

Attitudes among junior doctors towards improving the transurethral catheterisation process

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Abstract

Objectives To evaluate the subjective opinions of junior doctors on their adequacy of training and confidence levels for performing transurethral catheterisation (TUC) and to investigate their subjective interest in a 'safety mechanism' that would eliminate the potential for urethral trauma during TUC.

Methods An anonymous online survey was emailed to all interns that had a documented email address on the Royal College of Surgeons Ireland registry (2012–2013). The survey consisted of eight questions pertaining to TUC of male patients.

Results The survey was delivered to 252 email addresses and the response rate was 52 % (130/252). The vast majority (99 %; $n = 128$) of interns felt confident inserting a transurethral catheter independently and 73 % ($n = 95$) subjectively received appropriate training for catheterising male patients. The incidence of trauma after mistakenly inflating the catheter's anchoring balloon in the urethra was 3 % ($n = 4$). The majority (90 %; $n = 116$) of respondents were interested in a safety mechanism for preventing urethral trauma and 71 % ($n = 92$) felt that a safety mechanism for urethral trauma prevention should be compulsory for all transurethral catheterisation among male patients.

Conclusion Despite pre-emptive training programmes, it appears that iatrogenic urethral trauma secondary to TUC remains a persistent morbidity in healthcare settings.

Designing a safer transurethral catheter may be necessary to eliminate the risk of unnecessary urethral trauma in patients.

Keywords Transurethral catheter · Urethral catheter · Urethral trauma · Bioengineering · Medical education · Junior doctor

Introduction

Transurethral catheterisation (TUC) is a routine procedure frequently performed by junior doctors and up to 25 % of all hospitalised patients are catheterised during their inpatient stay [1]. The estimated incidence of iatrogenic catheter-related urethral injury is in the region of 0.3 % [2]. Typically, urethral injuries occur when the catheter's anchoring balloon is inadvertently inflated in poorly compliant urethral tissue. Short-term complications associated with catheter-related urethral injuries include tissue ischaemia, pain, bleeding and acute urinary retention. Long-term complications are recurrent urethral stricture disease with resultant reconstructive surgical procedures.

Previously, clinicians have demonstrated that training programmes and close supervision of junior doctors are associated with lower rates of catheter-related injuries [3]. However, recent studies have suggested that a pre-designed 'safety mechanism' may be required to completely eliminate the potential for urethral injury during the TUC process [4]. In the present study, our primary aim was to evaluate the subjective opinions of junior doctors on their adequacy of training and confidence levels for performing TUC. Our secondary objective was to investigate their interest in a pre-established 'safety mechanism' that would eliminate the potential for urethral trauma during TUC.

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Table 1 Questionnaire design and attitudes of respondents towards transurethral catheterisation

Questionnaire	Yes (<i>n</i>)	Yes (%)	No (<i>n</i>)	No (%)
1. Do you feel confident inserting a transurethral catheter independently?	128	99	2	1
2. Do you think you have received appropriate training for catheterising male patients?	95	73	35	27
3. Have you ever inflated the catheter's anchoring balloon in the urethra instead of the bladder in a male patient?	4	3	126	97
4. Are you supervised while performing transurethral catheterisation?	9	7	121	93
5. Would a safety mechanism that prevents urethral trauma from trans-urethral catheterisation interest you?	116	90	13	10
6. Do you think a safety mechanism that prevents urethral trauma should be compulsory for transurethral catheterisation in male patients?	92	71	38	29
7. How many transurethral catheterisations have you performed?	1-20 72 (55 %)	20-50 52 (40 %)	50-100 6 (5 %)	>100 0 (0 %)
8. To the best of your knowledge, the incidence of urethral trauma secondary to transurethral catheterisation is?	<0.1 % 4 (3 %)	0.3 % 26 (20 %)	1 % 56 (51 %)	>5 % 34 (26 %)

Materials and methods

Survey overview

An anonymous online survey was emailed to all interns that had a documented email address on the Royal College of Surgeons Ireland (RCSI) registry (2012–2013) in June 2013. The survey consisted of 8 questions and requested details pertaining to transurethral catheterisation of male patients (Table 1). Six questions required either 'Yes' or 'No' as an answer and the remaining two questions invited the respondent to select one answer from four different choices.

Transurethral catheterisation

Respondents were asked to indicate the number of transurethral catheterisations performed during their intern year, their confidence level when inserting a transurethral catheter and whether they received appropriate clinical training/supervision for catheterising male patients. Respondents were asked whether they had ever mistakenly inflated the catheter's anchoring balloon in the urethra instead of the urinary bladder and were also questioned on the incidence of urethral trauma secondary to transurethral catheterisation.

Prevention of urethral trauma during transurethral catheterisation

Respondents were invited to comment subjectively on their feelings towards a potential pre-designed 'safety

mechanism' that would prevent urethral trauma during the TUC procedure. Finally, respondents were asked whether a safety mechanism for preventing urethral trauma should be compulsory for TUC in male patients.

Results

Response rate

The survey was delivered to 252 email addresses and the response rate was 52 % (130/252). No questionnaires were incomplete and analysis was performed on every returned survey.

Attitudes to transurethral catheterisation in male patients

Table 1 provides an overview on junior doctor's attitudes to TUC and demonstrates the number of transurethral catheterisations performed during an intern year. The majority (99 %; *n* = 128) of interns felt confident inserting a transurethral catheter independently and 51 % (*n* = 56) believed that the incidence of urethral trauma secondary to transurethral catheterisation was 1 %. In total, 73 % (*n* = 95) had subjectively received appropriate training for catheterising male patients. The recognised incidence of trauma after mistakenly inflating the catheter's anchoring balloon in the urethra was 3 % (*n* = 4).

Attitudes to safety mechanism for preventing urethral trauma

The majority (90 %; $n = 116$) of interns were interested in a safety mechanism for preventing urethral trauma during the catheterisation procedure and 71 % ($n = 92$) felt that a safety mechanism for trauma preventions should be compulsory for all transurethral catheterisations among male patients. In total, 51 % ($n = 56$) of interns believed that the incidence of urethral trauma secondary to transurethral catheterisation was 1 %.

Discussion

TUC is a basic procedure that is performed on a daily basis by junior doctors across all healthcare settings. Overall, iatrogenic complications associated with TUC have decreased in recent years due to advanced training programmes that are provided by senior healthcare professionals [5]. Furthermore, medical students and junior doctors are heavily supervised during their initial months when performing TUC and a sufficient amount of catheterisations is often required before complete independence is gained. Findings from our study substantiate the importance of training programmes for teaching TUC as 99 % of respondents were confident and 73 % subjectively felt appropriately trained to independently perform TUC during their intern year.

Although supervised training programmes have led to an overall decrease in the frequency of catheter-related complications, our study demonstrates that the anchoring balloon is mistakenly inflated in the urethra in approximately 3 % of patients [6]. Admittedly, incorrect inflation of the balloon is immediately recognisable; however, it is noteworthy that urethral trauma has already occurred at this point with the potential for long-term consequences. Findings from our study also suggest that junior doctors recognise the potential for devastating consequences associated with urethral injury as 90 % of respondents

demonstrated a subjective interest in the development of a 'safety mechanism' to prevent urethral trauma after TUC. It appears that designing a safer transurethral catheter may be necessary to completely eradicate the incidence of unnecessary urethral trauma to catheterised patients. Such findings may encourage innovative bioengineers and urologists to optimise the transurethral catheterisation process.

Conclusion

Despite pre-emptive training programmes it appears that iatrogenic urethral trauma secondary to TUC remains a persistent morbidity in healthcare settings. Designing a safer transurethral catheter in conjunction with supervised training may be necessary to completely eliminate the risk of unnecessary urethral trauma in catheterised patients.

Conflict of interest None.

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