

Changes in Intraoperative Parameters During Laparoscopy with Low Pressure vs Conventional Insufflation



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OBJECTIVES

- To evaluate the difference in intraoperative parameters during laparoscopy with Airseal® system at 7mmHg (low pressure, LP) insufflation and conventional laparoscopy with 15mmHg (standard) insufflation (SI) in gynaecological surgeries,
- To compare the duration of recovery from general anaesthesia (GA) after LP laparoscopy with duration of recovery from GA following SI laparoscopy.

DESIGN AND METHODS

- Our study is a retrospective observational cohort study.
- Patients who had LP laparoscopy and SI laparoscopy for gynaecological causes at the Dudley Group NHS Foundation Trust over two years were selected retrospectively.
- Exclusion criteria included history of multiple abdominopelvic procedures, severe PID and suspected or confirmed frozen pelvis.
- Data on patient demographics, surgical details and anaesthetic parameters were collected from electronic and paper records.
- Intraoperative parameters which were used for statistical analysis were decided to be Peak Airway Pressure (PAP), Systolic Blood Pressure (SBP), and End Tidal CO₂ (EtCO₂). Recordings for each parameter at the beginning, in the middle and at the end of the procedure were found. We also included the duration of recovery from GA in our dataset.
- Statistical analysis was performed using GraphPad Prism software (Version 9.0.0). Two-sided alpha level of 0.05 was considered statistically significant.

RESULTS

- 77 patients who had laparoscopic surgery for gynaecological causes were identified and selected.
- 41 out of 77 had laparoscopic surgery with 7mmHg Airseal® system and grouped as LP arm.
- 36 patients underwent laparoscopy with 15mmHg insufflation and grouped under SI arm.

Table: Comparison of the anaesthetic parameters for each arm.

	LP – AirSeal® Group [n = 40]	Standard Insufflation Group [n = 36]	P	Estimated effect of LP – AirSeal® (95%CI)
Peak airway pressure (cm H ₂ O)				
At the beginning of operation	18.0 (16.0 – 23.0)	16.0 (15.0 – 19.75)	0.06	+ 2.5 (-0.1 – 5.1)
In the middle of the operation	23.0 (21.0 – 25.8)	24.5 (22.25 – 28.0)	0.20	– 1.6 (-3.8 – 0.56)
At the end of the operation	18.0 (16.0 – 21.0)	20.5 (18 – 24.75)	0.02	– 2.8 (-5.1 – -0.36)
Systolic blood pressure (mmHg)				
At the beginning of operation	120.0 (100.0 – 130.0)	120.0 (101.25 – 128.75)	0.98	+ 1.7 (-11.0 – 14.0)
In the middle of the operation	110.0 (100.0 – 124.0)	105.0 (100.0 – 113.75)	0.21	+ 6.3 (-2.2 – 15.0)
At the end of the operation	110.0 (100.0 – 115.0)	105.0 (100.0 – 110.0)	0.59	+ 3.0 (-3.5 – 9.5)
End tidal CO ₂ (kPa)				
At the beginning of operation	4.52 ± 0.45	4.58 ± 0.46	0.91	– 0.06 (-0.32 – 0.19)
In the middle of the operation	4.77 ± 0.37	5.10 ± 0.50	0.004	– 0.34 (-0.59 – -0.09)
At the end of the operation	4.84 ± 0.61	5.04 ± 0.63	0.45	– 0.19 (-0.54 – 0.16)
Duration of recovery from GA (min)	42.5 (33.5 – 52.5)	50.0 (40.0 – 70.0)	0.02	– 10.0 (-20.0 – 0.0)

Data presented as mean standard deviation, or median (interquartile range). Effect size estimated as mean difference, or median of differences between LP – AirSeal® group – Control group (95%CI).

Abbreviations: LP-AirSeal® low pressure AirSeal®

CONCLUSION

In conclusion, our results show that:

- There is no statistically significant difference in intraoperative parameters between the LP group and SI group, except PAP levels at the end of the procedure and EtCO₂ levels mid-procedure.
- The recovery from GA is significantly shorter in the LP group.

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