Supporting Tables And Figures

Title: Comparative Efficacy of Reinforced Suturing, Transanal Drainage Tube, and No Additional Intervention in Preventing Anastomotic Leakage after Rectal Cancer Surgery: A Network Meta-Analysis

Table S1 Search strategy of the network meta-analysis

Database and search strategy		Items
PubMed		
1	("Rectal Neoplasms"[Mesh]) OR ((((((((((((((((Neoplasm, Rectal) OR (Rectal Neoplasm)) OR (Neoplasms, Rectal)) OR (Rectum Neoplasms)) OR (Neoplasm, Rectum)) OR (Rectum Neoplasm)) OR (Rectal Tumors)) OR (Rectal Tumor)) OR (Tumor, Rectal)) OR (Cancer of Rectum)) OR (Rectum Cancers)) OR (Cancer of the Rectum)) OR (Rectal Cancer)) OR (Cancer, Rectal)) OR (Rectal Cancers)) OR (Rectum Cancer)) OR (Cancer, Rectum))	108144
2	("General Surgery"[Mesh]) OR ((Surgery, General) OR (Surgery))	6114152
3	(Transanal Drainage Tube) OR (TDT)	8452
4	(Reinforced Suturing) OR (RS)	153807
5	(1 AND 2 AND 3) OR (1 AND 2 AND 4) Filters: from 2010 to 2025/5	357
Web of Science Core Collection		
1	Rectal Neoplasms (All Fields) or Neoplasm, Rectal (All Fields) or Rectal Neoplasm (All Fields) or Neoplasms, Rectal (All Fields) or Rectum Neoplasms (All Fields) or Neoplasm, Rectum (All Fields) or Rectum Neoplasm (All Fields) or Rectal Tumors (All Fields) or Rectal Tumor (All Fields) or Tumor, Rectal (All Fields) or Cancer of Rectum (All Fields) or Rectum Cancers (All Fields) or Cancer of the Rectum (All Fields) or Rectal Cancer (All Fields) or Cancer, Rectal (All	57206

	Fields) or Rectal Cancers (All Fields) or Rectum Cancer (All Fields) or Cancer, Rectum (All Fields)	
2	General Surgery (All Fields) or Surgery, General (All Fields) or Surgery (All Fields)	2605184
3	Transanal Drainage Tube (All Fields) or TDT (All Fields)	5935
4	Reinforced Suturing (All Fields) or RS (All Fields)	420315
5	(1 AND 2 AND 3) OR (1 AND 2 AND 4) Filters: from 2010 ot 2025/5	487
Embase (via Ovid)		
1	(rectum tumor) OR (mass, AND rectum AND tumor) OR (neoplasm AND of AND the AND rectum) OR (neoplasma AND recti) OR (pararectal AND tumor) OR (pararectal AND tumour) OR (rectal AND mass AND tumor) OR (rectal AND neoplasia) OR (rectal AND neoplasm) OR (rectal AND neoplasms) OR (rectal AND tumor) OR (rectal AND tumour) OR (rectum AND mass AND tumor) OR (rectum AND neoplasia) OR (rectum AND neoplasm) OR (rectum AND tumour) OR (retrorectal AND tumor) OR (retrorectal AND tumour) OR (tumor AND of AND the AND rectum) OR (tumor AND recti) OR (tumour AND of AND the AND rectum) OR (tumour AND recti) OR (rectum AND tumor).af.	146832
2	(general surgery) OR (surgery, AND general) OR (general AND surgery).af.	877623
3	(transanal AND drainage AND tube) OR tdt.af	11307
4	(reinforced AND suturing) OR rs.af	173221
5	(1 AND 2 AND 3) OR (1 AND 2 AND 4) AND [2010-2025/5]/py	142

Table S2 Characteristics of included studies

Author(year)	Design	Country	Score	Sample	Anastomotic leakage	Grade CAL	Bowel obstruction	Anastomotic bleeding	Anastomotic stenosis	Hospitalization duration (day)	Intraoperative blood loss (ml)	Operative time (min)	The median/mean patient age	The median/mean distance of the tumor from the anal verge ranged	Preoperative chemoradiotherapy	Male	Female
Liang Xiao(2011)	RCT	China	4	188	8	-	-	20	7	12.9	-	-	60.9	-	0	62.5%	37.5%
				182	19	-	-	7	9	16.4	-	-	60.9	-	0	58.1%	41.9%
Sueda(2023)	RNCT	Japan	7	158	7	6	3	0	-	14.8	36.8	264.1	69.6	-	1.3%	63.9%	36.1%
				158	19	12	0	3	-	16	109.3	223.3	69.6	-	2.5%	59.5%	40.5%
Kim(2015)	RNCT	Korea	7	35	1	-	1	0	0	7.3	244.3	238.9	59.3	8.8	0	60.0%	40.0%
				35	6	-	2	1	1	9.2	346.7	256	62.2	8.9	0	65.7%	34.3%
Xinyu Qi(2025)	RNCT	China	7	296	4	1	-	8	23	6.25	43.35	195.51	59.5	9.26	30.1%	63.2%	36.8%
				429	20	16	-	19	22	6.6	54.15	173.93	60.4	9.38	22.8%	60.8%	39.2%
Bo Ban(2022)	RNCT	China	7	168	8	2	25	-	12	-	60.5	150.4	61.8	-	0	47.6%	52.4%
				151	17	13	17	-	17	-	58.2	146.6	63	-	0	48.3%	51.7%
Lee SY(2015)	RNCT	Korea	7	154	9	8	5	-	-	-	-	146	63.6	-	12.3%	66.9%	33.1%
				154	14	11	7	-	-	-	-	150.8	66	-	10.4%	66.2%	33.8%
Kenji Kawada(2017)	RNCT	Japan	7	178	19	10	-	-	-	-	-	-	66	-	14.4%	70.1%	29.9%
				23	6	3	-	-	-	-	-	-	66	-	14.4%	70.1%	29.9%

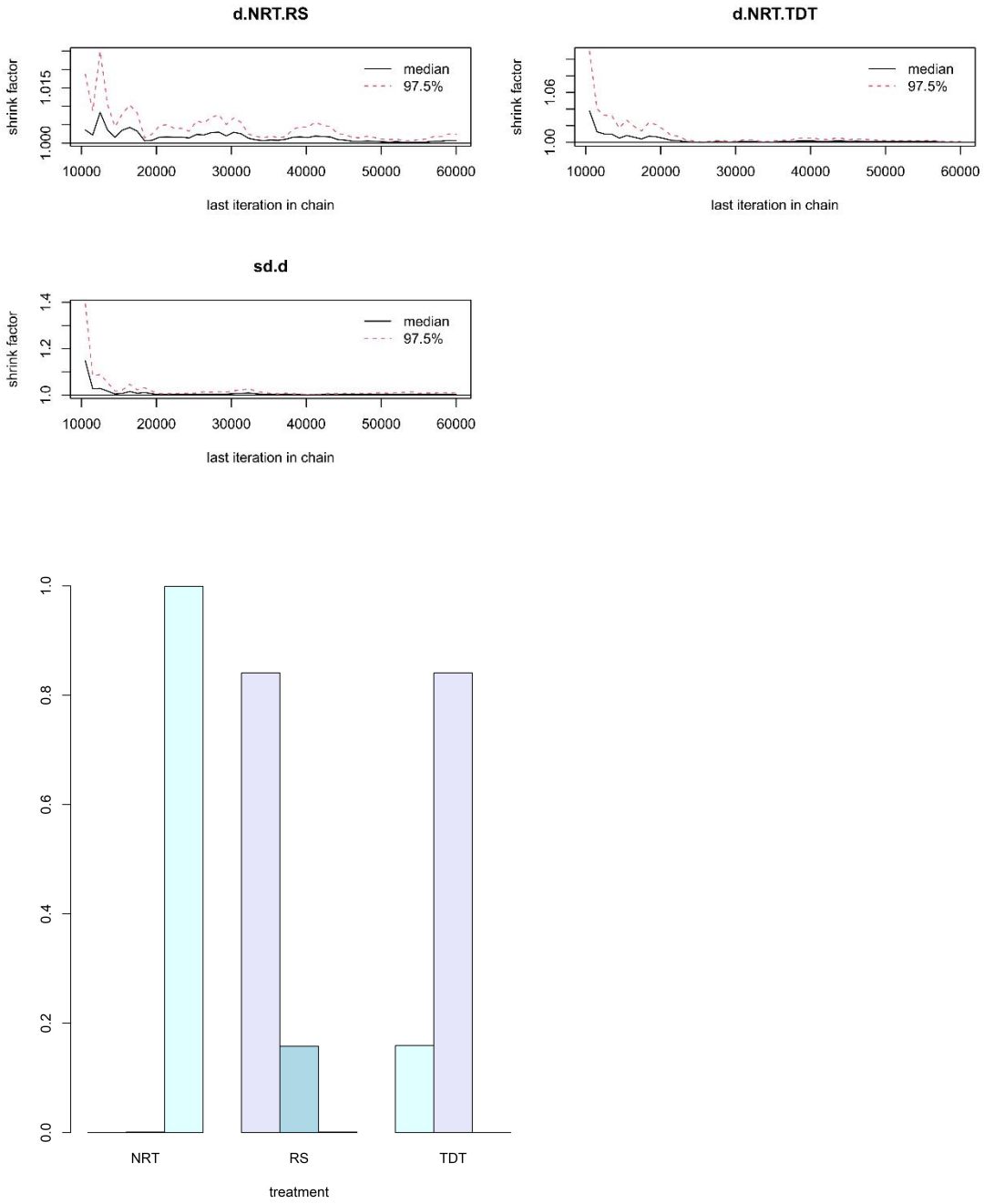
Koichi Tamura(2021)	RCT	Japan	6	79	8	1	7	1	-	-	-	-	69	-	12.7%	64.5%	35.5%
				78	11	1	10	0	-	-	-	-	69	-	24.3%	64.1%	35.9%
Saori Goto(2017)	RNCT	Japan	6	205	17	7	10	4	3	14	32	301	67	8	15.0%	70.0%	30.0%
				123	19	8	7	2	2	14	90	295	70	10	5.0%	63.0%	37.0%
Chun-Seok Yang(2016)	RNCT	Korea	7	102	10	4	0	4	-	10.6	60.9	155.1	64.2	7.9	17.6%	63.7%	36.3%
				102	12	12	3	0	-	10	65	150.6	63.5	7.8	11.8%	64.7%	35.3%
Keitaro Tanaka(2017)	PNCT	Japan	7	103	4	-	-	-	-	-	-	-	60	7.48	0	55.7%	44.3%
				292	29	-	-	-	-	-	-	-	60	7.48	0	55.7%	44.3%
Hong-Qiang Zhang(2023)	RNCT	China	7	117	4	-	1	0	-	7	60	104	66	9.5	-	58.9%	41.1%
				117	12	-	0	0	-	7	60	100	66	9.5	-	58.9%	41.1%
Zihao Wang(2024)	RNCT	China	6	88	3	-	4	-	-	13.01	-	-	63.18	9.59	27.1%	62.5%	37.5%
				63	10	-	7	-	-	13.38	-	-	63.37	9.59	27.1%	57.1%	42.9%
Song Zhao(2021)	RCT	China	6	280	18	4	-	0	-	-	-	-	61.5	-	-	63.2%	36.8%
				280	19	8	-	0	-	-	-	-	62	-	-	60.4%	39.6%
Adamova(2014)	RNCT	Czech Republic	7	9	0	-	-	-	-	-	-	-	65	-	-	-	-
				57	5	-	-	-	-	-	-	-	64	-	-	-	-
Wen-Tao Zhao(2013)	PNCT	China	7	81	2	-	3	0	-	-	-	-	-	-	0	58.0%	42.0%
				77	7	-	0	2	-	-	-	-	-	-	0	55.8%	44.2%

Table S3 Sensitivity Analysis of Anastomotic Leakage Prevention: Network Meta-Analysis Results and Treatment Rankings in Large-Sample Studies (≥100 Patients per Group)

	Compare with NRT OR (95% CrI)	Compare with RS OR (95% CrI)	Compare with TDT OR (95% CrI)	Rank 1	Rank 2	Rank 3	SUCRA
NRT		0.32 (0.16, 0.63)	0.54 (0.36, 0.79)	0.01%	0.37%	99.63%	<0.01
RS	3.08 (1.6, 6.29)		1.68 (0.76, 3.71)	90.64%	9.21%	0.15%	0.95
TDT	1.85 (1.27, 2.75)	0.6 (0.27, 1.31)		9.36%	90.42%	0.23%	0.55

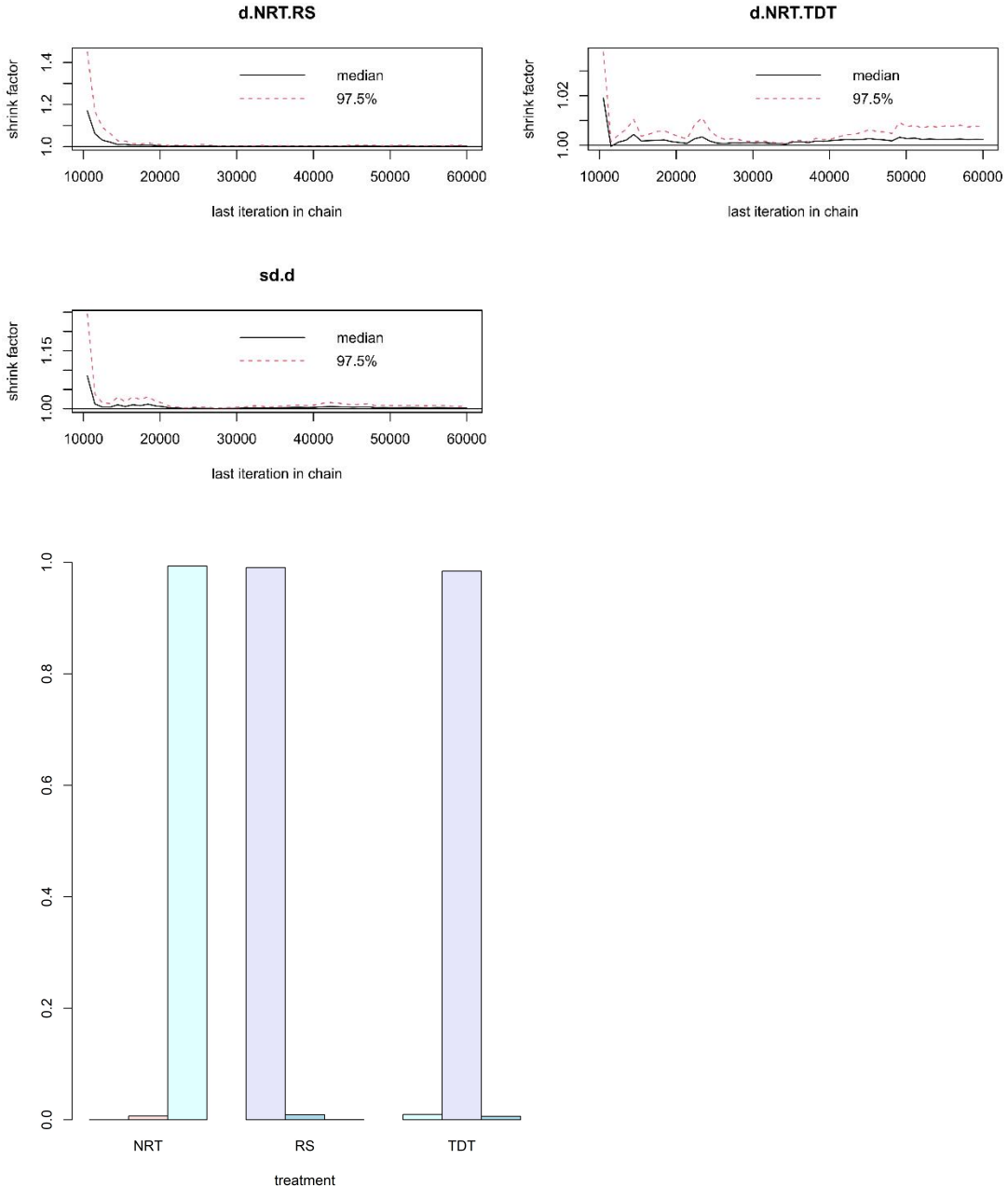
RS, reinforced suturing; TDT, transanal drainage tube; NRT, no additional intervention. OR: odds ratio; CrI: Credible Interval. If the OR >1, it means that the intervention increases the odds of the event compared with the control; if the OR <1, it means that the intervention decreases the odds of the event compared with the control. The 95% CrI indicates the range of possible intervals within which the estimated value of the OR, and the probability that this range covers the true value is 95%. If the 95% CrI does not include 1, the association between the exposure and the event is considered significant. If the 95% CrI includes 1, the exposure factor is considered to have no effect on the event. Data are presented as probabilities (%) for Rank 1 (highest efficacy), Rank 2, and Rank 3 (lowest efficacy), alongside the Surface Under the Cumulative Ranking Curve (SUCRA) values. Higher SUCRA values (range 0–1) indicate superior efficacy for the outcome.

Fig. S1 Comprehensive assessment of interventions for preventing anastomotic leakage: Convergence diagram and Rank Probability Distribution Plot



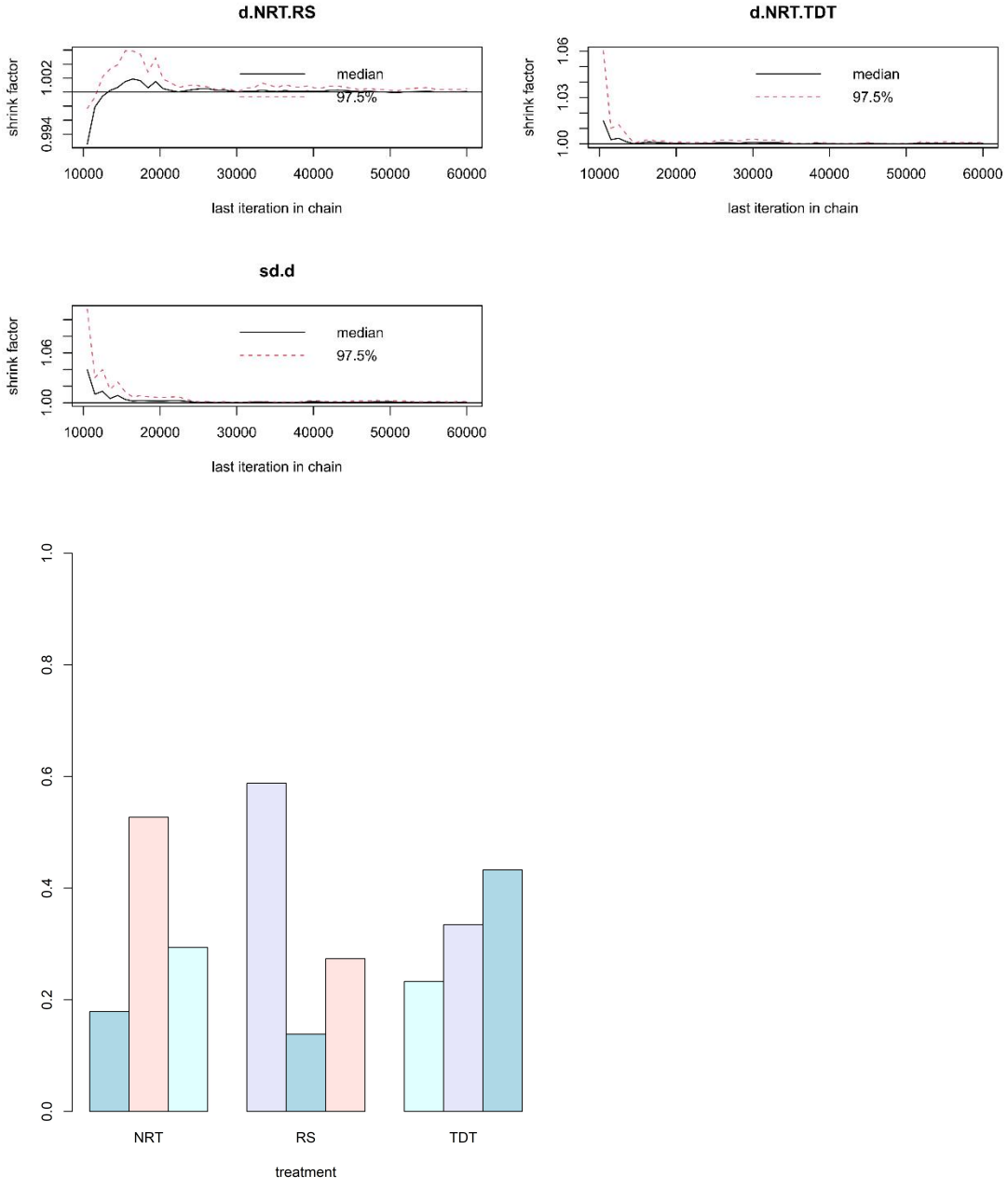
RS, reinforced suturing; TDT, transanal drainage tube; NRT, no additional intervention.

Fig. S2 Comprehensive assessment of interventions for preventing Grade C anastomotic leakage: Convergence diagram and Rank Probability Distribution Plot



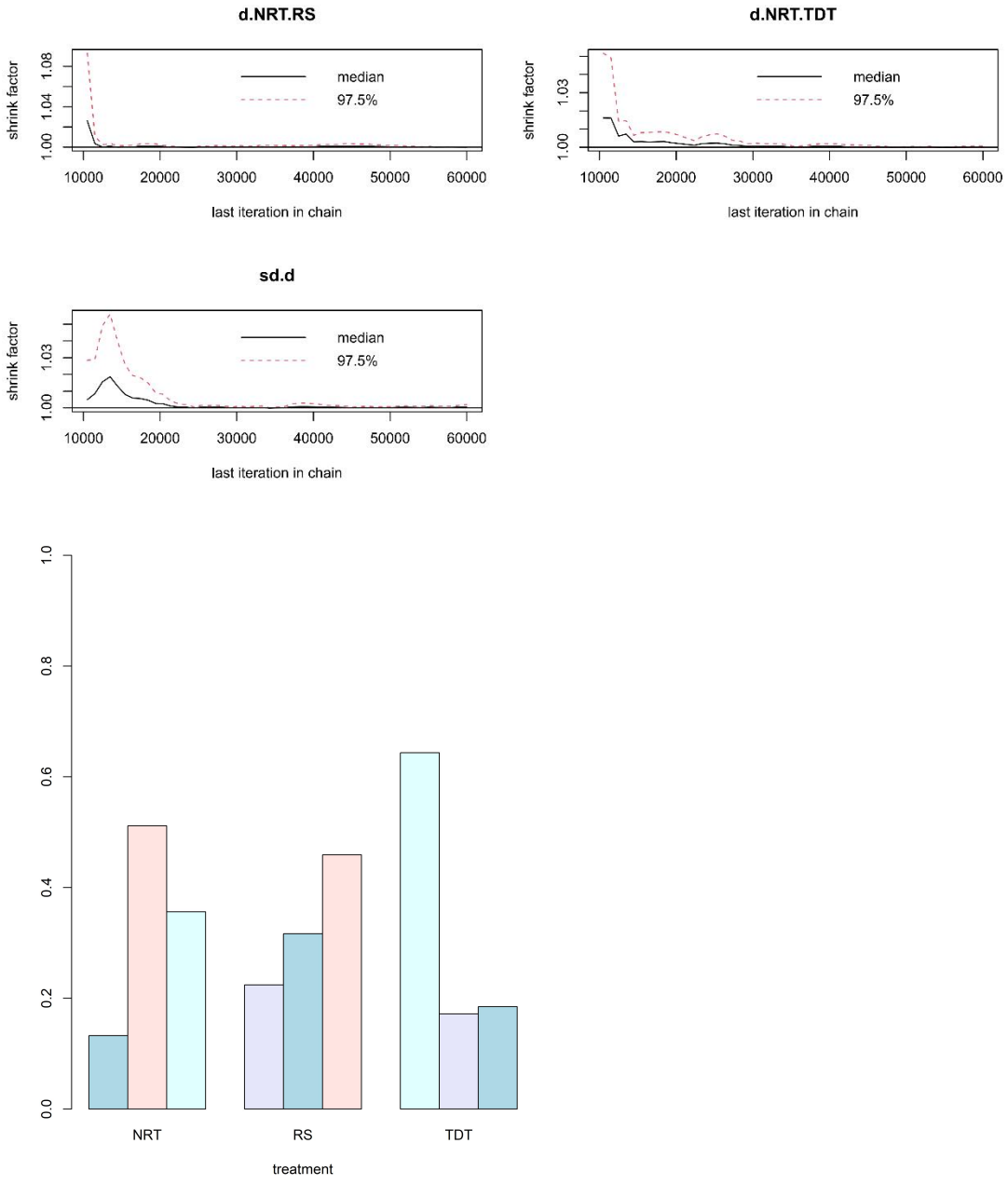
RS, reinforced suturing; TDT, transanal drainage tube; NRT, no additional intervention.

Fig. S3 Comprehensive assessment of interventions for preventing Perianastomotic bleeding: Convergence diagram and Rank Probability Distribution Plot



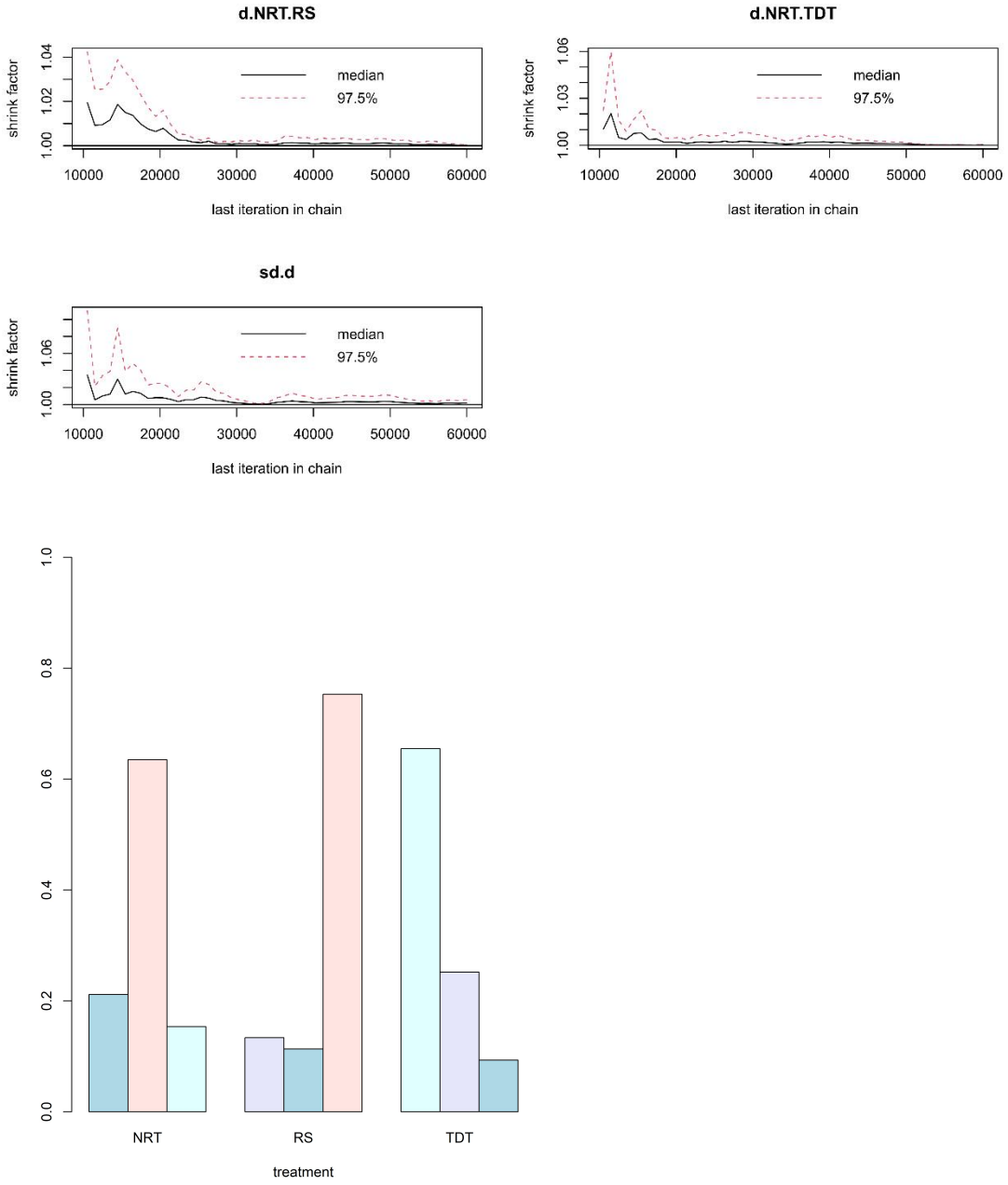
RS, reinforced suturing; TDT, transanal drainage tube; NRT, no additional intervention.

Fig. S4 Comprehensive assessment of interventions for preventing Anastomotic stricture: Convergence diagram and Rank Probability Distribution Plot



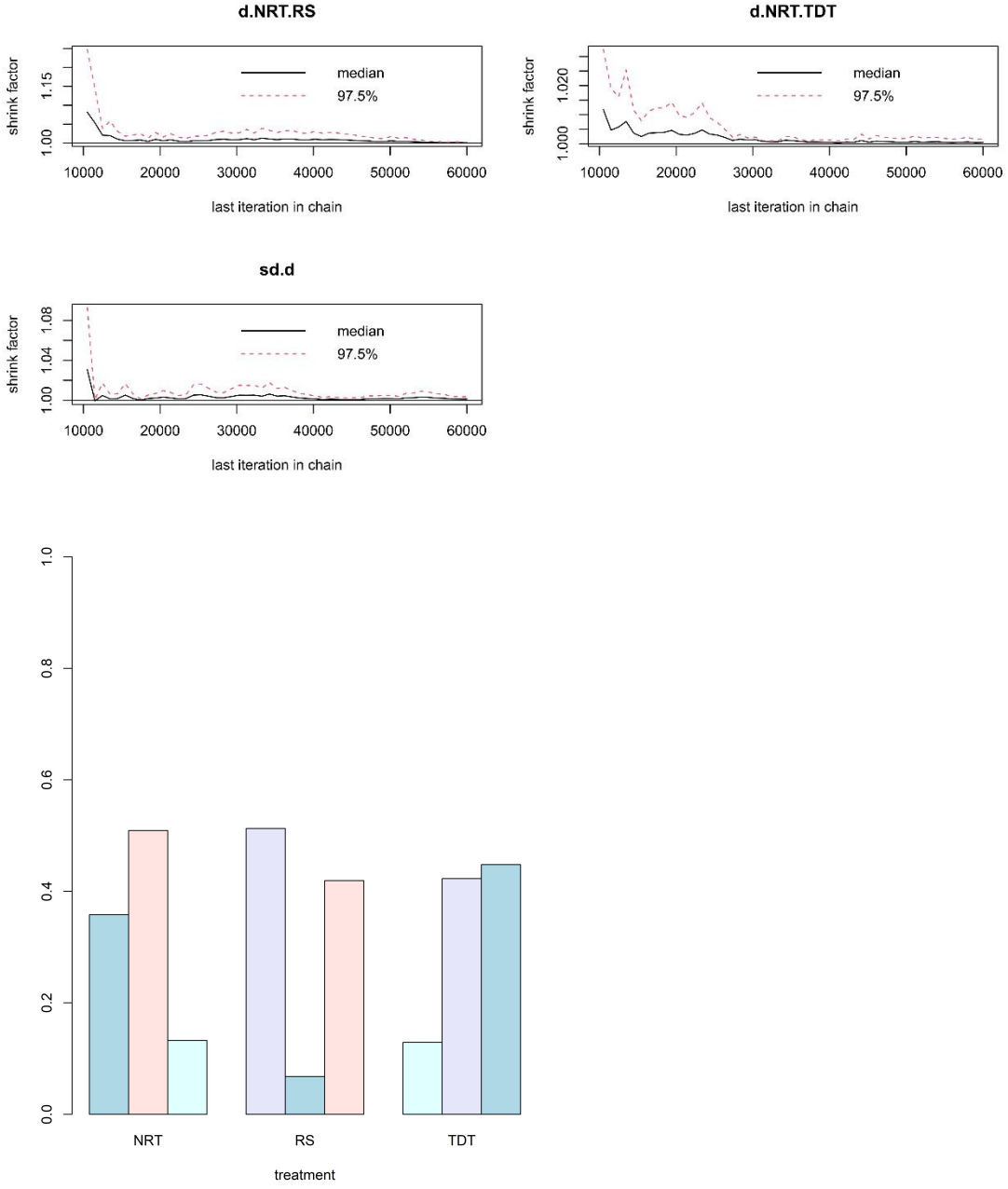
RS, reinforced suturing; TDT, transanal drainage tube; NRT, no additional intervention.

Fig. S5 Comprehensive assessment of interventions for preventing Ileus: Convergence diagram and Rank Probability Distribution Plot



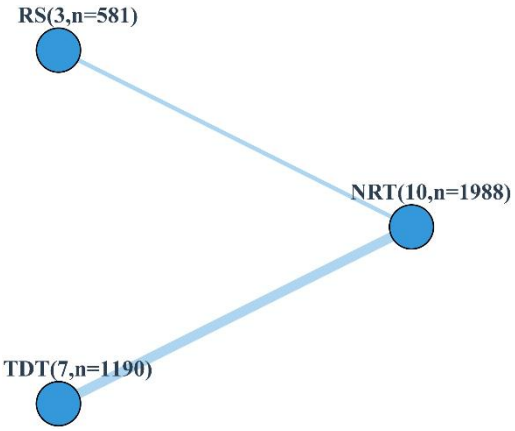
RS, reinforced suturing; TDT, transanal drainage tube; NRT, no additional intervention.

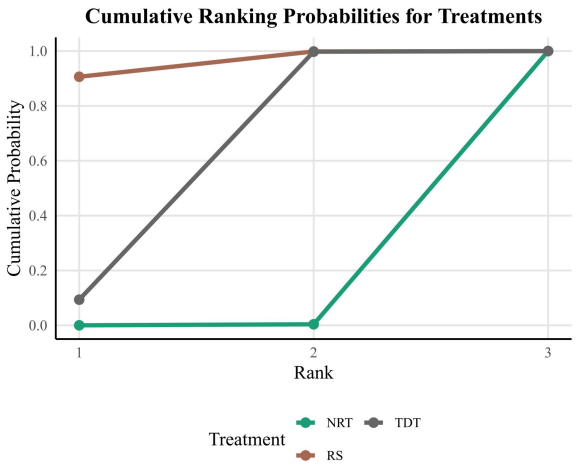
Fig. S6 Comprehensive assessment of interventions for preventing wound infection: Convergence diagram and Rank Probability Distribution Plot

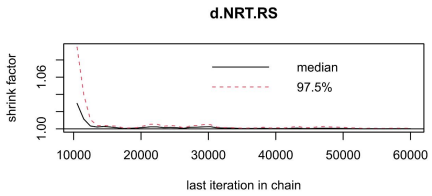


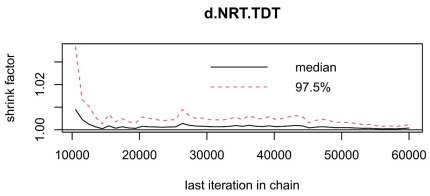
RS, reinforced suturing; TDT, transanal drainage tube; NRT, no additional intervention.

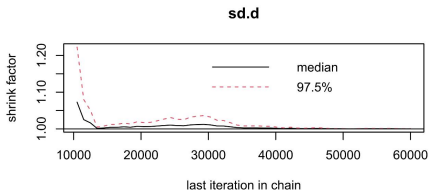
Fig. S7 Sensitivity Analysis

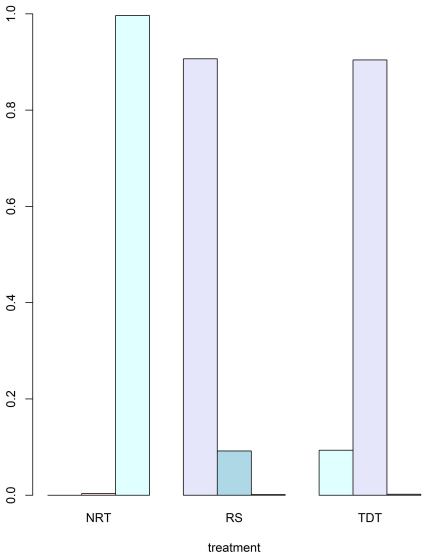












RS, reinforced suturing; TDT, transanal drainage tube; NRT, no additional intervention.