



Hospital Federal
de Bonsucesso

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A Comparative Study Among Elective Conventional Surgery, Urgency/Emergency Conventional Approaching and Elective Videolaparoscopic Surgery on the Treatment of Hospitalized Patients at First Surgeric Clinic of Federal Hospital of Bonsucesso with a Diagnostic of Colorectal Adenocarcinoma, between January 2010 and December 2012.

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Study Population

- **Patients with colorectal adenocarcinoma who underwent surgery in the years 2010, 2011 and 2012 in the 1st Surgical Clinic of the Federal Hospital Bonsucesso**

- **Surgeries:**
 - 1. Conventional Approach to Emergency*
 - 2. Conventional Elective Surgery*
 - 3. Elective Laparoscopic Surgery*

Data Collection

- **Pre-selection of histopathological reports in Anatomic Pathology Service (March-July / 2013)**

- **Selection with data collection in Medical Records (August / 2013 - May / 2014) grouped according to the surgery performed**

Data Collection

Selected data

✓ **Sex**

✓ **Age**

- *up to 39 years*
- *40 to 65 years*
- *over 65 years*

✓ **TNM stage**

✓ **Length of Stay**

- *Up to 15 days*
- *15 to 30 days*
- *30 to 40 days*
- *more than 40 days*

✓ **Complications**

Clavien Classification

Grade 1: Any deviation from the normal postoperative course without the need for pharmacologic treatment or surgical, endoscopic, and radiologic interventions. Allowed therapeutic regimens include drugs such as antiemetics, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy.

Grade 2: Complications requiring pharmacologic treatment with drugs other than allowed for Grade 1 complications. Blood transfusions and total parenteral nutrition are also included.

Grade 3: Complications requiring surgical, endoscopic, or radiologic intervention.

Grade 3a: Intervention not under general anesthesia

Grade 3b: Intervention under general anesthesia

Grade 4: Life-threatening complications (including central nervous system complications) requiring intensive care unit stay

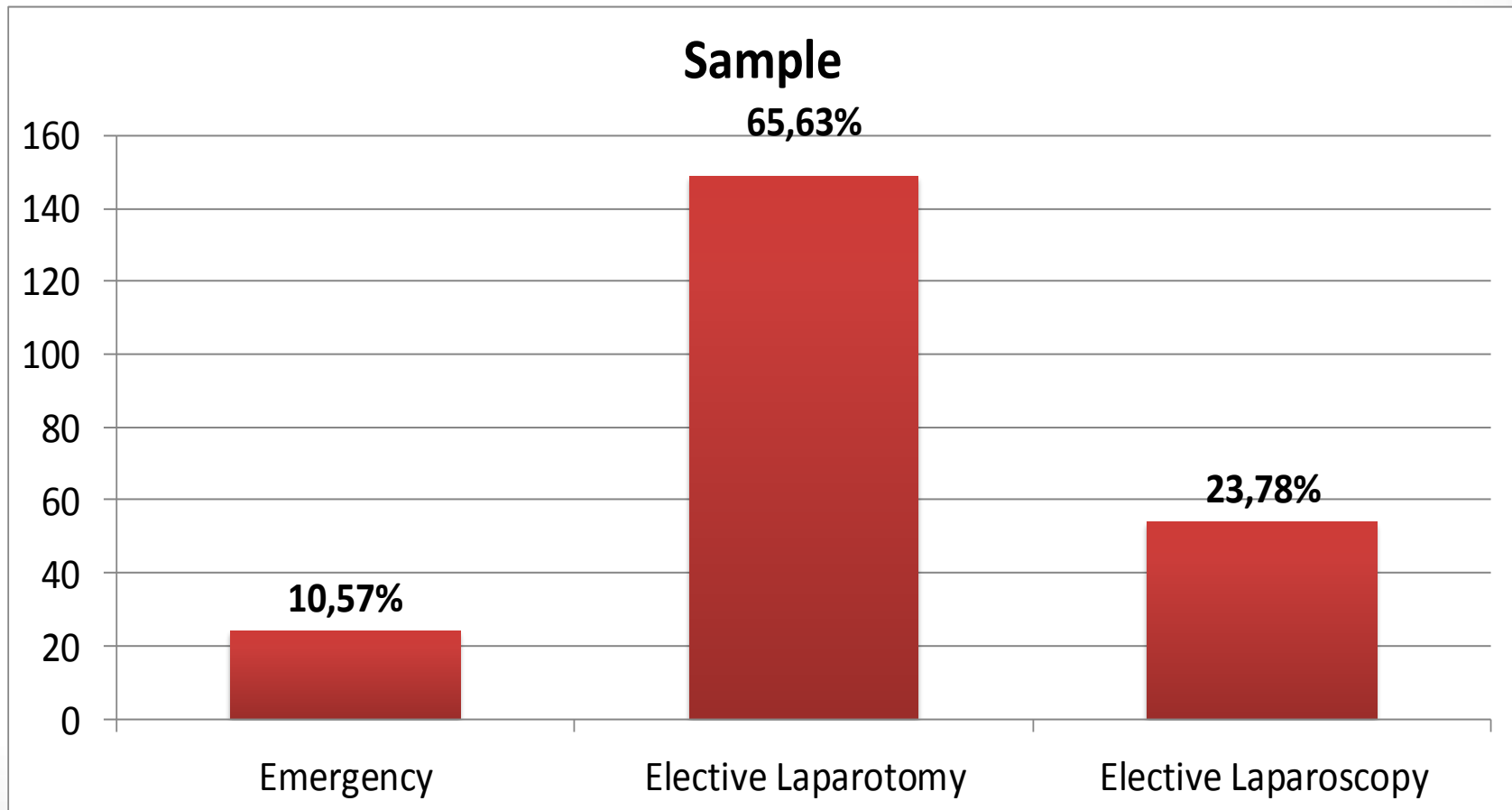
Grade 4a: Single-organ dysfunction (including dialysis)

Grade 4b: Multiorgan dysfunction

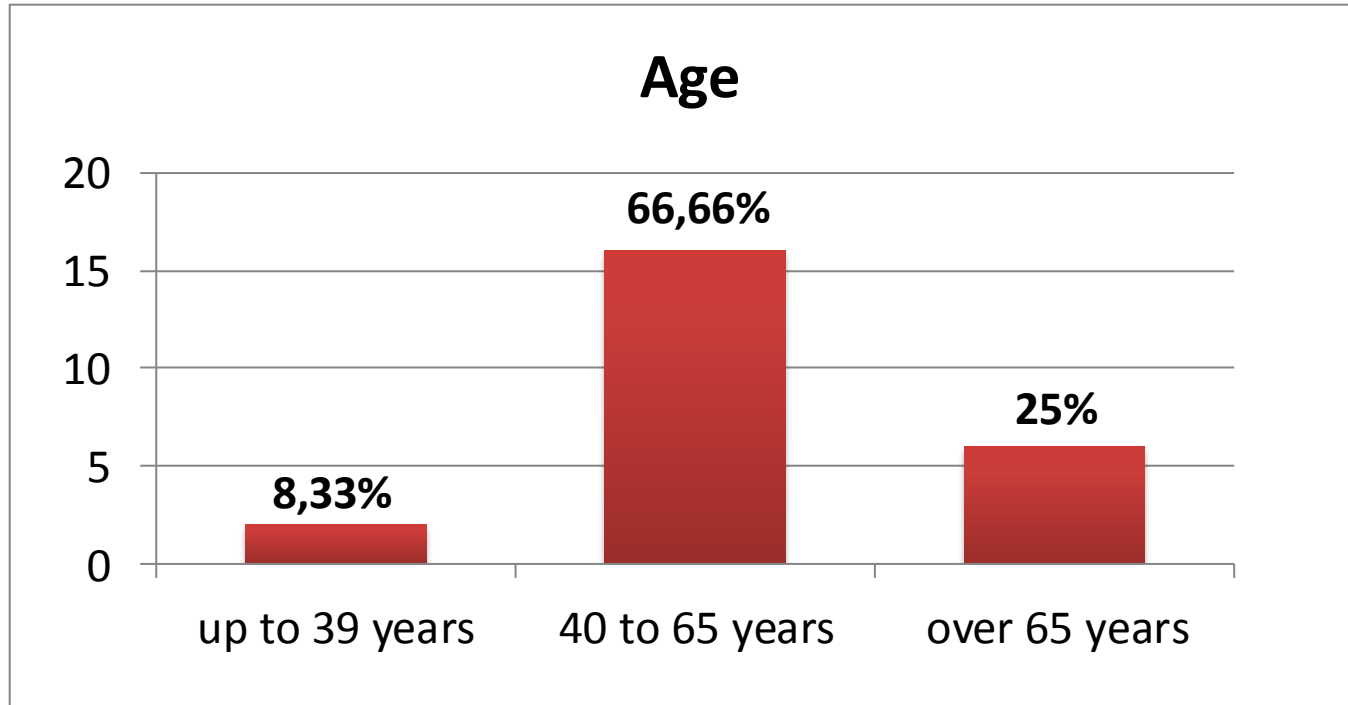
Grade 5: Death of the patient

Outcomes

- Selected sample: 227 patients

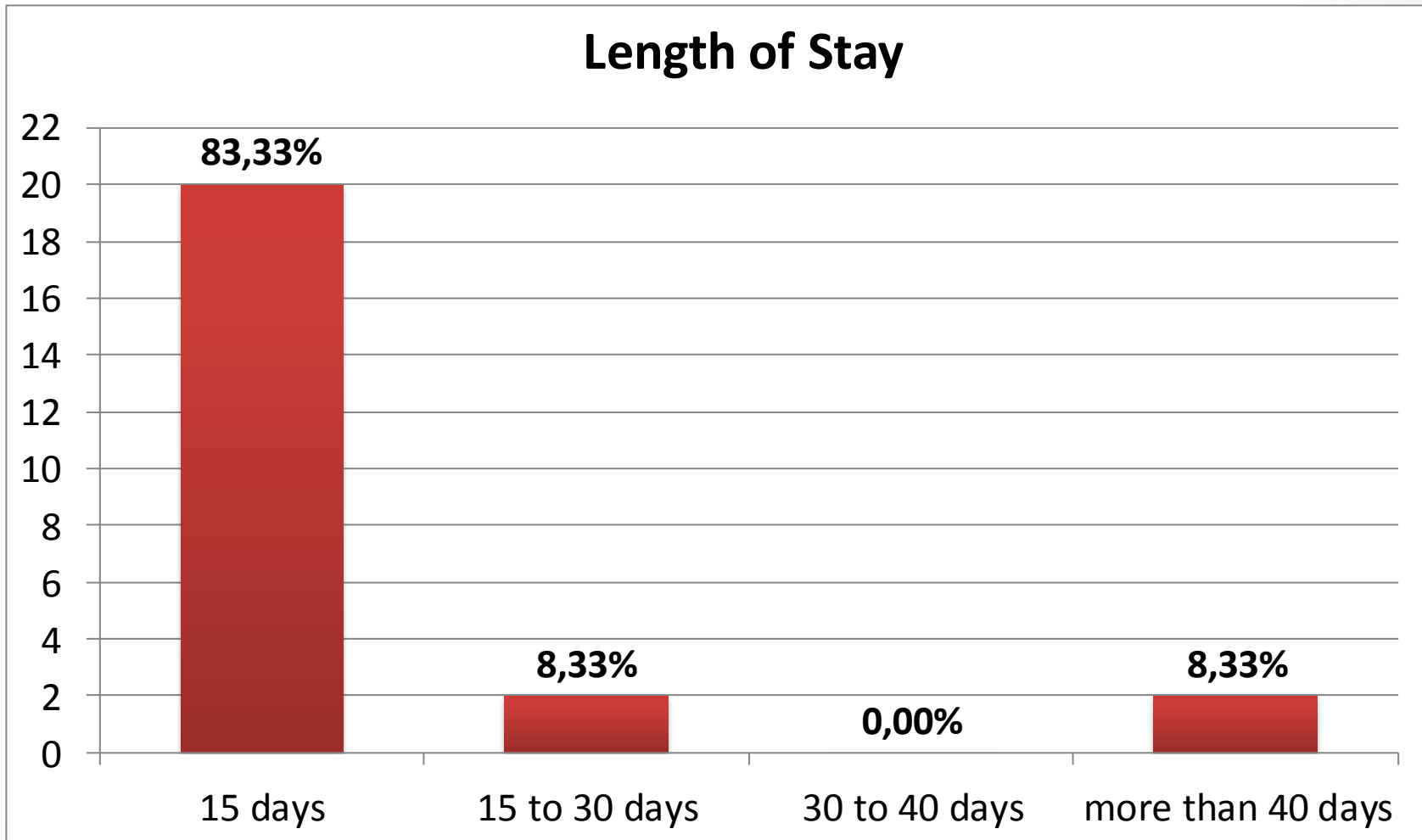


Outcomes - Emergency

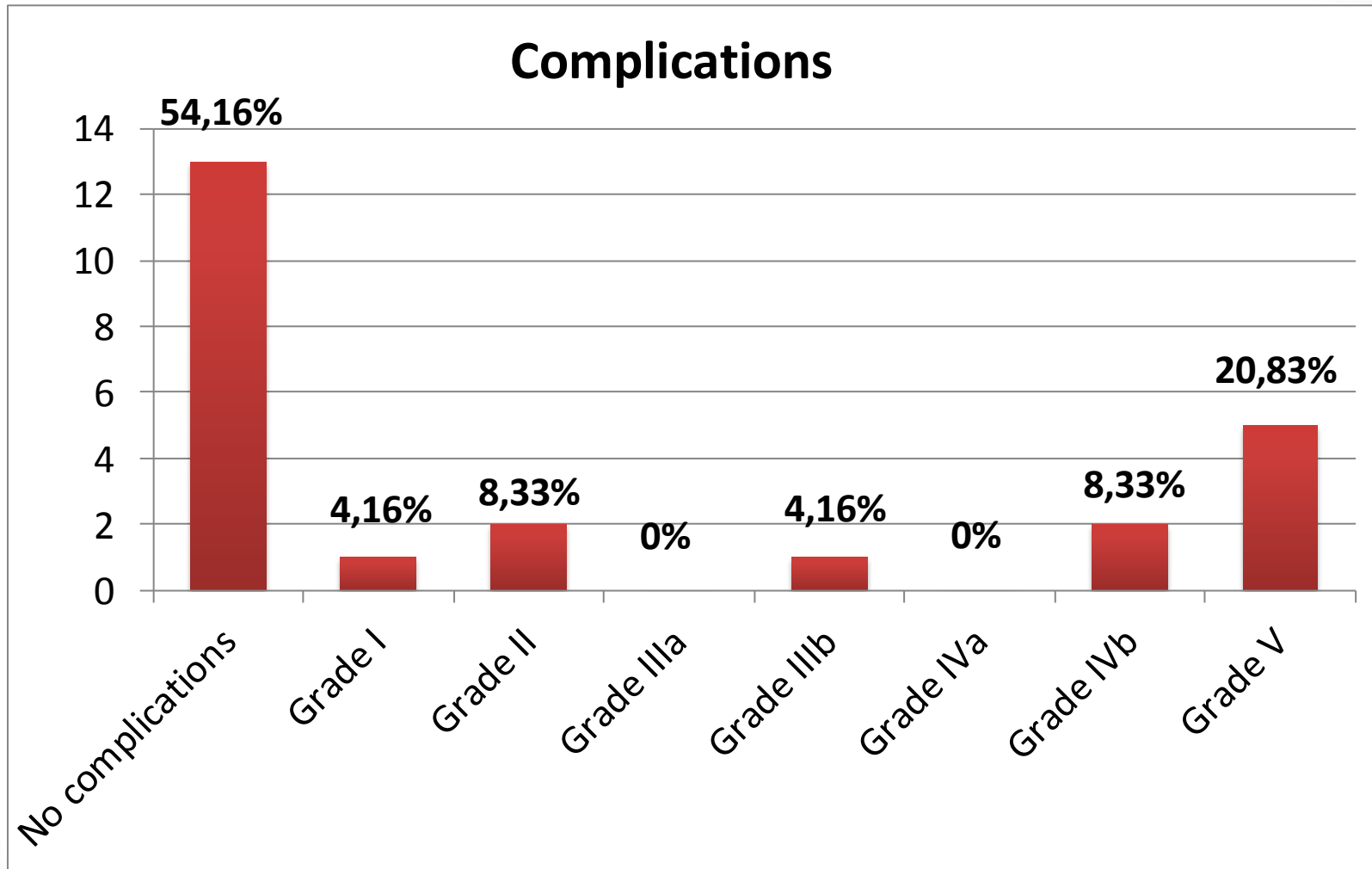


AVERAGE AGE	55,666
MEDIAN AGE	57,000
STANDARD DEVIATION OF AGE	15,465

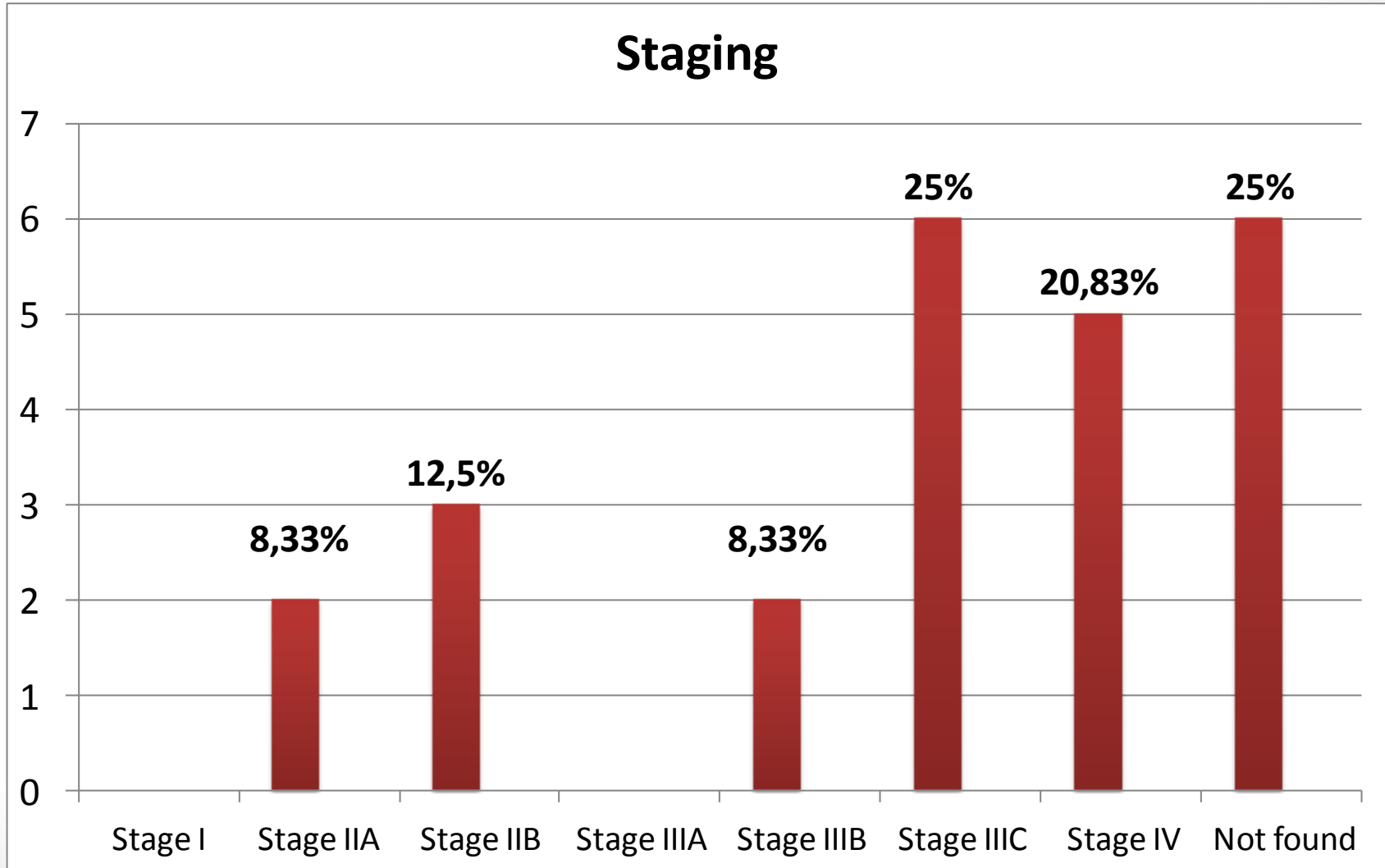
Outcomes - Emergency



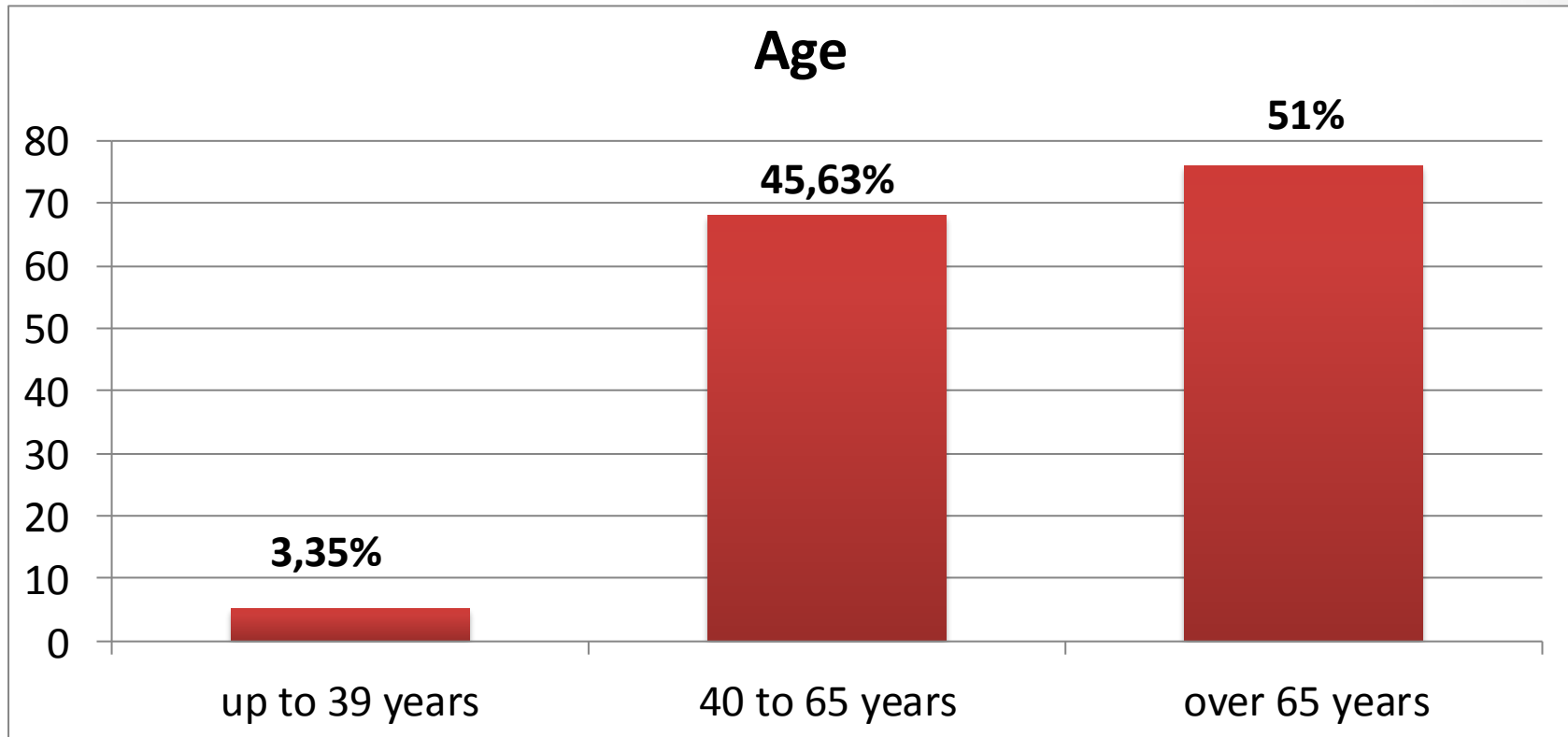
Outcomes - Emergency



Outcomes - Emergency

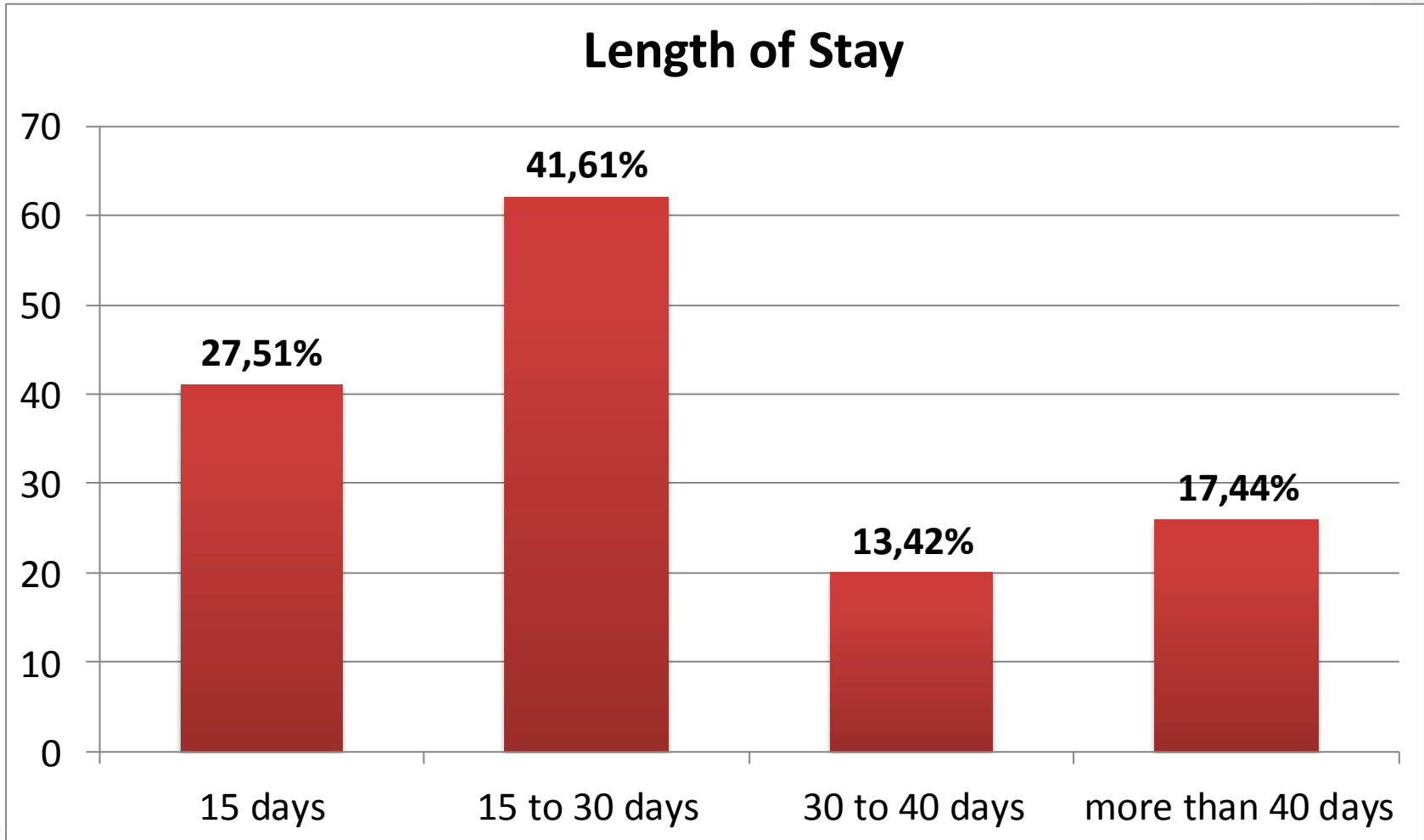


Outcomes – Conventional Elective Surgery



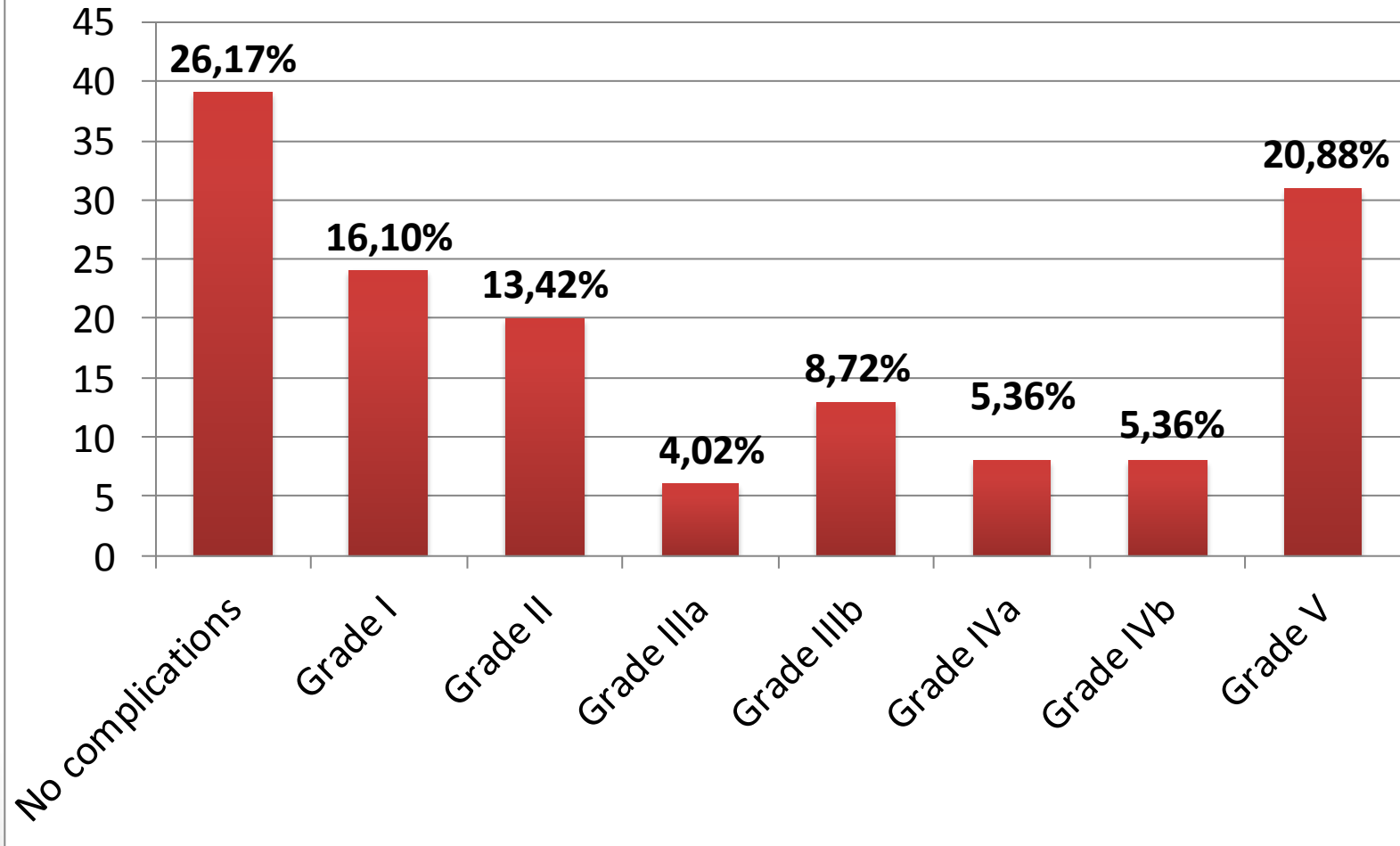
AVERAGE AGE	64,348
MEDIAN AGE	66,000
STANDARD DEVIATION OF AGE	12,684

Outcomes – Conventional Elective Surgery

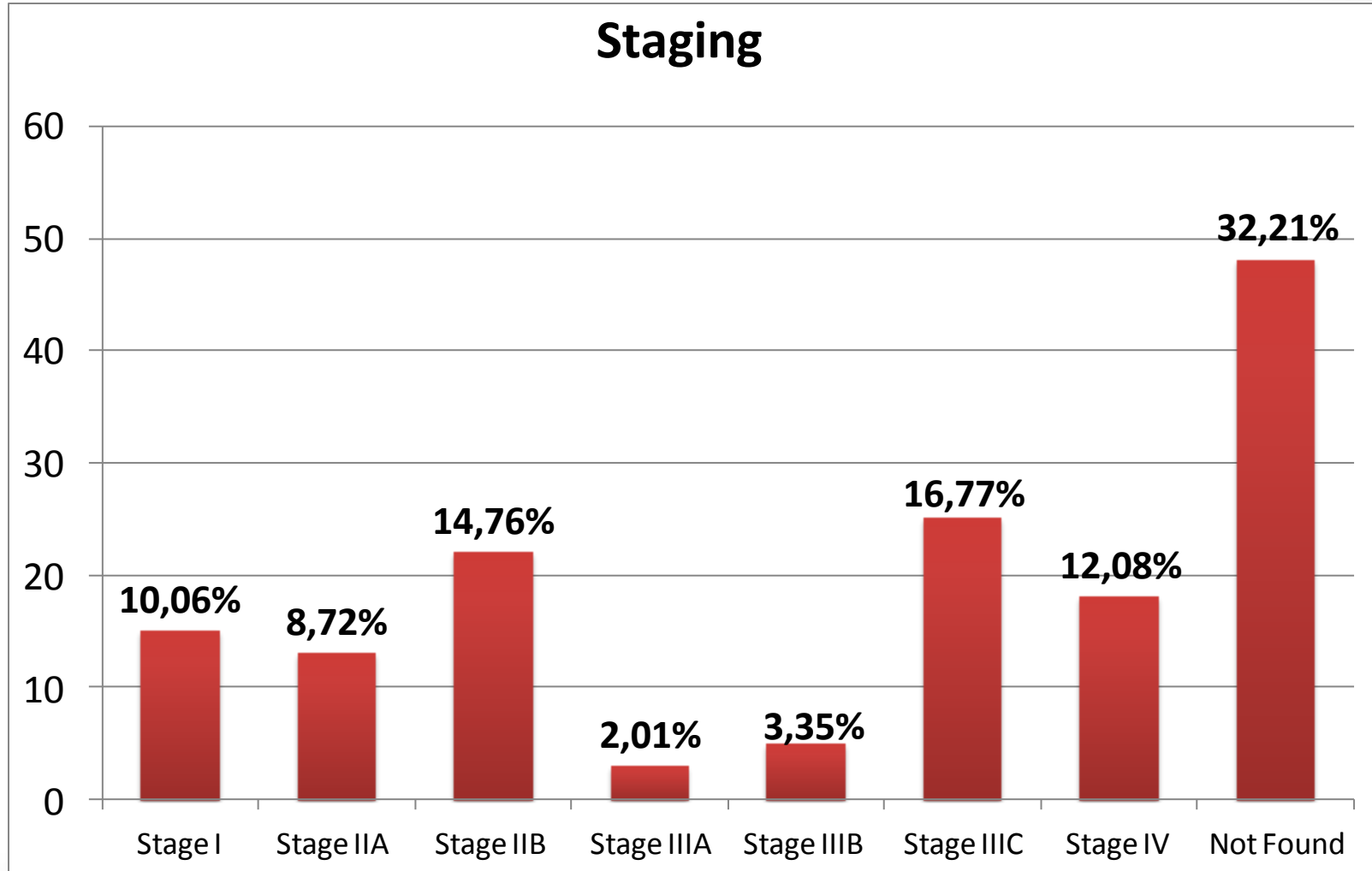


Outcomes – Conventional Elective Surgery

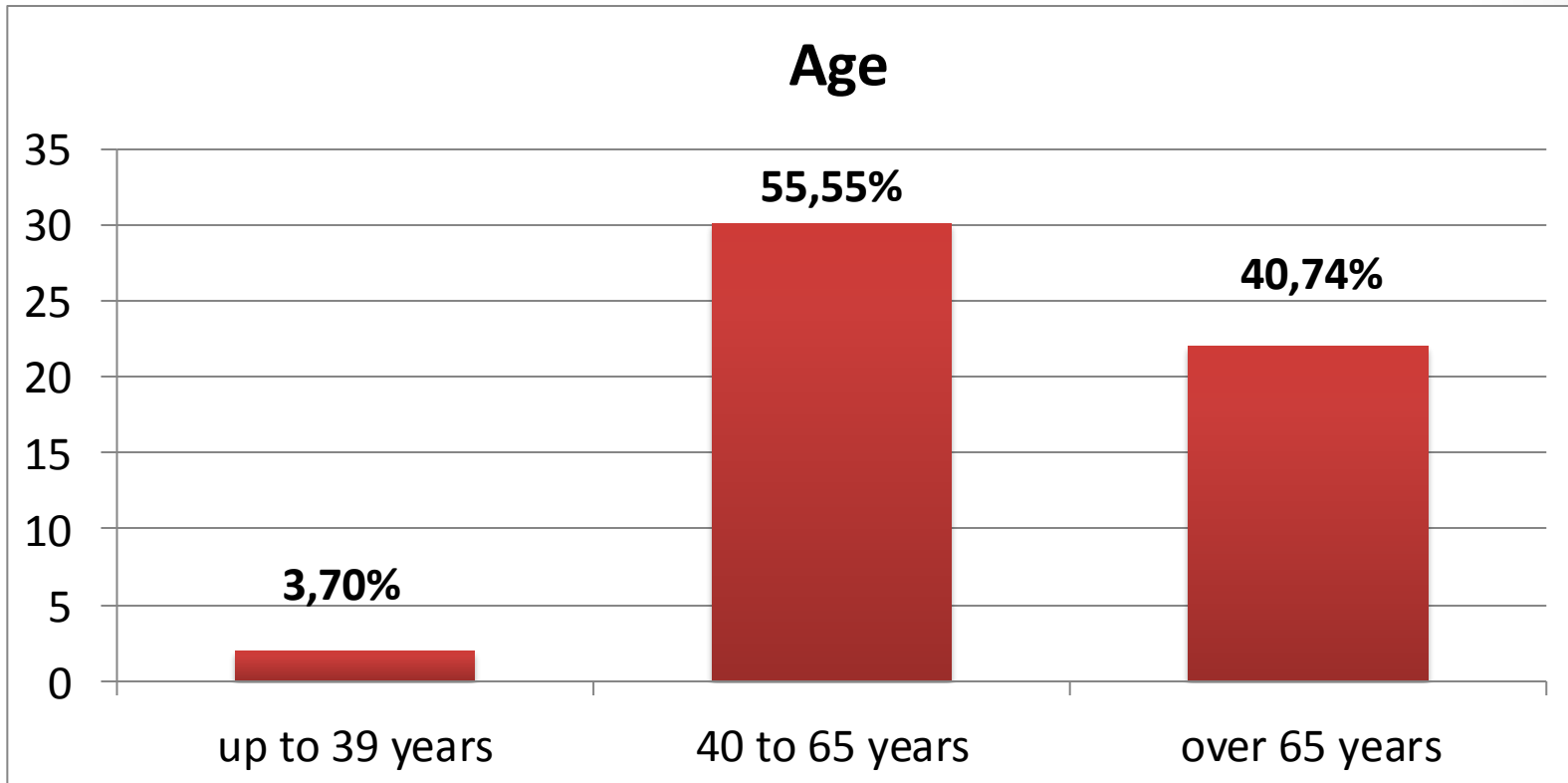
Complications



Outcomes – Conventional Elective Surgery



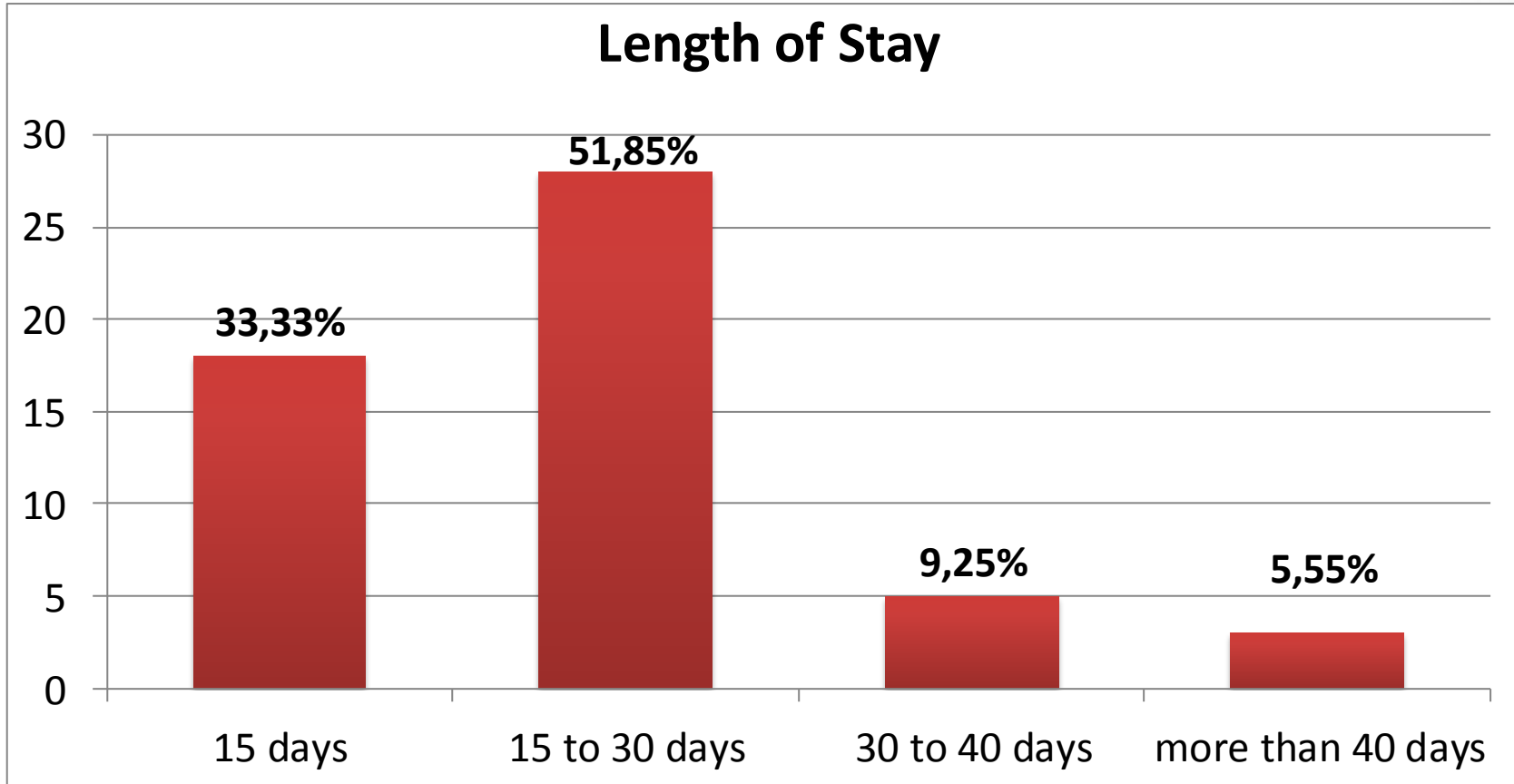
Outcomes – Elective Laparoscopic Surgery



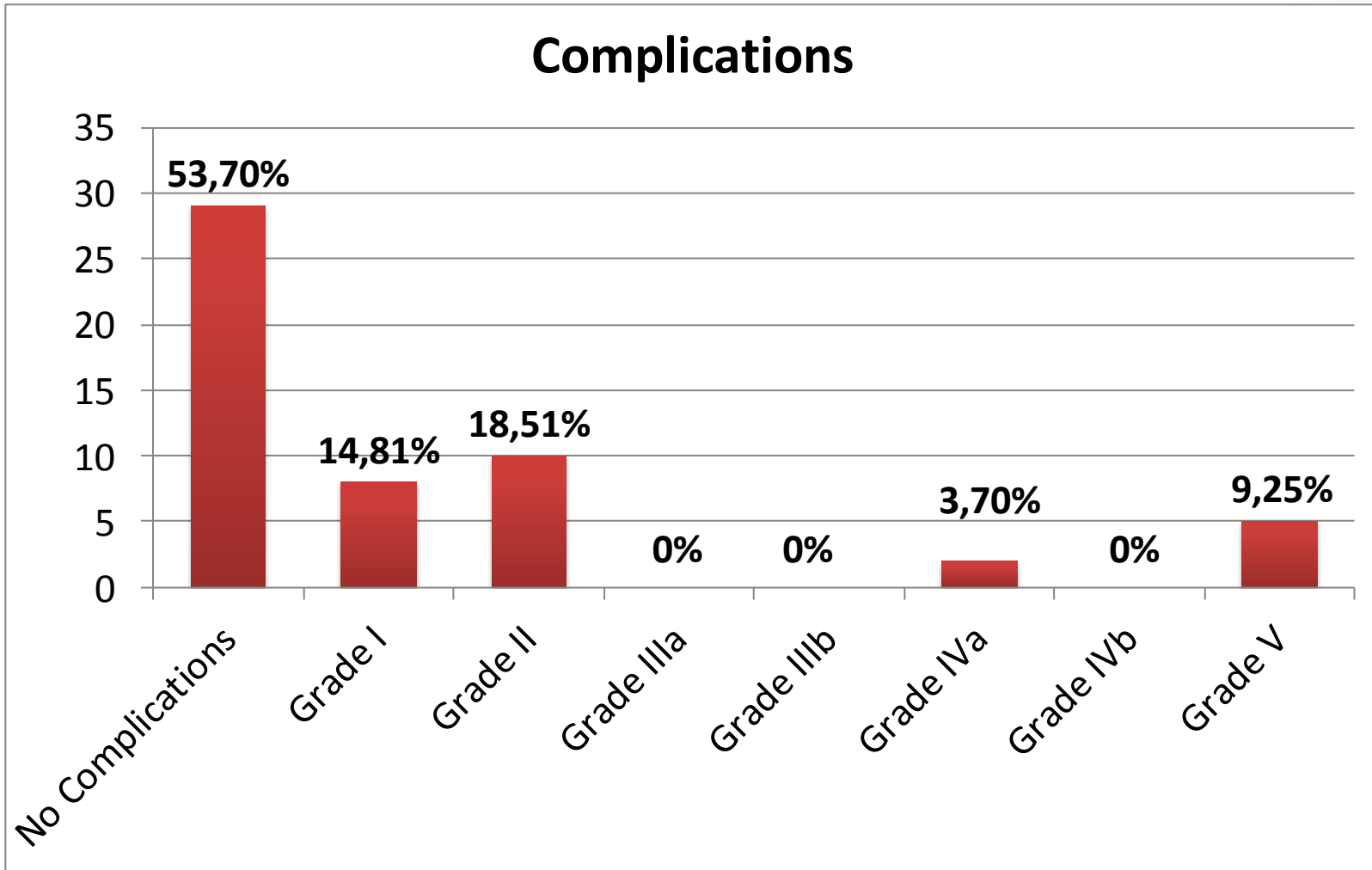
AVERAGE AGE	61,833
MEDIAN AGE	63,000
STANDARD DEVIATION OF AGE	12,319

Outcomes – Elective Laparoscopic Surgery

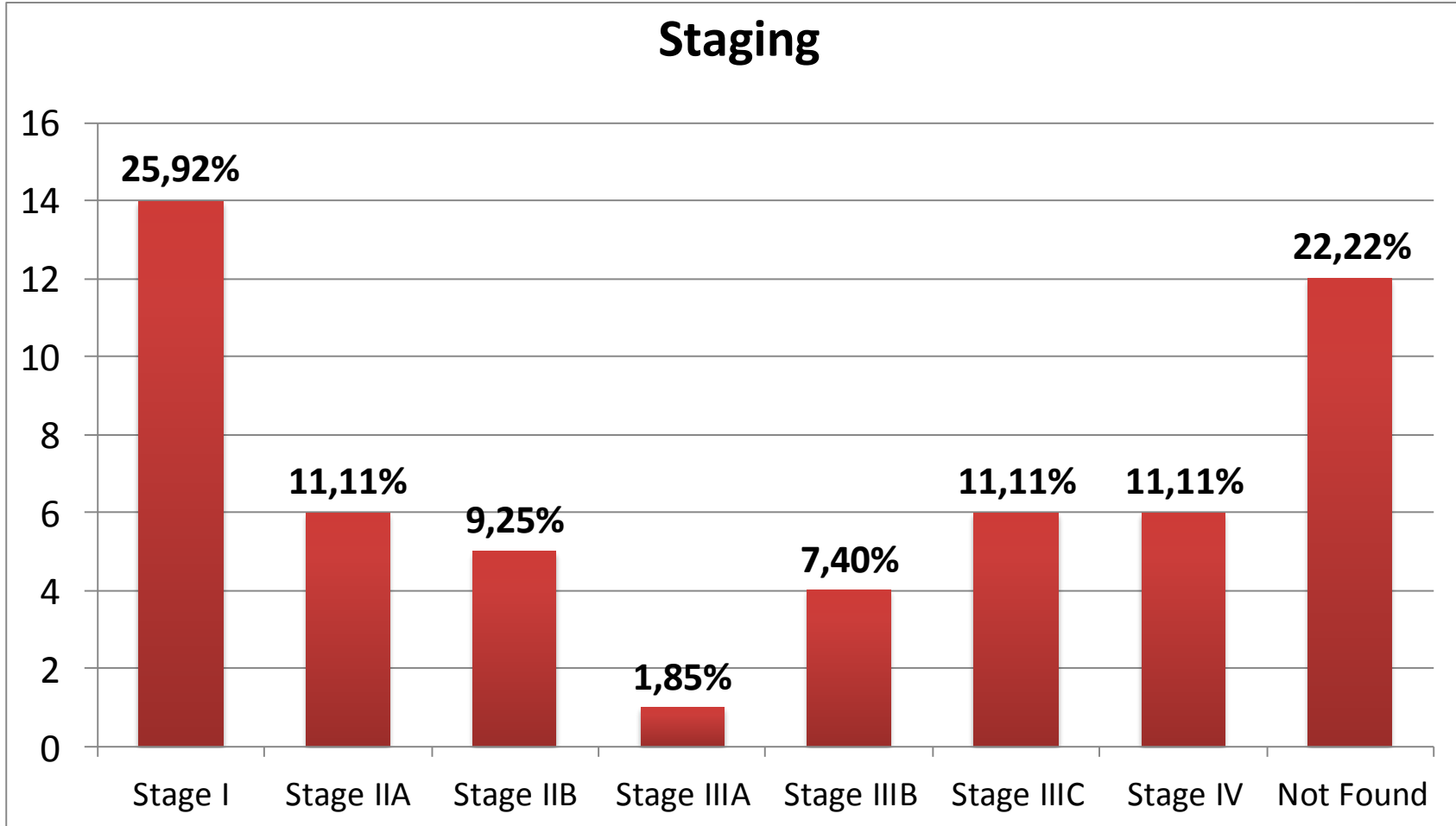
Length of Stay



Outcomes – Elective Laparoscopic Surgery



Outcomes – Elective Laparoscopic Surgery



Biostatistical Analysis

- **The groups were compared by evaluating the comparative significance of the variables**
- **Statistical evaluation highlighted three variables**
 - **Length of stay (*p-value* = 0,000004970)**
 - **Complications (*p-value* = 0,04734)**
 - **Staging (*p-value* = 0,002072)**

Minimally Invasive Approaches X Open Surgery



It is not only important to embrace the advantages but also to understand its limitations and complications



Complications Related to Trocars

- ***Insertion***
 - **Minimal violation of the anterior peritoneum**
 - **Patient-specific factors decides which method to use**
 - **Dreaded complication: missed intestinal injury**
 - **Dense adhesions suspected: choose an entry site away from the prior incision**

Complications Related to Trocars

- ***Bleeding Port Sites***
 - **Piercing or laceration of vessels traversing the abdominal wall during trocar placement is generally the cause**
 - **The most common vascular injury: inferior epigastric vessels**
 - **Methods to control bleeding: suture placement around the trocar site, standard electrocautery or port removal with direct suture ligation**

Complications Related to Trocars

- ***Adhesions and Port-site Hernias***
 - Intra-abdominal adhesions in laparoscopic intestinal surgery are reduced

Taylor GW and colleagues: “Adhesions and incisional hernias following laparoscopic versus open surgery for colorectal cancer in the CLASSIC trial.” [Br J Surg 2010]



There was an increase in rates of both adhesions and hernia complications among patients whose procedure was converted from a laparoscopic approach to open

Complications Related to Trocars

- ***Port-site Tumor Recurrence***

Reported rates of port-site tumor recurrences early in the experience of laparoscopic surgery for colon cancer were as high as 21%

X

It appears that the previously unexpected high rates of port tumor recurrences are not observed in the latest updates of all large randomized controlled trials

Intra-abdominal Complications

- ***Leak Rates Relative to Technique of Anastomosis***
 - **Anatomic location within the bowel**
 - **Anatomy**
 - **Mesenteric mobility**
 - **Bacterial load differ by location along the lower gastrointestinal tract**
 - **Tension**
 - **Blood supply**

Intra-abdominal Complications

SIGNIFICANT BENEFITS FROM LAPAROSCOPY

- 1. Earlier return of bowel function**
- 2. Decreased postoperative pain**
- 3. Shorter length of stay**
- 4. Lower late morbidity rates**
- 5. Reduced ileus**
- 6. Lower estimated blood loss**
- 7. Lower transfusion rate**
- 8. Lower wound infections**

Intra-abdominal Complications

- ***Injury to the Genitourinary Tract*** → the incidence of urinary tract injuries increases in patients with:
 - **Prior pelvic operations**
 - **Inflammatory bowel disease**
 - **Infection**
 - **Patients with extensive neoplasms that can cause distortion of normal surgical planes**

Conversion

- **Conversion from laparoscopic to open surgery is affected by variety of patient-related, as well as surgeon-related factors**
- **Patient-related factors:**
 - 1. Dense interloop adhesions**
 - 2. High body mass index**
 - 3. Advanced tumor with local invasion**
 - 4. Inflammatory conditions**

Conversion

Marusch F and colleagues: "Importance of conversion for results obtained with laparoscopic colorectal surgery."
[Dis Colon Rectum 2006]



Patients who were converted during laparoscopic colectomies when compared with those who had successful laparoscopic colectomies had longer operative time, increased blood loss, higher wound infection rate and longer length of stay

Conversion

Belizon and colleagues: "Converted laparoscopic colectomy: what are the consequences?"
[Surg Endosc 2006]



Clinical impact of conversion also depends on whether the case is converted early (< 30 minutes) or late



Early Proactive Conversion X Reactive Conversion



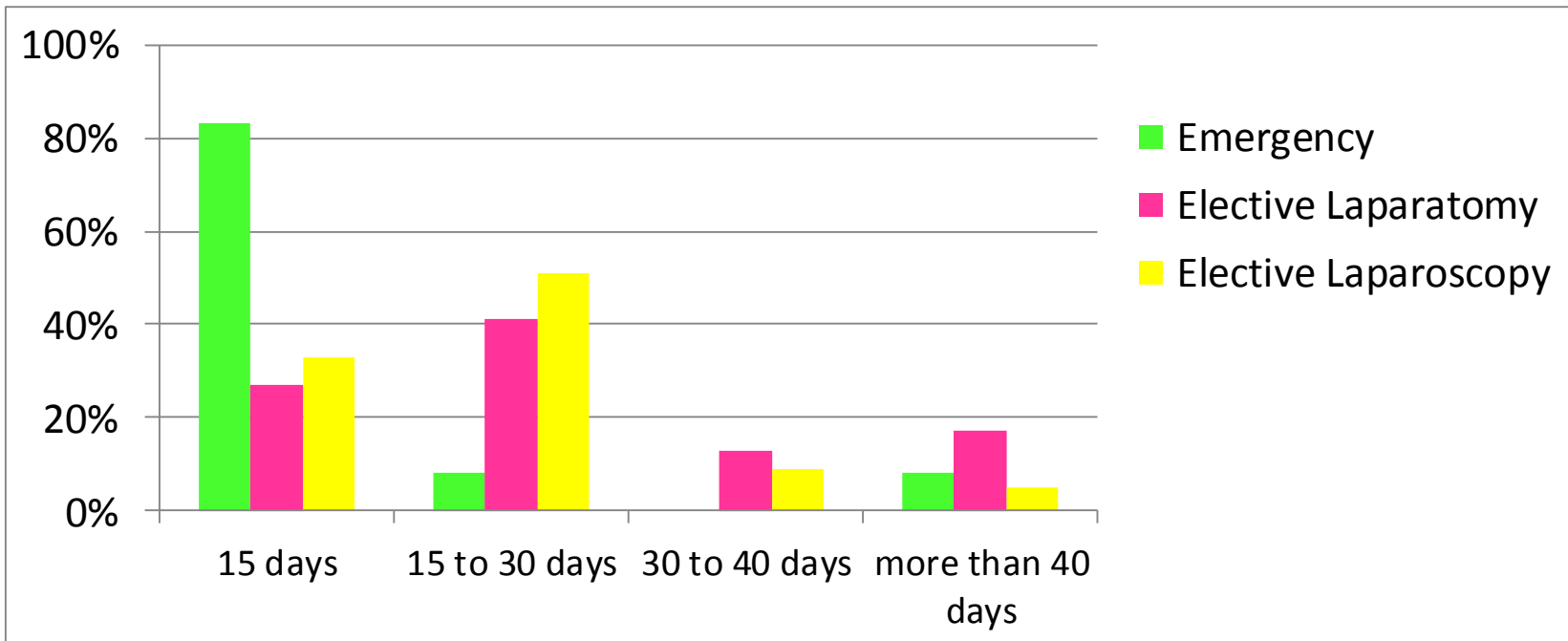
Favorable outcome in high-risk patients



Intraoperative complications and poorer outcomes

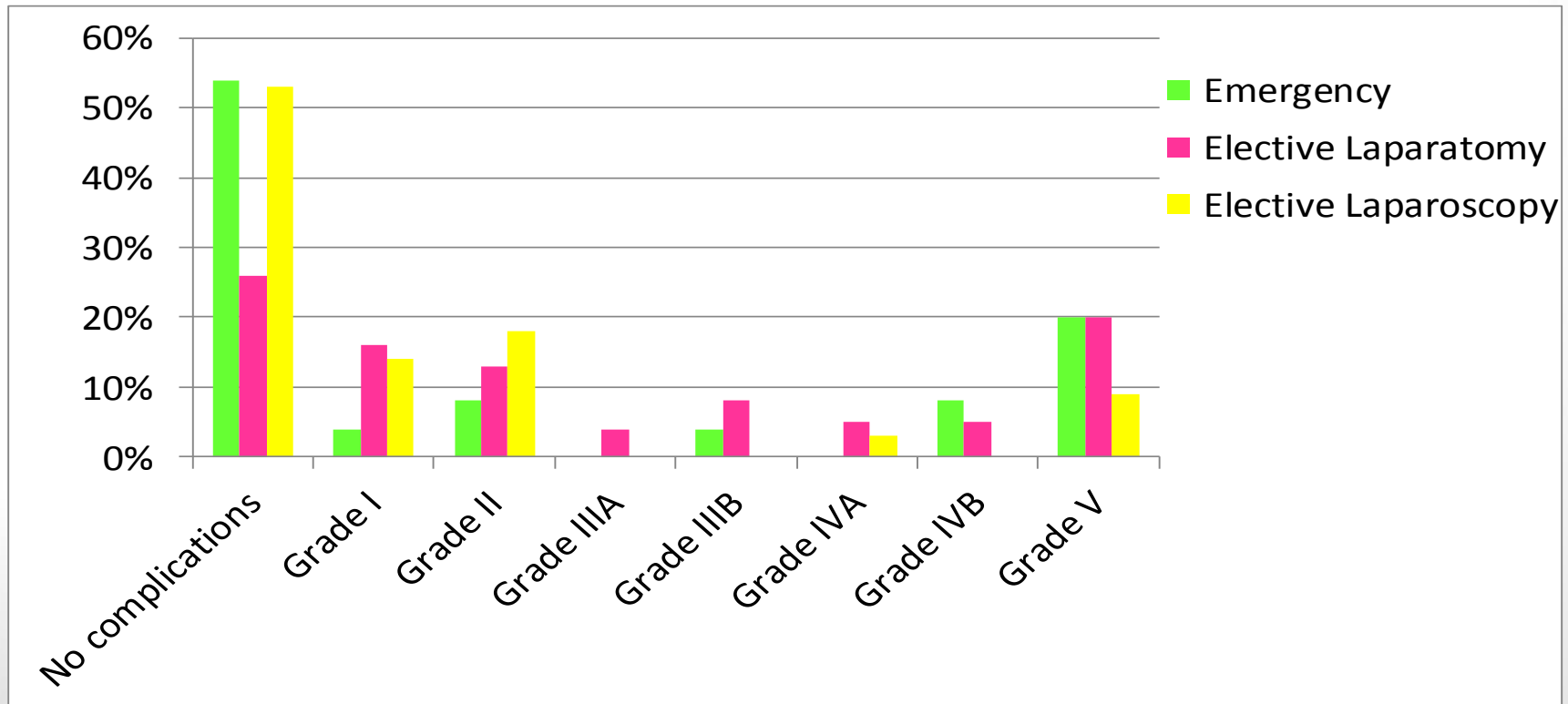
Conclusions

Most patients undergoing emergency surgery had a shorter length of stay ($p\text{-value} = 0,00000497$)



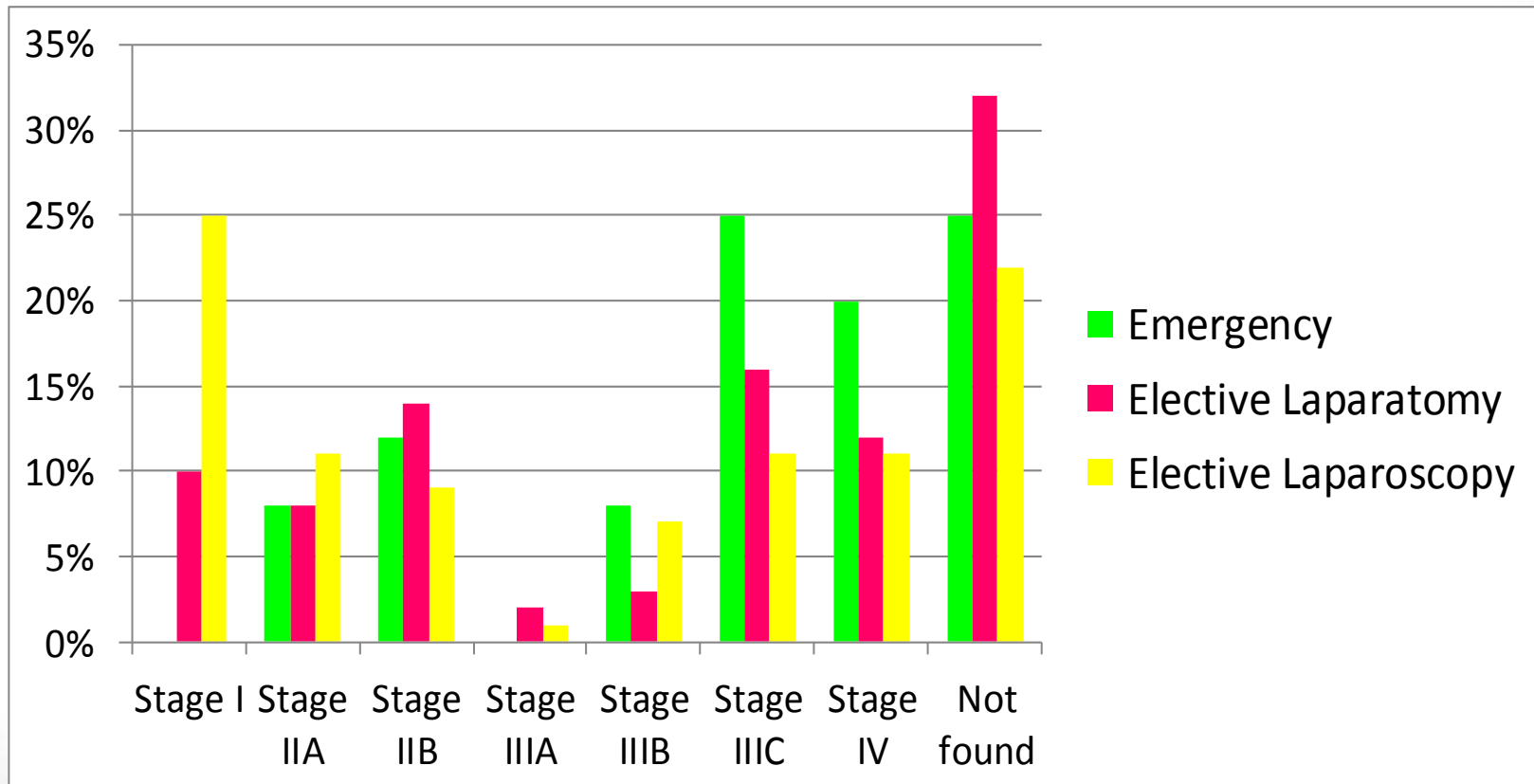
Conclusions

- The group operated by laparoscopy had lower incidence of complications when compared to elective laparotomy group ($p\text{-value} = 0,002072$)
- Conventional elective surgeries: the percentage of deaths was high



Conclusions

- Many patients undergoing laparoscopic surgery were in the earliest stages of the disease. And, conversely, a high percentage of patients undergoing emergency surgery was in the advanced stages of the disease ($p\text{-value} = 0,047$)



Key-Points

- 1. Laparoscopic colorectal surgery may be comparable to open techniques when considering oncological and long-term follow-up outcomes**
- 2. Although fewer perioperative complications and faster postoperative recovery of laparoscopy, it does possess a unique set of complications**
- 3. Complications resulting from conversion of procedures from laparoscopic-to-open may lead to worse outcomes than complications from open surgery alone**



Thank You!