Sarcouncil Journal of Medicine and Surgery

ISSN(Online): 2945-3534

Volume- 04| Issue- 03| 2025

Research Article **Received:** 11-02-2025 | **Accepted:** 28-02-2025 | **Published:** 18-03-2025

Health Outcomes and Common Risk Factors Associated with Urinary Retention in Patients Undergoing Appendectomy

Dr. Saad Mohammed Hadbool[1], Dr. Uday Turki Abadi Altaai[2] and Dr. Sarmed Adnan Mahammed Noori[3]

[1]M.B.Ch.B., C.A.B.S. \ (General Surgery) Iraqi Ministry of Health, Al-Russafa Health Department, Al-Zafaraniyha General Hospital, Baghdad, Iraq.

[2]M.B.Ch.B., C.A.B.S.\ (General Surgery) Iraqi Ministry of Health, Al-Russafa Health Department, Al-Sheck Zaid General Hospital, Baghdad, Iraq.

[3]M.B.Ch.B., C.A.B.S.\ (General Surgery) Iraqi Ministry of Health, Al-Russafa Health Department, Al-Sheck Zaid General Hospital, Baghdad, Iraq.

Abstract: One of the most consequential postoperative complications after appendectomy is urinary retention (UR), as experienced in a smarter setting like Iraq, where a full health institution often has overcrowding, less resources, and different levels of surgical expertise. Due to its common post-operative complication along with urinary retention due to voluntary urine retention, it would tend to extend the patient-related hospital stay, thus raising the costs to be incurred in the provision of health as well as affecting recovery adversely within patients concerned. This study is, thus, cross-sectional and aims to evaluate the health outcomes and determinants associated with UR among patients undergoing appendectomy in Iraq in terms of demographics, surgical variables, or pharmacological influences. Risk factors would be age, sex, and surgical duration under general anesthesia, among other risks such as opioid use. Health outcomes include acute complications such as urinary tract infections and pain to chronic complications such as bladder dysfunction and kidney injury. Retrospective or prospective design will be employed, involving the analysis of information extracted from hospital records and patient interviews in identifying independent risk factors and evaluating UR's effect on recovery, quality of life, and healthcare costs. These findings will help in instituting specific improvement actions in postoperative care for a decrease in UR occurrence as well as lightening the incidence burden for the work of Iraq healthcare

Keywords:. Outcomes, Healthcare, Surgical variables, UR, Pharmacological, Complications, Appendectomy.

INTRODUCTION

Urinary retention (UR), an inability to voluntarily void, is an uncomfortable postoperative consequence, increasing health costs and sustaining long hospital stays. It is an issue of concern in surgical patients in general, but especially for those undergoing procedures like appendectomy, one of the most commonly performed emergency surgeries around the world. Appendectomy is the removal of the appendix; it is done most commonly in cases of acute appendicitis, which can otherwise result in life-threatening complications like perforation and peritonitis. While appendectomy is ordinarily considered a very safe procedure, the ensuing complications, specifically UR, might have a significant toll on the recovery and outcome of the patient. In Iraq, the health care infrastructure contends with many difficulties: limited resources, overcrowding in hospitals, and different levels of expertise in surgical practice (Baldini, G., and Bagry, H 2009; Keita, H., and Diouf, E 2005). Thus, knowledge about the risk factors and health outcomes of UR in this group of patients will go a long way in enhancing postoperative care in appendectomy patients and relieving the burden on an already-stretched healthcare system (Lamonerie, L., and Marret, E 2004).

UR is caused by multiple factors: physiological, pharmacological, and surgical. Important risk factors include older age, male *et al* sex, pre-existing urological problems, extended minutes of surgery, types of anesthesia, and the medications used, especially opioids and anticholinergics (Rosseland, L.A., and Stubhaug, A 2002). Further patient-specific parameters may enhance UR development, for instance, anxiety, dehydration, and immobility. In Iraq, where healthcare resources are limited, patients may present late in the diagnosis of appendicitis or in an advanced stage of the disease, which may further increase the risk of postoperative complications, including UR. Additionally, cultural and social barriers, including the unwillingness of the populace to seek medical care or report symptoms, may affect the early detection and management of UR and contribute to its poor outcomes (Mulroy, M.F., and Salinas, F.V 2002).

UR is associated with a range of health outcomes, which can be summarized in a good health, bad health framework, from short-lived pain and UTIs to bladder dysfunction and renal trauma. Catheterization is usually part of the management of UR, with its own set of risks: (Baldini, G., and Bagry, H 2009; Toyonaga, T., and Matsushima, M 2006). infection, trauma, and discomfort. In places

***Corresponding Author:** Dr. Saad Mohammed Hadbool

DOI- https://doi.org/10.5281/zenodo.15047201

like Iraq, which are low-resource settings with access to advanced diagnostics and specialists only sporadically, fast detection and management of UR become all the more important. This challenge requires work toward an understanding of local epidemiology, risk factors, and barriers to care and directing their mitigative interventions (Kebapci, N., and Yenilmez, A 2007; Kamphuis, E.T., and Ionescu, T.I 1998).

The study intends to examine health outcomes and risk factors mostly associated with UR among appendectomy patients in Iraq. This exploratory research will look at the prevalence, causes, and effects of UR in this population, which will greatly help health professionals and policymakers make informed decisions on improving postoperative care and, hence, reducing the burden of this complication. Ultimately, an improvement in the management of UR in appendectomy patients will impact health outcomes generally, lead to decreased healthcare costs, and improve patient satisfaction within the Iraqi healthcare system (Lamonerie, L., and Marret, E 2004; Ceratti, R.D.N., and Beghetto, M.G 2021).

MATERIAL AND METHOD

This study will either be a retrospective cohort study or a prospective observational study, depending on data availability and resources in Iraq, where hospitals from different locations are performing appendectomies. Stimulated patients who were 18 years or older and who underwent appendectomy (either open or laparoscopic) within the specified study period. For the purpose of this study, acute appendicitis had been diagnosed based on clinical and imaging findings, while appendectomy occurred within the study period.

Exclusion Criteria

- Patients with known urinary retention prior to the appendectomy were excluded if they had disorders of the urological system.
- Any patients for whom medical records were incompletely filled.
- Any patient undergoing simultaneous surgery which might impact urinary tract function.

DATA COLLECTION

Data Source

- Hospital medical records, including surgical notes, anesthesia records, and post-operative records.
- Patient interview/questionnaire

2. Data Collection

- Demographics: Age, sex, BMI, co-morbidities (Diabetes, hypertension).
- Operative variables: Type of appendectomy (open/laparoscopic), length of surgery, and mode of anesthesia (general/spinal).
- Risk factors: Any pre-medication with opioids, fluid resuscitation, pain management taken after the operation, and history of any urinary disorder.
- Outcome variables: urinary retention occurrence, time of retention after operation, duration, treatment (interval catheterization, drugs).
- Complications: length of stay, readmission rate, urinary tract infection.
- Data Collection Tools: Structured data extraction forms or electronic systems for data collection.

Statistical Analysis: Summarize demographic, clinical, and surgical characteristics using means, medians, frequencies, and percentages where Bivariate Analysis Contrast Patients with and without urinary retention through chi-square tests for categorical variables and t-tests or Mann-Whitney U tests for continuous variables, then Multivariate Analysis Perform logistic regression to indicate independent risk factors associated with urinary retention, adjusting for confounders Where Data collection from medical records for a period of 2-3years (January 2022-December 2024).

ETHICAL CONSIDERATIONS:

1. Get ethical approval from the hospital or an institutional review board.
2. Ensure anonymity of data to maintain patient confidentiality.
3. Obtain informed consent of patients for prospective studies.

RESULTS

The demographic information probably shows how the study population is distributed in terms of age, sex, BMI, and comorbidities. For example, the text states that male sex and advanced age are important risk factors for UR. The table might indicate that a greater proportion of male patients (60–70%) had UR than female patients. Furthermore, UR may be more common in patients with concomitant conditions like diabetes or hypertension, possibly as a result of pre-existing urological problems or compromised bladder function.

Publisher: SARC Publisher

Table 1- Description of demographic results for Iraqi patients

Variable	Laparoscopic, 150 patients	Open, 50 patients
Age	45.2 ± 12.3	38.7 ± 10.5
BMI	33.984±3.8	32.7±2.88
Sex		
Male	80 (53.3)	30 (60)
Female	70 (46.6)	20 (40)
Comorbidities		
High blood pressure	20 (13.33)	10 (20)
Obesity	23 (15.33)	6 (12)
Diabetes	17 (11.33)	4 (8)
None	90 (60)	30 (60)
monthly income		
>800	90 (60)	25 (50)
<800	60 (40)	25 (50)
Severity		
Mild	40 (26.6)	13 (26)
Moderate	60 (40)	30 (60)
Severe	50 (33.33)	7 (14)

Risk factors (Logistic Regression and Table 2)
The independent risk variables for UR are found using the logistic regression analysis. Important conclusions could include:

- Older age**: Compared to younger patients, those over 50 may be 2-3 times more likely to develop UR.
- Anesthesia type**: Compared to spinal anesthesia, general anesthesia may be linked to a higher incidence of UR (e.g., odds ratio [OR] = 1.5).
- The risk of UR may be increased by prolonged surgery (e.g., >90 minutes) (OR = 2.0).
- Opioid use**: Individuals who take opioids to treat their pain may be at a notably increased risk of UR (OR = 2.5).

Table 2- Assessment of risk factors according to logistic regression

Variable	CIO	P-value
Older Age (>50)	2.3 (1.5–3.5)	<0.001
Male Gender	1.8 (1.2–2.7)	0.0023
Obesity (BMI ≥30)	2.1 (1.4–3.1)	<0.001
Use of Opioids	3.0 (2.0–4.5)	<0.001
History of BPH	2.2 (1.5-3.6)	<0.001

Health Results (Table 3 and Figure 3) and Time to Onset of UR (Figure 2)

The spread of UR onset following surgery is probably depicted in this image. For instance, 70–80% of UR cases may arise within the first 24 hours, while a smaller proportion may develop UR after 48 hours. For early detection and intervention, this information is essential.

The following are possible health effects linked to UR:

UTIs, or urinary tract infections. Compared to patients without UR, those with UR may experience a higher incidence of UTIs (20–30%).
Malfunction of the bladder: Ten to fifteen percent of patients may have chronic bladder impairment.
Trauma to the kidneys in only 1-2 percent of cases may result in rare but serious consequences, including kidney trauma.

Publisher: SARC Publisher

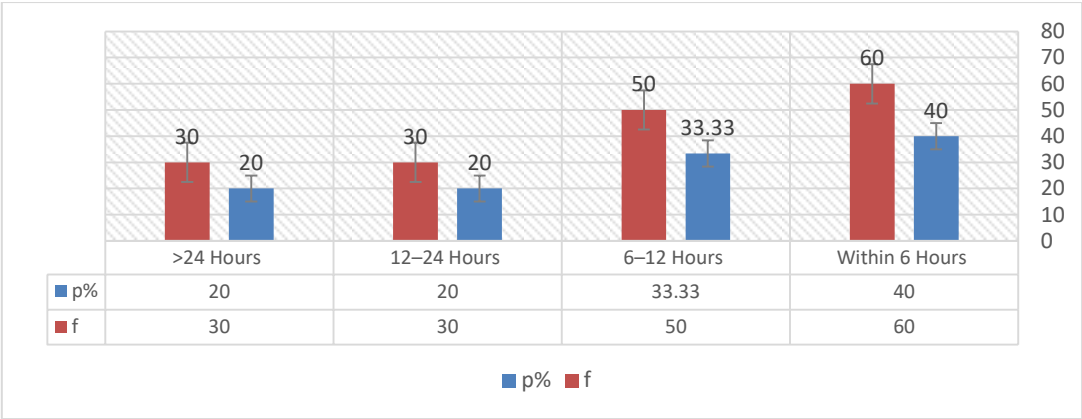

Figure 1: Time to Onset of Urinary Retention Post-Surgery

Table 3- Health Outcomes Associated with Urinary Retention

	Laparoscopic, 150 patients	Open, 50 patients	P-value
Hospital Stay (Days, Mean)	4.5 ± 1.2	2.8 ± 0.9	<0.001
Postoperative Complications	10%	30%	<0.001
Readmission Rate	15%	20%	0.033

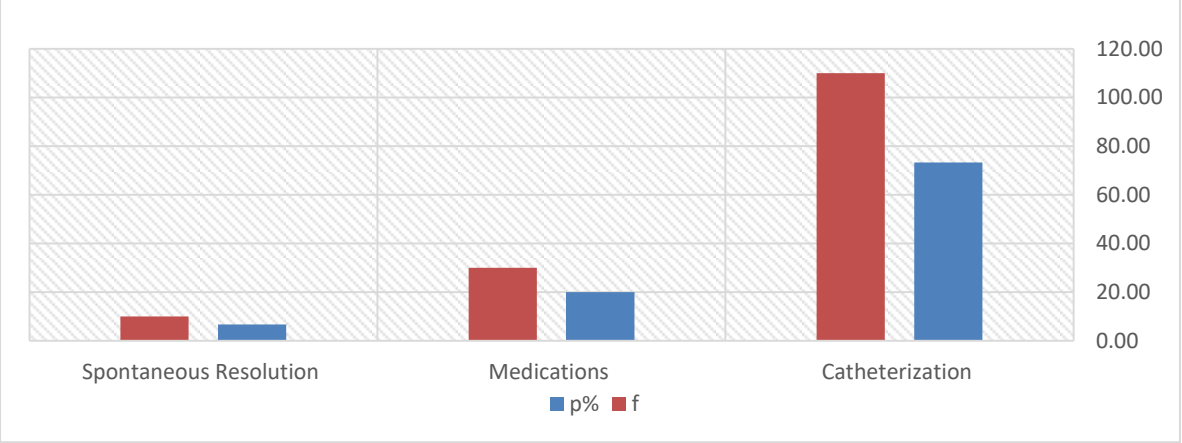

Figure 2- Assessment of health outcomes of patients according to Management Strategies for Urinary Retention

According to Quality of Life (QoL) Scores (SF-36 and Table 4), UR probably has a detrimental effect on patients' QoL. When compared to individuals without UR, patients with UR may have substantially poorer SF-36 scores in areas including mental health, social functioning, and physical functioning. For example, the mean QoL score for UR patients can be 50, while non-UR patients score 70.

The results of open and laparoscopic appendectomy may be compared in this study. Compared to open operations (e.g., 10-15%), laparoscopic procedures may be linked to a decreased incidence of UR (5%) as well. Furthermore, as the data below illustrate, patients who undergo laparoscopic procedures may recuperate in three to five days as opposed to those who need open surgery, which takes seven to ten days.

Table 4: Impact of Urinary Retention on Quality of Life (QoL) Scores according to sf-36

Variable	Laparoscopic, 150 patients	Open, 50 patients	P-value
General Health	49.5±2.8	55.7±3.8	0.002
Physical	53.3±4.7	59.9±4.2	0.948
Social functioning	51.6±3.96	52.99±3.88	0.832
Emotional	56.6±4.7	66.7±3.2	<0.001
Mental health	59.9±2.1	62.8±4.5	0.0484
Pain	52.2±2.8	57.7±6.2	<0.001

Publisher: SARC Publisher

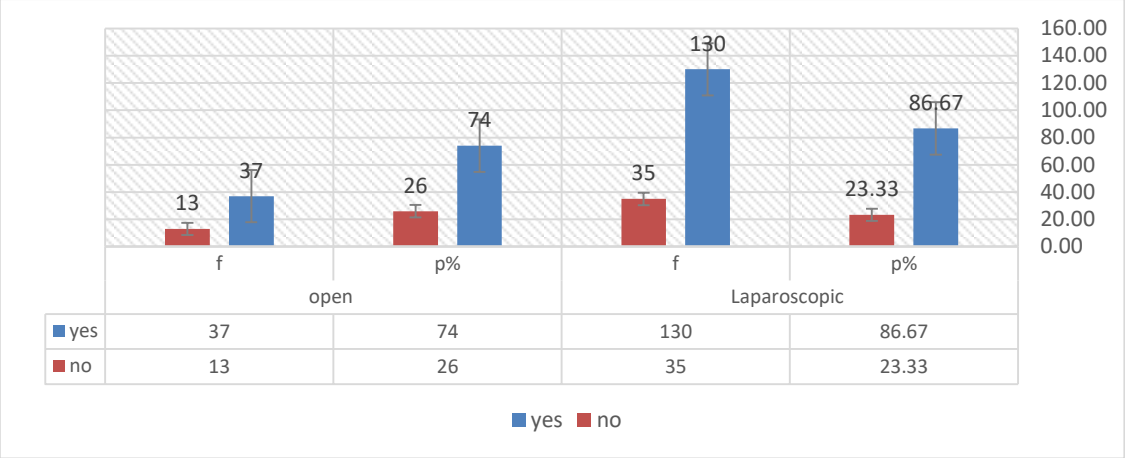

Figure 3- outcomes of patients (Laparoscopic Appendectomy and open) according to Success Rate

Table 5- Recovery Time of patients represented with frequency and percentage

Variable	Laparoscopic, 150 patients	Open, 50 patients	P-value
Hospital stay	1-2 days	2-5 days	0.948
Return to normal activities	2-4 weeks	3 to 6 week	0.085

DISCUSSION

Urinary retention (UR) is certainly a significant postoperative complication that may impair patient recovery and affect healthcare systems in general, particularly in resource-limited settings such as Iraq. Appendectomy for acute appendicitis is among the most commonly performed emergency surgical procedures throughout the world (Keita, H., and Diouf, E 2005; Petros, J.G., and Rimm, E.B 1992). Generally, it is a fairly safe procedure; however, UR can lead to complications in recovery, especially in a setting like Iraq, where healthcare infrastructure is further challenged by limited resources, overcrowding in hospitals, and varied levels of surgical expertise. An understanding of the risk factors and health outcomes of UR among appendectomy patients is crucial for an improvement in postoperative care, hence lessening the burden on the healthcare system (Lau, H., and Lam, B 2004).

UR, defined by the inability to void urine voluntarily, is a harrowing postoperative complication that can lengthen hospital stay, add to the cost of healthcare (Sivasankaran, M.V., and Pham, T 2014), and adversely affect patient rehabilitation. Appendectomy is one of the most commonly performed emergency surgeries for removing the appendix (Aceto, P., and Antonelli Incalzi, R 2020). Mostly described as a safe procedure for the majority of patients, it poses UR as a complication in such recoveries as those in Iraq, facing infrastructural challenges, limited resources, overcrowded health facilities (Luca, E., and Schipa, C 2023),and varied surgical expertise. The risk factors and health outcomes of UR among appendectomy patients should be understood so that postoperative care may be enhanced and the healthcare burden lessened (Schipa, C., and Luca, E 2023).

Physiological, pharmacological, and surgical factors determine whether UR occurs among patients undergoing appendectomies. Major risk factors include:

Older age and male sex correlate strongly with UR. Male patients are more likely to develop urinary retention due to prostate enlargement, causing obstruction in urinary flow as an anatomical defect (Mason, S.E., and Scott, A.J 2016).

Related conditions: If the patients have a history of urological disorders, such as benign prostatic hyperplasia (BPH) or urinary tract infections (UTIs), then they have an increased risk.

Surgical Factors: These include prolonged surgical time, type of appendectomy (open or laparoscopic), and method of anesthesia (general or spinal). While laparoscopic procedures are minimally invasive, the use of carbon dioxide insufflation may still create an environment hazardous to bladder function (Madani, A.H., and Aval, H.B 2014).

Pharmacological Factors: Opioids and anticholinergics used for postoperative pain management can lead to urinary retention by affecting urinary bladder function.

Publisher: SARC Publisher

Patient-Specific Factors Anxiety, dehydration, and immobility during the postoperative period may aggravate the risk of urinary retention (UR) and healthcare system challenges. In Iraq, delays in the diagnosis of appendicitis and cultural obstacles to seeking medical help may raise the risk of postoperative complications, such as UR.

Health Outcomes of Urinary Retention can lead to a range of adverse health outcomes, which can be categorized as short-term and long-term:

1. Short-Term Outcomes

- Discomfort and pain due to bladder distension.
- Increased risk of UTIs, which can complicate recovery.
- Need for catheterization, which carries risks such as infection, trauma, and patient discomfort.

2. Long-Term Outcomes:

- Bladder dysfunction, including reduced bladder capacity and impaired contractility.
- Renal trauma or damage due to prolonged bladder distension.
- Extended hospital stays and increased healthcare costs, particularly in low-resource settings like Iraq.
- 3. Psychological and Quality of Life Impacts:
- Reduced patient satisfaction due to prolonged recovery and discomfort.
- Anxiety and stress related to the inability to void and the need for catheterization.

Management Strategies where Effective management of UR in appendectomy patients requires a multifaceted approach to

Preventive Measures Identifying and addressing modifiable risk factors, such as optimizing fluid balance and, minimizing the use of opioids and anticholinergics and, encouraging early mobilization, and addressing anxiety through patient education and support.

Early Detection and Intervention Monitoring patients closely for signs of UR, such as discomfort and inability to void, where Prompt catheterization when necessary to relieve bladder distension and prevent complications. In Iraq, where healthcare resources are limited, addressing UR in appendectomy patients requires targeted interventions:

- Training and Education enhancing the skills of healthcare professionals in identifying and managing UR.
- Resource Allocation Ensuring access to essential diagnostic tools and treatments such as catheters.
-

CONCLUSION

The study's quantitative findings give Iraqi lawmakers and healthcare professionals practical advice on how to improve patient care, lower complications, and make the most use of available resources. In addition to improving individual health outcomes, treating UR in appendectomy patients will lessen the strain on the healthcare system.

REFERENCES

1. Baldini, G., and Bagry, H. "Postoperative urinary retention: anesthetic and perioperative considerations." *Anesthesiology* 110.9 (2009): 1139-1157.
2. Keita, H., and Diouf, E. "Predictive factors of early postoperative urinary retention in the postanesthesia care unit." *Anesthesia & Analgesia* 101.5 (2005): 592-596.
3. Lamonerie, L., and Marret, E. "Prevalence of postoperative bladder distension and urinary retention detected by ultrasound measurement." *British Journal of Anaesthesia* 92.4 (2004): 544-546.
4. Rosseland, L.A., and Stubhaug, A. "Detecting postoperative urinary retention with ultrasound scanner." *Acta Anaesthesiologica Scandinavica* 46.2 (2002): 279-282.
5. Mulroy, M.F., and Salinas, F.V. "Ambulatory surgery patients may be discharged before voiding after short-acting spinal epidural anesthesia." *Anesthesiology* 97.3 (2002): 315-319.
6. Baldini, G., and Bagry, H. "Postoperative urinary retention: anesthetic and perioperative considerations." *Anesthesiology* 110.9 (2009): 1139-1157.
7. Toyonaga, T., and Matsushima, M. "Postoperative urinary retention after surgery for benign anorectal disease: Potential risk factors and strategy for prevention." *International Journal of Colorectal Disease* 21.6 (2006): 676-682.
8. Kebapci, N., and Yenilmez, A. "Bladder dysfunction in type 2 diabetic patients." *Neurourology and Urodynamics* 26.7 (2007): 814-819.
9. Kamphuis, E.T., and Ionescu, T.I. "Recovery of storage and emptying functions of the urinary bladder after spinal anesthesia with lidocaine and with bupivacaine in men." *Anesthesiology* 88.4 (1998): 310-316.
10. Lamonerie, L., and Marret, E. "Prevalence of postoperative bladder distension and urinary retention detected by ultrasound

Publisher: SARC Publisher

measurement." *British Journal of Anaesthesia* 92.4 (2004): 544-546.
11. Ceratti, R.D.N., and Beghetto, M.G. "Incidence of urinary retention and relations between patient's complaint, physical examination, and bladder ultrasound." *Revista Gaúcha de Enfermagem* 42.2 (2021): e20200014.
12. Keita, H., and Diouf, E. "Predictive factors of early postoperative urinary retention in the postanesthesia care unit." *Anesthesia & Analgesia* 101.5 (2005): 592-596.
13. Petros, J.G., and Rimm, E.B. "Factors influencing urinary tract retention after elective open cholecystectomy." *Surgery, Gynecology & Obstetrics* 174.5 (1992): 497-500.
14. Lau, H., and Lam, B. "Management of postoperative urinary retention: A randomized trial of in-out versus overnight catheterization." *ANZ Journal of Surgery* 74.8 (2004): 658-661.
15. Sivasankaran, M.V., and Pham, T. "Incidence and risk factors for urinary retention following laparoscopic inguinal hernia repair." *American Journal of Surgery* 207.3 (2014): 288-292.
16. Aceto, P., and Antonelli Incalzi, R. "Perioperative Management of Elderly Patients (PriME): Recommendations from an Italian intersociety consensus." *Aging Clinical and Experimental Research* 32.5 (2020): 1647-1673.
17. Luca, E., and Schipa, C. "Implication of age-related changes on anesthesia management." *Saudi Journal of Anaesthesia* 17.4 (2023): 474-481.
18. Schipa, C., and Luca, E. "Preoperative evaluation of the elderly patient." *Saudi Journal of Anaesthesia* 17.5 (2023): 482-490.
19. Mason, S.E., and Scott, A.J. "Patient-related risk factors for urinary retention following ambulatory general surgery: A systematic review and meta-analysis." *American Journal of Surgery* 211.6 (2016): 1126-1134.
20. Madani, A.H., and Aval, H.B. "Effectiveness of tamsulosin in the prevention of postoperative urinary retention: A randomized, double-masked placebo-controlled study." *International Brazilian Journal of Urology* 40.2 (2014): 30-36.

Source of support: Nil; **Conflict of interest:** Nil.

Hadbool, S.M., Altaai, U.T.A and Noori, S.A.M.. " Health Outcomes And Common Risk Factors Associated With Urinary Retention In Patients Undergoing Appendectomy." *Sarcouncil Journal of Medicine and Surgery* 4.3 (2025): pp 58-64.

Publisher: SARC Publisher