

Retrospective study of operating efficiency in laparoscopic hysterectomy using the OpClear® system

Rhiannon Evans, Alexander Taylor¹,
University Hospitals Dorset NHS Foundation Trust

Objective:

This study investigates whether the delivery of consistent, high-level laparoscopic vision reduces operating time (OT) improving operating efficiency, while reducing surgical stress due to the interruptions of multiple scope removal.

Safe and efficient laparoscopic surgery requires high-levels of visual acuity. However, vision is frequently lost due to matter accumulating on the distal laparoscopic lens. This requires scope removal for cleaning, constituting non-productive operating time. The OpClear® system (Cipher Surgical Ltd., UK) effectively cleans the distal lens without scope removal by delivering saline and carbon dioxide across the lens, clearing accumulated matter.

Design:

A retrospective analysis was performed of operating outcomes and efficiency in laparoscopic hysterectomy (LH) cases for the three-year periods before (2013-2015) and after (2017-2019) the introduction of OpClear®.

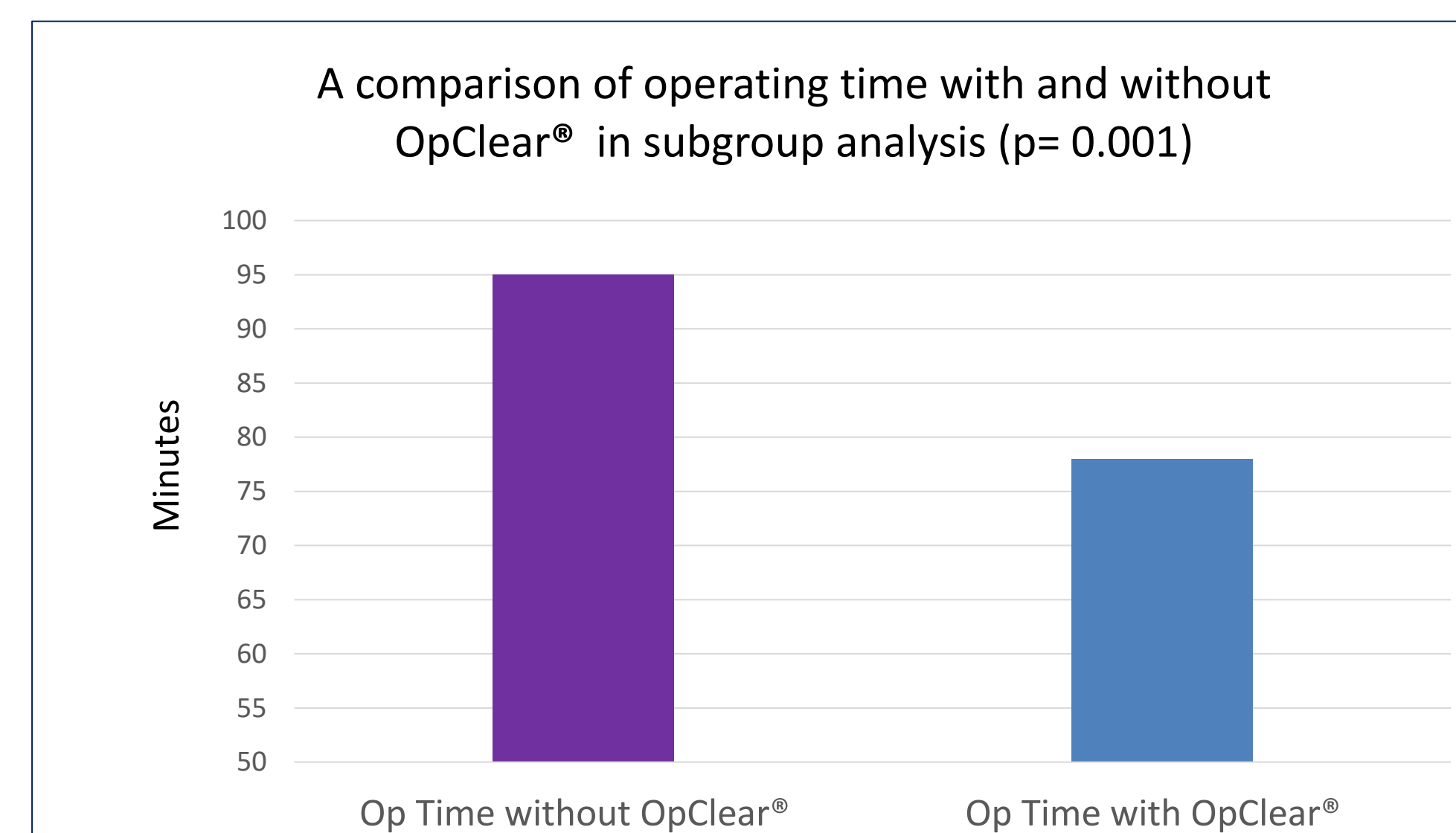
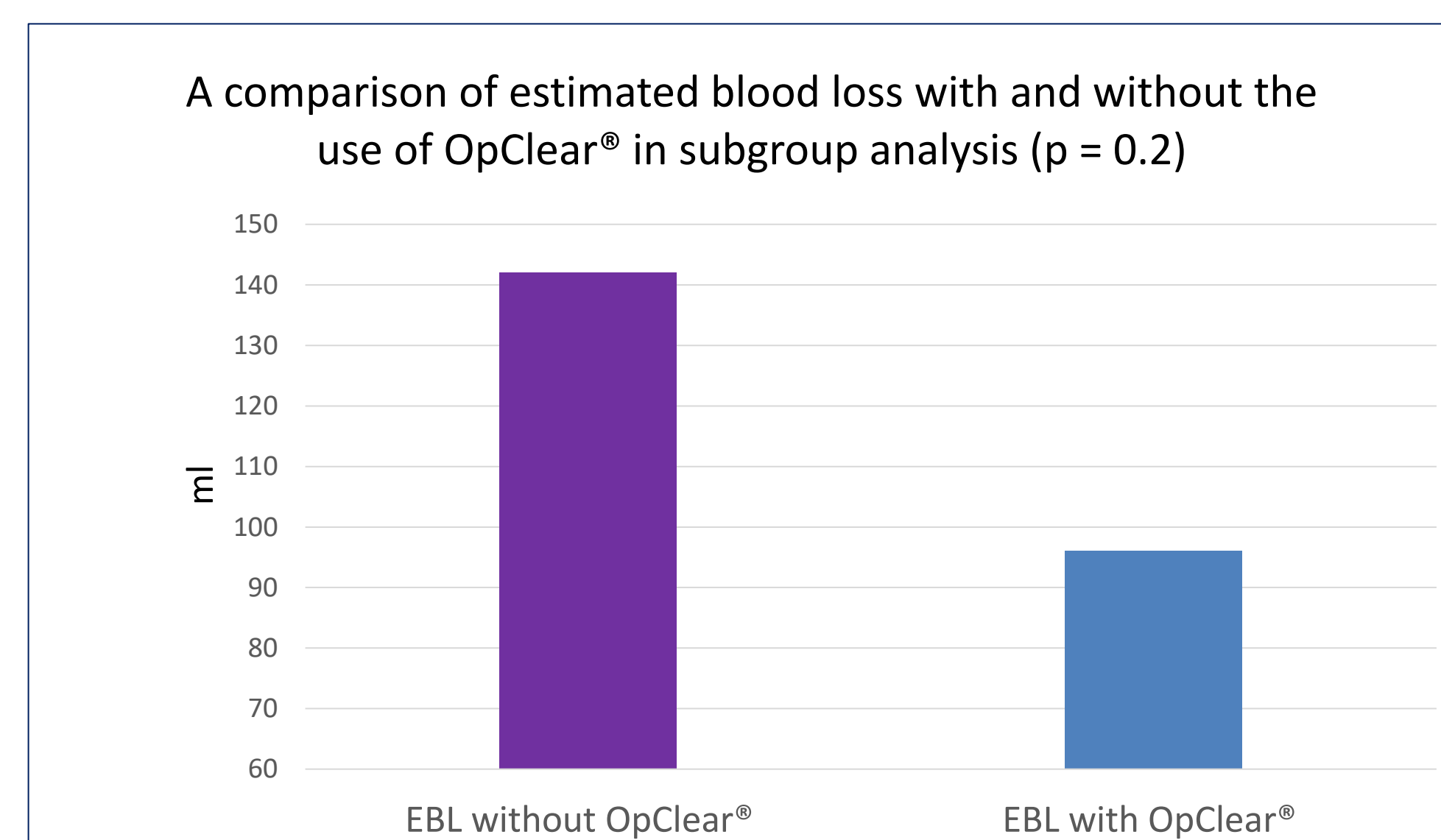
A subgroup analysis was performed of highly comparable total laparoscopic hysterectomies (no vaginal assist, parity difference, or additional procedures) pre and post introduction of OpClear®.

Method:

77 LHs were reviewed pre-, and 84 post- the introduction of OpClear®. Cases were consecutive LHs by a single lead surgeon. Both groups had similar levels of complexity.

Exclusions: Cases with additional procedures such as extensive adhesiolysis, cystoscopy or ovarian cystectomy.

Results:



OpClear® usage provided near-continuous high quality laparoscopic vision, which, with the near elimination of scope removal for cleaning, improved surgical satisfaction with the procedure and significantly reduced OT.

For the complete series, the mean OTs for laparoscopic hysterectomy pre-OpClear® was 93mins, and 81 mins post-OpClear®, demonstrating a statistically significant saving of **12 minutes per case** (p = 0.0003).

The highly comparable sub-group analysis compared 33 pre-OpClear® cases with 33 post-OpClear® cases:

- ❖ A statistically significant **17 min reduction** (p = 0.001) in OT was associated with the use of OpClear®.
- ❖ Patients in the OpClear® group were more likely to be discharged on post-op Day 1 compared to Day 2 in the non-OpClear® group (p = 0.02).
- ❖ A trend towards reduced estimated blood loss occurred with OpClear® use, but did not reach significance (p = 0.2).

Conclusion:

The OpClear® system maintains high-level visual acuity during laparoscopic surgery, reducing surgical stress and potentially reducing operative risk. Reducing scope removal for cleaning minimises non-productive periods, contributing to a reduction in overall OT. These outcomes potentially optimise theatre utilisation and improve productivity; **over the three-year OpClear® period, 10 hours of OT were saved, equating to an additional 7.5 LHs.** OpClear® usage aims to support the NHS “Get it right-first-time” initiative² and may provide an additional tool in tackling post-pandemic waiting lists.

Limitations:

It was not possible in the large data set to compare like for like total laparoscopic hysterectomies due to laparoscopic assisted vaginal hysterectomy being the predominant surgery prior to OpClear® introduction. However the smaller subgroup analysis of only total laparoscopic hysterectomies confirmed the reduction in operating time and was statistically significant.

A closer look at OpClear®



OpClear® maintains continuous intra-abdominal vision with intelligent CO₂ flow at the laparoscope's tip, and reduce scope removal events with in-situ on demand CO₂ and saline lens wash³.

- Quickly wash away smearing and debris such as blood and vaporised fats with a simple tap of a foot switch.
- Automatically remove condensation and prevent fogging of the lens, without operator assistance.

Further work:

Further work aims to investigate operative surgical stress through heart rate monitoring with and without the use of the OpClear®.

Acknowledgements:

1. Mr Taylor is a member of the Cipher Surgeon Advisory Board
2. <https://www.gettingitrightfirsttime.co.uk/>
3. <https://www.ciphersurgical.com/>