Sinus laser-assisted closure in pediatric pilonidal sinus disease: clinical outcomes and laser parameter optimization

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INTRODUCTION

- **Pilonidal sinus disease** is a **chronic inflammatory condition** of the sacrococcygeal region that predominantly affects adolescents. Independently of the treatment option, it often leads to leads to prolonged healing and postoperative discomfort
- **Sinus Laser-Assisted Closure (SILAC)** has emerged as a minimally invasive alternative that promotes faster recovery and superior cosmetic outcomes.

AIM To assess the effectiveness of SILAC in pediatric pilonidal sinus disease and factors influencing complications, namely recurrence.

METHODS

Observational retrospective cohort study.

All patients who underwent SILAC in our department.

January 2020 and December 2024.

Data collection included:
- Demographics
- Comorbidities
- Disease characteristics
- Laser energy parameters
- Postoperative outcomes

Descriptive statistics summarized data and analyzed complication patterns using SPSS V30.

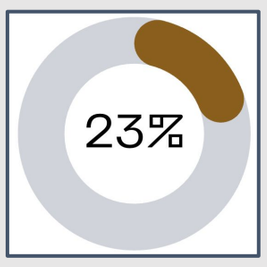
RESULTS

261 patients were included.

Median age at SILAC: 15.6 ± 1.6 years.

77.4% had complete healing without recurrence.

Overall recurrence rate

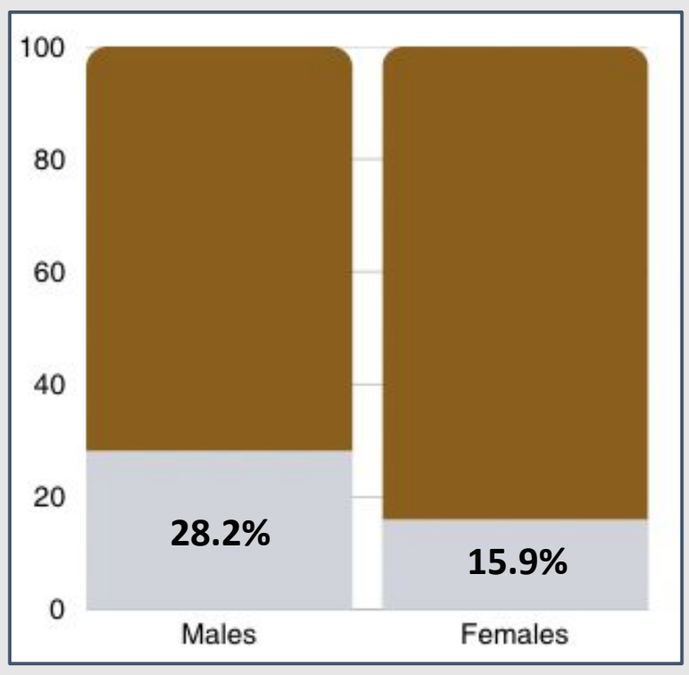


→ **23%** of patients had recurrence.

→ Mean time until recurrence was 395 ± 315 days after the initial surgery.

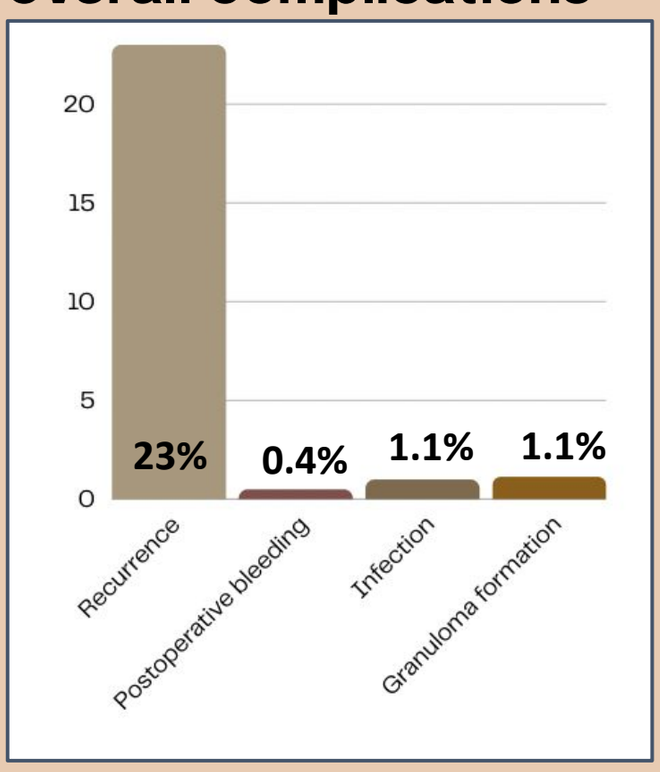
→ **88%** of patients with complications required re-intervention.

Gender Differences in Complication Rates

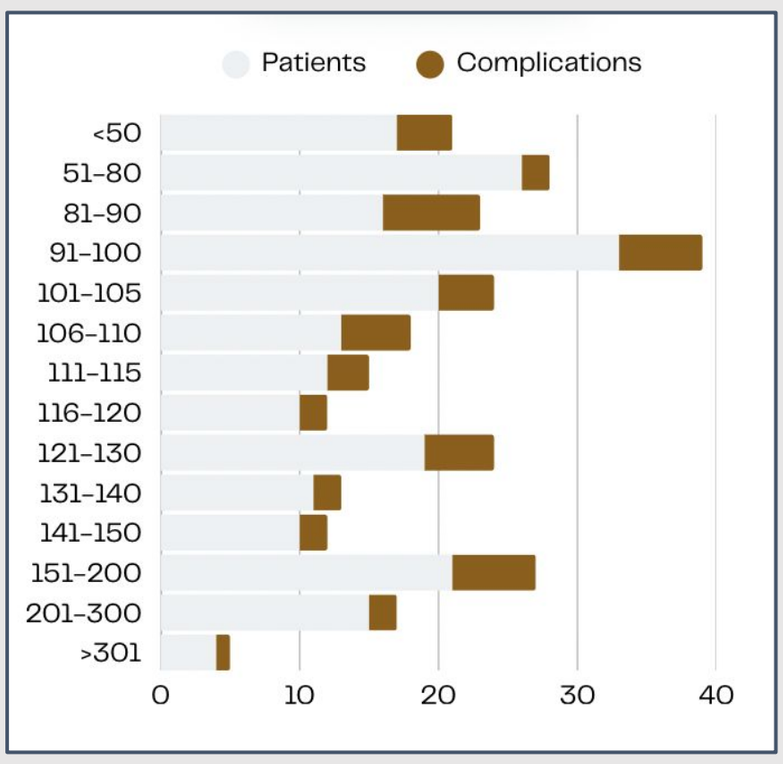


Higher recurrence rate in males.
(28.2% vs 15.9%; p =0.033)

Overall Complications



Number of Patients and Complications Across Energy Levels (J/cm)



→ The mean energy delivered was **121.7 J/cm**.

→ **Higher energy delivery** was associated with **increased recurrence rates** (p=0.008).

→ Subgroup analysis revealed that the **101–105 J/cm subgroup** had the **lowest statistically significant recurrence rate** (5.9%).

CONCLUSION

- **SILAC** offers a **safe and effective minimally invasive treatment option** for pediatric pilonidal sinus disease, achieving a high rate of complete healing and an acceptable recurrence rate.
- Further studies with larger sample sizes and prospective designs are warranted to validate these findings and to establish standardized treatment protocols for pediatric pilonidal sinus disease.

BIBLIOGRAPHY