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Laparoscopic vs. open hernia repair in children

State of the art comparison and future perspectives from a meta-analysis

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Disclosures

- No disclosures

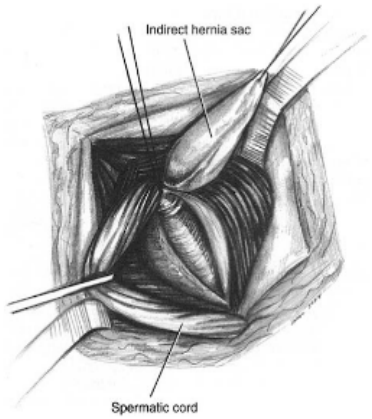
1 Marcy HO. Boston Med Surg 1871
2 El-Gohary MA. Pediatr Endosurgery Innov Tech 1997

Evolution of hernia surgery

Henry O. Marcy[1]

High ligation of the sac and closure of the internal inguinal ring

1871



MA El-Gohary[2]

Laparoscopic hernia repair first described

1997

Innovations

2019

Is laparoscopic hernia repair comparable to open repair?

3 Davies et al. J Laparoendosc Adv Surg Tech A lap 2016
4 Andropoulos et al. N Engl J Med 2017

Laparoscopic vs open repair

Laparoscopic technique

- Better visualization and simultaneous contralateral inspection/repair
- Shorter bilateral operation time & less postoperative complications, but higher recurrence rates [3]

Open technique

- Widely applicable
- Less equipment and costs
- Eligible for loco regional anaesthesia [4]

Aim

Provide state of the art comparison and overview of laparoscopic versus open inguinal hernia repair in children on high-level evidence on most relevant outcome measures

Literature search and eligibility criteria

- MEDLINE, Embase and Cochrane library databases
- No date or language restriction
- Search terms: Inguinal hernia, children/child, p(a)ediatric, laparoscopic/laparoscopy

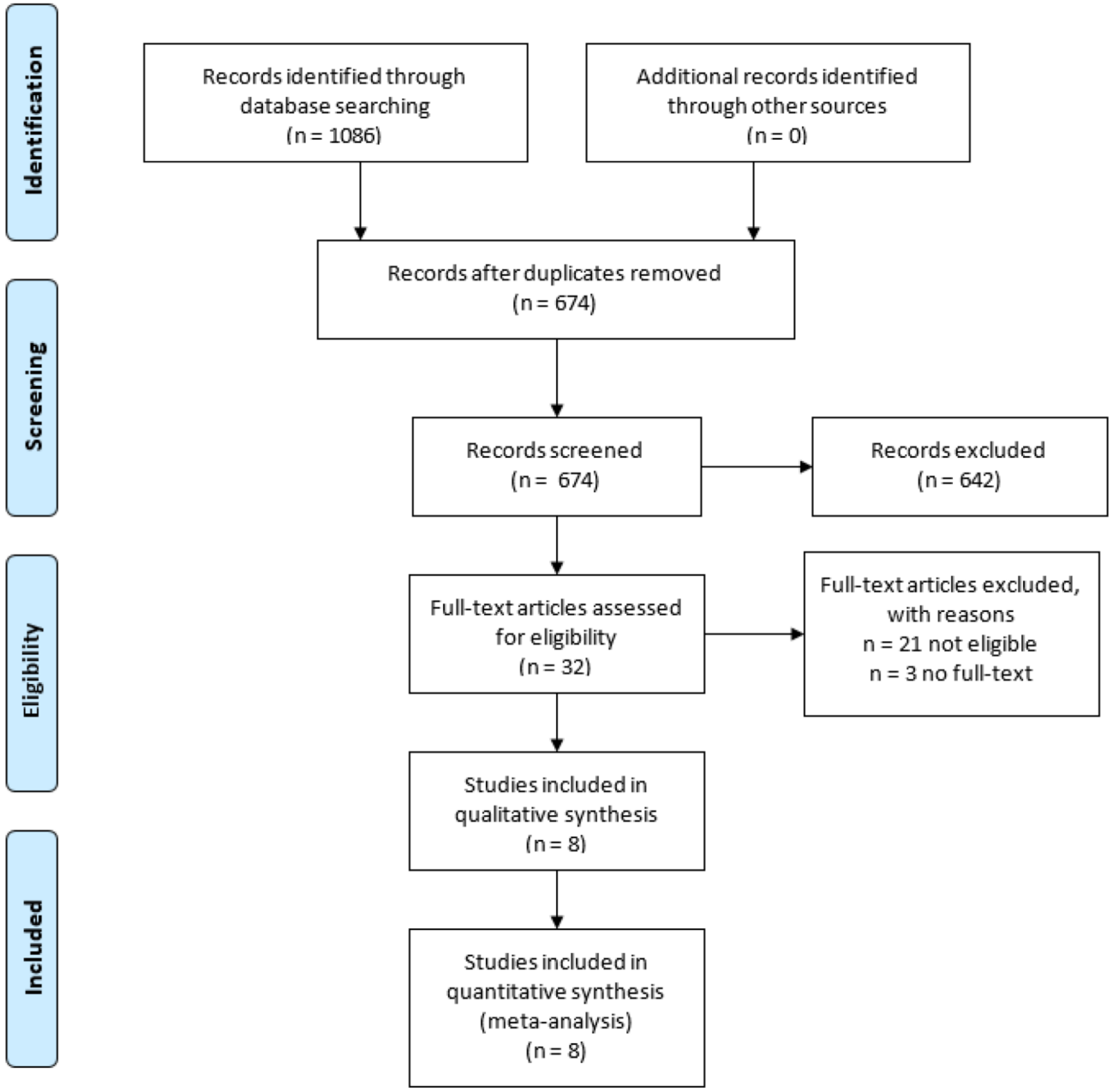
Inclusion	RCTs comparing laparoscopic with open repair in children
Exclusion	No full text
Outcome measures	Primary: Operative and postoperative complications Secondary: Duration of surgery, hospital admission, postoperative pain, time to full recovery, cosmetic appearance, recurrence and MCIH rate & health care costs

Eight RCTs were included

2005-2016

N=733 patients (age range 4 mo-16yr)
Laparoscopy: 375, open: 358

Follow-up
24 hours – 2 year



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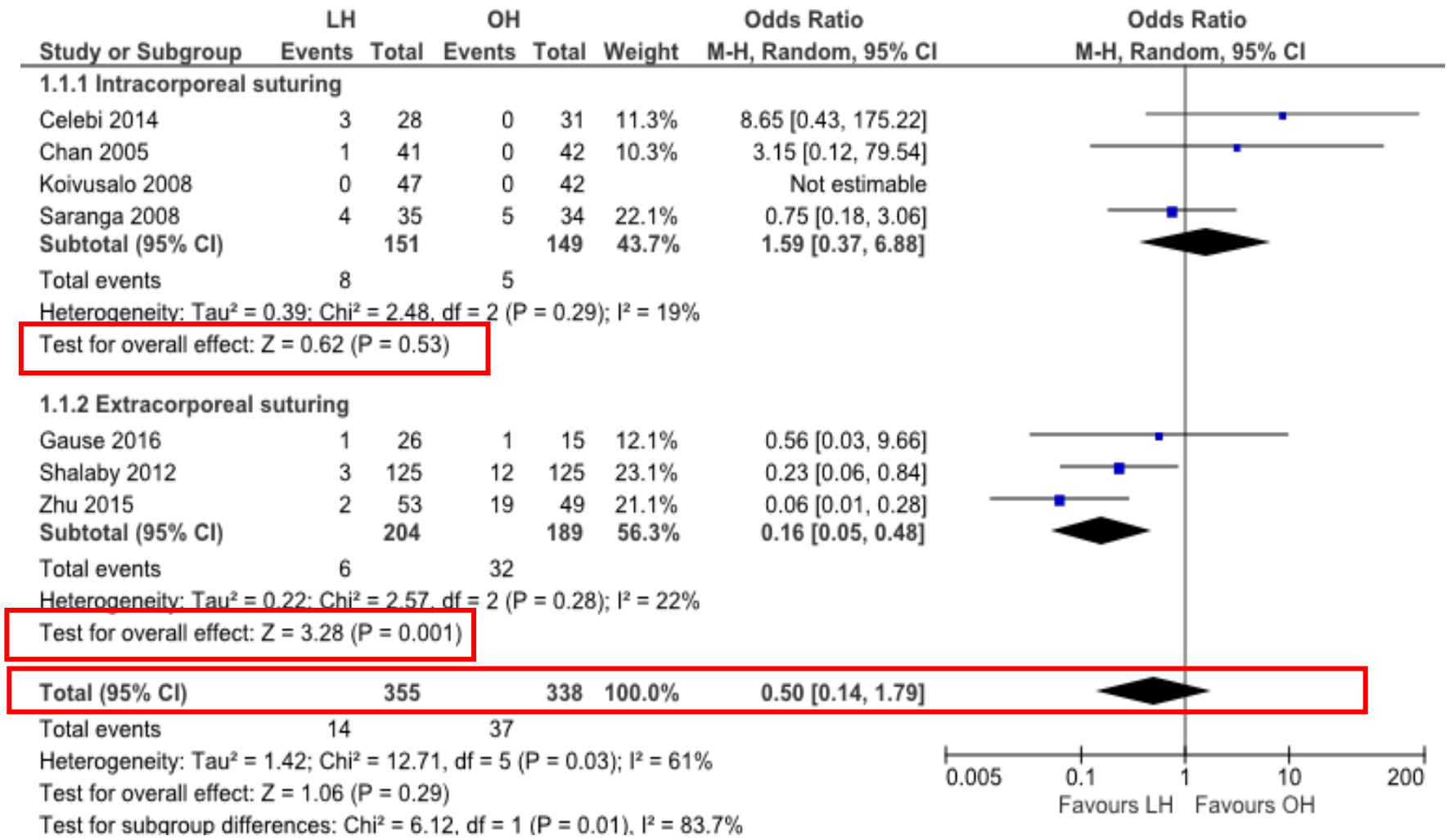
Author	Total study population n	Laparoscopic repair n	Open hernia repair n	Age Range	Laparoscopic closing technique
Celebi et al	59	28	31	>6 year	Intracorporeal
Chan et al	83	41	42	3 months – 18 year	Intracorporeal
Gause et al	41	26	15	<3 year	Extracorporeal
Inal et al	40	20	20	7-14 year	Intracorporeal
Koivusalo et al	89	47	42	4 months- 16 year	Intracorporeal
Saranga et al	69	35	34	<14 year	Intracorporeal
Shalaby et al	250	125	125	14-96 months	Extracorporeal
Zhu et al	102	53	49	7-63 months	Extracorporeal

Complication rates are similar for laparoscopic and open repair

- **7 studies, n=622**



Laparoscopic bilateral hernia repair results in shorter operation time, less postoperative pain, but worse cosmetic results

Outcome	Studies n	Total participants n	Laparoscopic group, n	Open group n	Heterogeneity I^2 %	Mean difference (95% CI)	p value
Unilateral operation time (min)	7	434	226	208	97	0.62 (-5.70, 6.95)	.85
Bilateral operation time (min)	5	194	93	101	73	-7.19 (-10.04, -4.34)	<.001
Length of hospital stay (hours)	5	565	292	273	59	0.74 (-0.38, 1.87)	.20
Time to full recovery (hours)	4	282	142	140	67	2.05 (-11.13, 15.23)	.76
Pain medication (doses)	4	224	121	103	38	-0.34 (-0.65, -0.03)	.03
Wound cosmesis	3	183	95	88	75	1.21 (0.50, 1.92)	<.001

Outcome	Studies, n	Total participants, n	Laparoscopic group, events, n	Open group, events, n	Heterogeneity, I^2 %	Odds Ratio (95% CI)	p value
Recurrence	7	693	4/355	4/338	0	0.88 (0.20, 3.88)	.87
MCIH rate	4	343	4/176	14/167	52	0.28 (0.04, 1.86)	.19

Laparoscopic hernia repair is comparable to open hernia repair

- Limitations of meta-analysis
  - Different laparoscopic techniques
  - Heterogeneity
  - Apneas and health care costs not assessed

- Clinical (ir)relevance
  - Laparoscopic repair for bilateral hernia repair

- No definitive conclusions based on this meta-analysis

- Patient-tailored treatment

Thank you for your attention!

Contact details

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