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BLEEDING AND SURGICAL TIME IN KNEE PROSTHESIS USING ROBOTIC ASSISTANCE WITH AND WITHOUT THE USE OF A TOURNIQUET

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Faculty Disclosure Information

- Nothing to disclosure.



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INTRODUCTION

- **ROBOTIC TECHNOLOGY:**

- Total Knee Arthroplasty (TKA) allows for better precision, improved implant positioning, and less tissue trauma.
- It may reduce blood loss and decrease postoperative pain.

- **TOURNIQUET AND ROBOTIC TKA:**

- The use of the tourniquet has become a subject of debate in the literature.
- In conventional TKA, studies show an increase in occult blood loss, higher infection incidence, and increased postoperative pain associated to the use of tourniquet.
- In the robotic-assisted technique, the divergence remains, with few comparative studies regarding the use of a tourniquet.



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OBJECTIVES

- Compare patients undergoing robotic-assisted TKA with and without the use of tourniquet, evaluating the blood loss 24 hours after surgery and surgical time.



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MATERIALS AND METHODS

- Retrospective study with medical records analysis.
- Patients who underwent TKA with robotic assistance between October 2022 and June 2023.
- Two groups: one with the use and other without the use of a tourniquet.
- Patients underwent the same anesthetic technique, surgical technique, surgical instruments (ROSA® robotic arm), and postoperative management.
- Statistical analysis of the decrease in hemoglobin (Hb) and hematocrit (Ht) values 24 hours post-procedure, calculation of blood loss by Body Mass Index (BMI)*, surgical time, sex, age, BMI, and number of transfusions (criterion: Hb < 7g/dl).
- Confidence level of 5%



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*Nadler SB et al., 1962; Lisander B et al., 1998.

RESULTS



Fig. 1 Flowchart of patients evaluated after robotic TKA



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RESULTS

Table 1. Demographic characteristics of the study population

Variable	Tourniquet group (<i>n</i> =59)	Non-tourniquet group (<i>n</i> =49)	<i>P</i> *
Age (years) (mean±SD)	68,1 ± 7,6	67,4 ± 9,5	0,648
Male, <i>n</i> (%)	24 (40,7)	29 (59,2)	0,056
BMI (mean±SD)	30,1 ± 4,4	30,4 ± 4,9	0,712
Hemoglobin, g/dl (mean±SD)	13,97 ± 1,30	14,25 ± 1,48	0,287
Hematocrit, % (mean±SD)	41,60 ± 3,86	42,12 ± 4,41	0,508

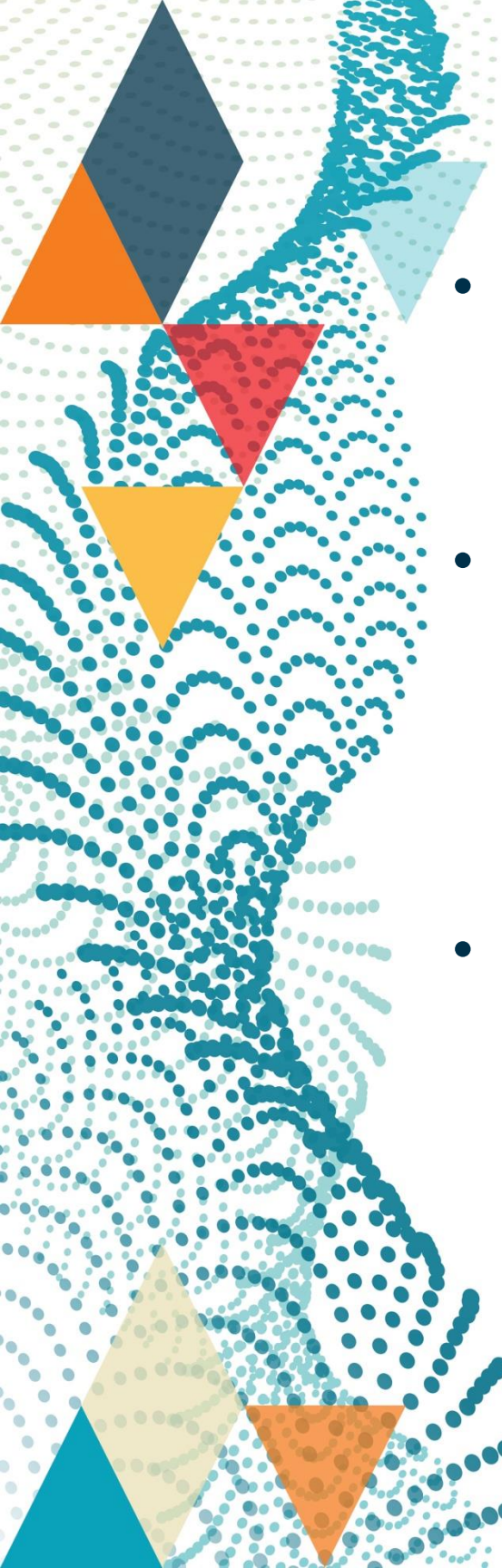
Standard deviation (SD); Body mass index (BMI).

RESULTS

Table 2. Comparisons between the groups regarding surgical time and bleeding

Variable	Tourniquet group (<i>n</i> =59)	Non-tourniquet group (<i>n</i> =49)	<i>P</i> *
Surgical time, min (mean±SD)	108,7 ± 20,4	114,4 ± 23,2	0,179
Hemoglobin reduction (g/dL)	2,28 ± 0,92	2,54 ± 1,36	0,252
Estimated blood loss (ml)	765,4 ± 290,6	842,4 ± 421,4	0,265
Transfusion (<i>n</i>)	0	0	N/A

Standard deviation (SD).



DISCUSSION

- Many studies compare robotic TKA to conventional techniques, but without comparing the use or not of the tourniquet.
- Lai et al. (2022) in a randomized clinical trial with only 14 patients demonstrated similar results between the group with and without a tourniquet in the robotic technique.
- Xu et al. (2022) in a retrospective study with 65 patients using tourniquet showed that robotic surgery had less blood loss compared to the conventional technique when both were performed with a tourniquet.



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DISCUSSION

- There was no significant difference in surgical time between groups.
 - This differs from recent meta-analyses of non-robotic-assisted surgeries, which indicate that the tourniquet is a factor in reducing surgical time.

LIMITATIONS:

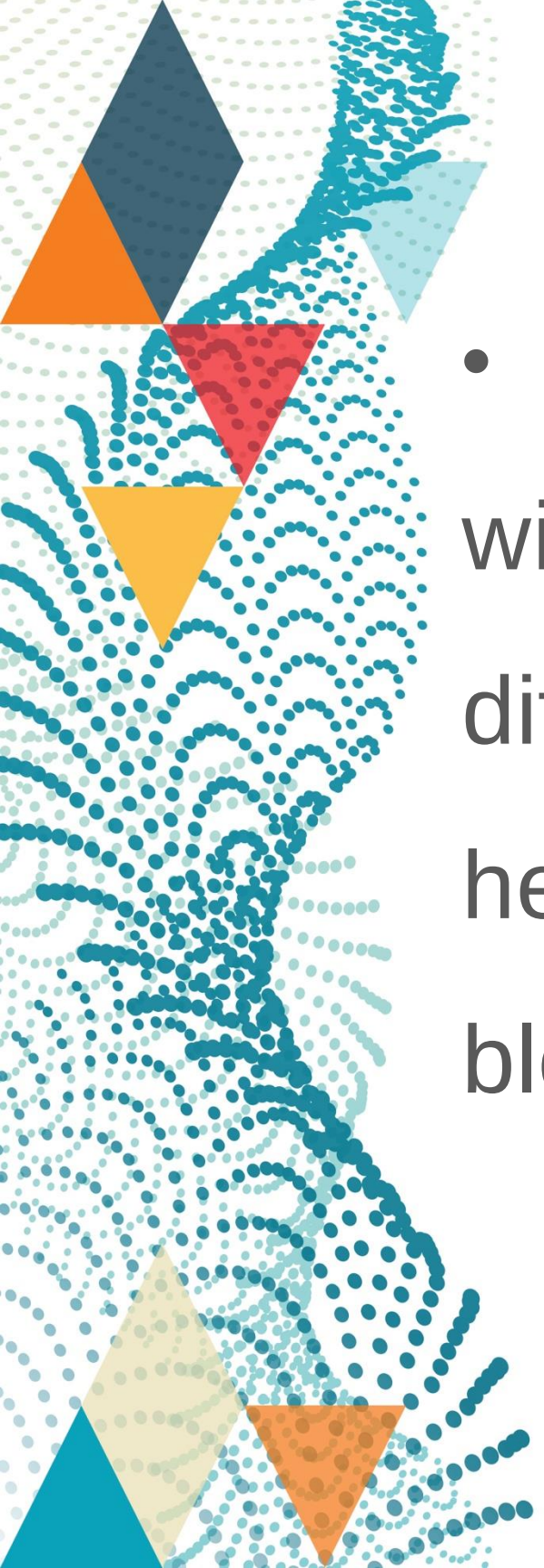
- Retrospective study;
- Data from a single center;
 - Reduction of bias when comparing different surgeons with varying practices.
- Limited number of patients for a retrospective study.



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CONCLUSION

- Robotic-assisted TKA surgeries performed with or without the use of a tourniquet showed no significant difference in the decrease in hemoglobin and hematocrit levels 24 hours after surgery, estimated blood volume loss, transfusions, and surgical time.



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Thank you

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