

Clinical outcomes of transanal total mesorectal excision combined with the abdominal robotic approach for low rectal cancer

Masayuki Ando, Takeru Matsuda, Ryuichiro Sawada, Hiroshi Hasegawa, Kimihiro Yamashita, Hironobu Goto, Shingo Kanaji, Yoshihiro Kakeji
Division of Gastrointestinal Surgery, Department of Surgery, Kobe University Graduate School of Medicine, Kobe, Japan

Backgrounds

- Transanal total mesorectal excision (TaTME) for low rectal cancer has been introduced to overcome the technical difficulties in laparoscopic surgery and achieve more favorable outcomes. *Sylla et al. Surg Endosc. 2010*
- Since June 2020, we have performed TaTME combined with the abdominal robotic approach (**hybrid TaTME**) for a safer, less invasive surgery (Fig.1).
- However, the feasibility and safety of hybrid TaTME are unclear.

Objective

We evaluated the feasibility and safety of hybrid TaTME compared with conventional TaTME for low rectal cancer.

Materials and Methods

- We retrospectively reviewed 187 TaTME cases performed in our department from September 2016 to December 2022.
- Among them, 106 cases of conventional TaTME and 37 of hybrid TaTME were eligible.
- We used propensity score matching analysis (PSM) to adjust for patients' characteristics and compared the short- and mid-term outcomes (Fig.2).

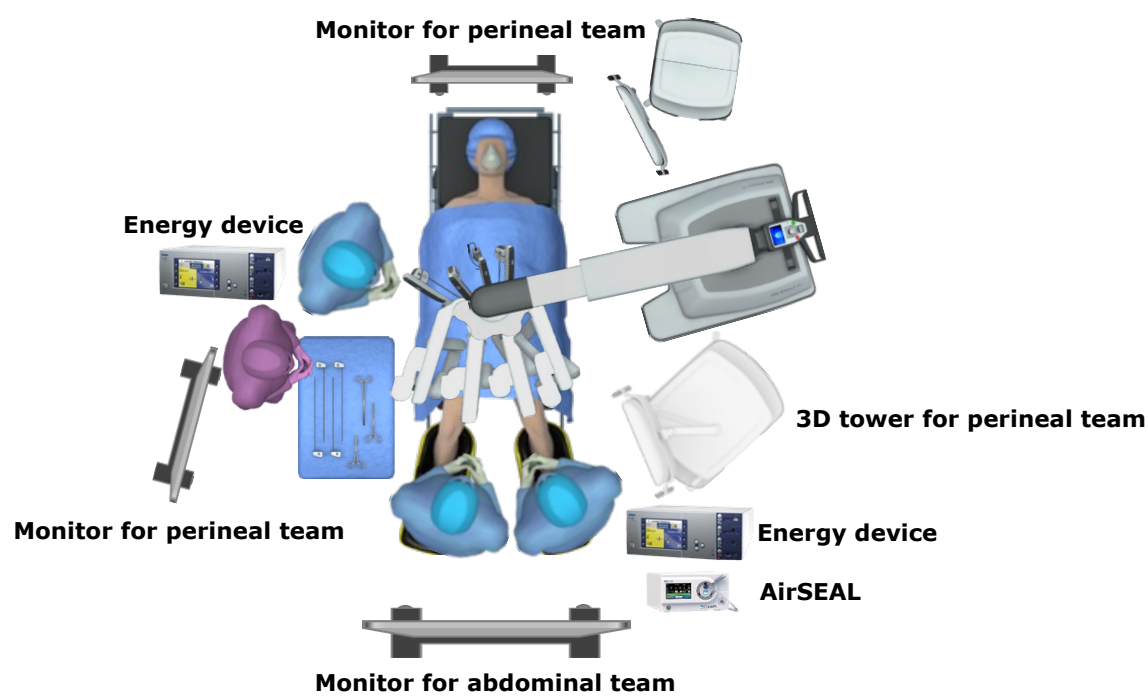


Fig.1 Surgical set-up after docking in hybrid TaTME

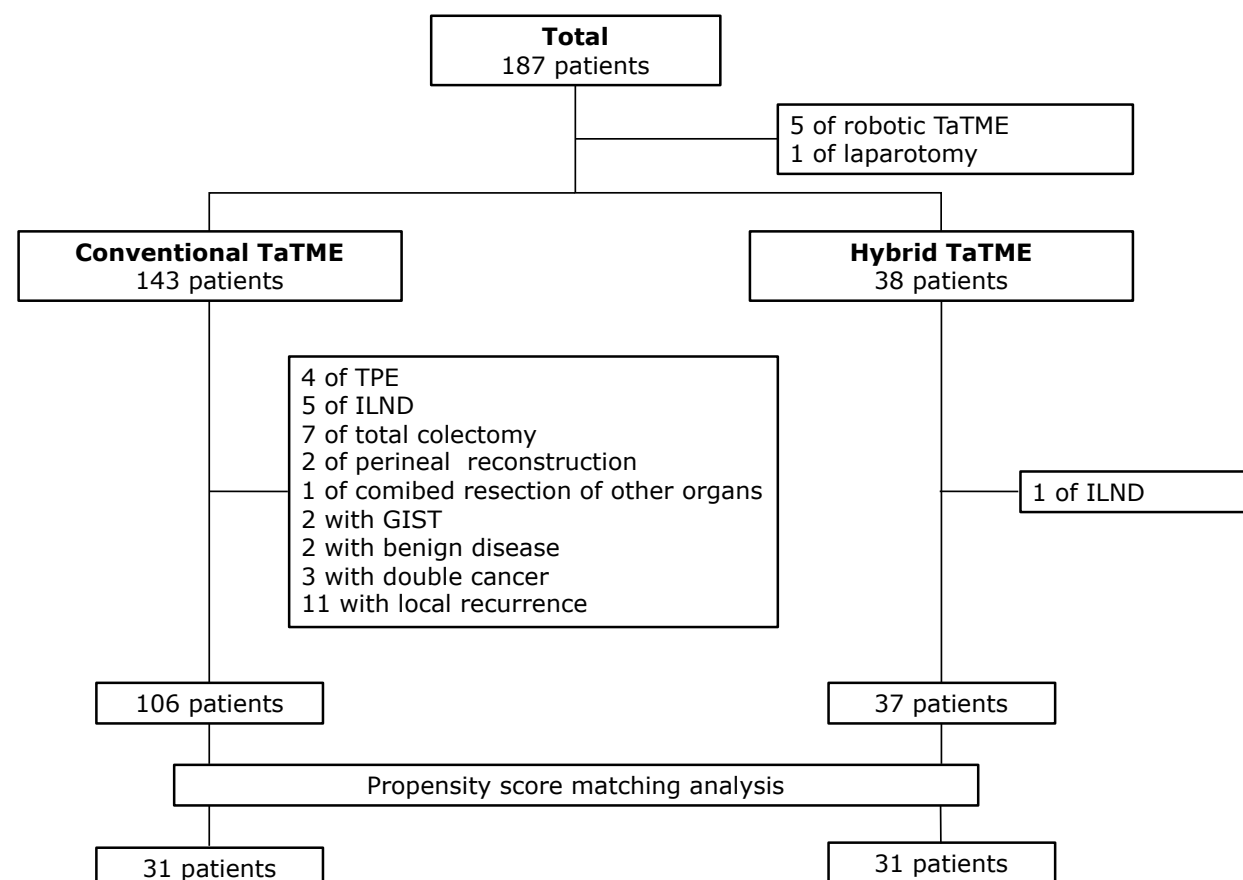


Fig.2 Flowchart of patient selection

Results

- The patient and tumor characteristics after PSM were similar between the two groups (Table 1).
- The **blood loss in hybrid TaTME** was significantly less than in conventional TaTME ($P=0.046$)(Table 2).
- The **postoperative hospital stay in the hybrid group** was shorter than in the conventional ($P=0.030$)(Table 2).
- Other intra and postoperative, and pathological outcomes were similar between the two groups (Table 2, 3).
- No significant difference was found between the two groups in OS and RFS (Fig.3A, B).

Table1 Patient and tumor characteristics

	Before PSM		p-value	After PSM		p-value
	Conventional (n=106)	Hybrid (n=37)		Conventional (n=31)	Hybrid (n=31)	
Age, median, (range)	69.00 (33.00, 88.00)	60.00 (27.00, 86.00)	0.006	67.00 (33.00, 82.00)	61.00 (46.00, 86.00)	0.714
Sex, n (%)			0.422			1
M	72 (67.9)	22 (59.5)		19 (61.3)	20 (64.5)	
F	34 (32.1)	15 (40.5)		12 (38.7)	11 (35.5)	
BMI (kg/m ²), median, (range)	23.00 (13.00, 37.00)	23.00 (19.00, 28.00)	0.776	23.00 (16.00, 37.00)	23.00 (19.00, 28.00)	0.972
ASA score, n (%)			0.377			0.667
I	10 (9.4)	5 (13.5)		2 (6.5)	4 (12.9)	
II	88 (83.0)	27 (73.0)		26 (83.9)	23 (74.2)	
III	8 (7.5)	5 (13.5)		3 (9.7)	4 (12.9)	
AV (cm), median, (range)	3.00 (0.00, 12.00)	3.00 (0.00, 10.00)	0.066	3.00 (0.00, 10.00)	3.00 (0.00, 10.00)	0.416
Preoperative treatment, n (%)			0.343			0.611
No	59 (55.7)	17 (45.9)		13 (41.9)	16 (51.6)	
Yes	47 (44.3)	20 (54.1)		18 (58.1)	15 (48.4)	
ct, n (%)			0.723			0.786
0	1 (0.9)	1 (2.7)		1 (3.2)	1 (3.2)	
1	17 (16.0)	6 (16.2)		3 (9.7)	5 (16.1)	
2	28 (26.4)	12 (32.4)		7 (22.6)	10 (32.3)	
3	49 (46.2)	16 (43.2)		18 (58.1)	13 (41.9)	
4	11 (10.4)	2 (5.4)		2 (6.5)	2 (6.5)	
cn, n (%)			0.933			0.579
0	55 (51.9)	21 (56.8)		14 (45.2)	18 (58.1)	
1	18 (17.0)	5 (13.5)		5 (16.1)	3 (9.7)	
2	9 (8.5)	2 (5.4)		5 (16.1)	2 (6.5)	
3	24 (22.6)	9 (24.3)		7 (22.6)	8 (25.8)	
cStage, n (%)			0.848			0.759
0	1 (0.9)	1 (2.7)		1 (3.2)	1 (3.2)	
I	39 (36.8)	15 (40.5)		8 (25.8)	12 (38.7)	
II	12 (11.3)	4 (10.8)		4 (12.9)	4 (12.9)	
III	41 (38.7)	12 (32.4)		14 (45.2)	9 (29.0)	
IV	13 (12.3)	5 (13.5)		4 (12.9)	5 (16.1)	

Table2 Intra and postoperative outcomes after PSM

	Conventional (n=31)	Hybrid (n=31)	p-value
Operative procedure, n (%)			0.65
LAR	20 (64.5)	17 (54.8)	
ISR	4 (12.9)	3 (9.7)	
APR	7 (22.6)	11 (35.5)	
Lymphadenectomy, n (%)			1
prxD2	3 (9.7)	2 (6.5)	
prxD3	28 (90.3)	29 (93.5)	
LLND, n (%)			1
No	18 (58.1)	19 (61.3)	
Yes	13 (41.9)	12 (38.7)	
Op time (min), median, (range)	283.00 (158.00, 760.00)	277.00 (198.00, 579.00)	0.473
Bleeding (ml), median, (range)	15.00 (0.00, 1770.00)	0.00 (0.00, 150.00)	0.046
Transfusion, n (%)			1
No	30 (96.8)	31 (100.0)	
Yes	1 (3.2)	0 (0.0)	
Conversion, n (%)			1
No	31 (100.0)	31 (100.0)	
Yes	0 (0.0)	0 (0.0)	
Harvested LNs, median, (range)	14.00 (2.00, 39.00)	13.00 (2.00, 35.00)	0.327
Postoperative complications (CD \geq II), n (%)	19 (61.3)	13 (41.9)	0.204
Postoperative complications (CD \geq III), n (%)	9 (29.0)	3 (9.7)	0.106
Postoperative hospital stay (day), median, (range)	20.00 (8.00, 52.00)	16.00 (9.00, 30.00)	0.030
Re-operation \leq 30 days, n (%)	3 (9.7)	3 (9.7)	1
Mortality \leq 30 days, n (%)	0 (0.0)	0 (0.0)	1

Table3 Pathological outcomes after PSM

	Conventional (n=31)	Hybrid (n=31)	p-value
Histological type, n (%)			0.64
tub1/tub2	23 (74.2)	23 (74.2)	
por/sig/muc	2 (6.5)	4 (12.9)	
others	6 (19.4)	4 (12.9)	
pT, n (%)			0.545
0	6 (19.4)	3 (9.7)	
1	4 (12.9)	9 (29.0)	
2	6 (19.4)	6 (19.4)	
3	14 (45.2)	12 (38.7)	
4	1 (3.2)	1 (3.2)	
pN, n (%)			0.414
0	20 (64.5)	19 (61.3)	
1	9 (29.0)	7 (22.6)	
2	2 (6.5)	2 (6.5)	
3	0 (0.0)	3 (9.7)	
pStage, n (%)			0.588
0	6 (19.4)	2 (6.5)	
I	8 (25.8)	12 (38.7)	
II	5 (16.1)	4 (12.9)	
III	8 (25.8)	8 (25.8)	
IV	4 (12.9)	5 (16.1)	
DM involvement, n (%)	0 (0.0)	1 (3.2)	1
RM involvement, n (%)	1 (3.2)	1 (3.2)	1

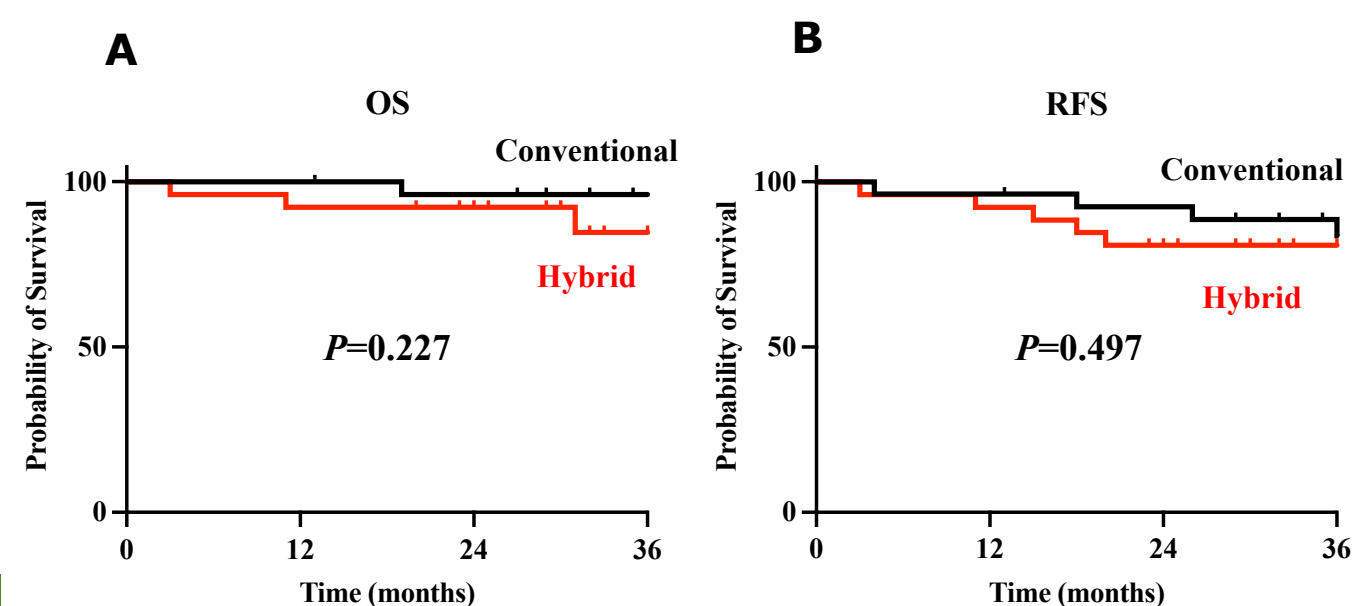


Fig.3 The Kaplan-Meier curves for OS (A)
The Kaplan-Meier curves for RFS (B)

Conclusion

Hybrid TaTME for low rectal cancer was superior to conventional laparoscopic TaTME in terms of blood loss and postoperative hospital stay.

All author have no financial relationships to disclose.