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LA vs OA for acute appendicitis: which way to go?

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Introduction

- Open appendicectomy by McBurney in 1894

- The procedure has remained unchanged:
- proven safe and efficacious,
- low morbidity and mortality
- Semm (1983) performed the first laparoscopic appendicectomy.
- Efficiency and superiority of LA vs OA - subject of much debate

- Numerous prospective randomized studies, meta-analyses, and systematic reviews have been published on the topic of LA.

- A general consensus is that no definitive conclusions and generalizations could be drawn due to:

✓ the heterogeneity of the measured variables

✓ and other weaknesses in the methodology

❖ Advocates for laparoscopic appendicectomy contend that the procedure is associated:

- with shorter hospital stay,
- reduced analgesic requirement,
- early return to normal daily activities,
- early feeding,
- reduced incidence of SSI and intra-abdominal abscesses,
- **Operation time and costs are not different between the two approaches** (Manjunath 2016, Southgate 2012)

The purpose of this presentation/ review

- is to explore whether there is any evidence to support these claims;

- if any, whether the evidence in favour of laparoscopy is strong enough to change the Gold standard – open appendicectomy.

The objective of this presentation /review

❖**is to compare these two procedures in terms of the following outcome measures:**

- Mean procedure time
- Average Length of hospital stay (ALOS)
- incidence of Surgical site infection (SSI)
- Incidence of Intra-abdominal abscesses
- Parenteral analgesia requirement
- Procedure costs

Methods

- We conducted a literature review of both systematic reviews and original articles comparing LA and OA with regard to the outcomes listed above.

Results

1. Mean Operation Time

- Though LA is marginally longer than OA (about 10 minutes), for individual operations,
- the mean difference is not statistically significant.
- However, cumulatively, LA is costly especially in centres with high volume

Study A	Study period	Type of study	LA	OA	p-value	95% CI	comment
Kehagias, I et. al (2008)	2006-2008		44.3±24	47±19.7	0.31		No signif. difference
Ali, R et al(2010)	2002-2006		82 (40-180)	70(30-120)	<0.001		Signif - OA
Minutolo et al (2014)	2008-2012	Retrospective	52.2 (20-155)	49.3 (20-110)	0.476		Not sign
Manjnath A et al (2016)		RCT	73.36	63.67	0.8293		Not sig
Suerlands et al (2010)		Review	10 min longer			6-15	Not sig
Southgat		Review	0.06		0.58	-0.16-	Not sig

2. Requirement for injectable analgesia

- Requirement for parenteral analgesia varied among different studies.
- Others showed no difference in the requirements for analgesia between the two groups;
- while others showed reduction in favour of LA group.

NO UNANIMITY

Study	LA	OA	p-value	95%CI	comment
Ali R et al (2010)			<0.001		Sig.-LA
Karatparambil et al (2016)	6.5±0.6 doses	6.5±0.8	0.781		Not sign
Manjnath A et al (2016)	1.81 days	4.79	0.0014		Sign-LA
Tsai et al (2012)			>0.05		Not sign

3. Wound sepsis

- ❖ With regard to SSI
- ➢ there is no consistency in the incidence SSI in LA versus OA.
- ➢ The data is not conclusive in favour / against either approach.

	LA	OA	p-value	95%CI	comment
Kehagias, I et. al (2008)	5.3%(c) 0% (uc)	12.8%(c) 0.8% (uc)	0.03 0.01		sign
Karatparambil et al (2016)	2.3	6	0.212		Not sign
Suerland S et al (2010)	OR:0.43			0.34-0.54	Sign-LA
Tan et al (2014)	3.7	6	0.528		Not sign
Southgate et al (2012)	OR:0.53		0.44	0.11-2.63	Not sig
Beg et al (2016)	12.2%	15.1%	0.48		Not sign

4. Intra-abdominal abscesses

Similarly,

- there is variability in the studies with regard to intra-abdominal abscess formation following either approach.

	LA	OA	p-value	95%CI	comment
Kehagias, I et. al (2008)	5.3% (c)	2.1% (c)	0.002		Sign-OA
Suerland S et al (2010)	OR:1.87			1.14-2.76	sign
Southgate et al (2012)	OR:1.19		0.62	0.61-2.31	Not sign
Beg et al (2016)	2.2%	0			Not sig

5.Average length of stay

In terms of the average length of stay,

though LA demonstrate reduced ALOS, this was not statistically significant in most studies.

	LA	OA	p-value	95%Ci	comment
Kehagias, I et. al (2008)	2.2	3.1	0.04		??
Ali, R et al(2010)			0.672		Not sig
Minutolo et al (2014)	2.75	3.87	0.011	-1.25-0.33	Not sign
Karatparambil et al (2016)	3.4±0.7	3.5±0.8			Not sign
Suerland S et al (2010)	1-7	1-7			No diff
Southgate et al (2012)	-0.51		<0.05	-0.64to-0.37	Sign-LA
Manjnath A et al (2016)	3.65(2-7)	6.87 (3-12)	0.0010		

6. Average costs

Cost of LA in comparison to that of OA are individually and cumulatively higher for LA without variability demonstrated by other outcome measures.

	LA (mean diff)	OA	p-value	95%CI	comment
Kehagias, I et. al (2008)	€ 370 higher				
Ali R et al (2010)	PR 7803 higher		<0.001		
Minutolo et al (2014)	€55 Higher		0.812		
Karatparambil et al (2016)	Rs4569.5 higher				
Manjnath A et al (2016)	Rs5313 higher		0.0001		
Tan et al	4794	4725	0.721		??

Discussion

❖<u>This review has demonstrated the following</u>:

➢Average operating time is variable.

➢In most - about 10 minutes mean difference.

➢Though the difference for individual procedures has been shown to be not statistically significant.

➢ cumulatively, LA is more costly than OA in terms of theatre time.

❖**The studies demonstrate variability in terms of other outcome measures, such as:**

- SSI, intra-abdominal collections,
- need for analgesia
- and length of stay.
- **None of these has shown superiority of one approach to the other**.
- **All the studies reviewed have demonstrated that cost of LA are individually and cumulatively higher than those of OA.**

Conclusion

- In the absence of evidence demonstrating superiority of one procedure over the other in terms of measured outcome variables

- and the exorbitant costs and long cumulative operating time for LA on the other,

- OA should remain a “Gold standard” and a standard of care for acute appendicitis,

Exceptions

- Diagnostic uncertainty where laparoscopy may be used as a therapeutic and diagnostic modality;
- In the obese patients who would require a bigger incision with associated increased pain and a higher risk of wound infection.

THANK YOU