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Asymptomatic Bacteriuria and Urological Surgery: Risk Factor or Not? Results From the National and Multicenter TOCUS Database

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Study Need and Importance: Current guidelines recommend screening and treatment of asymptomatic bacteriuria before urological surgeries. There is no evidence in the literature to support these recommendations. Therefore, it is crucial to identify and understand the factors associated with postoperative febrile infectious complications in urological surgery.

What We Found: Among 2389 patients undergoing urological surgery with preoperative urine cultures, over one-third (35%) had positive cultures (546 mono-/bimicrobial and 292 polymicrobial). Notably, only 5% of these polymicrobial cultures had microorganism identification. Postoperative infections occurred in 106 cases (4.4%). Of these, 42 had positive mono-/bimicrobial urine cultures (40%) and 20 had a polymicrobial urine cultures (19%). Factors independently associated with postoperative febrile infections included a history of UTIs within 12 months of surgery, positive preoperative urine culture, both monomicrobial/bimicrobial or polymicrobial, and longer operative time (Table).

Limitations: While our study identified factors contributing to postoperative infections, it is a retrospective study, which may introduce biases. Additionally, other variables influencing infection risk, such as comorbidities, were not fully explored. Finally, subgroup comparisons by surgery were not conducted in this study.

Interpretation for Patient Care: Positive urine culture, mono-/bimicrobial or polymicrobial, before urological surgery was associated with postoperative infections. However, the effectiveness of systematic preventive antibiotic therapy remains inconclusive, and this may not be applicable to all surgeries. Our findings emphasize the need for further research to refine preoperative screening and preventive strategies, ultimately enhancing patient outcomes in urological surgeries.

Table. *Multivariable Logistic Regression Analysis*

	OR (CI)	*P* value
Age (y)	1.01 (0.99, 1.02)	.4
Medical history of UTI in previous 12 mo		
No	Reference	
Yes	**3.43 (2.07, 5.66)**	**< .001**
Preoperative urinary catheter		
No	Reference	
Yes	1.03 (0.59, 1.78)	.9
Surgery category		
No endoscopic surgery without opening of urinary tract	Reference	
No endoscopic surgery with opening of urinary tract	0.90 (0.44, 1.83)	.8
Upper urinary tract endoscopy	0.72 (0.31, 1.70)	.4
Lower urinary tract endoscopy	0.89 (0.44, 1.87)	.8
Preoperative urine culture		
Negative	Reference	
Positive (mono- or bimicrobial)	**3.68 (1.57, 8.42)**	**.002**
Polymicrobial	**2.85 (1.52, 5.14)**	**< .001**
Preoperative antibiotic therapy		
No	Reference	
Yes	0.65 (0.30, 1.41)	.3
Operative time (for 15-min increase in operative time [min])	**1.09 (1.04, 1.15)**	**< .001**

Abbreviations: OR, odds ratio.
Bolded text indicates statistical significance.

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Asymptomatic Bacteriuria and Urological Surgery: Risk Factor or Not? Results From the National and Multicenter TOCUS Database

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Purpose: Current guidelines recommend screening and treatment of asymptomatic bacteriuria prior to all urological surgeries breaching the mucosa. But little evidence supports this recommendation. At the least, risk stratification for postoperative UTI to support this strategy is lacking. The aim of this study was to define the associated factors for postoperative febrile infectious complications (UTI or surgical site infection) in urological surgery.

Materials and Methods: We conducted a retrospective, multicentric study including all consecutive patients undergoing any urological surgery with

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Author Contributions:
Protocol/project development: Vallée.
Data collection or management of local database: Kutchukian, Robin, Bigot, Françot, Chapuis, Jousseaume, Karray, Kosseifi, Asare, Gaullier, Poussot, Baboudjian, Gondran-Tellier, de Vergie, Rigaud, Brureau, Borojeni, Descazeaud, Chicaud, Tricard, Lechevallier, Vallée, Delpech, Ducousso, Bernardeau.
Data analysis: Kutchukian, Vallée, Robin, Gondran-Tellier, Bruyère, Ayoub, Dinh.
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Data Availability: The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.
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preoperative urine culture. The primary outcome was the occurrence of a UTI or surgical site infection occurring within 30 days after surgery.

Results: From 2016 to 2023, in 10 centers, 2389 patients were included with 838 (35%) positive urine cultures (mono-/bi-/polymicrobial). Postoperative infections occurred in 106 cases (4.4%), of which 44 had negative urine cultures (41%), 42 had positive mono-/bimicrobial urine cultures (40%), and 20 had polymicrobial urine cultures (19%). In multivariable analysis, UTI during the previous 12 months of surgery (odds ratio [OR] 3.43; 95% CI 2.07-5.66; $P < .001$), monomicrobial/bimicrobial preoperative urine culture (OR 3.68; 95% CI 1.57-8.42; $P = .002$), polymicrobial preoperative urine culture (OR 2.85; 95% CI 1.52-5.14; $P < .001$), and operative time (OR 1.09; 95% CI 1.04-1.15; $P < .001$) were independent associated factors for postoperative febrile infections.

Conclusions: Positive urine culture, including preoperative polymicrobial urine culture, prior to urological surgery was associated with postoperative infection. Additionally, patients experiencing infectious complications also had a higher incidence of other complications. The effectiveness of systematic preventive antibiotic therapy for a positive urine culture has not been conclusively established.

Key Words: antibiotic prophylaxis, asymptomatic bacteriuria, urinary tract infections, urologic surgical procedures

Currently, AUA and European Association of Urology guidelines recommend investigation and treatment of asymptomatic bacteriuria (ABU) prior to urologic surgery with urothelial mucosal involvement.[1,2] French guidelines strongly recommend treating ABU 48 hours before the operation and up to 7 days postoperatively,[3] or up to 24 hours postoperatively in case of insertion or change of a ureteral stent.[4] European guidelines suggest perioperative antibiotic for ABU without strong level of evidence regarding the choice of the antibiotic and the treatment duration.[1] Management of ABU prior to urological surgery depends on the surgeon's experience and the country, with only few scientific data on this subject. This leads to systematic treatment of all cases of ABU, which is also due to the major medicolegal impact of postoperative infections. In addition to the risk of increased antibiotic resistance, which is directly linked to the use of antibiotics,[5] there is also evidence in favor of an increased risk of highly resistant infection.[6,7] In the absence of high-level evidence-based studies, we need to reconsider these systematic practices.

The main risk in positive preoperative urine culture (UC) is health care–associated UTI with consequences in term of morbidity, mortality, and cost.[3] In the literature, a rate of posturological surgery infectious complications of 2% to 12% has been found, with 20% to 30% of febrile urinary tract infectious complications, 6% to 10% of bacteremia, and 2.6% of surgical site infections (SSIs).[8] The aim of the different guidelines is not only to reduce the incidence of UTI and SSI complications, but also to limit the impact of antibiotic resistance. A 2019 study by Cassini et al highlighted a high rate of infections linked to multiresistant bacteria in Europe, 64% of which were health care–associated infection.[9] Bacterial resistance has been increasing, particularly in enterobacterales, which are the most common cause of postoperative infectious complications in urology. The interest of screening and treating ABU to reduce the rate of postoperative infections has been demonstrated for operations such as flexible ureteroscopy,[10,11] percutaneous nephrolithotomy,[12] and transurethral resection of the prostate (TURP)[13] but remains unproven for other surgeries. There are few data in the literature on the risk factors for infectious complications, particularly concerning ABU, with some studies not finding this to be a risk factor at all.[8]

The aim of this study was to determine ABU-related preoperative and intraoperative factors with an influence on the rate of infectious complications after urological surgery.

MATERIALS AND METHODS

TOCUS Database

TOCUS stands for "To treat Or not to treat a Colonization prior to Urologic Surgery." This study is a French retrospective, multicentric study (10 hospitals), including all patients having undergone urological surgery with UC from January 1, 2016, to April 1, 2023. The inclusion criteria were: all patients having undergone any planned noncombined urological surgery, with preoperative UC performed. The noninclusion criteria were: patients admitted and operated in emergently, without preoperative UC or in combined surgery.

We classified all patients into 4 categories of surgery for analysis.

- Upper urinary tract endoscopy (percutaneous nephrolithotomy and flexible or rigid ureteroscopy, ureteral stent change or insertion, retrograde ureteropyelography)
- Lower urinary tract endoscopy (transurethral resection of bladder tumor [TURB], TURP, urethrotomy, vaporization or prostatic enucleation, endovesical lithotripsy)
- Surgery without opening the urinary tract system (partial or radical nephrectomy, sacrocolpopexy, and artificial urinary sphincter)
- Surgery with opening of the urinary tract system (simple prostatectomy, tension-free vaginal tape, pyeloplasty,

ureteral reimplantation, prostatectomy, cystoprostatectomy, and anterior pelvectomy)

UC Management and Antibioprophylaxis

UC was performed 4 to 10 days before the surgery, and could be negative, positive (monomicrobial or bimicrobial), or polymicrobial (defined as a UC isolating at least 3 microorganisms, none of which predominate). ABU was defined according to the guidelines as the detection of a microorganism, whatever the bacteriuria threshold, in a patient with no clinical symptoms, associated or not with leukocyturia (presence of leukocytes in urine with no threshold).[3]

Each department was responsible for the management of ABU in these patients. In positive UC, each center could give an antibiotic adapted to the antibiogram and choose the duration. For polymicrobial UC, probabilistic antibiotic therapy was prescribed or not according to surgeon preference.

Intraoperative antibiotic prophylaxis was defined in compliance with the guidelines if it was performed 30 minutes before surgery, with the molecule and dosage indicated by the guidelines.[14]

Primary and Secondary End Points

Our primary end point was the occurrence of a urinary infectious complication within 30 days postoperatively defined as:

- Febrile UTI, defined as postoperative fever (38 °C or more) or hypothermia (<36 °C) associated with clinical symptoms (lower urinary tract symptoms or flank/back pain), biological and microbiological (positive UC), and radiological results (which was not systematic and sometimes performed to precise diagnostic or for another noninfectious complications) of prostatitis, pyelonephritis, or urosepsis[3]or
- SSI (defined as infections occurring up to 30 days after surgery and affecting the incision or deep tissue at the operation site)

Our secondary end points were the occurrence of other noninfectious complications and overall survival within 30 days of surgery.

Data Analysis

Demographic data, preoperative clinical information, and follow-up variables until 30 days after surgery were extracted from medical files. Quantitative variables were reported in median and interquartile range. Categorical variables were described as numbers and percentages. A univariate analysis, to determine the prognostic value of each variable, was realized. Wilcoxon test, χ^2 test, or Fisher exact test was used, depending on the type of variable. We conducted a multivariate logistic regression model with the status of postoperative infectious complication as the dependent variable. The independent covariates included in our model were the variables selected from the literature, including operative time and age and the variables with $P < .20$ after the univariate analysis. This was done to calculate the adjusted odds ratios (ORs) and 95% CIs to determine the associated factors for postoperative infections. Results were reported as OR with 95% CI. A P value < .05 was considered statistically significant. Operative time was reported with the OR and CI for a 15-minute increase in operative time. Due to a very low number of missing data (<5%), these were excluded from the analysis. For the multivariate logistic regression analysis, 9 patients were excluded from the analysis due to missing data. Statistical analysis was performed using R 4.2.2 software.

Data Collection

All information was collected retrospectively from patients' medical records thanks to a standard dataset. It was anonymized and then entered in a national database using Excel software. The study was validated by the Commission Nationale de l'Informatique et des Libertés and registered under number 2211250V0. It was approved by the Ethics Committee of the Association Française d'Urologie under number CERU_2022009.

RESULTS

Clinical and Demographic Characteristics

On April 1, 2023, the TOCUS study included 2389 patients. There were 1550 (65%) patients with negative preoperative UC, compared to 838 (35%) with positive UC. Out of these positive UCs, 546 (65%) were mono- or bimicrobial and 292 (35%) were polymicrobial (Table 1).

Table 1. *Baseline Characteristics and Characteristics During Surgery*

No. patients	2389	
Age, median (IQR), y	68	(59, 74)
Male gender, No. (%)	1835	(77)
BMI, median (IQR), kg/m^2	26.15	(23.45, 29.39)
Medical history of UTI in previous 12 mo, No. (%)[a]		
No	2038	(85)
Pyelonephritis	84	(3.5)
Obstructive pyelonephritis	166	(7)
Prostatitis	85	(3.6)
Others	15	(0.6)
Preoperative urinary catheter, No. (%)		
No	1661	(70)
Double pigtail stent	554	(23)
Ureteral catheter	8	(0.3)
Bladder catheter	142	(6)
Others	24	(1)
Preoperative urine culture, No. (%)[a]		
Negative	1550	(65)
Polymicrobial	292	(12)
Bimicrobial	74	(3)
Monomicrobial	472	(20)
Use of antibiotic therapy, No. (%)	622	(26)
Use of antibiotic prophylaxis, No. (%)[a]	1772	(74)
Operative time, median (IQR), min	58	(29, 120)
Intraoperative antiseptic agent, No. (%)[b]		
Alcoholic betadine	969	(41)
Dermal betadine	1247	(52)
Others	169	(7)
Postoperative urinary catheter, No. (%)[c]		
No	144	(6)
Double pigtail stent	554	(23)
Bladder catheter	1457	(61)
Others	232	(10)

Abbreviations: IQR, interquartile range.
[a] Missing data for 1 patient.
[b] Missing data for 4 patients.
[c] Missing data for 2 patients.

The demographic characteristics and the preoperative characteristics are presented in Table 1.

Of note, 728 patients (30%) had a preoperative urinary catheter. Out of the latter, 124 had polymicrobial UC, ie, 42.5%.

The different types of surgeries and the percentage of complications per surgery are summarized in Figure 1. Among the 2389 patients, 1041 (44%) had lower urinary tract endoscopy, 762 (32%) upper urinary tract endoscopy, 317 (13%) had nonendoscopic surgery with opening of the urinary tract system, and 269 (11%) had nonendoscopic surgery without opening of the urinary tract system.

Among the 838 positive UCs, 542 (65%) microorganisms were identified preoperatively, and for the 292 polymicrobial UCs, only 15 (5%) had microorganism identification.

The main bacteria identified in the preoperative UC are shown in Figure 2. The microorganisms responsible for the mono- and bimicrobial preoperative UC were identified in 97% of the cases, and only 5% of the microorganisms responsible for the polymicrobial UC were reported.

After analyzing patients with positive preoperative UC with bacterial identification and who developed a postoperative infection, the microorganisms found postoperatively were different from those found preoperatively for 24 patients of 62 (38%).

Among patients with positive or polymicrobial UC, 622 (26%) received antibiotic therapy. Preoperative antibioprophylaxis was administered to 1772 (74%) patients. The mean time for administration of antibiotic prophylaxis was 18.8 minutes. We noted 77% of cases were not compliant with the

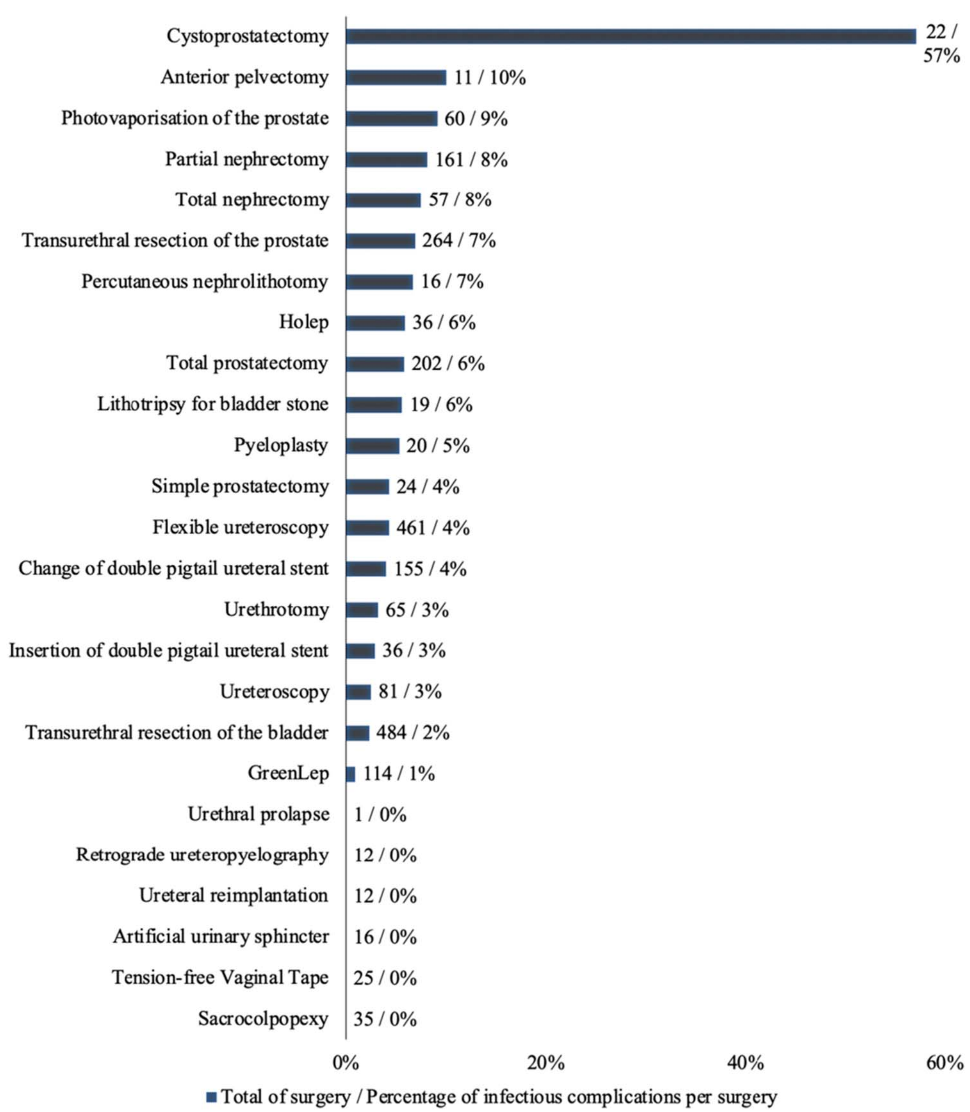

Figure 1. Occurrence of postoperative infections per surgery. – indicates no infectious complication; Holep, holmium laser enucleation of the prostate; GreenLep, GreenLight laser enucleation of the prostate.

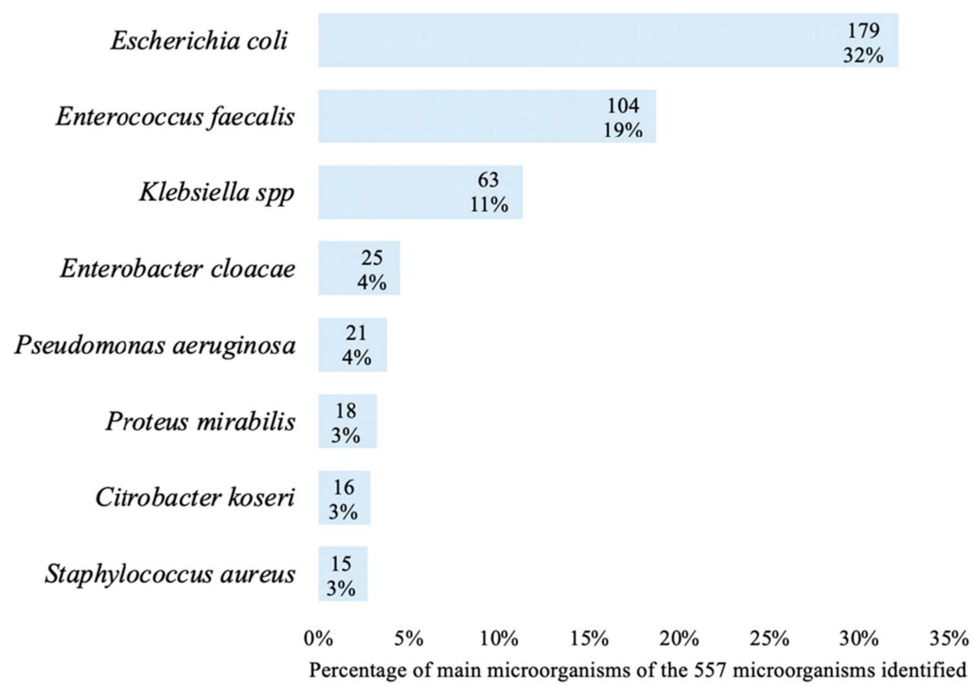

Figure 2. Main microorganisms on preoperative urine culture. spp indicates species.

guidelines, mainly due to administration time of less than 30 minutes (in 79% of cases; Table 1).

Results for the Primary End Point

The rate of postoperative infections was 4.4% (106 patients): 3.9% (94 patients) with a febrile UTI and 0.5% (12 patients) an SSI. Six patients (0.25%) required the ICU. In our cohort, 62 patients (56%) with positive preoperative UC had an infectious complication postoperatively. The characteristics of patients who presented a postoperative infection, as well as the univariate analysis, are shown in Table 2. In multivariable logistic regression (Table 3), UTIs during the previous 12 months of surgery (OR 3.43; 95% CI 2.07-5.66; $P < .001$), monomicrobial/bimicrobial preoperative UC (OR 3.68; 95% CI 1.57-8.42; $P = .002$), polymicrobial preoperative UC (OR 2.85; 95% CI 1.52-5.14; $P < .001$), and operative time (OR 1.09; 95% CI 1.04-1.15; $P < .001$) were independently associated factors for postoperative febrile infections. Preoperative antibiotic therapy was not associated with postoperative infection (OR 0.65; 95% CI 0.30-1.41; $P = .3$).

Results for Secondary End Points

Two hundred and sixty-four (11%) patients had a noninfectious complication within 30 days postoperatively: macroscopic hematuria (37%), acute urine retention (24%), digestive or urinary fistula (15%), acute renal failure (6.8%), and anemia with transfusion (6.8%). Out of all postoperative complications (infectious and noninfectious), 230 were grade I to II according to the Clavien-Dindo classification, 78 were grade III to IV, and 5 were grade V.

Forty-five patients had a combined infectious and noninfectious postoperative complication.

In our study, we counted 6 deaths (0.25%) that occurred within 30 days of surgery, of which 3 (50%) were due to an infectious complication associated with another noninfectious complication.

DISCUSSION

In our study, we found a concordant rate, compared to the literature, of postoperative UTI and SSI of 4.4% for all surgeries.[8,15,16] This study showed unprecedented results on risk factors for postoperative infectious complications: history of UTI in the previous 12 months, positive preoperative monomicrobial or bimicrobial UC, operative time, and occurrence of a noninfectious complication. It also seems to confirm that preoperative polymicrobial UC is an associated factor for postoperative infectious complications such as monomicrobial or bimicrobial UC. Indeed, 58.5% of patients who developed a postoperative UTI or SSI had positive preoperative UC. Earlier studies found contradictory results about this subject. They did not report positive UC as a risk factor, and in a few situations, they noted that systematic treatment of ABU could actually increase the risk of infection.[6,7,16,17]

The preoperative polymicrobial UC was significantly associated with postoperative infection across all urological surgeries included in our study. Given the retrospective nature of this research, it is

Table 2. *Univariate Analysis*

	No infectious complication, No. (%)		Postoperative infectious complications, No. (%)		*P* value (univariate)
No. patients	2283		106		
Age, median (IQR), y	67	(59, 74)	70	(62, 76)	.06
Medical history of UTI in previous 12 mo, No. (%)					
No	1968	(97)	70	(3)	< .001
Yes	314	(90)	36	(10)	
Preoperative urinary catheter, No. (%)					
No	1595	(96)	66	(4)	.1
Yes	688	(94)	40	(5.5)	
Surgery category, No. (%)					
No endoscopic surgery without opening of urinary tract	253	(94)	16	(6)	.05
No endoscopic surgery with opening of urinary tract	295	(93)	22	(7)	
Upper urinary tract endoscopy	733	(96)	29	(3.8)	
Lower urinary tract endoscopy	1002	(96)	39	(3.7)	
Preoperative urine culture, No. (%)					
Negative	1506	(97)	44	(2.8)	< .001
Positive (mono- or bimicrobial)	504	(92)	42	(7.7)	
Polymicrobial	272	(93)	20	(6.8)	
Leukocyturia >10/mm^3, No. (%)					
Negative	864	(96)	28	(3.1)	.02
Positive	1380	(94)	75	(5.2)	
Hematuria >10/mm^3, No. (%)					
Negative	886	(96)	31	(3.4)	.06
Positive	1359	(95)	72	(5)	
Preoperative antibiotic therapy, No. (%)					
No	1706	(96)	61	(4)	< .001
Yes	577	(93)	45	(7)	
Antibiotic prophylaxis in accordance with guidelines, No. (%)					
No	1752	(95)	76	(4.2)	.2
Yes	504	(94)	29	(5.4)	
Operative time, median (IQR), min	56	(28, 117)	94.5	(45, 189.5)	< .001
Noninfectious postoperative complication, No. (%)					
No	2064	(97)	61	(2.9)	< .001
Yes	219	(83)	45	(13)	

Abbreviations: IQR, interquartile range.

challenging to ascertain whether the polymicrobial UC directly contributes to this heightened risk, or if other causal mechanisms exist that warrant further investigation. It was also found in the study of May et al comparing prostatic laser vaporization and TURP, particularly in the vaporization group.[18] There are no clear guidelines for the management of preoperative polymicrobial UC.[1] The management of this UC was decided by the surgeon or the urology department, giving us an overview of practices. In our study, only 5.1% of polymicrobial UCs had identified microorganisms. This rate is very low because these UCs are often considered to be negative due to technical difficulties in isolating bacterial colonies.

Table 3. *Multivariable Logistic Regression Analysis*

	OR (CI)	*P* value
Age (y)	1.01 (0.99, 1.02)	.4
Medical history of UTI in previous 12 mo		
No	Reference	
Yes	**3.43 (2.07, 5.66)**	**< .001**
Preoperative urinary catheter		
No	Reference	
Yes	1.03 (0.59, 1.78)	.9
Surgery category		
No endoscopic surgery without opening of urinary tract	Reference	
No endoscopic surgery with opening of urinary tract	0.90 (0.44, 1.83)	.8
Upper urinary tract endoscopy	0.72 (0.31, 1.70)	.4
Lower urinary tract endoscopy	0.89 (0.44, 1.87)	.8
Preoperative urine culture		
Negative	Reference	
Positive (mono- or bimicrobial)	**3.68 (1.57, 8.42)**	**.002**
Polymicrobial	**2.85 (1.52, 5.14)**	**< .001**
Preoperative antibiotic therapy		
No	Reference	
Yes	0.65 (0.30, 1.41)	.3
Operative time (for 15-min increase in operative time [min])	**1.09 (1.04, 1.15)**	**< .001**

Abbreviations: OR, odds ratio.
Bolded text indicates statistical significance.

In the absence of clear guidelines about this subject, it is necessary to choose narrow-spectrum antibiotics to limit the emergence of bacterial resistance.[4,19] In a systematic review, Vallée et al suggested using molecules such as nitrofurantoin or fosfomycin-tromethamine in the treatment of polymicrobial UC with endourinary catheter. However, it is fundamental to note that even if polymicrobial UC seems to be associated with an increased risk of postoperative infection, no studies have proven that preoperative antibiotic therapy could significantly reduce this risk. Adequate management of polymicrobial UC has not been validated by randomized prospective studies, even though it could help to reduce the risk of postoperative infection in these patients.[20] A recent

French study has demonstrated the ineffectiveness of antibiotics such as IV C3G or fluoroquinolones in the treatment of polymicrobial UC with a high rate of postoperative infections (10.5%).[21] The adequate way to treat these infections seems to be to identify the bacteria and use appropriate antibiotic therapy. The use of broad-spectrum antibiotics does not always target bacteria such as enterococcus, extended-spectrum beta-lactamase, or *Pseudomonas aeruginosa*.

Noninfectious complication has been found to be an associated factor for postoperative infections, but it is difficult to determine the chronology of their appearance. We found a noninfectious complication in 41.5% of patients who presented with postoperative febrile infections. Nearly 50% of these patients presented with hematuria or acute retention of urine, requiring the insertion of an indwelling urinary catheter with manipulative procedures like clot removal. The infection in this case may be either the cause or the consequence of the noninfectious complication. Conversely, we found almost 15% of complications such as digestive or urinary fistulas in which the infection was the consequence of the fistula.

Our study has limitations, in particular because of retrospective data collection. The missing data were minimal in our series (less than 2%). Our series reports unpublished data from a large cohort of patients and is to best of our knowledge the largest multicenter study on this subject. Although in our study, types of surgery were heterogeneous, there were very few exclusion criteria, thereby providing a "real-life" overview of the peri- and intraoperative management of patients undergoing urological surgery. It remains difficult to compare all these surgeries, since they do not have the same risk factors for postoperative infections. It would be necessary to collect additional and prospective data for each surgery to identify specific risk factors for infections. Future studies could also determine whether there is an interest in treating preoperative ABU in surgeries with a low percentage of postoperative infections, such as TURB, for example.[22]

In clinical practice, screening ABU before urological surgery remains a very systematic attitude, even though scientific data tend to prove that screening and treating ABU before urological surgery does not always reduce the occurrence of postoperative infectious complications.[23] The heterogeneity of the protocols in our study reflects the lack of high-level scientific data. As for oncologic treatments, the use of antibiotics should be based only on studies with a high level of evidence confirming their benefits. The interest of screening and treating ABU to reduce the rate of postoperative infection has been demonstrated for some surgeries,[10-13] whereas it remains unproven for others, such as TURB[24] and partial nephrectomy. These results do not offer a definitive conclusion but can inform future research on these topics, for which quality scientific literature is lacking. With 601,472 urological surgeries performed in France in 2021 with one-third of patients with ABU, this represents almost 200,000 prescriptions of antibiotic therapy.[25] It is crucial to concentrate on this aspect because, as our study demonstrates, ABU accounts for about one-third of our patients requiring surgery, sometimes leading to dramatic consequences when the infectious risk is not adequately managed. Therefore, it seems essential to develop specific management with personalized treatment in accordance with the results of our research and with awareness of the medicoeconomic consequences and current antibiotic resistance.[26]

CONCLUSIONS

Positive UC, including preoperative polymicrobial UC, prior to urological surgery was associated with postoperative infection. Additionally, patients experiencing infectious complications also had a higher incidence of other complications. The effectiveness of systematic preventive antibiotic therapy for a positive UC has not been conclusively established. This highlights the need to critically evaluate the dogmatic practice of screening and treating all cases of ABU in randomized controlled trials, particularly when the benefits of such a strategy remain questionable. On the other hand, the risks and detrimental effects of antibiotic resistance are well documented and beyond dispute.

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