SEX SPECIFIC OUTCOMES AFTER MINIMALLY INVASIVE LOW ANTERIOR RESECTION FOR COLORECTAL CANCER: A SYSTEMATIC REVIEW

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BACKGROUND

- Female patients are underrepresented in colorectal cancer research, with male representation as high as 75%.[1,2,3]
- Anatomical and physiological differences between sexes may introduce important surgical implications. Male patients are often described as presenting greater technical challenges due to a narrower pelvis, but whether this translates to meaningful differences in outcomes remains unclear.[5,6,7]
- Male urinary and sexual dysfunction following LAR is well-documented, but data on equivalent outcomes in female patients remains limited.[8,9]
- With colorectal cancer increasingly diagnosed at younger ages, understanding the functional and clinical postoperative outcomes for both sexes is essential.

OBJECTIVES:

(1) To evaluate the reporting of sex in the MIS-LAR literature and characterize the representation of male vs. female patients.

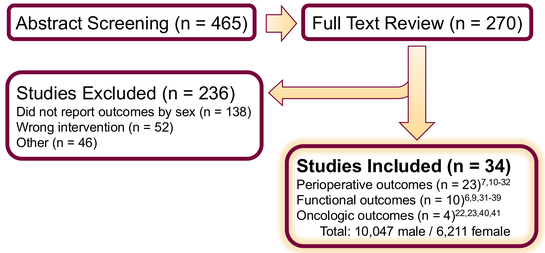
(2) To examine differences between sexes in peri-operative, functional, and oncologic outcomes among patients undergoing minimally invasive low anterior resection for colorectal cancer.

METHODS

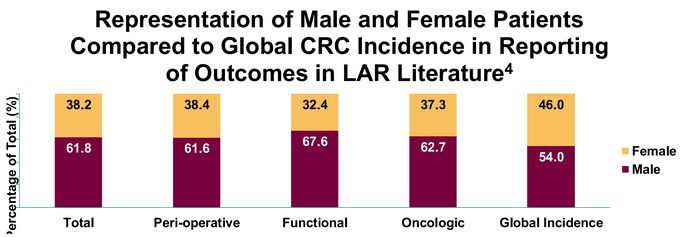
- **Databases searched:** Medline, Embase, Scopus, and Web of Science (from inception to 2025).
- **Inclusion criteria:** Studies evaluating minimally invasive (laparoscopic or robotic) LAR in adults that reported outcomes by sex.
- **Extraction:** Two reviewers independently screened studies and extracted data. Qualitative synthesis was performed with quantitative analysis where possible.
- **Risk of bias tools:** NOS, RoB 2.0, ROBINS-I, and JBI.

RESULTS

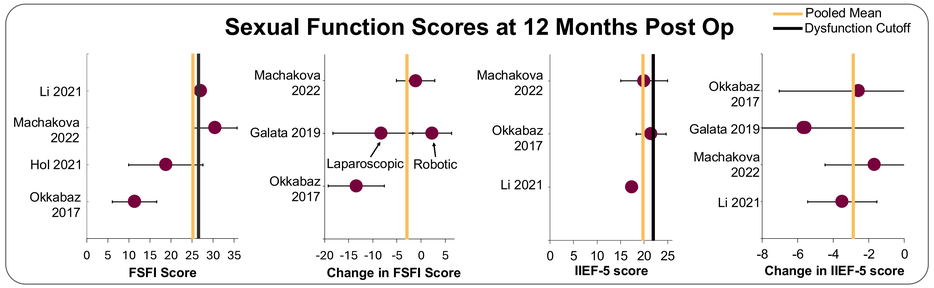
Review Process



Overall Demographics



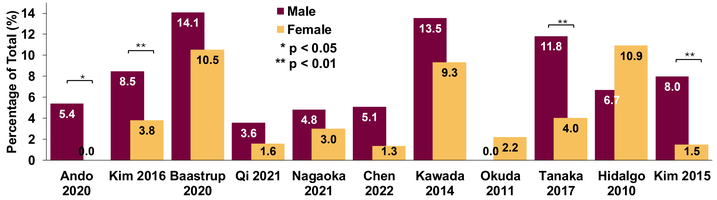
Functional Outcomes: Sexual and Urinary Function



Urinary Function

Study	Sex	Urinary Dysfunction, N (%)
Hol 2021	M	32 (100)
Bjoern 2019	M	19 (95)
Veltcamp Helbach 2019	M	18 (90)
Jones 2009	M	3 (4)
Takashima 2024	M	10 (14)
	F	4 (7)

Perioperative and Oncologic Outcomes



Perioperative Outcomes

	Pooled Mean		
	Operative Time (min)	Length of Stay (days)	Blood Loss (mL)
Female	208.5	9.0	33.5
Male	219.4	9.9	53.7
P-value	0.25	**0.04**	0.11

CONCLUSIONS

Female patients are underrepresented across all outcomes, and sex reporting was sparse and inconsistent, limiting conclusions about sex-based differences.

At 12 months post-op, both male and female sexual function scores had declined from baseline and were below dysfunction cutoffs. One study noted improved sexual function in females after robotic (vs. laparoscopic) surgery, but not in males.

Urinary outcomes were assessed mainly in males, but one study reported that female patients also required medication for postoperative urinary symptoms.

Although males generally had higher AL risk, several high-quality studies found no significant difference.

Overall complication rates and oncologic outcomes were similar between sexes, though male patients had longer hospital stays.

REFERENCES

1. Jagsi et al. Cancer. 2009;115:3293–3301.
2. Lee & Wen. ESMO Open. 2020;5:e000773.
3. Díaz Rosario et al. Front Glob Womens Health. 2024;5.
4. Bray et al. CA Cancer J Clin. 2024;74:229–263.
5. McDermott et al. Br J Surg. 2015;102:462–479.
6. Takashima et al. J Robot Surg. 2024;18:338.
7. Hidalgo et al. Dis Colon Rectum. 2010;53:438–444.
8. Gaffney et al. Updates Surg. 2024;76:2787–2794.
9. Jones et al. Colorectal Dis. 2009;11:489–495.
10. Ando et al. In Vivo. 2020;34:3533–3538.
11. Kim et al. Ann Surg. 2016;263:130–137.
12. Baastrup et al. Surg Endosc. 2020;34:177–185.
13. Qi et al. World J Surg Oncol. 2021;19:187.
14. Nagaoka et al. Asian J Endosc Surg. 2021;14:478–488.
15. Chen et al. Surg Today. 2022;52:120–128.
16. Kawada et al. Surg Endosc. 2014;28:2988–2995.
17. Okuda et al. Asian J Endosc Surg. 2011;4:68–72.
18. Tanaka et al. Surg Today. 2017;47:1215–1222.
19. Kim et al. Surg Endosc. 2015;29:3117–3124.
20. Long et al. World J Gastrointest Surg. 2024;16:1558–1570.
21. Pietrabissa et al. Surg Endosc. 2002;16:431–435.
22. Bulut et al. Dis Colon Rectum. 2011;54:803–809.
23. Park et al. Medicine (Baltimore). 2016;95:e3271.
24. Akagi et al. Surg Laparosc Endosc Percutan Tech. 2012;22:52–57.
25. Inomata et al. Asian J Endosc Surg. 2014;7:214–221.
26. Darwich et al. Tech Coloproctol. 2022;26:373–386.
27. Ishihara et al. Tech Coloproctol. 2014;18:247–255.
28. Hyde et al. Colorectal Dis. 2019;21:932–942.
29. Ichikawa et al. Surg Laparosc Endosc Percutan Tech. 2020;30:49–54.
30. Liu et al. Langenbecks Arch Surg. 2023;408:151.
31. Okkabaz et al. Int J Surg. 2017;47:4–12.
32. Galata et al. Int J Colorectal Dis. 2019;34:1907–1914.
33. Hol et al. Int J Med Robot. 2021;17:e2227.
34. Li et al. Tech Coloproctol. 2021;25:449–459.
35. Bjoern et al. J Gastrointest Surg. 2019;23:1623–1630.
36. Veltcamp Helbach et al. Surg Endosc. 2019;33:79–87.
37. Machackova et al. Wideochir Inne Tech Maloinwazyjne. 2022;17:506–514.
38. Luo et al. Ann Ital Chir. 2025;96:152–159.
39. Barry et al. J Urol. 1992;148:1549–1557.
40. Park et al. Ann Surg. 2015;261:129–137.
41. Xia et al. J Investig Surg. 2018;31:483–490.