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# Postsurgical complications after total knee arthroplasty and preoperative assessment of health

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# PRESENTATION PLAN

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# Total knee arthroplasty

Total knee arthroplasty (TKA) is an operation to restore motion to a knee joint and is one of the most profitable and consistently successful surgeries performed in orthopedics.

Reported main outcomes are pain relief, functional restoration and improvement in quality of life.

TKA provides reliable results especially for patients suffering from degenerative osteoarthritis.

33192 TKA in 2019 - Polish NHF



# Common causes of knee pain

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- Degenerative Osteoarthritis (OA)
- Inflammatory arthritis
- Post-traumatic arthritis
- Irreversible damage to the knee joint





Bleeding •

Blood clots in legs or lungs •

Infection (SSI, PJI) •

Vascular and nerve injuries •

Aseptic loosening •

**Early  
postsurgical  
complications**



**First developed in 1941 by the American Society of Anesthetists, an organization that later became the ASA.**

**Anesthesiologists use the system to describe a patient's preoperative and comorbid conditions before surgery and to properly stratify outcomes.**

# **ASA**

## **Physical status classification system**

**Describing patients' ASA score is used for recordkeeping, for communicating between colleagues, and to create a uniform system for statistical analysis.**

**This classification cannot serve as a direct indicator of operative risk**



**ASA I** A normal healthy patient

**ASA II** A patient with mild systemic disease

**ASA III** A patient with severe systemic disease

**ASA IV** A patient with severe systemic disease that is a constant threat to life

**ASA V** A moribund patient who is not expected to survive without the operation

**ASA VI** A declared brain-dead patient whose organs are being removed for donor purposes

**E** A patient for emergency surgery



## The aim

— The purpose of this study was to determine the probability and types of postoperative complications basing on the patients ASA score as well as BMI, age and laboratory tests.





# Materials & methods

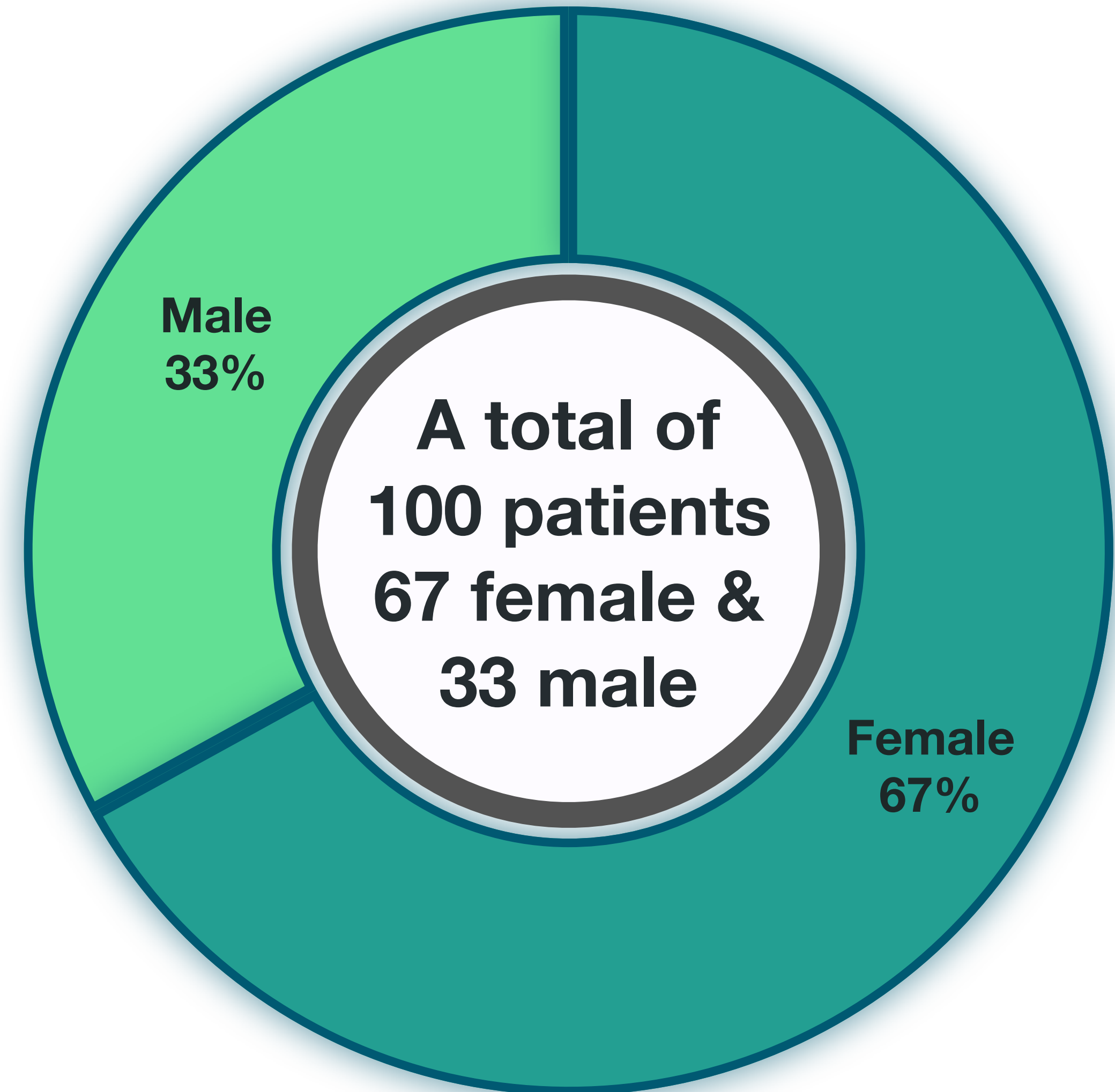
 The Department of Orthopaedics and Traumatology of Medical University of Silesia database

 January 2019 to May 2019

 ICD-10 M17 - the main criterium of database

 Average age 67.7 y/o

 Comparison of: medical history, laboratory results and postoperative consultations

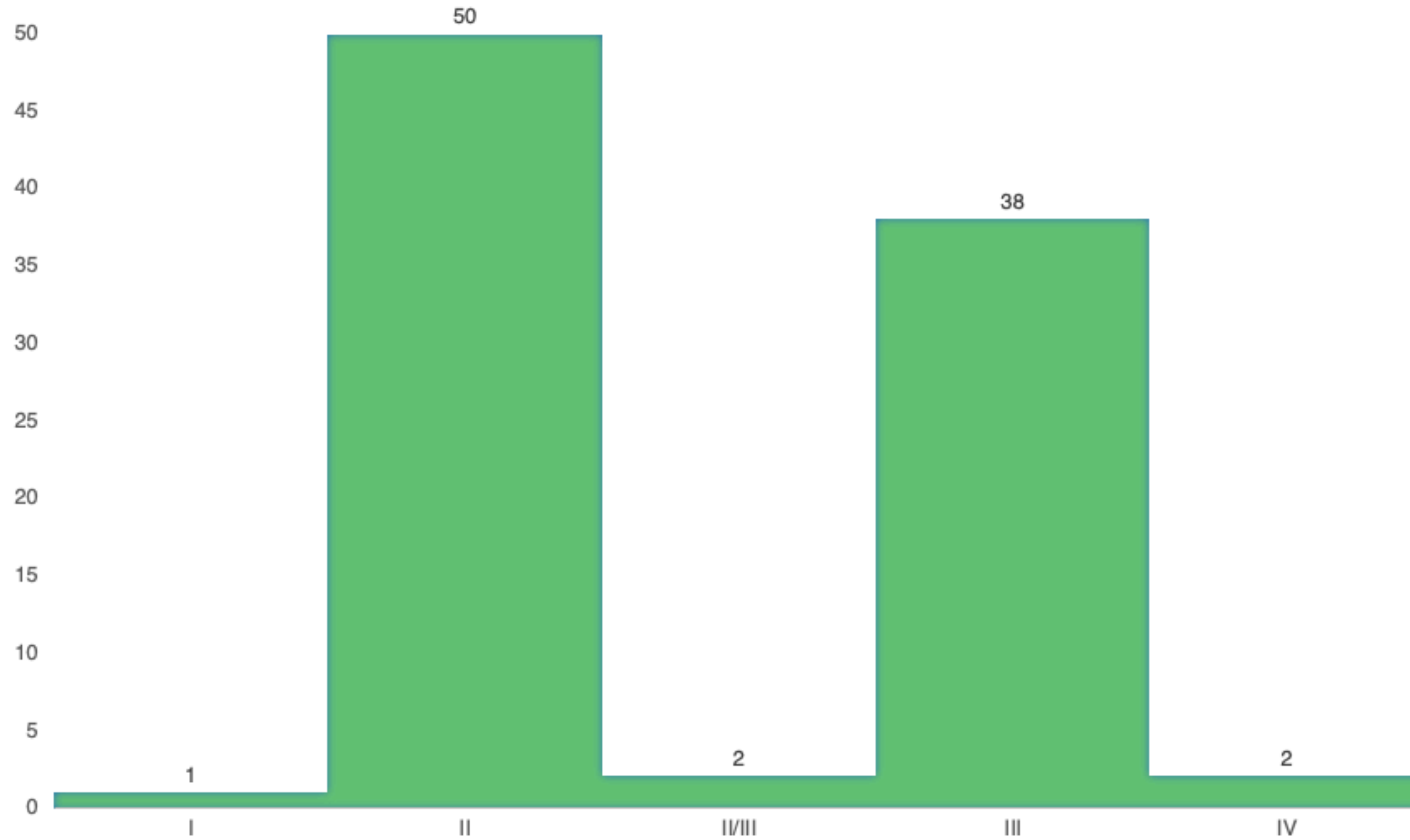






# Results

NUMBER OF PATIENTS IN EACH ASA SCORE GROUP





# Results

| ASA class and occurrence of complications |    |     |
|---|----|-----|
| Complications \ ASA Score                 | NO | YES |
| I   | 1  | 0   |
| II  | 44 | 6   |
| III/III                                   | 1  | 1   |
| III                                       | 33 | 5   |
| IV  | 2  | 0   |

The most numerous groups in the queried database were patients with ASA Score II and III.

Small number of patients with ASA score I and IV results from the distinctive character of patients classified to TKA



# Results

| Complications \ ASA score | NO | YES |
|---------------------------|----|-----|
| II                        | 44 | 6   |
| III                       | 33 | 6   |

We've classified the patient with ASA score II/III to a ASA III score after phone consultations.

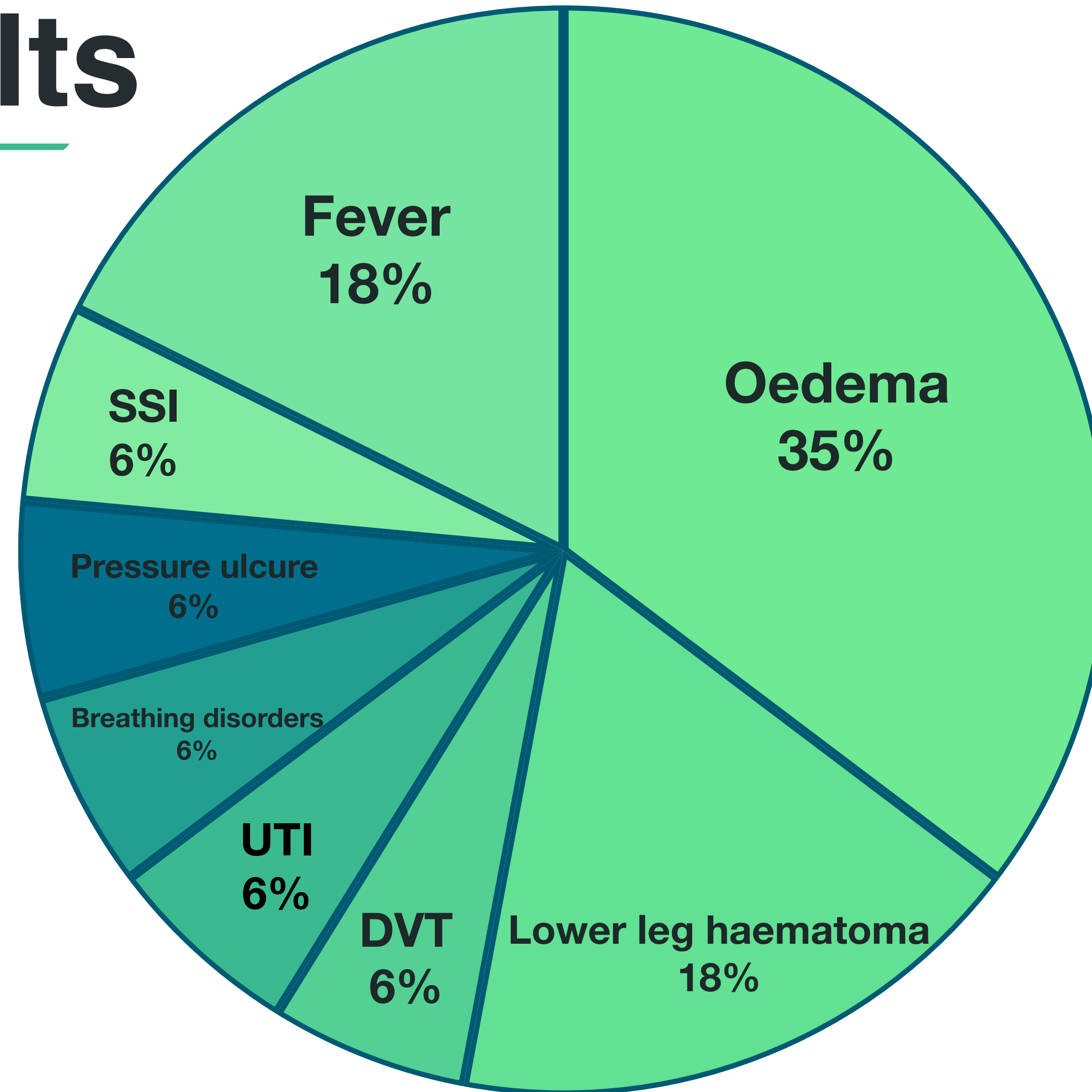
After excluding ASA score groups I and IV due to being statistically irrelevant, we can observe that the higher the ASA score group the higher the percentage of post-surgical complications (12% in ASA II and 15% ASA III).

Statistically, there is no correlation between ASA II and ASA III groups regarding the occurrence of post-surgical complications as  **$p=0.64$** .

|                            |         |          |         |
|----------------------------|---------|----------|---------|
| Liczności, wiersz          | 44      | 6        | 50      |
| Procent całości            | 49,438% | 6,742%   | 56,180% |
| Liczności, wiersz          | 33      | 6        | 39      |
| Procent całości            | 37,079% | 6,742%   | 43,820% |
| Razem w kol.               | 77      | 12       | 89      |
| Procent całości            | 86,517% | 13,483%  |         |
| Chi-kwadrat (df=1)         | ,22     | p= ,6428 |         |
| V-kwadrat (df=1)           | ,21     | p= ,6446 |         |
| Chi-kwadrat skoryg. Yatesa | ,02     | p= ,8799 |         |
| Fi-kwadrat                 | ,00242  |          |         |
| dokł. p Fishera, jednostr. |         | p= ,4365 |         |
| dwustr.                    |         | p= ,7577 |         |
| Chi-kwadrat McNemary A/D   | 27,38   | p= ,0000 |         |
| Chi-kwadrat McNemary B/C   | 17,33   | p= ,0000 |         |



# Results



**Type of post-surgical complications**



# Results

## Comparison of complications

| ASA II      |                     |         |   |
|-------------|---------------------|---------|---|
|             | Lab tests           | Obesity | Compilcations   |
| 1. 64y/o; W | Glucose ↑           | -       | <ul style="list-style-type: none"> <li>• UTI</li> <li>• Lower leg oedema</li> </ul>                 |
| 2. 63y/o; W | Glucose ↑           | +       | <ul style="list-style-type: none"> <li>• Lower leg haemetama</li> </ul>                             |
| 3. 65y/o; M | Glucose ↑, RBC ↓    | -       | <ul style="list-style-type: none"> <li>• Lower leg oedema</li> <li>• Lower leg haemetama</li> </ul> |
| 4. 79y/o; M | Glucose ↑           | -       | <ul style="list-style-type: none"> <li>• Exanthem</li> </ul>  |
| 5. 68y/o; W | N                   | -       | <ul style="list-style-type: none"> <li>• Fever</li> </ul>   |
| 6. 66y/o; W | RBC ↑; Creatinine ↑ | -       | <ul style="list-style-type: none"> <li>• Lower leg oedema</li> </ul>                                |

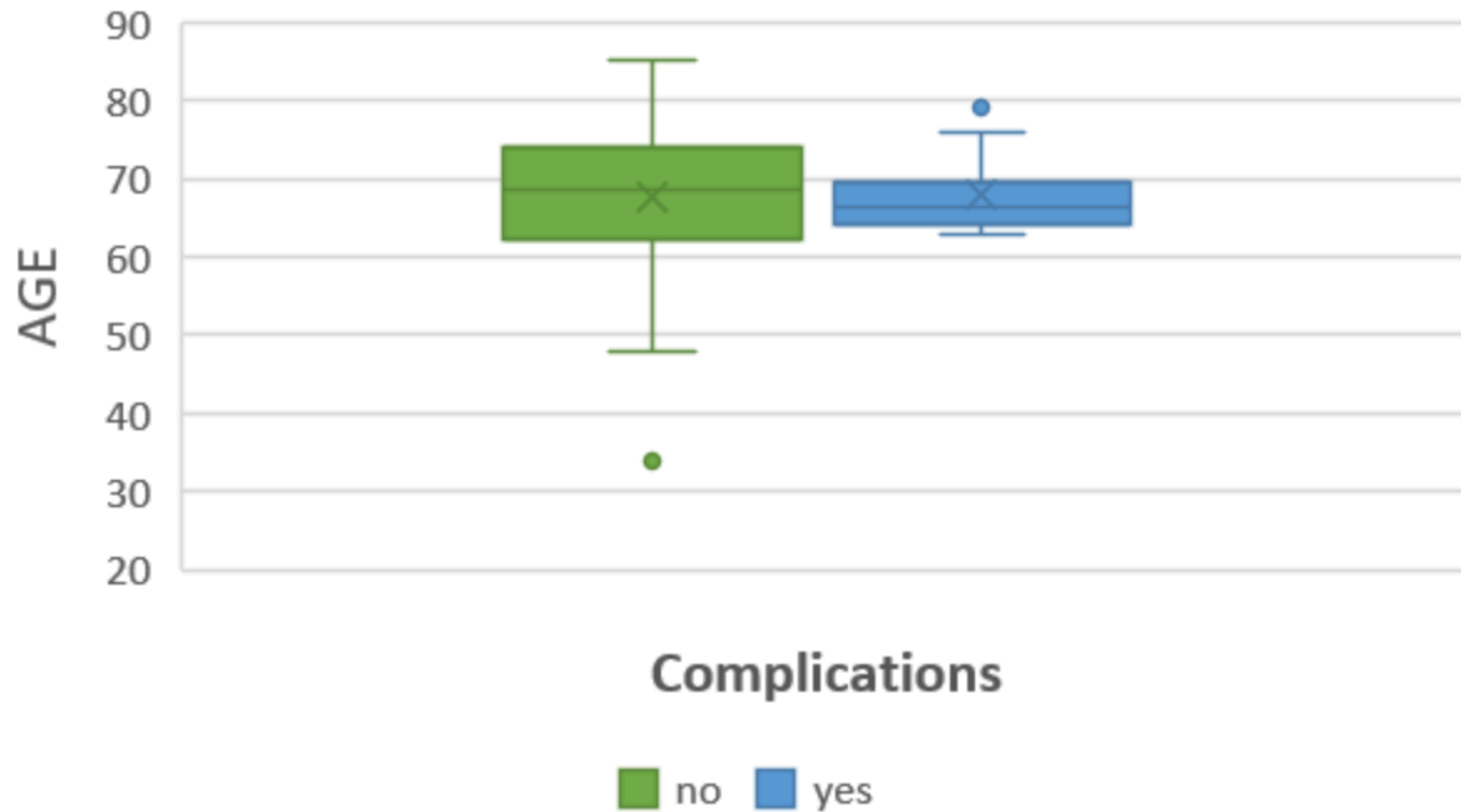
| ASA IIII    |                       |         |   |
|-------------|-----------------------|---------|---|
|             | Lab tests             | Obesity | Compilcations   |
| 1. 67y/o; W | Glucose ↑             | -       | <ul style="list-style-type: none"> <li>• Pressure ulcer</li> </ul>                                  |
| 2. 65y/o; W | Glucose ↑, Hb ↓, Ht ↓ | -       | <ul style="list-style-type: none"> <li>• Fever</li> </ul>   |
| 3. 68y/o; W | Glucose ↑             | -       | <ul style="list-style-type: none"> <li>• Lower leg oedema</li> <li>• DVT</li> </ul>                 |
| 4. 76y/o; W | Glucose ↑             | -       | <ul style="list-style-type: none"> <li>• Lower leg oedema</li> <li>• Lower leg haemetama</li> </ul> |
| 5. 70y/o; M | Glucose ↑             | -       | <ul style="list-style-type: none"> <li>• Breathing disorders</li> </ul>                             |
| 6. 64y/o; W | Glucose ↑             | -       | <ul style="list-style-type: none"> <li>• Lower leg oedema</li> <li>• Fever</li> </ul>               |

- When it comes to laboratory tests, the only common variable is glucose. In the queried group, 64/100 patients' glucose ↑ - in **11(17%)** cases, complications occurred.
- 2/100** patients had BMI>30 - correlation excluded due to a small number of patients.



# Results

## The influence of the patient's age on the occurrence of complications



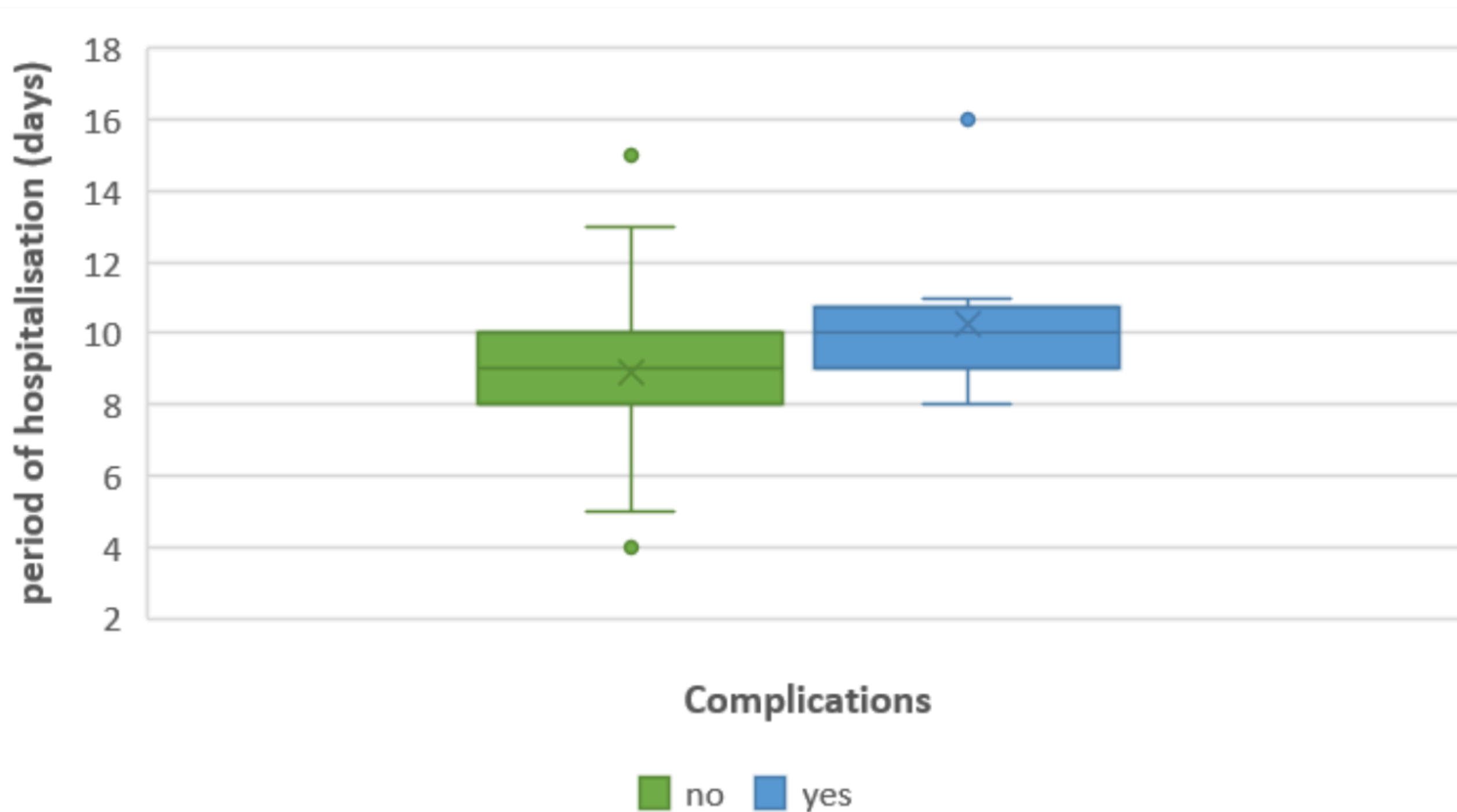
There are **no** significant differences between the groups





# Results

## Comparison of hospitalization time with the occurrence of complications



The mean hospitalization time is **9,2** days

When it comes to hospitalization time when any complication occurs it is - **10,2** days

ASA II - **10,1** days  
ASA III - **10,3** days



# Conclusions

- **There is no correlation between ASA Score groups II & III and the occurrence of postsurgical complications following the TKA.**
  - **Basing on the following research we can deduce that the TKA is a relatively safe procedure with overall low risk of post-surgical complications.**
- **We found no correlation between post-surgical complications and different factors like patients age, laboratory test results and medical history.**



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**Thank  
you!**



# Discussion

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