

## Introduction

- Meatal damage (or urethral stress ulcer) develops in about 5% of patients with an indwelling catheter.
- Fixation of the catheter to patient's body is believed to prevent catheter traction and pressure on the urethral meatus.
- A common recommendation is to remove indwelling catheters as soon as possible.

## Objective

- To assess the prevalence and risk factors for catheter associated meatal damage.

## Methods

- Cross-sectional study
- All hospitalized patients at RMC were screened for the presence of a urinary catheter.
- Patients were inspected for meatal damage.
- Collection of clinical data from patient charts and staff interviews.
- Univariable and multivariable analyses of the possible risk factors for meatal damage.

## Results

Table 1. Patient population

n=	168
Age	
median	70.5 years
IQR	57-80 years
Catheter presence	
median	5.5 days
IQR	2-11 days
Meatal damage	61 (36%)

IQR: Inter-quartile range(25 to 75 percentiles).

Fig 1. patient comorbidities

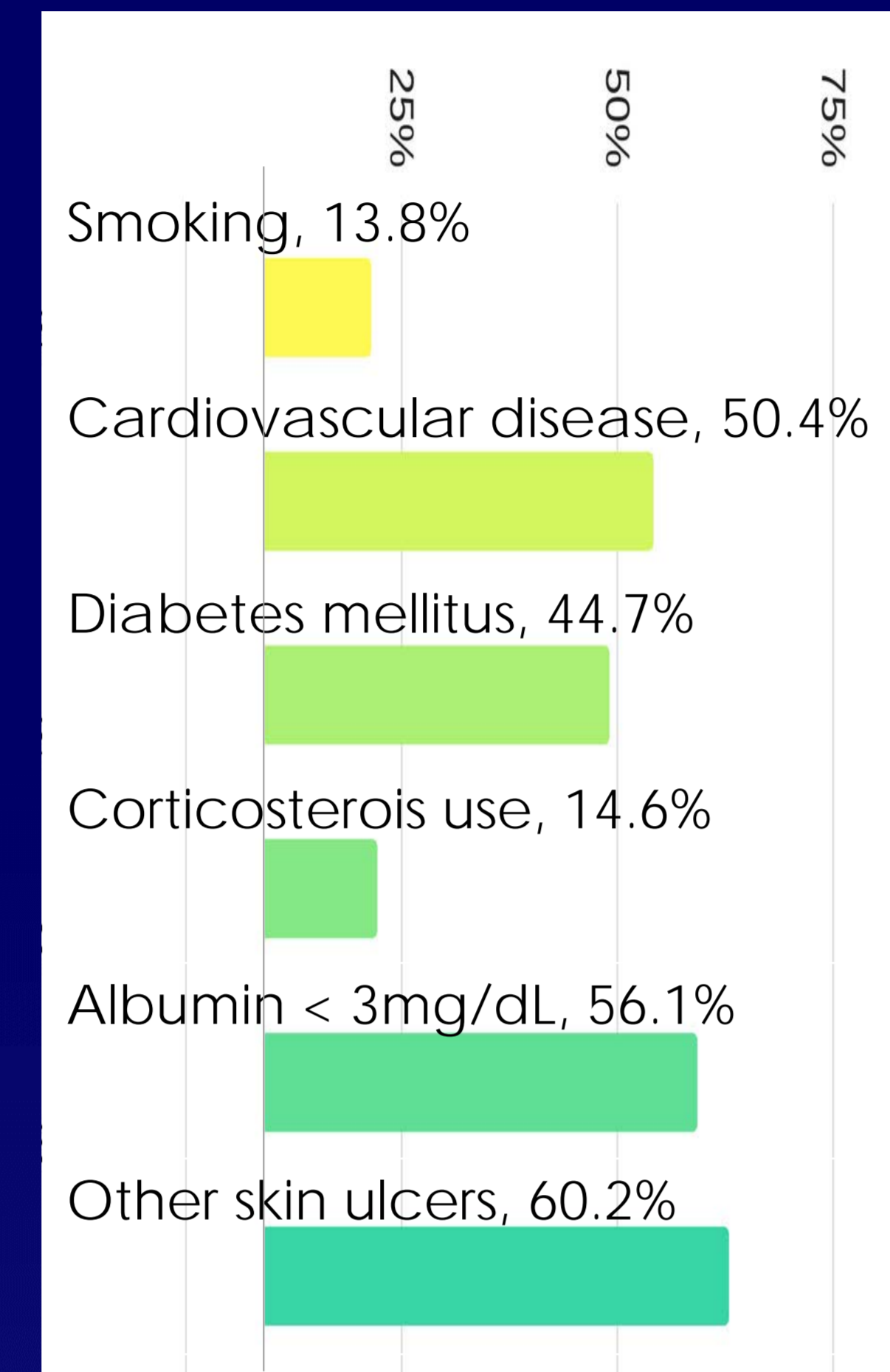


Fig 2a. Patient mobility

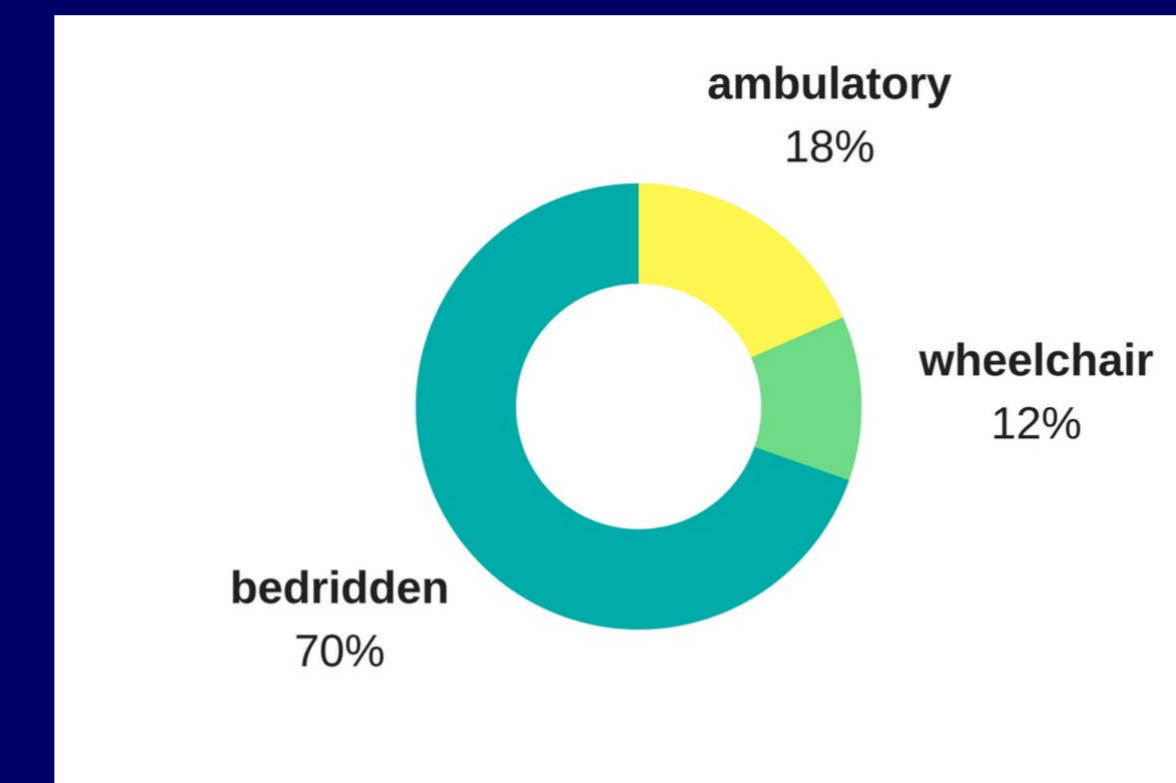


Fig 2b. Indication

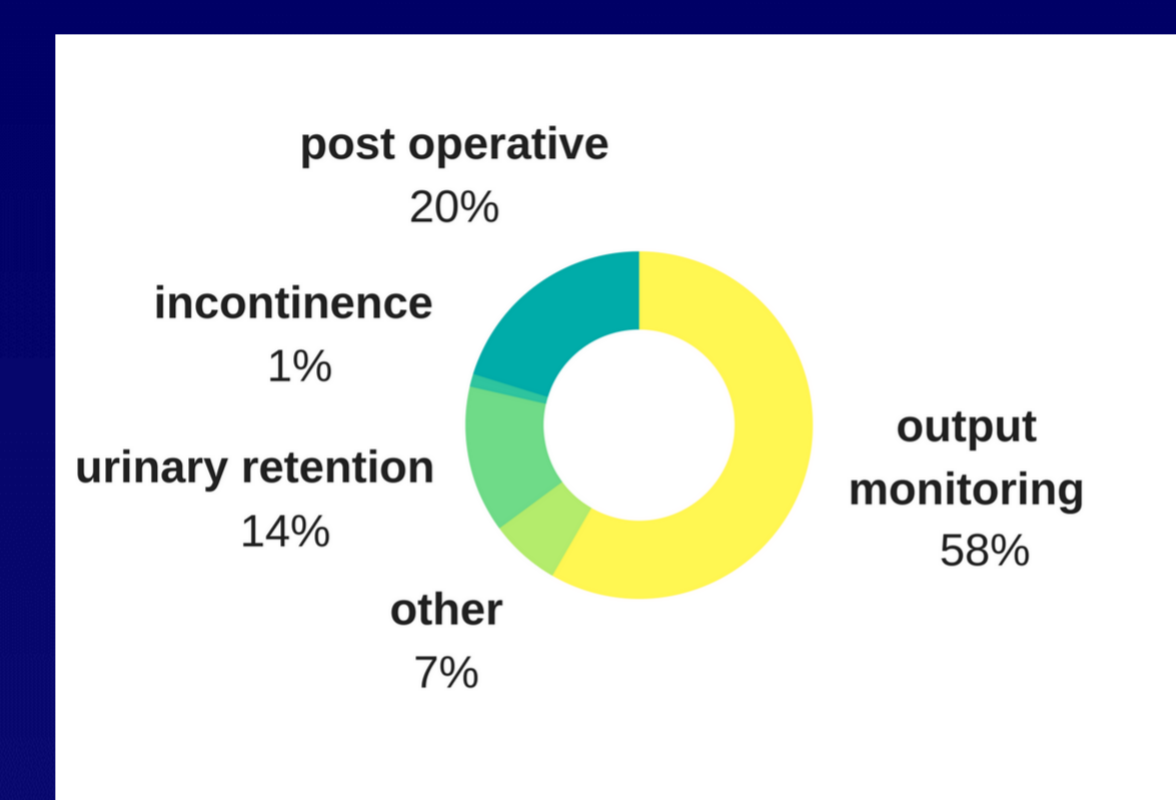


Fig 2c. Ward

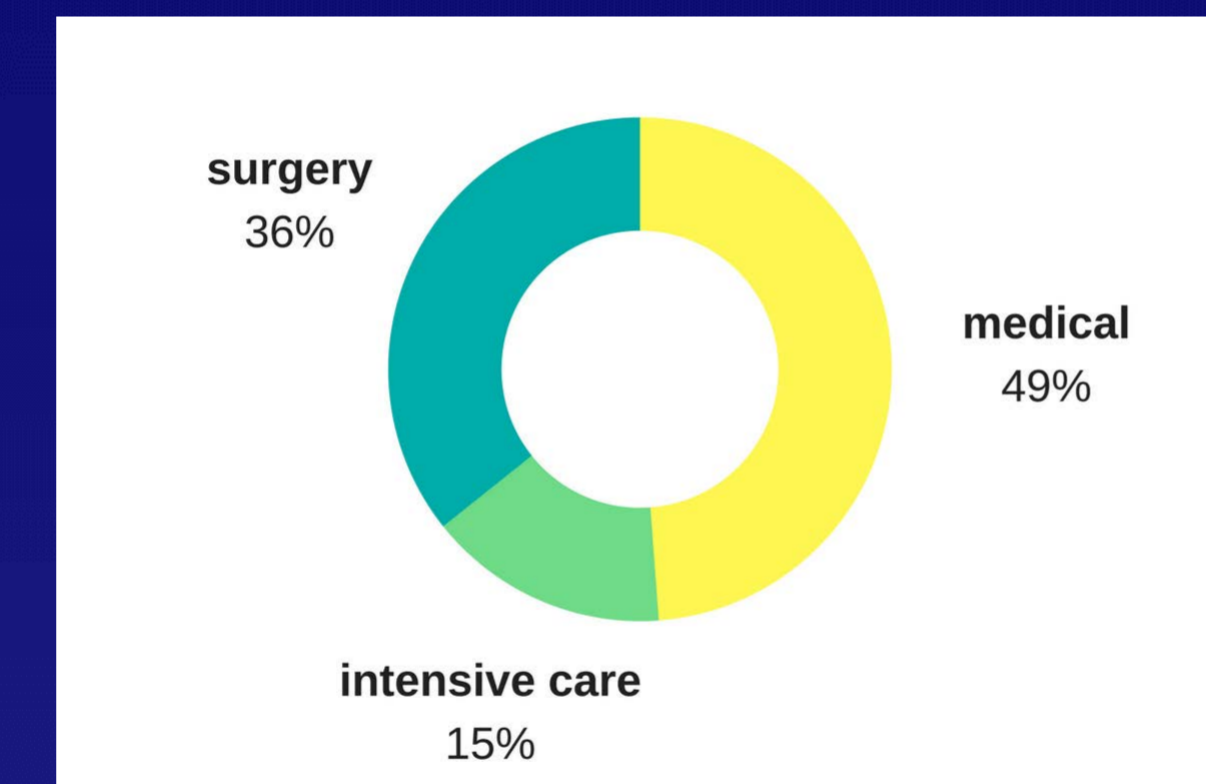


Fig 2d. Catheter fixation

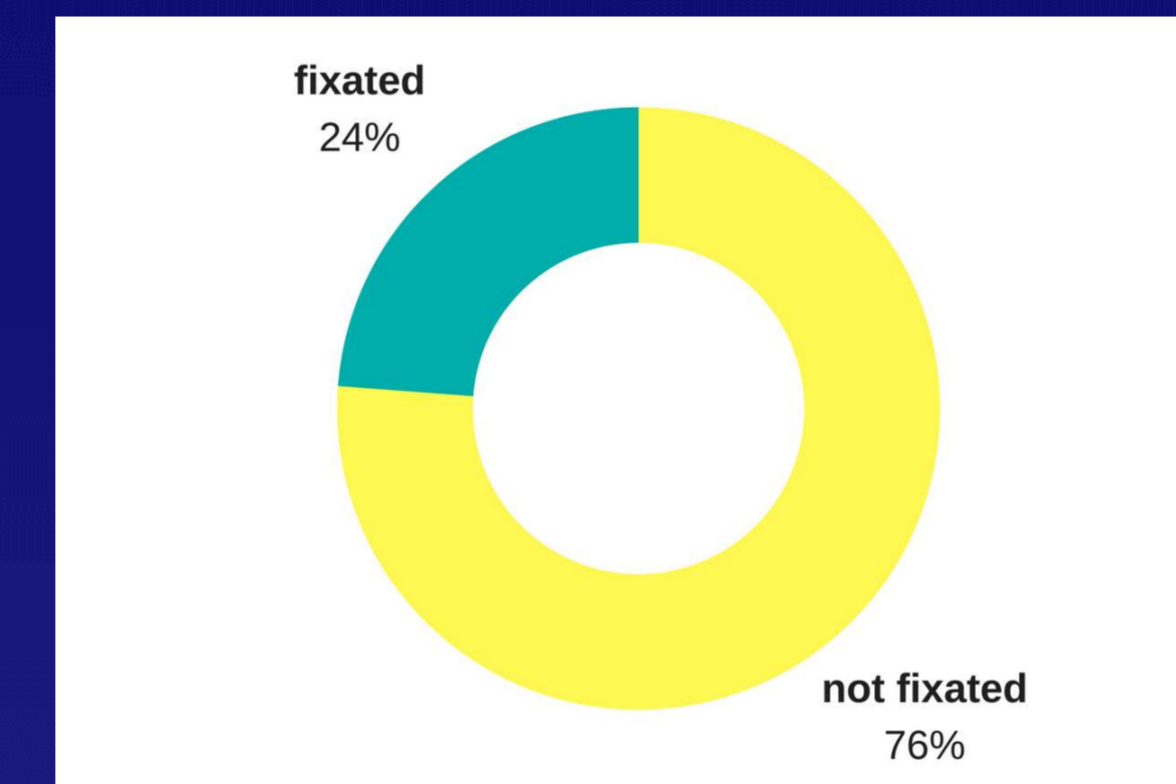


Fig 3. Meatal damage

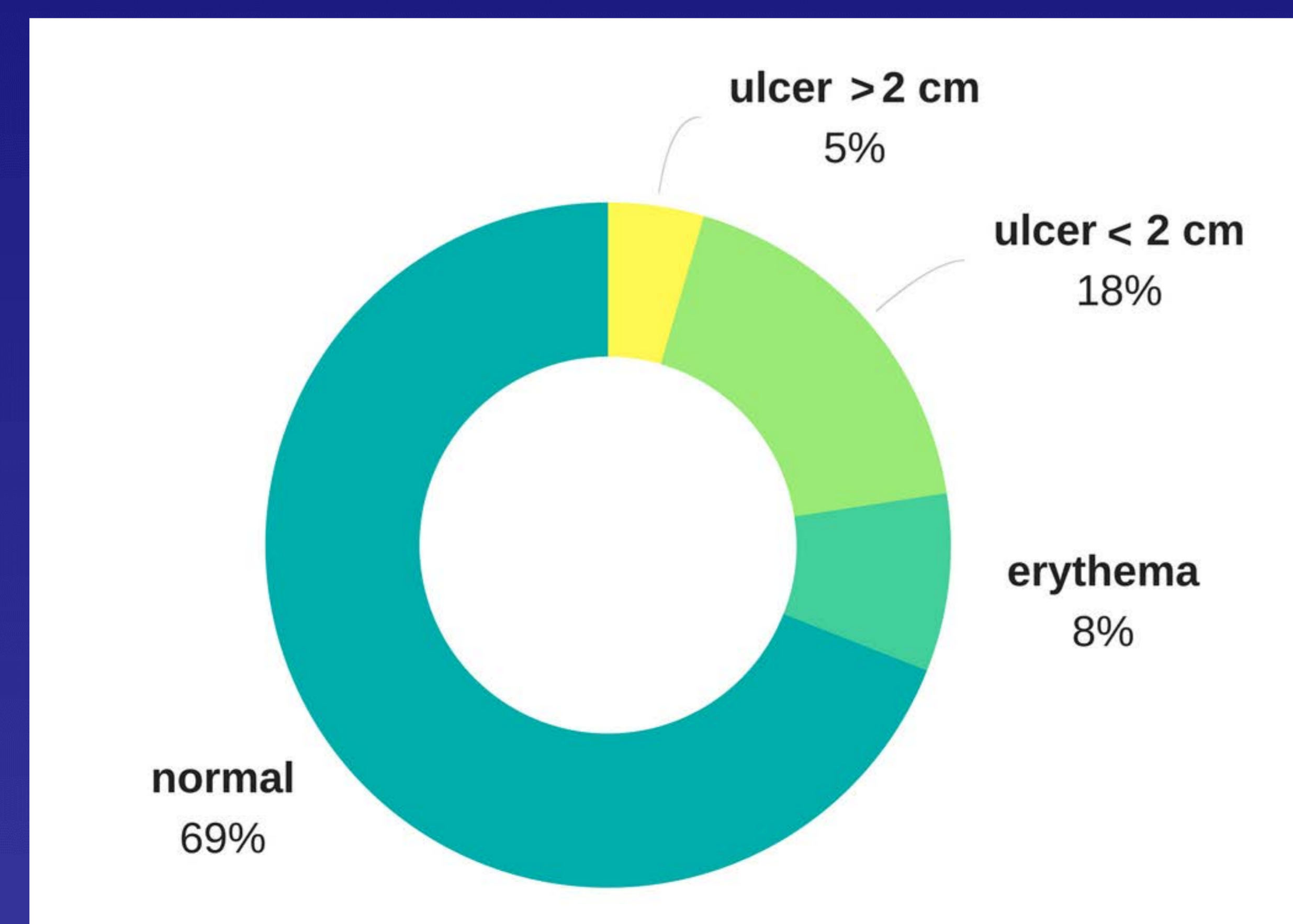


Table 2. Univariable and multivariable analyses of the risk factors for meatal damage

Factors	Univariable analysis		Multivariable analysis:	
	odds ratio [95% CI]	p-value	odds ratio [95% CI]	p-value
Age	1.01 [0.99-1.03]	0.248		
Duration of catheter presence	<b>1.05 [1.01-1.08]</b>	<b>0.001</b>	<b>1.05 [1.01-1.08]</b>	<b>0.017</b>
Patient bedridden	<b>2.34 [1.11-4.93]</b>	<b>0.025</b>	2.20 [0.86-5.61]	0.10
Indications:				
output monitoring	1.80 [0.93-3.46]	0.079		
post operative	<b>0.38 [0.16-0.95]</b>	<b>0.037</b>	0.89 [0.23-3.38]	0.862
urinary retention	0.93 [0.37-2.33]	0.870		
incontinence	1.77 [0.11-28.76]	0.689		
Catheter fixation	<b>0.42 [0.19-0.97]</b>	<b>0.041</b>	<b>0.18 [0.05-0.61]</b>	<b>0.006</b>
ICU ward	1.96 [0.84-4.55]	0.118		
Medical ward	<b>1.92 [1.02-3.64]</b>	<b>0.045</b>	1.22 [0.49-3.04]	0.667
Current smoking	2.02 [0.72-5.66]	0.181		
Vascular disease	1.72 [0.84-3.54]	0.137		
Diabetes Mellitus	1.73 [0.85-3.54]	0.133		
Corticosteroid use	0.72 [0.26-2.07]	0.553		
Serum albumin<3mg/dL	1.08 [0.52-2.22]	0.842		
Other skin ulcers	<b>2.84 [1.32-6.13]</b>	<b>0.008</b>	2.34 [0.99-5.51]	0.052

Fig 4. Meatal damage rate, by catheter fixation status

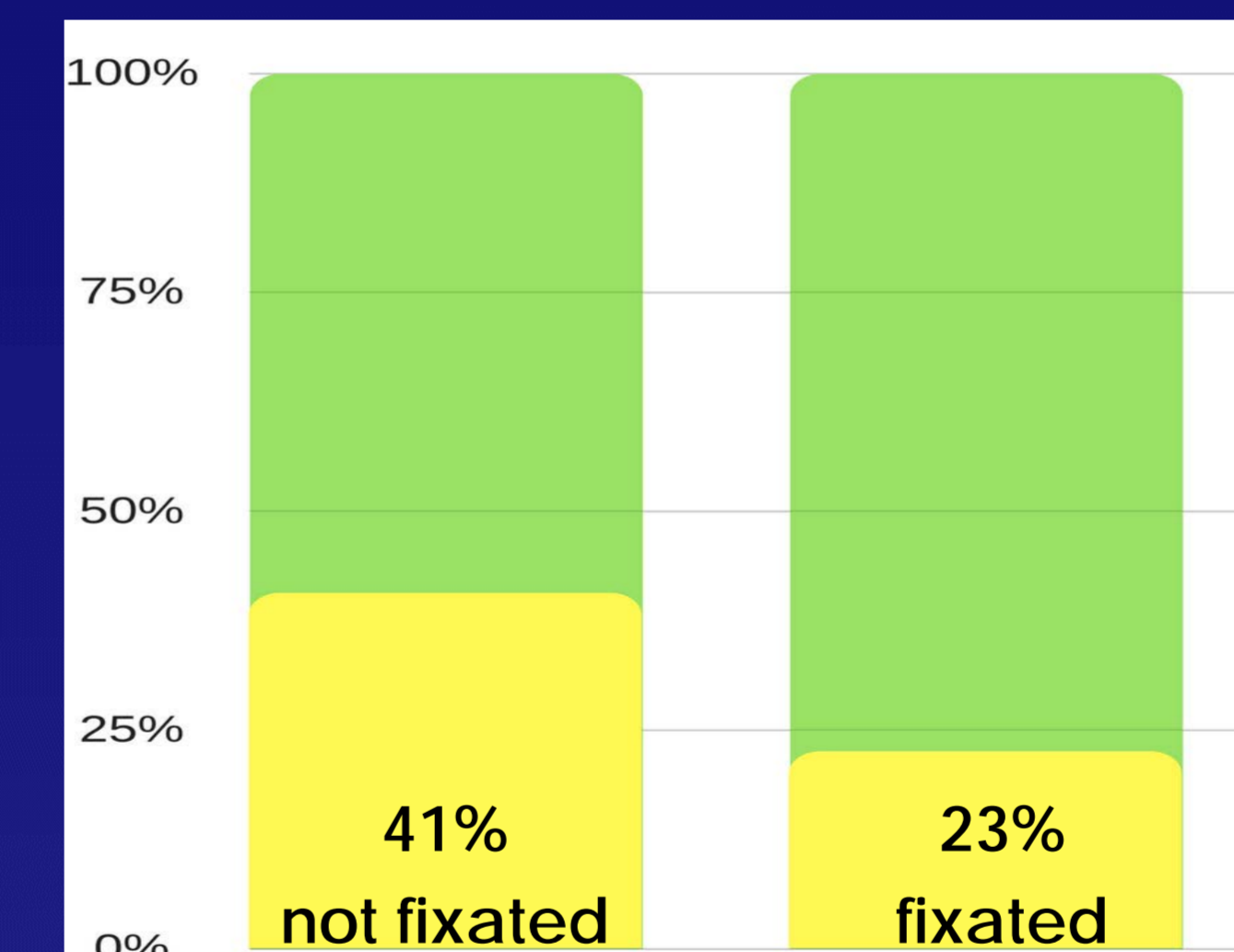
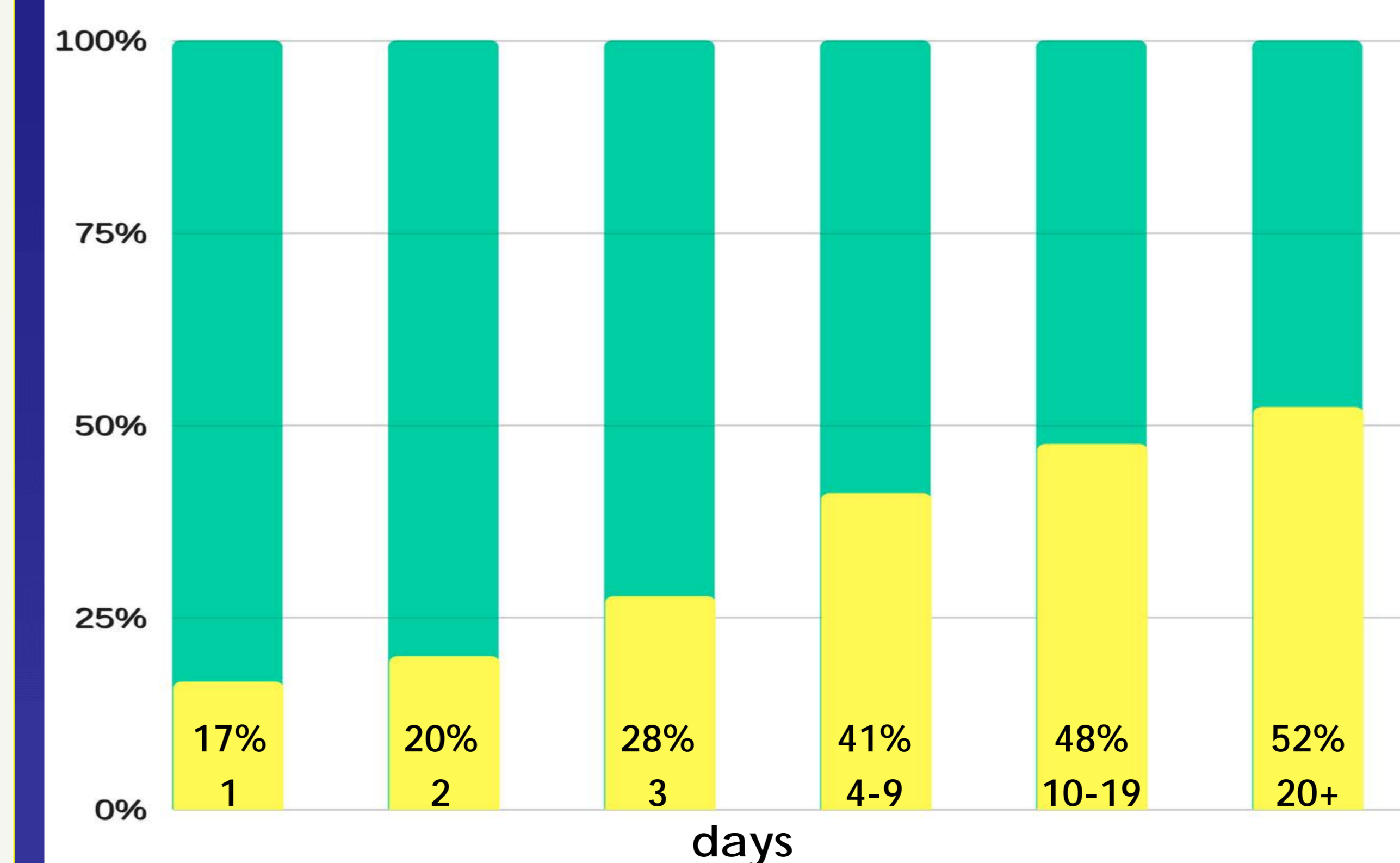


Fig 5. Meatal damage rate, by days of catheter presence



## Results

- 268 patients with an indwelling catheter (27% out of approximately 1,000 hospitalized patients), **168 of them male**.
- Median age: 70.5 (interquartile range: 57.0-80.3) years.
- Median duration of catheter presence - 5.5 (interquartile range: 2-11) days.
- **61 (36%) had meatal damage**.
- In a univariable model, a longer duration of catheter presence (p=0.001), patient immobility (p=0.025), internal ward hospitalization (p=0.045) and other skin ulcers (p=0.008) were predictors of meatal and urethral damage. Catheter fixation (p=0.041) and a post-operative indication (p=0.037) were associated with reduced meatal and urethral damage.
- In a multivariable analysis, catheter fixation (p=0.006, OR 0.18 [95% CI 0.05-0.61]) was associated with a reduced risk of meatal damage, while duration of catheter presence (p=0.017, OR 1.05 [95% CI 1.01-1.08]) and a trend for other skin ulcers (p=0.052, OR 2.34 [95% CI 0.99-5.51]) were associated with higher risk of meatal damage.

## Conclusions

- Meatal ulcers are a **common complication** of indwelling catheters in males.
- **Catheter fixation** and **early removal** may have a preventative effect.
- Longitudinal studies are needed to establish evidence-based guidelines.