and single status. Although pelvic floor repair appears to be safe in older women,

any perioperative complication in a patient 70 years of age or older doubles the risk of discharge to a care facility.<sup>11,12</sup> Women who have already undergone several surgeries or who have advanced medical problems such as coronary artery disease or cancer should be counseled thoroughly about the safety and efficacy of colpocleisis.

As for self-image, colpocleisis eliminates prolapse and reduces the genital hiatus. If the patient understands that colpocleisis is obliterative for the vagina but may improve the external appearance of the genital area, she may be more accepting of the procedure. One recent prospective, multicenter study found that only 2% of women thought their body looked worse 1 year after colpocleisis; 60% thought their body looked better.<sup>5</sup>

When reviewing treatment options, inform the patient that the pessary is a palliative option, whereas surgical therapy aims to be definitive.

## CASE 2 RESOLVED

After comprehensive counseling, the patient elects to undergo colpocleisis, along with placement of a midurethral sling. She is discharged 1 day after surgery, and reports substantially improved urinary function, including bladder emptying, and quality of life. She says she would recommend the procedure to any woman who has a similar condition.

## CASE 3

### Pessary-related complications, incontinence, and underlying medical conditions

A 92-year-old multiparous widow, whose stage-IV uterovaginal prolapse has been managed by a pessary, develops vaginal ulcers in both anterior and posterior walls. After removal of the pessary and 4 weeks of treatment with vaginal estrogen, a smaller pessary is inserted, but she again develops ulcers and bleeding.

The patient's medical condition is complicated by hypertension and generalized arthritis. She has urodynamically confirmed mixed urinary incontinence. She lives with her daughter and does not want to be placed in a nursing home.



**On the matter of self-image, colpocleisis eliminates prolapse, reduces the genital hiatus, and may improve the appearance of the external genital area**

CONTINUED ON PAGE 22



What treatment options should you offer to her?

Because of this patient's advanced age, poor health, and pessary-related problems, she is an ideal candidate for colpocleisis, provided she consents to the procedure after thorough counseling about its benefits and limitations.

### Preoperative concerns

A thorough history, physical examination, and normal Pap test are necessary. If a suspicious pelvic mass or uterine bleeding is present, transvaginal ultrasonography (US) is crucial. In-office endometrial sampling also is necessary in any woman who has unexplained vaginal bleeding. More invasive procedures such as dilatation and curettage and hysteroscopy are needed only when the biopsy is inadequate or endometrial thickness exceeds 4 mm on transvaginal US.<sup>13</sup>

All elderly women who have high-risk medical problems must be cleared for surgery, with the necessary cardiac and pulmonary workup completed before the procedure.

Because colpocleisis is an extraperitoneal procedure, we have adapted use of over-the-counter enema products on the day before surgery in lieu of mechanical bowel preparation, which may lead to dehydration in very elderly women.

Coordinated consultation between the surgeon and anesthesiologist is necessary to determine the type of anesthesia to be used. Sedation and local anesthesia can be adequate for extremely high-risk women.<sup>14,15</sup> Antibiotic prophylaxis is conventional for all patients.

### Surgical technique

The LeFort method involves denudation and approximation of the midportions of the anterior and posterior vaginal walls.<sup>8</sup> This operation creates a longitudinal vaginal septum with bilateral channels on each side, which serve as conduits for any secretion or bleeding from the apical vagina (FIGURE 1A AND B, page 24). Aggressive perineorrhaphy is also needed to shorten the

genital hiatus. The following description incorporates perineorrhaphy into the LeFort technique.

### Patient positioning

Place the patient in the dorsal lithotomy position, using stirrups to support the entire leg up to the knee. Let the patient's buttocks overhang the edge of the table by 1 to 2 inches. A slight Trendelenburg position is imperative, especially when operating on the anterior compartment of the vagina. The bladder should be only partially emptied because the leakage of urine from the bladder makes it easier to identify inadvertent cystotomy. Infiltration of local anesthetic solution to develop the surgical planes is acceptable.

### Initiating the procedure

Remove a rectangular piece of vaginal epithelium from the anterior vaginal wall, beginning 2 to 3 cm distal to the vaginal apex (or cervix, if the uterus is present) and ending immediately proximal to the urethrovesical junction to leave space for midurethral sling placement. Remove a similarly sized piece of epithelium from the posterior vaginal wall. This posterior rectangle is an almost geometric projection of the anterior rectangle, but is somewhat longer (2 to 3 cm) (FIGURE 1).

When removing the vaginal epithelium, it may be helpful to use the skills developed for anterior and posterior colporrhaphy. Our operation begins with a 5- to 6-cm transverse incision at the anterior vaginal apex, which creates the proximal side of the anterior rectangle described above (FIGURE 2A, page 26).

As you develop the plane between the epithelium and fibromuscular layer, make a midline sagittal incision and extend it to the urethrovesical junction (FIGURE 2B). Dissect the epithelium off the fibromuscular layer approximately 3 cm bilaterally, then make a transverse incision at the urethrovesical junction. Finally, remove the anterior rectangle in two pieces by cutting along the lateral sides (FIGURE 2C AND D). Remove the posterior rectangle using the same technique, but also excise a triangular piece of skin from the posterior fourchette for the

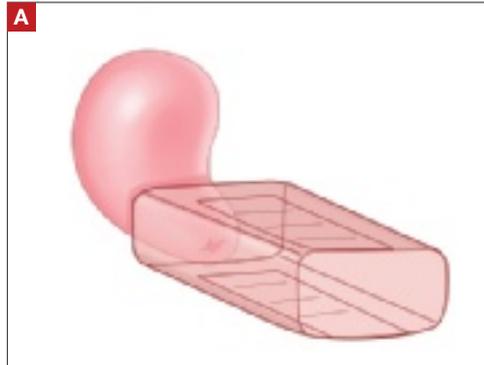


**Preop, transvaginal US is crucial if the patient has a suspicious pelvic mass or uterine bleeding; endometrial sampling is indicated for unexplained vaginal bleeding**

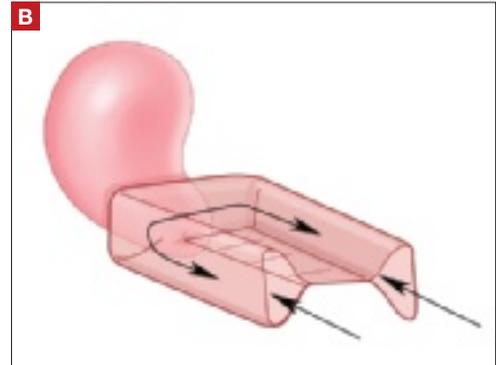


**FIGURE 1 Principles of LeFort colpocleisis**

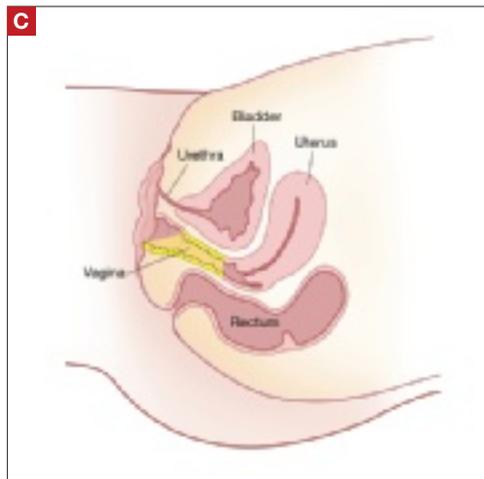
The depiction here is not anatomically precise: The vagina is illustrated as a rectangular prism to clarify the relationship between tissues.



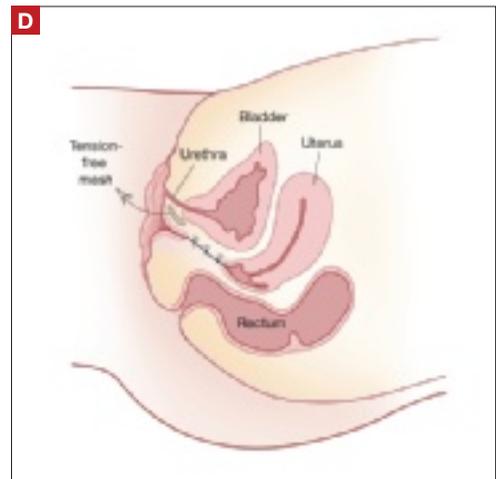
Two rectangular pieces of vaginal epithelium are removed, one each from the anterior and posterior vaginal walls.



The corresponding sides of these rectangles are sutured together, creating bilateral channels that connect at the vaginal apex. (Three short transverse lines represent row-by-row suturing of the raw surfaces.)



Sagittal representation of the denuded rectangular areas on the anterior and posterior vaginal walls (highlighted in yellow).



The procedure is completed by suturing the corresponding sides of the rectangles and denuded surfaces in three rows.

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**FAST TRACK**

The sides of two denuded rectangles on the vagina – one on the anterior and one on the posterior wall – are sutured together, which creates bilateral channels that connect at the apex of the vagina

perineorrhaphy portion of the procedure (FIGURE 2E, page 26).

**Suturing**

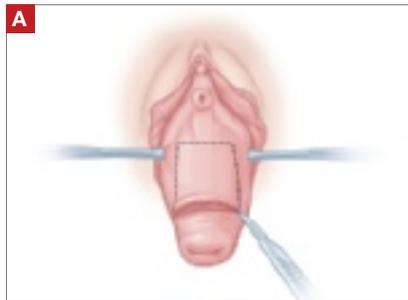
Suture the apical sides of the anterior and posterior rectangles together using a continuous running technique (FIGURE 2F). Then approximate the lateral sides bilaterally using continuous sutures.

To ensure adherence of the anterior and posterior rectangles, stitch the raw surfaces together in three rows (FIGURE 2G). Do not include the distal 2 cm of the posterior vagina because you will need to leave room for perineorrhaphy.

Using several sutures, reapproximate the torn perineal fibromuscular structures in the midline to perform perineorrhaphy



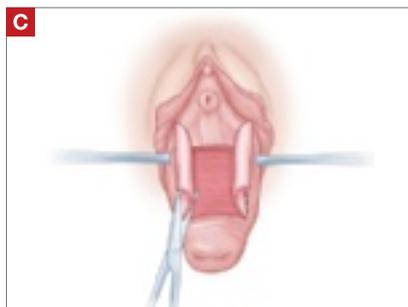
**FIGURE 2** LeFort technique, step by step



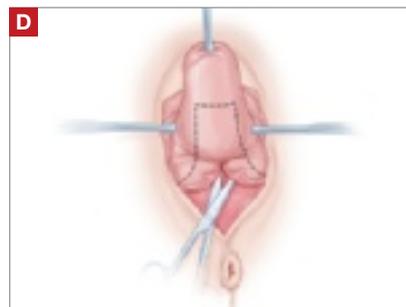
**A** Begin with a 5–6 cm transverse incision at the anterior vaginal apex.



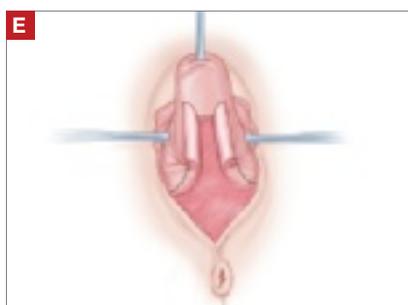
**B** Dissect the epithelium off the fibromuscular layer, with a midline sagittal incision extending to the urethrovesical junction.



**C** After dissection is completed, make a transverse incision at the urethrovesical junction, and remove the anterior rectangle in two pieces by cutting along the lateral sides.



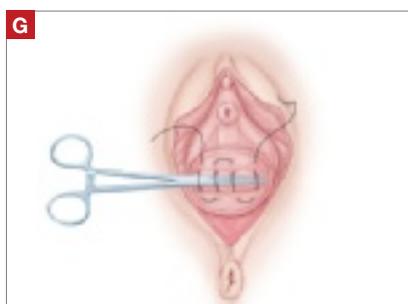
**D** Denude the posterior rectangle using the same technique. In addition, excise a triangular piece of skin from the perineum.



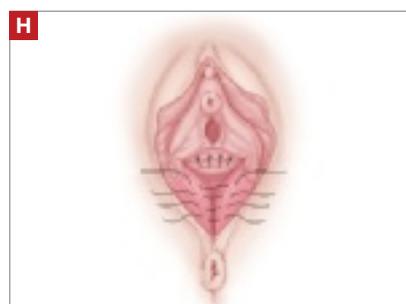
**E** The posterior rectangle is ready for removal.



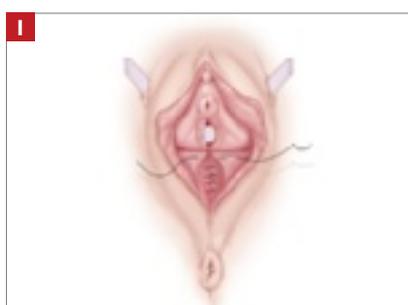
**F** Suture all but the distal sides of the rectangles between the anterior and posterior vaginal walls.



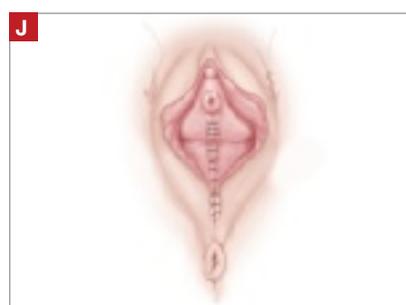
**G** Also stitch together the raw surfaces in three rows in an imbricating fashion.



**H** Perform perineorrhaphy.



**I** Close the distal vagina, starting at the midpoint of the anterior transverse side. If indicated, place a midurethral sling.



**J** Final appearance.

(FIGURE 2H). Close the distal vagina, beginning at the midpoint of the anterior transverse side, which lies at the urethrovesical junction (FIGURE 2I). Continue this suture on the posterior vagina and then the perineal body, sagittally, creating a small invagination in the distal vagina (FIGURE 2J).

### Sling procedure

We place a midurethral sling as part of most colpocleisis operations. It is best to do this after the colpocleisis but before the perineorrhaphy.

In our cases, cystoscopy with simultaneous intravenous indigo carmine injection is standard before perineorrhaphy, even when a sling procedure is not planned. This safeguard ensures ureteral patency, which can be compromised (although rarely) in these procedures. Cutting and replacement of one of the sutures that approximate the raw tissues typically resolve the problem.<sup>16</sup>

### Special considerations

Here are additional key points about colpocleisis, based on our experience:

- If an ulcer lies within the area designated to be denuded, some debridement to freshen up the surface will suffice. An ulcer is not an indication to deviate from the standard procedure.
- A modification developed by Goodall and Power may allow coitus by removing only a triangular piece of epithelium from each wall, leaving more room for the channels.<sup>17</sup>
- We have been unable to find any report of uterine or cervical cancer after colpocleisis, despite a MEDLINE search of the literature in English. Even so, the lateral channels created by the LeFort procedure allow any bleeding to escape the vagina, and may therefore enable recognition of malignancy. When non-invasive imaging techniques such as US or magnetic resonance are inadequate, vaginoscopy and hysteroscopy may be accomplished via these channels.
- When colpocleisis is performed in a hys-

terectomized woman, no lateral channel is necessary. Therefore, it is appropriate to do total colpocleisis.<sup>18,19</sup>

- When a patient with POP has a rectovaginal or vesicovaginal fistula caused by a neglected pessary, the addition of LeFort colpocleisis to the fistula repair may provide an effective treatment for both problems.<sup>10</sup>

## Surgical outcomes

### Success rate

Evidence concerning colpocleisis comes from case series, some of which are more than 30 years old. Although the definition of success is not clear in some series, the reported success rate has always exceeded 90% over the past three decades.<sup>2,18-22</sup> Moreover, some of these reports involve as many as 30 years of follow-up.

### Perioperative complication

In a recent review of the literature, the procedure-related mortality rate was 0.025%.<sup>2</sup> When the authors focused only on studies published since 1980, major complications due to the patient's underlying cardiovascular and pulmonary condition were seen in 2% of cases. Major surgical complications such as pyelonephritis and bleeding requiring transfusion occurred in 4% of cases, and less severe complications occurred in 15%.

In a study that included women who underwent concomitant vaginal hysterectomy, hysterectomy prolonged the surgery by 52 minutes, with a 5% rate of laparotomy as a result of intraoperative bleeding.<sup>22</sup>

### Quality of life

In our series of 40 colpocleisis cases, we noted no instance in which a patient regretted the procedure.<sup>18</sup> Others have also reported a low rate of regret—the highest being 9%.<sup>3-5,19-21</sup>

Using validated questionnaires, FitzGerald and colleagues found significant improvement in mental and physical quality of life, as well as urinary, colorectal, and bulge-related pelvic floor symptoms, 1 year after colpocleisis.<sup>5</sup>



**The two lateral channels created by the LeFort procedure allow any bleeding to escape the vagina; this may enable recognition of uterine or cervical malignancy**

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De novo or worsening urinary incontinence is one of the drawbacks of colpopo-  
cleisis. However, the same risk is present in  
approximately 40% of women who undergo  
surgical reconstructive procedures for POP  
without a continence operation.<sup>23</sup> Because  
preoperative urinary retention is common  
in women who have POP, the decision to add  
a potentially harmful continence procedure  
is complicated in colpopo-  
cleisis candidates. A  
small case series reported that the success  
rate ranged from 90% to 94% in women who  
underwent a midurethral tension-free sling  
procedure for the treatment of urinary in-  
continence at the time of colpopo-  
cleisis.<sup>5</sup>

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Preoperative urodynamic studies to de-  
tect urethral intrinsic deficiency and detrusor  
dysfunction are prudent, and detailed  
counseling of the patient about urinary con-  
trol is vital. We perform a midurethral sling  
procedure in most of our colpopo-  
cleisis cases,  
and have had pleasing results.

### CASE 3 RESOLVED

The patient decides to undergo partial colpo-  
cleisis using the LeFort procedure, along with  
placement of a midurethral sling, for a total  
operative time of 75 minutes. She is discharged  
1 day later and reports substantial improve-  
ment in urinary function and quality of life. 

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