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**Review Article**

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# *Urinary Complications among Women with Cystoceles: A Systematic Review*

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## ABSTRACT

*Cystoceles result from a pelvic-floor support system that is not strong enough. This systematic review aims to study the urinary complications in women with cystoceles, especially SUI, and the complication following surgical repair. PubMed, Web of Science, Science Direct, EBSCO, and Scopus were searched. Study articles were screened by title and abstract using Rayyan QCRI then a full-text assessment was implemented. Thirteen studies were included, with a total of 1043 women with cystoceles and urinary complications. The follow-up duration ranged from 1.4 months to 53 months. Most of the included studies had SUI as a complication of cystoceles. The other complication included urge incontinence, mixed incontinence, frequency, incomplete voiding, and voiding difficulties. Incontinence recurrence and voiding dysfunction were reported only in one investigation. The majority of cystoceles cases had SUI. Frequency, incomplete voiding, urge incontinence, mixed incontinence, and voiding issues were among the other complications. The most frequent surgical complications were pyelonephritis, cystitis, and UTIs.*

**Key words:** *Cystocele, Pelvic prolapse, Urinary incontinence, Systematic review*

## INTRODUCTION

A cystocele often referred to as a protrusion of the bladder develops when the bladder descends into the vagina. The bladder protrudes through the anterior wall of the vagina, with which it is anatomically connected. Several underlying factors might lead to cystocele development, which causes the muscles and connective tissue surrounding the bladder and vagina to weaken [1].

In women, the endopelvic fascia and pelvic floor muscles support the pelvic viscera anatomically. Pubococcygeus, puborectalis, and iliococcygeus, three muscles that together make up the levator ani muscle group, provide this pelvic support. Additionally, the cardinal and uterosacral ligaments offer extra stability and support. The functionality of daily life and sexual activities might be negatively impacted by a prolapsed or herniated bladder. Some women may experience modest symptoms that do not need treatment, and in some circumstances, prolapses may regress after menopause [2].

Cystoceles are the result of a pelvic-floor support system that is not strong enough. Obesity, advancing age, and parity are the primary risk factors. They may also develop as a result of pelvic surgery, collagen abnormalities, a familial history of cystocele, and chronically elevated intra-abdominal pressure [2].

The exact number of women who suffer from anterior vaginal wall prolapse is difficult to determine. According to the Women's Health Initiative study, 32.9% of women who have had a hysterectomy and 34.3% of women with uteruses experience bladder prolapse [3]. 2.9% of non-pregnant women over 20 who were not pregnant were found to have some degree of pelvic organ prolapse in a cross-sectional survey of the participants [4]. The severity of the symptoms was shown to be higher in groups of women from lower socioeconomic backgrounds. Additionally, it has been determined that by age 80, 11.1% of women will need an operation to control a prolapse, with around one-third of them requiring a second surgery [5].

Only women who report symptomatic anterior wall prolapse are advised to have treatment for cystocele [6]. Generally speaking, there are three treatment options for the condition: expectant, conservative, and surgical. As part of a therapy strategy, the patient should be presented with all available options and adequately briefed on them. Better results are observed if surgical goals and the patient's expectations are discussed before treatment [7].

The next option for symptomatic women, those who need quick relief, those who have rejected conservative treatment, or for whom the conservative strategy has not been successful is surgical management. It should be highlighted that surgery should be performed after the patient's family is complete because childbirth can further harm the pelvic support system [8]. This systematic review investigates the urinary complications associated with cystoceles, especially stress urinary incontinence (SUI), and following surgical repair among women [9-11].

## MATERIALS AND METHODS

This systematic review was conducted following the accepted standards (Preferred Reporting Items for Systematic Reviews and Meta-Analyses, PRISMA).

### *Study design*

This was a systematic Review.

### *Study condition*

This study reviewed the urinary complications in women with cystoceles, especially SUI, and the complication following surgical repair.

### *Search strategy*

To find the appropriate literature, a thorough literature search was carried out in five major databases: PubMed, Web of Science, Science Direct, EBSCO, and Scopus. The English language was our only option, and the requirements of each database were taken into consideration. The following keywords, which were converted into Mesh terms in PubMed, were used to find the right studies; "Cystocele," "Pelvic prolapse," "Vaginal prolapse," "Complications," "Sequelae," "Urinary incontinence," "Urinary stress incontinence," " Urinary urge incontinence," and "Urinary tract disorders." The appropriate keywords were paired with the Boolean operators "OR" and "AND." The search yielded English-language publications with full text, freely accessible articles, and human trials.

### *Selection criteria*

### *Inclusion criteria*

The subjects were chosen for addition founded on their applicability to the research, which has the following criteria; only female patients with cystoceles who had urinary complications.

### *Exclusion criteria*

We dismissed all subsequent publications, ongoing research, and analyses of completed studies that did not focus on our main object.

### *Data extraction*

To check for duplicate search strategy results, we used Rayyan (QCRI) [12]. By imposing a set of inclusion/exclusion criteria on the combined search results, the researchers were able to determine the relevance of the titles and abstracts. The reviewers read the entirety of the papers' texts that met the criteria for inclusion. The authors discussed dispute resolution. The qualified study was incorporated using a created data extraction

form. The authors extracted data about the study titles, authors, study year, study designs, participant number, mean age, follow-up duration, preoperative complications of cystoceles, type of procedure, and postoperative complications.

*Strategy for data synthesis*

To provide a qualitative summary of the included study components and outcomes, summary tables were created using the data collected from the eligible studies. After data extraction for the systematic review, the best use of the data from the included study articles was decided. Studies that met the full-text inclusion criteria but did not provide any data on urinary complications among women with cystoceles were excluded.

## RESULTS AND DISCUSSION

*Search results*

A total of 420 study articles resulted from the systematic search, and then 40 duplicates were removed. Title and abstract screening were conducted on 380 studies, and 309 studies were excluded. 71 reports were sought for retrieval, and only 3 articles were not retrieved. Finally, 68 studies were screened for full-text assessment; 29 were excluded for wrong study outcomes, 17 for unavailable data on the urinary complications of cystoceles, and 9 for the wrong population type. Thirteen eligible study articles were included in this systematic review. **Figure 1** displays a summary of the study selection method.

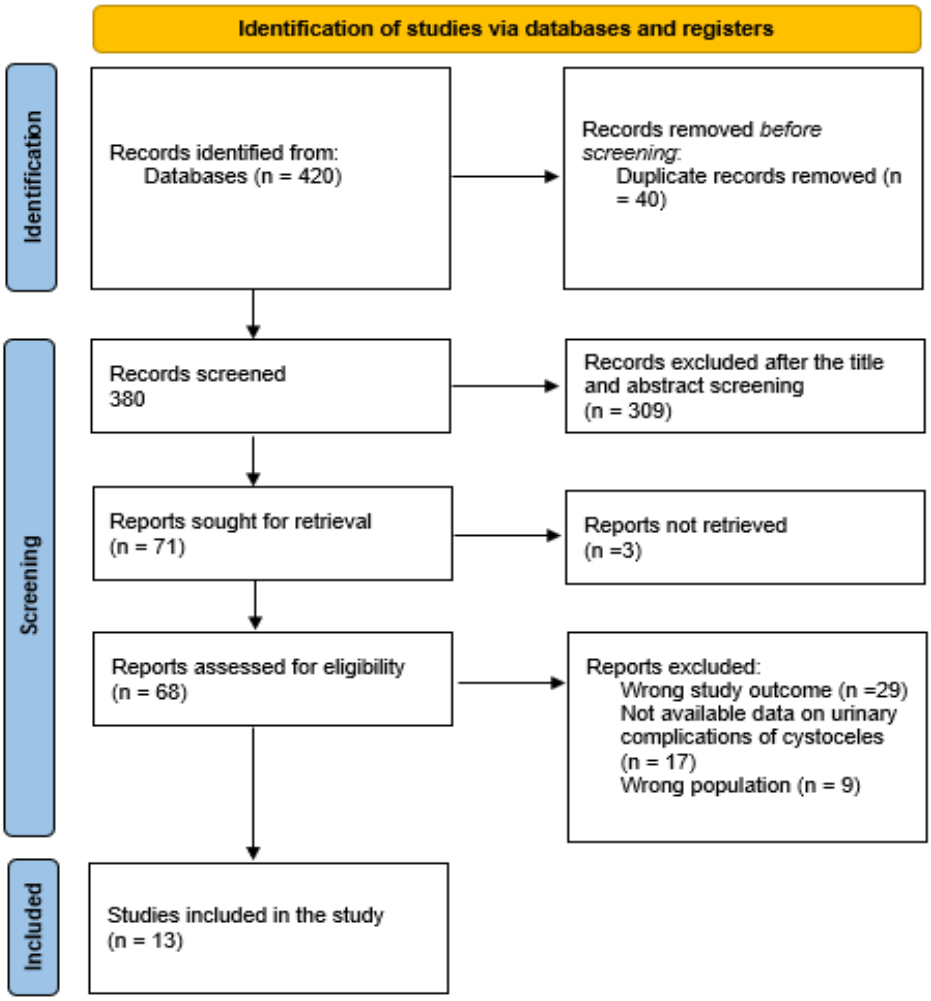


**Figure 1.** Summarizes the study selection procedure using a PRISMA flowchart.

*Characteristics of the included studies*

A total of 13 studies were included in this review, with 1043 patients with cystoceles and urinary complications. Five studies were retrospective [13-17], three were randomized control trials (RCTs) studies [18-20], one was a case-control study [21], one was a descriptive study [22], and one was a prospective study [23]. Three studies

were conducted in Italy [15, 20, 23], One in India [22], one in Australia [13], one in Japan [18], one in Egypt [19], one in South Korea [14], one in France [20], one in Taiwan [16], one in Georgia [24], one in Turkey [17], and one in the USA [23]. Most of the included populations were elderly. The follow-up duration ranged from 1.4 months [13] to 53 months [15]. Most of the included studies had SUI as a complication of cystoceles [13-17, 19, 20, 22-25]. The other complication included urge incontinence, mixed incontinence, frequency, incomplete voiding, and voiding difficulties. Cystocele repair was done through various procedure types. Most cases with SUI were cured following the repair. Urinary tract infection (UTI), cystitis, and pyelonephritis were reported in four studies as postoperative complications [14, 15, 20, 22]. Incontinence recurrence and voiding dysfunction were reported in one investigation [24].

**Table 1.** A summary of characteristics of the included study articles.

| Study | Country | Study designs | Participants (n) | Mean age | Follow-up duration (months) | Preoperative complications | Procedure type | Postoperative complications |
|---|---|---|---|---|---|---|---|---|
| **Shrestha, 2016 [22]** | India | Descriptive study | 80 | 15-45 | NA | 23.8% have SUI, and 15% have urge incontinence | Various procedures for cystocele repair | UTI followed by retention of urine |
| **Shek *et al.*, 2009 [13]** | Australia | Retrospective study | 93 | 61 ± 11.5 | 1.4-24 | 25.8% have SUI | Transobturator mesh | No postoperative complications. Net curative effect. |
| **Okui *et al.*, 2009 [21]** | Japan | Case-control | 34 | 42-89 | 12-37 | Urgency, daytime frequency, and incontinence | Polypropylene mesh | Improvement in the preoperative symptoms; however, no significant improvement in nocturia was found. |
| **Abdel Aziz *et al.*, 2020 [18]** | Egypt | Prospective randomized trial | 72 | 52 ± 9.4 | 12 | Frequency followed by urgency, urgency incontinence, weak flow, and interrupted flow. | Trans-obturator tape (TOT) and TOT with concomitant repair of cystocele by anterior colporrhaphy | The cure rate of SUI increases and the frequency of irritative urinary symptoms decrease when stage II asymptomatic cystocele and a mid-urethral sling are simultaneously repaired. |
| **Park *et al.*, 2013 [19]** | South Korea | RCT | 91 | 58 ± 9.5 | 12 | 43.3% have SUI, and 48.4 have mixed incontinence | Tension-free vaginal tape (TVT) and concomitant cystocele repair | Mixed incontinence was the most prevalent |
| **Eboue *et al.*, 2010 [14]** | France | Retrospective study | 123 | 62 | 15 | 57% have SUI, 40% with urgency, and 39% with incomplete voiding | Transobturator four arms mesh | Incomplete voiding, UTI, pyelonephritis, bladder obstruction, and de novo stress incontinence. |
| **Zullo *et al.*, 2008 [20]** | Italy | RCT | 69 | 49–75 | 12 | All patients are with SUI | Anterior colporrhaphy plus inside-out TVT | Fever, UTI, severe pain, and transitory urinary retention |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Cugudda *et al.*, 2002 [15]** | Italy | Retrospective study | 36 | 57.3 ± 9.6 | 53 | All patients are with SUI | Anterior colpoperineorrhaphy and burch colposuspension | Vaginal candidiasis and cystitis |
| **Chen *et al.*, 2011 [16]** | Taiwan | Retrospective study | 50 | 65.7 ± 8.9 | 24 | 32% with frequency, 28% with urinary incontinence, 6% with urgency, 10% with dysuria, 20% with voiding difficulty, and 14% with a feeling of incomplete voiding | Isolated cystocele repair | Only one patient continued to have incontinence |
| **Bruce *et al.*, 1999 [24]** | Georgia | NA | 52 | 61 | 17 | All patients are with SUI | Paravaginal defect repair (PVdR) | Incontinence recurrence, voiding dysfunction, or the appearance of recurrent vaginal prolapse were late postoperative problems. |
| **Onarımının, 2014 [17]** | Turkey | Retrospective study | 165 | 56.3 ± 11.2 | 45.1±19.9 | All patients are with SUI | TOT | There is a significant improvement in the SUI after cystocele repair |
| **Gilleran *et al.*, 2006 [25]** | USA | NA | 121 | 67 | NA | 6% with SUI | Vaginal gauze pack | The Valsalva leak point pressures in those with SUI were indicative of intrinsic sphincter insufficiency |
| **Adile *et al.*, 2012 [23]** | Italy | prospective study | 57 | 57 | 36 | 20% with SUI | Monoprosthesis | 80% of patients were cured of SUI |

We believe that this is the first systematic review to investigate the urinary complications associated with cystoceles among women in addition to the postoperative complications. This review is mainly limited by the lack of quantitative assessment to evaluate our objective. We have fully outlined the studies we have included and have obtained data on several complications.

Another important drawback is the inclusion of low-quality evidence: most studies lacked a comparative design, did not look at treatments based on complication type, and did not compare results based on various management approaches. Therefore, it is challenging to interpret the evidence. Most studies failed to report outcomes per the reason for referral, which is crucial information for figuring out how to manage complications effectively.

The present study found that most cystoceles cases suffered from USI. Urge incontinence, mixed incontinence, frequency, incomplete voiding, and voiding difficulties were the other reported complications. SUI, also known as spontaneous urinary incontinence, is the unintentional leakage of urine during actions that raise intraabdominal pressure, such as straining, lifting, or coughing.

In women, urethral hypermobility and intrinsic sphincter weakness are the main causes of stress incontinence [26]. Buchsbaum also reported that in both community and care facility settings, elderly people frequently experience urinary incontinence and pelvic organ prolapse [26]. In cases of cystocele, urinary incontinence, particularly the SUI, is a well-recognized symptom. In comparison, Khan *et al.* observed a similar incidence of SUI (14.78%, n=69) [27], Luka *et al.* observed SUI in 15% (n=4458) of women and overactive bladder in 13% (n=4458) of their cases [28]. Bai *et al.*, however, found SUI in 63.3% (n=19) of the population [29].

The degree of the cystocele, the existence of SUI, the degree of genital prolapse, and the desire for future childbearing dictated the type of intervention. This study found that UTI, cystitis, and pyelonephritis were the most common postoperative complication. It is now standard practice to use a postoperative indwelling catheter for a limited time following prolapse surgery. On the other hand, placing an indwelling catheter increases the

chance of developing a urinary tract infection, and the rate of infection rises the longer the catheter is left in place [30].

One study by Bruce *et al.* [24] reported incontinence recurrence and voiding dysfunction after cystocele repair. Everyone who encounters women with pelvic prolapse and SUI should make an effort to offer anatomic surgical correction when necessary. We are aware that the amount of follow-up we have is little and that many continence operations will have positive outcomes right away. We need to monitor patients for a longer time to see if our defect-focused anatomic approach to incontinence and prolapse will "stand the test of time." [24]

Complications from surgical procedures are the most common. The prolapse returning and requiring additional surgery is the most frequent. After an anterior colporrhaphy, over 40% of women need a second surgery because their symptoms have returned. Other issues can result from surgery, such as postoperative bleeding, hematoma, harm to the surrounding pelvic organs, infection at the surgical site and wound dehiscence, urinary tract infection, pain during erections, urine retention, and the development of a vesicovaginal fistula [31].

The presence of a cystocele alone does not represent a risk to life. The problem is that it progresses and can result in a wide range of symptoms and illnesses if not treated properly. Women may experience voiding difficulty and urinary symptoms as a result of the bladder wall protruding into the vagina. These symptoms may be linked to kidney damage and urinary tract infections. The vaginal mucosal tissue is more prone to bleeding and infection if the prolapse extends past the vaginal entrance and causes ulcers. Additionally crucial is the psychological toll that incontinence and sexual dysfunction can have [32].

## CONCLUSION

This systematic review revealed that SUI affected the majority of cystoceles cases. The other complications included frequency, incomplete voiding, urge incontinence, mixed incontinence, and voiding difficulties. Pyelonephritis, cystitis, and UTI were the most frequent postoperative complications.

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