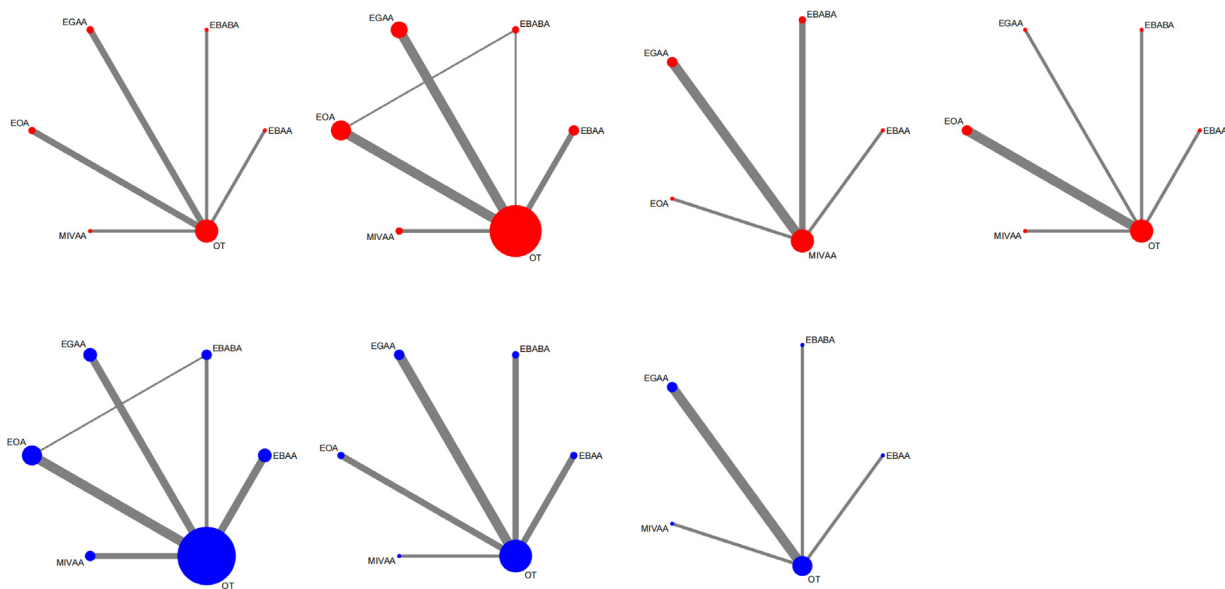


Table S1 The quality of included studies assessed by the Newcastle-Ottawa scale

Authors	Selection				Comparability	Outcome			Quality score
	Representativeness of the exposed cohort	Selection of the non-exposed cohort	Ascertainment of exposure	Demonstration that outcome of interest was not present at start of study	Comparability of cohorts on the basis of the design or analysis	Assesment of outcome	Was follow-up long enough for outcomes to occur	Adequacy of follow up of cohorts	
Hensler <i>et al.</i>	★	★	★	★	★★	★		★	8
Lombardi <i>et al.</i>	★	★		★	★★	★	★	★	8
Anuwong <i>et al.</i>	★	★	★	★	★		★	★	7
Ahn <i>et al.</i>		★	★	★	★	★	★	★	7
Hong <i>et al.</i>	★	★	★		★★	★	★	★	8
Xiang <i>et al.</i>	★		★	★	★	★	★	★	7
Zhang <i>et al.</i>	★	★		★	★	★	★	★	7
Kim <i>et al.</i>	★	★	★	★	★	★	★	★	8
Kim <i>et al.</i>	★	★		★	★	★	★	★	7
Kim <i>et al.</i>		★	★	★	★	★	★	★	7
Huang <i>et al.</i>	★	★	★	★	★	★		★	7
Park <i>et al.</i>	★	★	★		★★	★	★		7
Koh <i>et al.</i>	★	★	★	★	★	★	★	★	8
Li <i>et al.</i>	★	★	★	★	★★	★	★		7
Qu <i>et al.</i>	★	★	★	★	★		★	★	7
Lee <i>et al.</i>		★	★	★	★	★	★	★	7
Sun <i>et al.</i>	★	★	★	★	★	★	★	★	8
Liang <i>et al.</i>	★	★	★		★★	★		★	7
Zeng <i>et al.</i>	★	★	★	★	★	★	★	★	8
Liu <i>et al.</i>	★		★	★	★	★	★	★	7
Yuan <i>et al.</i>	★	★		★	★★	★		★	7



**Figure S1** The network relationships between different surgical approaches. OT, open thyroidectomy; EBAA, endoscopic bilateral areola approach; EBABA, endoscopic bilateral axillo-breast approach; EGAA, endoscopic gasless transaxillary approach; EOA, endoscopic transoral approach; MIVAA, minimally invasive video-assisted approach.

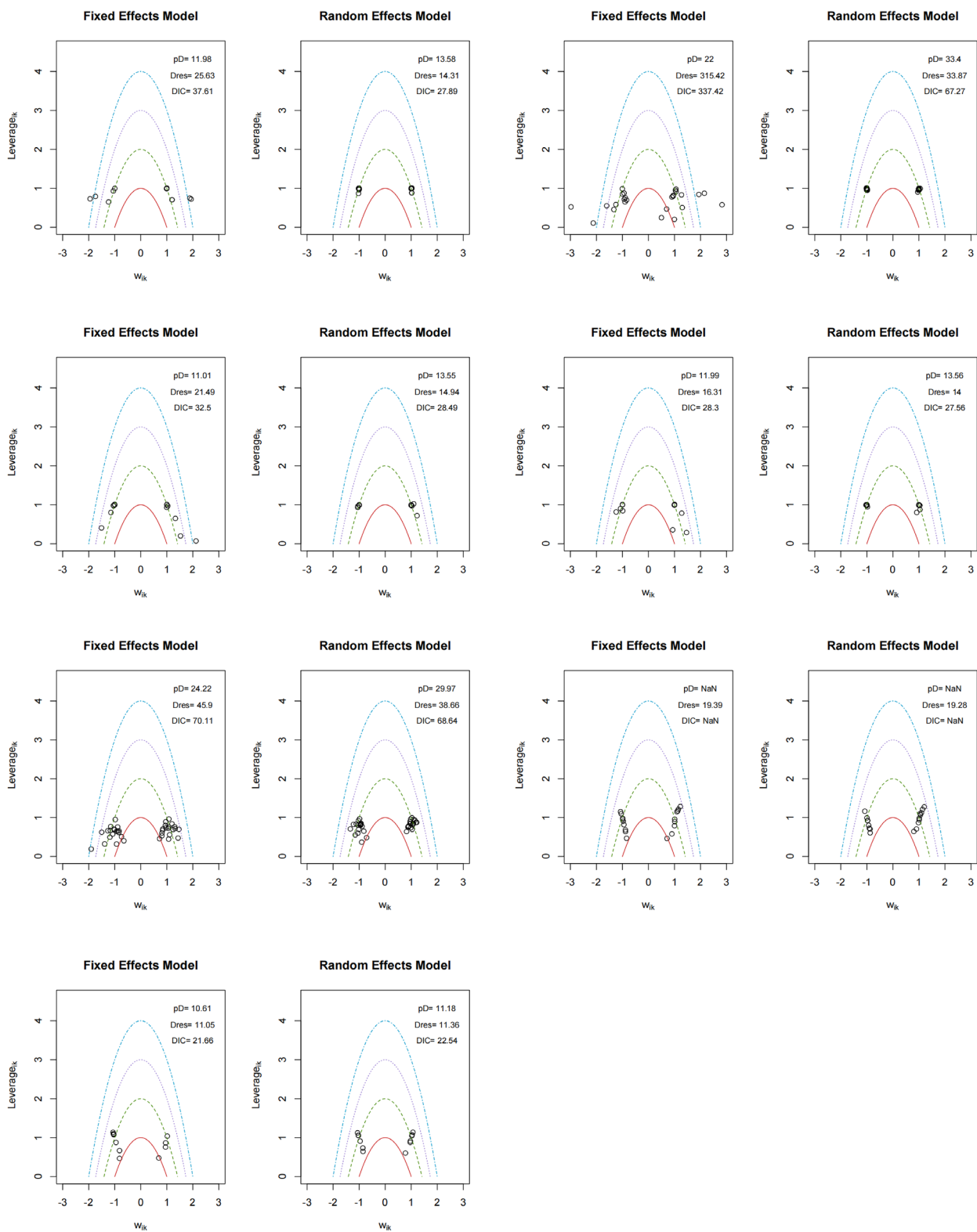
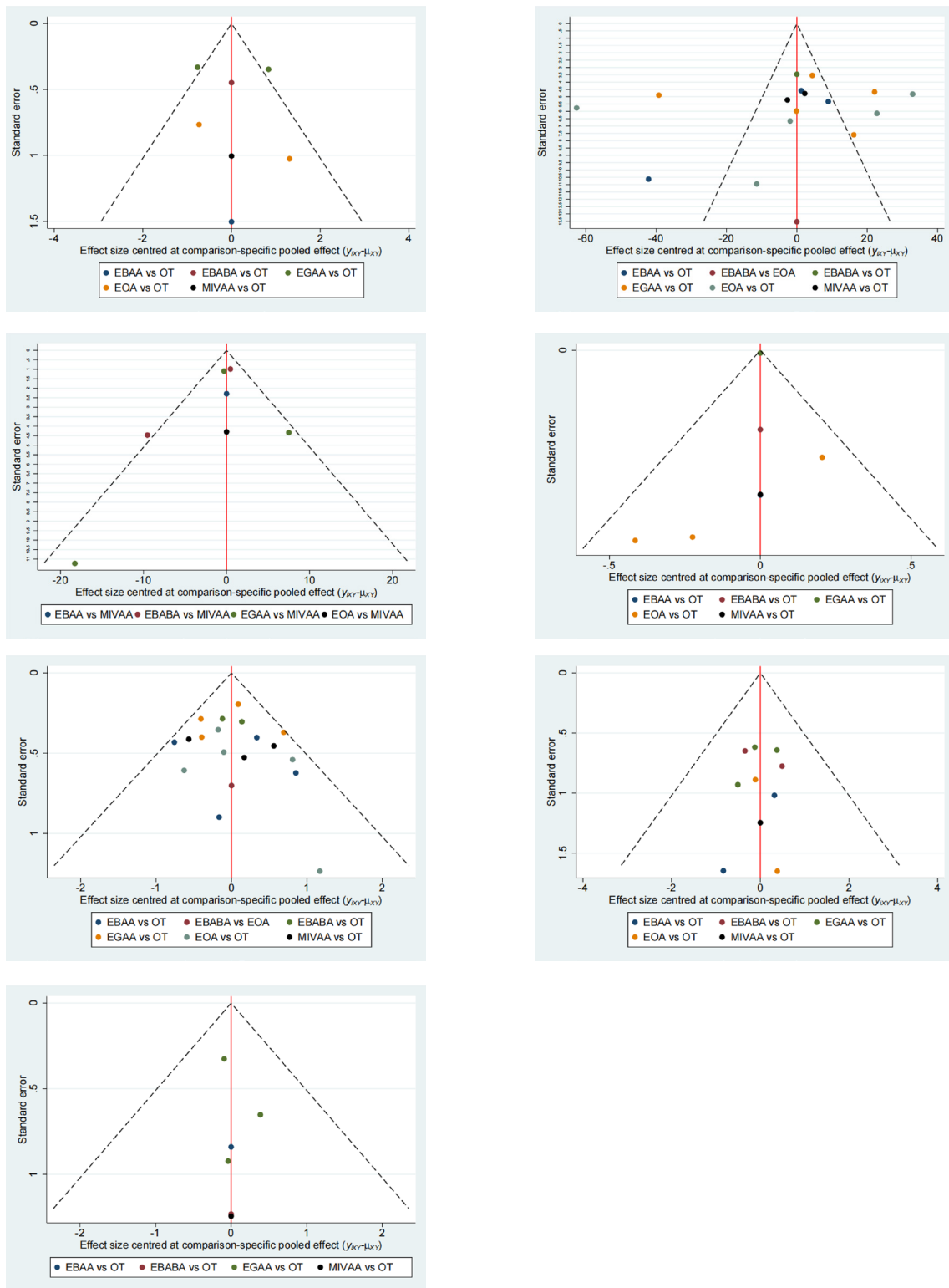
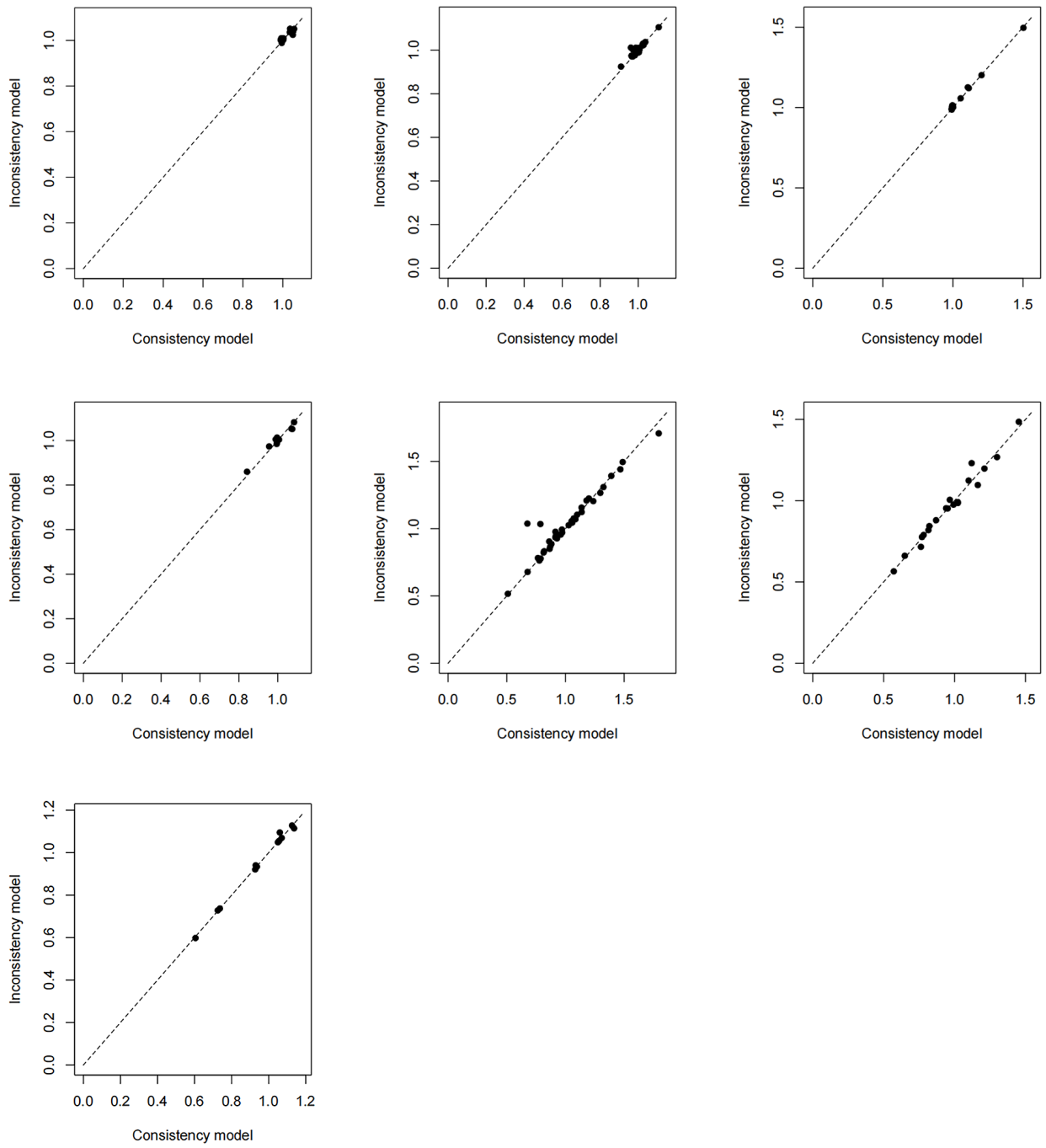


Figure S2 The cumulative ranking plots and nomograms for the six surgical approaches.



**Figure S3** The risk of publication and reporting bias. OT, open thyroidectomy; EBAA, endoscopic bilateral areola approach; EBABA, endoscopic bilateral axillo-breast approach; EGAA, endoscopic gasless transaxillary approach; EOA, endoscopic transoral approach; MIVAA, minimally invasive video-assisted approach.



**Figure S4** The inconsistencies of the six surgical approaches.

Number of studies = 17					Root MSE = 6.407	
Std_Eff	Coef.	Std. Err.	t	P >  t	[ 95% Conf.Interval ]	
Slope bias	-43.91726	26.71766	-1.64	0.12	-100.8646	13.0301
	0.2758858	5.035579	0.05	0.96	-10.4572	11.00897

Test of H0 : no small-study effects                      P = 0.96

**Figure S5** The Egger test of operative time.

**Table S2** The surface under the cumulative ranking curve values of all outcomes

Group	Number of retrieved lymph nodes	Operative time	Intraoperative bleeding volume	Hospital stay	Transient hypoparathyroidism	Permanent hypoparathyroidism	Transient RLN palsy
EBAA	0.58	0.64	0.35	0.43	0.10	0.49	0.92
EBABA	0.57	0.34	-	0.22	0.45	0.22	0.24
EGAA	0.35	0.28	0.46	0.95	0.74	0.58	0.34
EOA	0.59	0.08	0.31	0.27	0.58	0.46	-
MIVAA	0.23	0.77	0.77	0.67	0.66	0.81	0.40
OT	0.68	0.90	0.60	0.45	0.46	0.44	0.60

OT, open thyroidectomy; EBAA, endoscopic bilateral areola approach; EBABA, endoscopic bilateral axillo-breast approach; EGAA, endoscopic gasless transaxillary approach; EOA, endoscopic transoral approach; MIVAA, minimally invasive video-assisted approach; RLN, recurrent laryngeal nerve.