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Incidence of urinary tract infection after surgery for fractured hip

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Introduction
To prevent urinary tract infections (UTIs) The National Clinical Guidelines for patients with Hip Fracture - recommend e.g. early and systematic mobilization and no use of indwelling catheters (1). Since 2003, these recommendations have existed and been implemented in the ward. Besides serious individual implications, hip fracture is also associated with substantial health costs (2).
In order to achieve the best possible result for the hip patient, two areas of nursing interventions seem particularly important. UTI is one of the most frequent complications related to hip fracture (3) and early mobilization accelerates functional refunds and contributes to a shortening of hospitalization (4).

Method
There were used a descriptive prospective design. This study was conducted from October 2015 to December 2016 at two departments of orthopedic surgery in Farsø and Hjørring, Aalborg University Hospital in Denmark.
The criteria for inclusion were adult patients who had surgery for fractured hip. Exclusion criteria were patients discharged to other departments than orthopedics, diagnosed dementia, not being able to talk and understand the Danish language, patients with catheter a demure, usually catheterization, or patients in antibiotic treatment on admission.
In this study all patients had urine samples collected on admission and at discharge, using sterile intermittent catheterization. The urine sample should be collected within eight hours after admission to the emergency room. The definition of Centers for Disease Control (5) modified for Danish conditions (10) were used to define urinary tract infection (1). Both urine samples were sent to microbiological analysis, to diagnose the presence of UTI. Demographic data: age, gender, type of fracture, comorbidity, form of anaesthesia and waiting time for surgery were recorded. Care process data: time for early mobilization after surgery and which and for how long urinary catheter were used. Data are processed in the statistical program SPSS, version 23.

Results
The findings showed that 29.2% of patients with a fractures hip had a positive urine culture on admission to hospital. 6.2% contracted nosocomial urinary tract infection during admission. None of these patients had catheter a demure at hospitalization. All the patients with a diagnosed UTI received antibiotics for the infection, during their hospital stay. At discharge, 29.2% of the patients had a positive urine sample, but no symptoms.
13 patients were given a catheter a demure under hospitalization. 4 patients had Catheter a Demere beneath 24 hours (mean 14.75 hours). 9 patients had Catheter a Demere in more than 24 hours (mean 93.11 hours). None of those had urinary tract infection. The chi-square test used, testing whether patients with UTI and indwelling catheter, more often had an UTI than those, who not have been catherized. Significance level was 0.098 and thus not significant.

Urinary culture was performed on 96.9% of patients after hospitalization within 8 hours of arrival at the emergency room. 83% got a examen at discharge. Four patients did not wanted to use intermittent catheterisation upon discharge, because of no symptoms and therefore didn’t want the intervention. Five patients were treated for UTI during hospitalization.

Patient with UTI 9.2% were intermittently catherized. These patients were catherized from 0-23 times, except the two times, which were part of the project.
55.5% of patients were not intermittently catheterized. Out of the 27 patients who were intermittently catheterized more than once, 3.4% showed a nosocomial urinary tract infection.

At first mobilization, nurse noted data and time. Mobilized patients, reason was not possible finding a UTI at discharge. Patient with UTI were treated with catheter a demure more often than those, which did not have UTI. The chi-square test used, testing whether patients with UTI and utrinary catheterization, more often had an UTI than those, who not have been catherized. Significance level was 0.081 and thus not significant.

In this study all patients had urine samples collected on admission and at discharge, using sterile intermittent catheterization. The urine sample should be collected within eight hours after admission to the emergency room. The definition of Centers for Disease Control (5) modified for Danish conditions (10) were used to define urinary tract infection (1). Both urine samples were sent to microbiological analysis, to diagnose the presence of UTI. Demographic data: age, gender, type of fracture, comorbidity, form of anaesthesia and waiting time for surgery were recorded. Care process data: time for early mobilization after surgery and which and for how long urinary catheter were used. Data are processed in the statistical program SPSS, version 23.

Discussion
In our study, 29.2% had a positive urine culture on admission. Other studies showed that 8-52% of patients had UTI during admission (7-9). It is therefore within the normal area of patients with UTI.
In this study, none of the patients with an indwelling catheter, was found to affect the incidence of UTI. In this study all patients had urine samples collected on admission and at discharge, using sterile intermittent catheterization. The urine sample should be collected within eight hours after admission to the emergency room. The definition of Centers for Disease Control (5) modified for Danish conditions (10) were used to define urinary tract infection (1). Both urine samples were sent to microbiological analysis, to diagnose the presence of UTI. Demographic data: age, gender, type of fracture, comorbidity, form of anaesthesia and waiting time for surgery were recorded. Care process data: time for early mobilization after surgery and which and for how long urinary catheter were used. Data are processed in the statistical program SPSS, version 23.

Conclusions
The two departments who took part in this study do not have a higher number of UTI than other departments. Furthermore, there is a difference in the result because the sample results are number of bacteria, which is 10^5, whereas the results compared to, are 10^10.3. In this study, all patients who had UTI were mobilized within 24 hours. Even if evidences indicate that mobilization can help prevent UTI, it does not appear as a valid factor in this study.
However, it should be mentioned that this study was carried out on a basis of 65 patients, of which only 24 had UTI.

Table 1. Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>72.3 (8.7)</td>
</tr>
<tr>
<td>Gender</td>
<td>51.5</td>
</tr>
<tr>
<td>Indwelling catheterization</td>
<td>31.2</td>
</tr>
<tr>
<td>Malignancy</td>
<td>6.2%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>13.8%</td>
</tr>
<tr>
<td>Comorbidities</td>
<td>40.8%</td>
</tr>
<tr>
<td>Other data</td>
<td>40.8%</td>
</tr>
</tbody>
</table>

Table 2. Percentage of results

<table>
<thead>
<tr>
<th>Variable</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI at admission</td>
<td>10.9%</td>
</tr>
<tr>
<td>UTI at discharge</td>
<td>6.2%</td>
</tr>
</tbody>
</table>


Reference