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Laser tonsil treatment under local anesthesia: a patient-friendly effective alternative?

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Citation

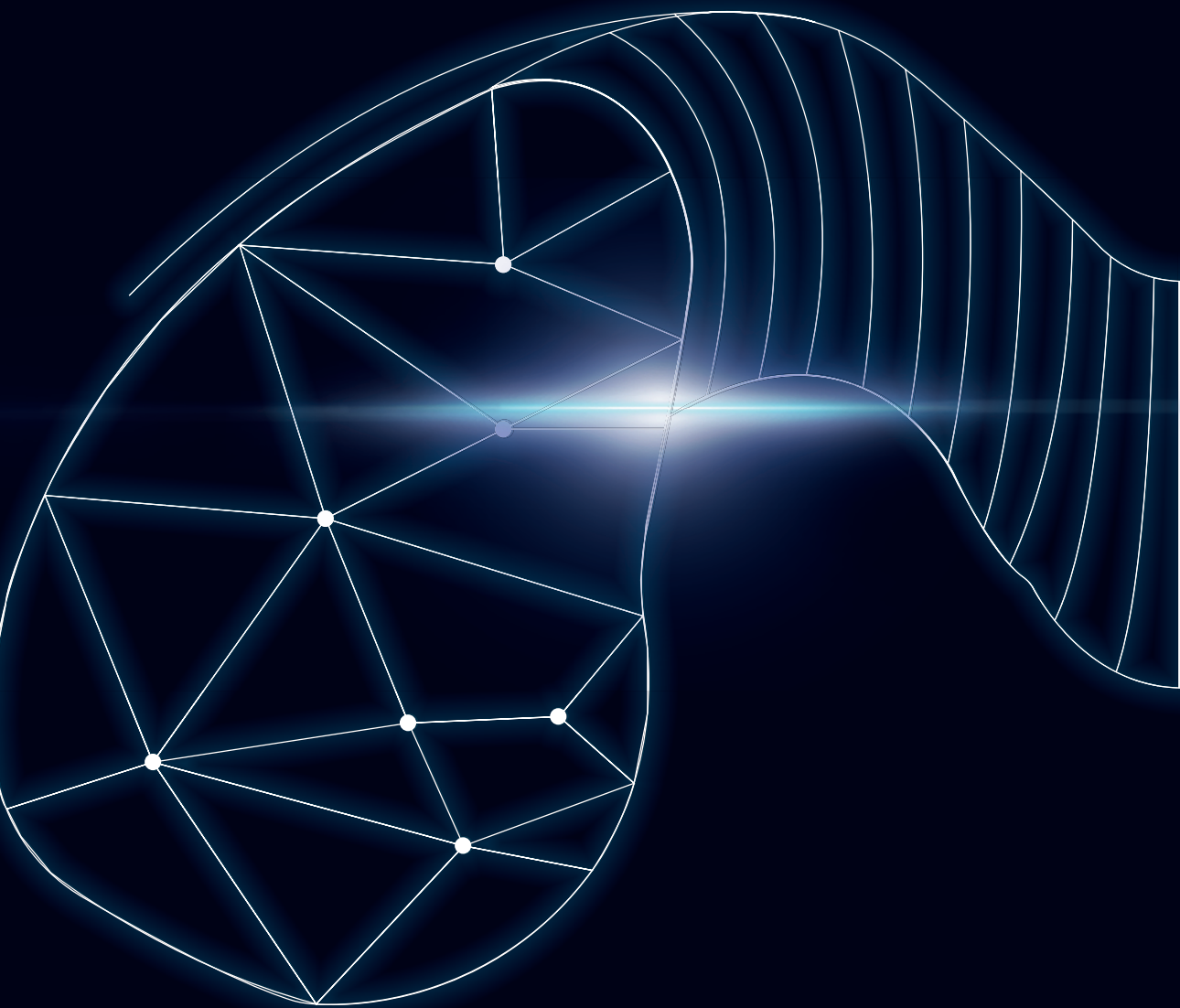
Wong Chung, J. E. R. E. (2025, November 6). *Laser tonsil treatment under local anesthesia: a patient-friendly effective alternative?*. Retrieved from <https://hdl.handle.net/1887/4282135>

Version: Publisher's Version

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CHAPTER 10

APPENDICES

- **General summary**
- **Nederlandse samenvatting**
- **Study Protocol**
- **Curriculum Vitae**
- **Acknowledgements**

GENERAL SUMMARY

The aim of this thesis was to investigate the effectiveness, safety, and cost-effectiveness of CO₂-laser tonsillotomy (CO₂-laser TO) compared to classic dissection tonsillectomy (TE) in adult patients with tonsil-related conditions. Additionally, this thesis aims to contribute to the availability and advancements of tonsillotomy (TO) under local anesthesia for adults.

General introduction

Chapter 1, the introduction, outlines key questions addressed in this thesis to evaluate the potential benefits of CO₂-laser TO. The palatine tonsils, key lymphoid tissues in the human immune system, are the focus of this research. Tonsil diseases such as recurrent tonsillitis, obstructive sleep apnea syndrome (OSAS), and halitosis significantly impact adult patients' quality of life and healthcare systems. Traditional TE remains a common, effective surgical intervention for tonsil-related complaints but carries considerable morbidity and risks. Consequently, there is increasing interest in less invasive alternatives like TO which aims to only remove the part of the tonsil leading to complaints, while preserving the larger nerves and vessels to limit recovery time, pain and complications.

Key differences in surgical outcomes in current literature

In **Chapter 2**, a systematic review compared TO with TE in adult patients. The review highlighted that TO offers advantages such as reduced postoperative pain, faster recovery, and fewer complications, particularly postoperative hemorrhage. Studies reported TO to be similarly effective as TE in symptom resolution, with lower pain scores and analgesic usage. However, the evidence is of low quality, study designs are incomparable, and studies often lack long-term evaluation. Discussion on residual symptoms after TO remain. For these reasons further investigation through a large, high-quality trial is recommended.

CO₂-laser tonsillotomy as a viable alternative?

A prospective non-randomized cohort study in **Chapter 3** evaluated the outcomes of CO₂-laser TO compared to TE. The findings indicated that CO₂-laser TO reduced postoperative pain, analgesic use and shortened recovery time, enabling faster return to daily activities. However, the slightly lower success rate of symptom resolution and the need for re-surgery in a small percentage of patients underscore the importance of patient selection. While this study concludes that CO₂-laser TO seems to offer substantial benefits, larger, high quality prospective research is necessary to draw more definite conclusions and refine patient selection criteria.

Performing a safe and effective tonsillotomy

Chapter 4 provided a detailed protocol for performing CO₂-laser TO under local anesthesia. This protocol emphasized patient selection, preoperative preparations, and precise surgical steps to minimize complications. The inclusion of an instructional video enhances clinical training and facilitates more standardized surgical outcomes.

Trends in tonsil complaints in the Dutch population

In **Chapter 5**, a review of Dutch healthcare data, revealed a stable incidence of tonsil complaints and a consistent number of annual TE surgeries, indicating a persistent demand for surgical interventions. This underscores the current and future need for viable, less invasive alternatives like CO₂-laser TO.

Short-term outcomes

Chapter 6 presented the first results of the TOMTOM study, which compared the direct surgical safety and recovery between CO₂-laser TO and TE and the six months (short-term) results. TO offered a significantly shorter recovery time and faster return to work, patients experienced less postoperative pain and required fewer and less potent analgesics. The incidence of postoperative hemorrhage was notably lower in the TO group. However, symptom resolution six months after surgery was lower in the TO group, indicating a trade-off between quicker recovery and long-term symptom relief. Patients in both groups who experienced persistent symptoms reported significantly reduced symptom severity compared to baseline, often below clinically relevant scores, with overall quality of life and patient satisfaction remaining equally high in both groups. A small percentage of patients required a second surgery after initial TO. Apparently, the benefits of TO outweigh its lower effectiveness and occasional mild residual symptoms.

Long-term outcomes and cost-effectiveness

Chapter 7 focuses on the long-term effectiveness and cost-effectiveness of CO₂-laser TO and TE. On long term TE was more effective in fully resolving symptoms. However, in patients with remaining symptoms, the severity of symptoms decreased dramatically, often below clinically significant thresholds, leading to an equal patient satisfaction in both groups.

In terms of cost-effectiveness CO₂-laser TO was found to be more cost-effective compared to TE on all 3 dimensions: surgical costs, medical costs and societal costs.

Recommendations for clinical practice, education, and future research

The thesis concludes with a discussion and recommendations for clinical practice, education, and future research in **Chapter 8 and 9**:

Clinical Practice: CO₂-laser TO should be considered a first-line option for adults due to its reduced morbidity, quicker recovery, and lower societal costs. Careful patient selection is crucial to minimize risks of recurrent symptoms.

Education: Incorporate CO₂-laser TO into ENT training curricula, focusing on patient selection, surgical techniques, and informed consent.

Future Research: A longitudinal registry is recommended to track outcomes, improve evidence-based tonsil surgery and compare different TO techniques. Further research is also needed to refine surgical protocols and improve patient outcomes.

These findings and recommendations aim to enhance surgical decision-making and optimize care for adult patients with tonsil-related conditions, establishing CO₂-laser TO as a viable and efficient alternative to traditional TE.