Efficacy of Routine Screening of Urine Culture before Transurethral Prostatectomy on the Improvement of the Post Operative Outcome - a Single Centre Experience

- Authors –

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Background

- Transurethral prostatectomy(TURP) - high volume surgery in our centre
- Bacteriuria can be found in 8% to 24% of patients before TURP(1)
- Common practice to treat bacteriuria before TURP - i.e. sterile urine before TURP
  - only reversible factor in reducing post TURP bleeding (2)
  - reducing postoperative infective outcome - reported rates of postoperative UTI ranges from 3.5% to 21.6%, septic shock in 2.3% (3)

Reference:
1. Campbell Walsh “Urology”, 10th Edition,Chapter 93
2. Risk factors in prostatectomy bleeding: pre-operative urinary infection is the only reversible factor. ElMalk et al, Eur Urol 2000; 37: 199-204
3. Complications of Transurethral Resection of the Prostate(TURP)-Incidence, Management and Prevention. Jens Rassweiler et al, Eur Urol 2006; 50:969-980

Objective

- To improve the postoperative outcome after transurethral prostatectomy by routine screening of urine culture and treating bacteriuria before surgery

Method

May 2013 to Oct 2013

- Retrospective comparison was made with patients undergoing surgery from November 2012 to April 2013
- Patients with emergency TURP were excluded

Prophylactic Antibiotics

- Intravenous Cefuroxime 1.5gram would be given if preoperative urine culture was negative
- Otherwise antibiotics were given according to sensitivity profile
- Two more doses of antibiotics were given after operation

Post Operative Outcome

- Urinary Tract Infection
  - bacteriuria with symptoms including suprapubic pain, lower urinary tract symptoms (dysuria, frequency, urgency), haematuria, or fever
- Fever - temperature ≧ 38℃
- Length of hospital stay
- 30-day emergency department(AED) attendance rate
- 30-day unplanned readmission rate

Results

Patient characteristics

n = 247	Study Group (n=99)	Control Group (n=148)	p-value
Mean Age	75.4	75.2	0.833
Diabetes Mellitus	21(21.2%)	32(21.6%)	0.939
Dementia	2(2%)	10(6.8%)	0.131
Charlson Comorbidity Index	4.78	4.84	0.730
Presence of Urethral Catheter/CISC	45(45.5%)	96(64.9%)	0.003

Urine culture two weeks before TURP

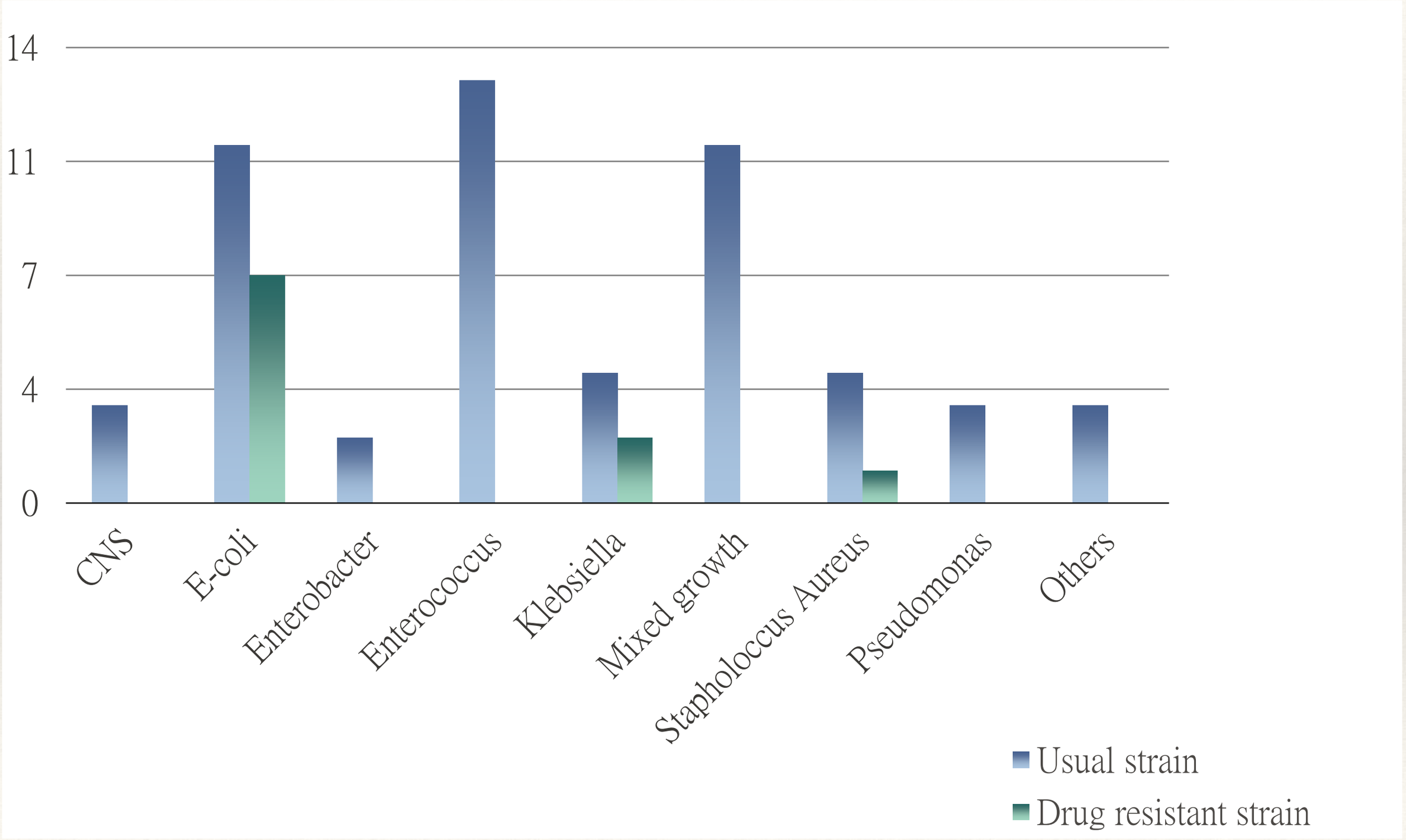
	Study Group(%) (n=99)	Control Group(%) (n=148)
Positive urine culture	37(37.4%)	17(11.5%)
No growth	58(58.6%)	41(27.7%)
No culture available	4(4.0%)	90(60.8%)

45.5% of patients with indwelling catheter in study group

	Urine Culture 2 weeks before TURP	
	No growth	Positive growth
On catheter/CISC	11	31
Not on catheter	47	6

- Percentage of bacteriuria in patients without catheter = 11.3%
- Percentage of bacteriuria in patient with catheter/CISC = 59.6%
- RR of bacteriuria in those without catheter = 0.153 (95% CI 0.071-0.333)
- p=0.000

Bacteriology in Pre-op Urine Culture in Study Group



Efficacy of Antibiotics Treatment

Bacteriuria (n=37)

one week of antibiotics

Persistent Bacteriuria (n=19)

Sterile urine (n=18)

Presence of catheter has no significant effect on the efficacy of antibiotic treatment

	Indwelling Catheter		Total
	No (n=6)	Yes (n=31)	n=37
Successful Treatment	4(66.7%)	14(45.2%)	18
Persistent Bacteriuria	2(33.3%)	17(54.8%)	19
Total (n=37)	6(16.2%)	31(83.8%)	

- Fisher’ s Exact test “p=0.405”

Operation

	Study Group (n=99)	Control Group (n=148)	p-value
Volume of Glycine used (L)	10.92	11.41	0.533
Mean Weight of Resected Prostate(gram)	24.51	22.90	0.496
Mean Resection Time(min)	31.72	33.42	0.453
Co-concomitant Procedure	35(35.4%)	36(24.3%)	0.061
Capsular Perforation	2(2.0%)	5(3.4%)	0.705
Bipolar resection	4(4.0%)	2(1.4%)	0.222
Pathology			
Benign Prostatic Hyperplasia	91	121	
CA prostate	8(8.1%)	27(18.2%)	0.025
Remarks	Co-concomitant procedure includes cystolithotripsy, TUBNI		

Results

- Postoperative fever – 18.6%
- Postoperative UTI – 8.5%
- Mean hospital stay (days) – 2.78 days
- 30-day AED attendance rate – 21.5%
- 30-day unplanned readmission rate – 17%

Lower incidence of postoperative fever in study group

	Study group	Control group	Total
Postoperative fever RR 0.528 (95%CI 0.288-0.968), p=0.032			
yes	12(12.1%)	34(23.0%)	46(18.6%)
no	87(87.9%)	114(77.0%)	201(81.4%)
Postoperative UTI p=0.229			
yes	11(11.1%)	10(6.8%)	21(8.5%)
no	88(88.9%)	138(93.2%)	226(91.5%)

Shorter length of hospital stay

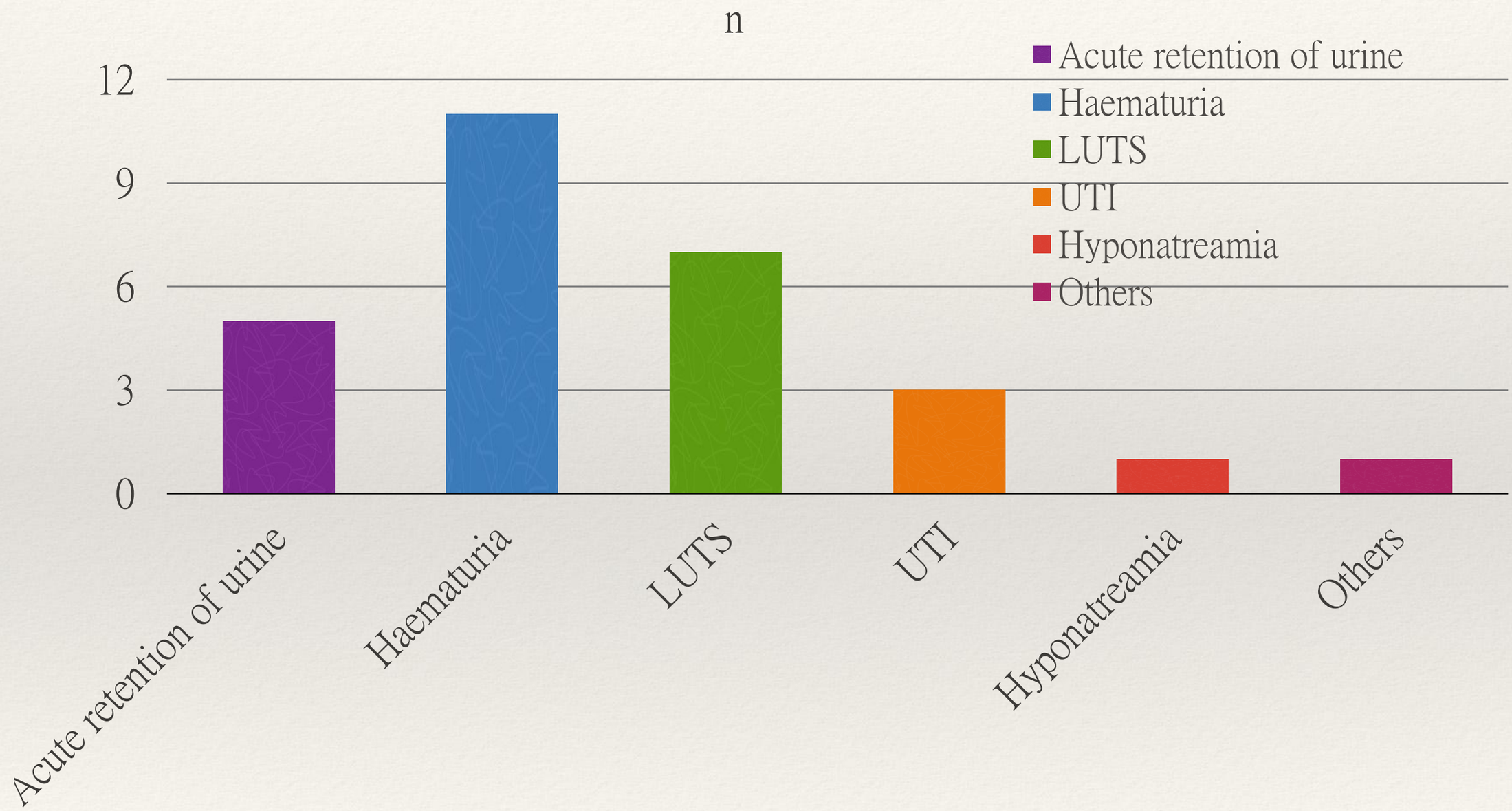
	Study group	Control group
Mean hospital stay(days)	2.27	3.13

Independent Samples Mann-Whitney U test - p=0.000

Lower 30-day unplanned readmission rate

	Study group	Control group	Total
	30-day AED attendance p=0.478		
yes	19(19.2%)	34(23.0%)	53(21.5%)
no	80(80.8%)	114(77%)	194(78.5%)
	30-day readmission RR 0.53(95%CI 0.28-0.98, p=0.044)		
yes	11(11.1%)	31(20.9%)	42(17%)
no	88(88.9%)	117(79.1%)	205(83%)

Presenting symptoms at readmission



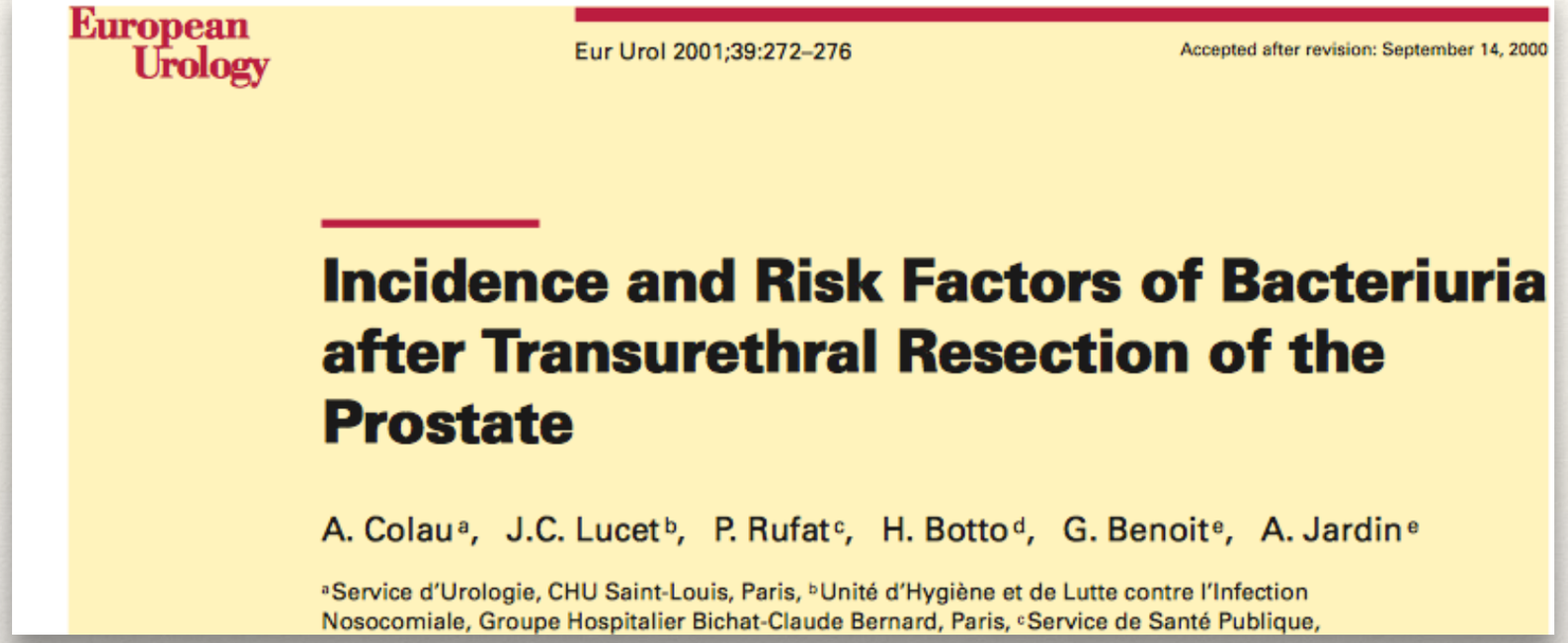
Discussion

Authors	N	Transfusion (%)	Revision (%)	Infection (%)	TUR–syndrome (%)
Early					
Zwergel 1979	232	21.2	n.a.	n.a.	1.6
Mebust 1989	3885	6.4	n.a.	2.3	2.0
Doll 1992	388	22.0	3.0	14.0	n.a.
Intermediate					
Zwergel 1995	214	14.6	n.a.	n.a.	0.8
Horninger 1996	1211	7.6	n.a.	n.a.	2.8
Haupt 1997	934	2.2	n.a.	n.a.	0.3
Gallucci 1998	80	0.0	n.a.	5.0	0.0
Gilling 1999	59	6.6	3.3	8.2	0.0
Borboroglu 1999	520	0.4	n.a.	2.1	0.8
Recent					
Heilbronn 2003[a]	126	4.8	4.2	1.7	0.8
Baden-Württemb. 2003	7707	3.0	5.0	3.5	0.8
Kuntz 2004	100	2.0	3.0	4.0	0.0
Muzzonigro 2004	113	7.1	n.a.	n.a.	0.0
Berger 2004[b]	271	2.6	n.a.	n.a.	1.1

- Postoperative UTI are one of the most frequent complications within the first hours to six weeks after TURP (1)
- Postoperative infection rate in out study – 8.5%

Reference:
1. Complications of Transurethral Resection of the Prostate(TURP)-Incidence, Management and Prevention. Jens Rassweiler et al, Eur Urol 2006; 50:969-980

Discussion



European Urology

Eur Urol 2001;39:272–276

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Incidence and Risk Factors of Bacteriuria after Transurethral Resection of the Prostate

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- Risk factors of postoperative infection
  - preoperative bacteriuria
  - longer operative time
  - preoperative stay longer than two days
- No difference in UTI rate between two group in our study

Limitations

- Retrospective study
- Confounding factors
- Low antibiotic efficacy in our study - 48.6%
  - significant percentage of patients with indwelling catheter and CISC
    - formation of biofilm - difficult for eradication of bacteria
- Ways to improve
  - change of catheter prior to antibiotics treatment
  - shortening of indwelling catheter time before surgery
    - approximately 10% risk of bacteriuria per day of catheterization(1)

Reference:
1. Warren JW: Catheter-associated urinary tract infections. *Infect Dis Clin North Am* 1997; 11:609-622

Conclusion

- Preoperative bacteriuria is common
- Poor efficacy of preoperative antibiotics treatment
  - Consider change of catheter before treatment
- Routine review of urine culture and treatment of bacteriuria before TURP can reduce postoperative fever rate, shorten hospital length of stay and reduce 30 day unplanned readmission rate

Thank you.