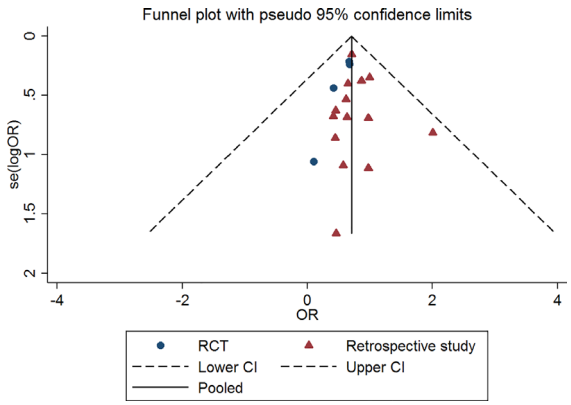

Figure S1 Funnel plot for the evaluation of publication bias of studies comparing DOACs and LWMHs for the treatment of VTE recurrence in cancer patients. DOAC, direct oral anticoagulant; LMWH, low-molecular-weight heparin; VTE, venous thromboembolism.

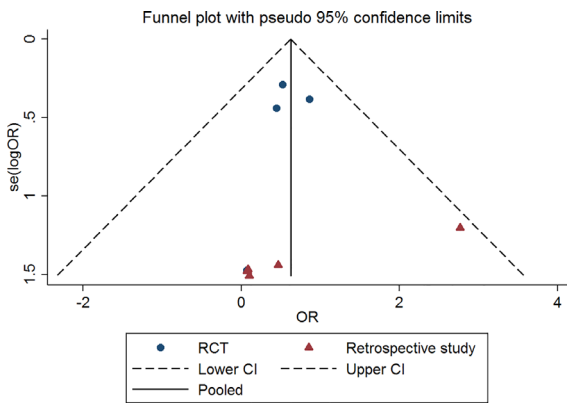

Figure S2 Funnel plot for the evaluation of publication bias of studies comparing DOACs and LWMHs for the treatment of DVT recurrence in cancer patients. DOAC, direct oral anticoagulant; LMWH, low-molecular-weight heparin; DVT, deep vein thrombosis.

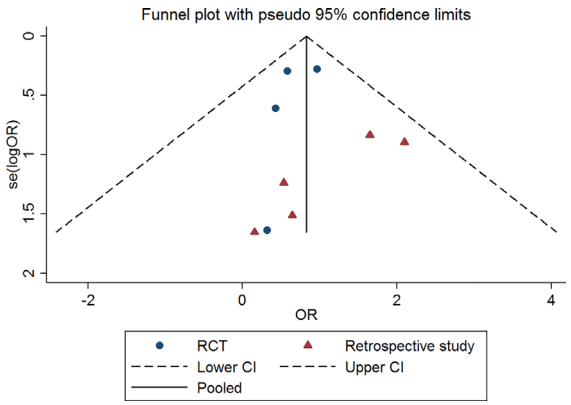

Figure S3 Funnel plot for the evaluation of publication bias of studies comparing DOACs and LWMHs for the treatment of PE recurrence in cancer patients. DOAC, direct oral anticoagulant; LMWH, low-molecular-weight heparin; PE, pulmonary embolism.

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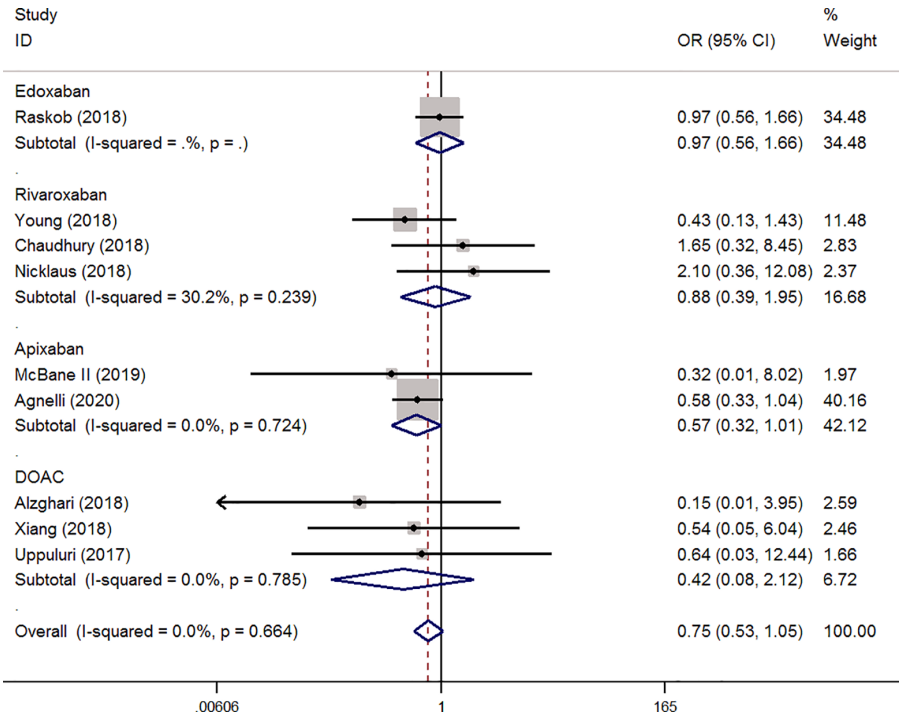

Figure S4 Subgroup analyses of ORs of different DOACs for PE recurrence. OR, odds ratio; DOAC, direct oral anticoagulant; PE, pulmonary embolism.

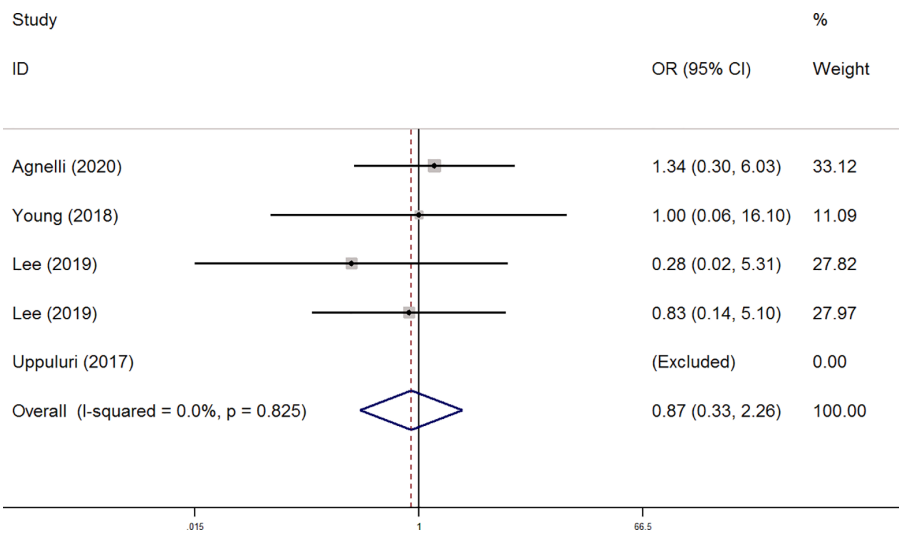

Figure S5 Forest plot of ORs of DOACs *vs.* LMWHs for fatal PE recurrence. OR, odds ratio; DOAC, direct oral anticoagulant; LMWH, low-molecular-weight heparin; PE, pulmonary embolism.

http://dx.doi.org/10.21037/atm-20-8156

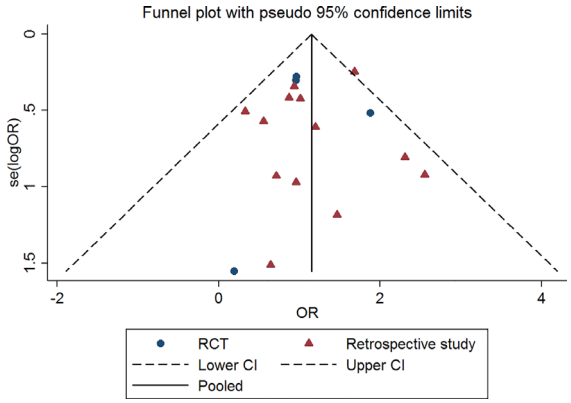

Figure S6 Funnel plot for the evaluation of publication bias of studies comparing DOACs and LWMHs for the major bleeding events in cancer patients. DOAC, direct oral anticoagulant; LMWH, low-molecular-weight heparin.

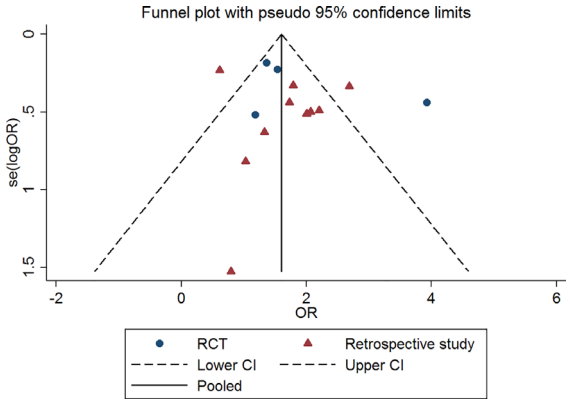

Figure S7 Funnel plot for the evaluation of publication bias of studies comparing DOACs and LWMHs for the CRNMB events in cancer patients. DOAC, direct oral anticoagulant; LMWH, low-molecular-weight heparin; CRNMB, clinically relevant non-major bleeding.

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Table1 Baseline characteristics of included studies

Study	Study period	Study type	Study groups and sample size	Treatment dose	Treatment duration (interquartile range)	Follow-up	Recurrent VTE (%)	Recurrent PE (%)	Major bleeding (%)	CRNMB (%)	Risk
Raskob *et al.*	2015-2016	RCT	Edoxaban (n=522) *vs.* Dalteparin (n=524)	Edoxaban: 60 mg, qd, after LMWH for 5 d Dalteparin: 200 IU/kg/d, qd for 1 mo→150 IU/kg/d, qd	Edoxaban: 211 d (IQR:76-357); Dalteparin: 184 d (IQR: 85-341)	12 mo	7.9% *vs.* 11.3%	5.2% *vs.* 5.3%	6.9% *vs.* 4.0%	14.6% *vs.* 11.1%	L
Young *et al.*	2013-2016	RCT	Rivaroxaban (n=203) *vs.* Dalteparin (n=203)	Rivaroxaban: 15 mg, bid, for the first 3 weeks→20 mg, qd Dalteparin: 200 IU/kg/d, qd for 1 mo→150 IU/kg/d, qd	Rivaroxaban: 5.9 mo (IQR: 2.5-6.0); Dalteparin: 5.8 mo (IQR: 3.0-6.0)	24 mo	3.9% *vs.* 8.9%	2.0% *vs.* 4.4%	5.4% *vs.* 3.0%	12.3% *vs.* 3.4%	L
McBane II *et al.*	2015-2017	RCT	Apixaban (n=150) *vs.* Dalteparin (n=150)	Apixaban: 10 mg,bid for 7 d→5 mg, bid Dalteparin: 200 IU/kg/d, qd for 1 mo→150 IU/kg/d, qd	N/A	6 mo	0.7% *vs.* 6.3%	0% *vs.* 0.7%	0% *vs.* 1.4%	6.2% *vs.* 4.2%	L
Agnelli *et al.*	2017-2019	RCT	Apixaban (n=576) *vs.* Dalteparin (n=579)	Apixaban: 10 mg,bid for 7d→5 mg, bid Dalteparin: 200 IU/kg/d, qd for 1 mo→150 IU/kg/d, qd	Apixaban: 178 d (IQR: 106-183); Dalteparin: 175 d (IQR: 79-183)	7 mo	5.6% *vs.* 7.9%	3.3% *vs.* 5.5%	3.8% *vs.* 4.0%	9.0% *vs.* 6.0%	L
Alzghari *et al.*	2013-2015	RC	DOAC (n=48, rivaroxaban: 44 and apixaban: 4) *vs.* Enoxaparin (n=23)	N/A	DOAC: 204 d (range: 63-708); Enoxaparin: 136 d (range: 2-590)	6 mo	2.1% *vs.* 13.0%	0% *vs.* 4.3%	6.2% *vs.* 4.2%	N/A	M
Chaudhury *et al.*	2010-2015	RC	Rivaroxaban (n=107) *vs.* Dalteparin (n=179)	N/A	N/A	6 mo	4.9% *vs.* 11.1%	5.0% *vs.* 3.1%	2.8% *vs.* 1.1%	9.3% *vs.* 4.5%	M
Signorelli *et al.*	2013-2015	RC	Rivaroxaban (n=18) *vs.* Enoxaparin (n=26)	N/A	N/A	6 mo	0% *vs.* 0%	0% *vs.* 0%	17.0% *vs.* 8.0%	N/A	M
Nicklaus *et al.*	2012-2015	RC	Rivaroxaban (n=45) *vs.* Enoxaparin (n=45)	N/A	Rivaroxaban: 169 d; Enoxaparin: 110 d	N/A	9.0% *vs.* 13.0%	9.0% *vs.* 4.0%	N/A	N/A	M
Simmons *et al.*	2013-2017	RC	Rivaroxaban (n=98) *vs.* Enoxaparin (n=168)	N/A	N/A	12 mo	1.0% *vs.* 4.2%	N/A	5.1% *vs.* 3.6%	6.1% *vs.* 0.6%	M
Xiang *et al.*	2013-2016	RC	DOAC(n=71, Rivaroxaban:32, Dabigatran:17 and Apixaban:22) *vs.* Enoxaparin (n=77)	N/A	N/A	N/A	5.6% *vs.* 11.7%	1.4% *vs.* 2.6%	2.8% *vs.* 3.9%	8.5% *vs.* 6.5%	M
Streiff *et al.*	2007-2015	RC	Rivaroxaban (n=685) *vs.* LMWH (n=682)	N/A	Rivaroxaban:1 mo; LMWH: 3 mo	6 mo	13.1% *vs.* 17.6%	N/A	6.7% *vs.* 4.1%	N/A	M
Phelps *et al.*	2010-2016	RC	DOAC (n=190) *vs.* LMWH (n=290)	N/A	DOAC: 153 d ; LMWH: 160 d	6 mo	6.3% *vs.* 7.2%	N/A	17.9% *vs.* 26.2%	N/A	H
Uppuluri *et al.*	2010-2015	RC	DOAC (n=11) *vs.* LMWH (n=86)	N/A	N/A	N/A	9.1% *vs.* 9.3%	0% *vs.* 5.8%	0% *vs.* 5.8%	9.1% *vs.* 4.7%	M
Pritchard *et al.*	2012-2015	RC	DOAC (n=80) *vs.* LMWH (n=95)	N/A	N/A	N/A	18% *vs.* 12%	N/A	15% *vs.* 17%	14% *vs.* 7%	M
Lee *et al.*	2012-2016	RC	Rivaroxaban (n=78) *vs.* LMWH (n=203)	Rivaroxaban: 15 mg, bid, for 21 d→20 mg, qd Dalteparin: 200 IU/kg/d, qd; Enoxaparin: 1 mg/kg, bid; Nadroparin 85.5 IU/kg, bid	N/A	12 mo	3.8% *vs.* 3.9%	N/A	5.1% *vs.* 8.9%	15.3% *vs.* 24.4%	M
Lee *et al.*	2012-2016	RC	Rivaroxaban (n=131) *vs.* Dalteparin (n=73)	Rivaroxaban: 15 mg, bid, for 21 d→20 mg, qd Dalteparin: 200 IU/kg/d, qd for 1 mo→150 IU/kg/d, qd	N/A	N/A	5.3% *vs.* 2.7%	N/A	6.1% *vs.* 2.7%	17.6% *vs.* 11.0%	M
Ross *et al.*	2014-2015	RC	Rivaroxaban (n=30) *vs.* Enoxaparin (n=123)	Rivaroxaban: 15 mg, bid, for 21 d→20 mg, qd Enoxaparin: 1 mg/kg, bid;	N/A	11.6 mo	3.3% *vs.* 6.7%	N/A	13% *vs.* 11%	7.3% *vs.* 6.7%	M
Wysokinski *et al.*	2013-2018	RC	DOAC(n=387, Rivaroxaban:163 and Apixaban:224) *vs.* Enoxaparin (n=363)	N/A	N/A	6 mo	Rivaroxaban (or Apixaban) *vs.* Enoxaparin: 3.7% (6.5%) *vs.* 4.3%	N/A	Rivaroxaban (or Apixaban) *vs.* Enoxaparin: 6.6% (5.8%) *vs.* 6.5%	Rivaroxaban (or Apixaban) *vs.* Enoxaparin: 8.8% (0.6%) *vs.* 2.2%	M

RCT, randomized controlled trial; RC, retrospective cohort study; DOAC, direct oral anticoagulants; LMWH, low-molecular-weight heparin; IQR, interquartile range; mo, moths; VTE, venous thromboembolism; PE, pulmonary embolism; CRNMB, clinically relevant non-major bleeding. M, moderate risk; L, low risk; H, high risk.

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TableS2 Quality assessment of non-randomized using risk of bias in nonrandomized studies of interventions (ROBINS-I).

Study	Bias due to confounding	Bias in selection of participants into the study	Bias in classification of intervention	Bias due to deviations from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in selection of the reported result	Overall
Alzghari *et al.*	M	L	M	L	M	M	L	M
Chaudhury *et al.*	L	L	M	L	L	M	L	M
Signorelli *et al.*	L	L	M	L	M	M	L	M
Nicklaus *et al.*	M	L	M	L	M	M	M	M
Simmons *et al.*	L	M	M	L	L	M	L	M
Xiang *et al.*	L	L	M	L	M	M	M	M
Streiff *et al.*	L	L	L	L	L	M	L	M
Phelps *et al.*	L	L	M	L	M	M	M	M
Uppuluri *et al.*	H	L	M	H	L	M	M	H
Pritchard *et al.*	L	L	M	M	L	M	M	M
Lee *et al.*	L	L	L	M	L	M	L	M
Lee *et al.*	L	L	L	L	L	M	L	M
Ross *et al.*	M	L	L	L	L	M	M	M
Wysokinski *et al.*	L	M	L	L	L	M	L	M

M, moderate risk; L, low risk; H, high risk.

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