

Online Resource 1 — Supplementary material

Renal Vascular Complications Requiring Embolization After Partial Nephrectomy: A Systematic Review and Exploratory Meta-analysis

Abdominal Radiology. Blinded review copy; identifying author details are withheld for double-anonymous review. Add the journal-required author header only to the post-review publication version.

Search record

The sensitive literature search yielded 506 records from the combined databases of PubMed, CINAHL and Google Scholar on September 22, 2026.

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(
  "Nephrectomy, Partial"[Mesh]
  OR "partial nephrectom*" [Title/Abstract]
  OR "partial renal resection*" [Title/Abstract]
  OR "nephron-sparing surg*" [Title/Abstract]
  OR "nephron sparing surg*" [Title/Abstract]
  OR "robotic partial nephrectom*" [Title/Abstract]
  OR "robot-assisted partial nephrectom*" [Title/Abstract]
  OR "robot assisted partial nephrectom*" [Title/Abstract]
  OR "laparoscopic partial nephrectom*" [Title/Abstract]
  OR "open partial nephrectom*" [Title/Abstract]
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AND
(
  emboliz* [Title/Abstract]
  OR embolis* [Title/Abstract]
  OR angioemboliz* [Title/Abstract]
  OR angioembolis* [Title/Abstract]
  OR "transarterial embolization" [Title/Abstract]
  OR "transarterial embolisation" [Title/Abstract]
  OR "transcatheter arterial embolization" [Title/Abstract]
  OR "transcatheter arterial embolisation" [Title/Abstract]
  OR "selective arterial embolization" [Title/Abstract]
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  OR "Embolization, Therapeutic" [Mesh]
  OR pseudoaneurysm* [Title/Abstract]
  OR "pseudo-aneurysm*" [Title/Abstract]
  OR "false aneurysm*" [Title/Abstract]
  OR "arteriovenous fistula*" [Title/Abstract]
  OR "arterio-venous fistula*" [Title/Abstract]
)
NOT
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  animals [Mesh] NOT humans [Mesh]
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Table S1 Included studies and incidence counts

Study / main reference	Country; approach	TAE / denominator	Access
Seveso 2005 [12]	Italy; Open	2/159 patients	Abstract only
Singh D. 2005 [13]	USA; Laparoscopic	6/345 patients	Abstract only

Study / main reference	Country; approach	TAE / denominator	Access
Taneja 2008 [14]	Singapore; Source approach distribution NR	4/96 patients	Full text
Joniau 2009 [15]	Belgium; Mixed/unspecified	2/67 patients	Abstract only
Shapiro 2009 [16]	USA; Laparoscopic	6/259 patients	Abstract only
Netsch 2010 [17]	Germany; Mixed: open/laparoscopic	6/329 patients	Abstract only
Ghoneim 2011 [18]	USA; Mixed: open/laparoscopic	15/1461 patients	Abstract only
Montag 2011 [19]	USA; Laparoscopic	13/640 patients	Abstract only
Touma 2012 [20]	Canada; Laparoscopic intent;hand-assisted/open conversions	2/147 patients	Full text
Alyami 2013 [21]	Canada; Laparoscopic intent;4open conversions	4/51 patients	Full text
Jung 2014 [1]	South Korea/USA; Mixed: robotic/laparoscopic/open	12/300 patients	Full text
Suriano 2014 [22]	Italy; Laparoscopic	1/42 patients	Abstract only
Volpe 2014 [23]	Belgium; Robotic	2/44 patients	Abstract only
Bahler 2015 [24]	USA; Robotic	1/45 patients	Abstract only
Kriegmair 2015 [25]	Germany; Open	12/233 patients	Full text
Larson 2015 [26]	USA; Robotic	16/1532 patients	Full text
Jeon 2016 [4]	South Korea; Mixed: robotic/open	29/775 patients	Full text
Kallingal 2016 [27]	USA; Robotic	1/15 patients	Full text
Leavitt 2016 [28]	USA; Laparoscopic	1/17 patients	Abstract only
Strobl 2016 [29]	Germany; Mixed/unspecified	39/1425 patients	Abstract only
Mari 2017 [30]	Italy; Mixed: robotic/laparoscopic/open	4/925 patients	Full text
Rassweiler 2017 [31]	Germany; Laparoscopic	3/287 patients	Abstract only
Mason 2018 [32]	USA; Mixed/unspecified	2/76 patients	Abstract only
Nouhaud 2018 [33]	Australia; Robotic	1/83 patients	Abstract only
Corongiu 2019 [34]	Italy; Laparoscopic	1/15 patients	Full text
Dominique 2019 [35]	France; Mixed: robotic/open	8/194 patients	Full text
Mattevi 2019 [36]	Italy; Robotic	3/62 patients	Abstract only
Baboudjian 2020 [37]	France; Mixed: open/robotic	17/493 patients	Abstract only
Chung 2020 [38]	South Korea; Mixed: robotic/laparoscopic/open	41/2076 patients	Abstract only
Morita 2020 [3]	Japan; Mixed: robotic/laparoscopic/open	82/1166 procedures	Full text

Study / main reference	Country; approach	TAE / denominator	Access
Motoyama 2020 [39]	Japan; Robotic	2/96 patients	Abstract only
Shigeta 2020 [40]	Japan; Laparoscopic	11/113 patients	Abstract only
Lee 2021 [2]	South Korea; Mixed: laparoscopic/open	33/493 patients	Full text
Qin 2021 [41]	China; Source approach distribution NR	12/810 patients	Full text
Saoud 2021 [42]	USA; Open/minimally invasive not split	18/685 patients	Full text
Styopushkin 2021 [43]	Ukraine; Mixed: laparoscopic/open	2/175 patients	Full text
Takayama 2021 [6]	Japan; Robotic	4/100 patients	Full text
Benamran 2022 [44]	France; Robotic	1/20 patients	Abstract only
McLarty 2022 [45]	Canada; Robotic	0/17 patients	Full text
Morgan 2022 [46]	USA; Robotic	1/45 patients	Abstract only
Schulze 2022 [47]	Brazil; Robotic	2/80 patients	Full text
Forte 2023 [48]	Italy; Laparoscopic	1/27 patients	Full text
Loffroy 2023 [5]	France; Mixed/unspecified	12/298 patients	Full text
Gomella 2024 [49]	USA; Mixed/unspecified	24/1256 procedures	Abstract only
Kola 2024 [50]	USA; Robotic	8/447 patients	Abstract only
Mahmud 2024 [7]	Israel; Mixed: robotic/laparoscopic/open	17/785 patients	Full text
Mazzoleni 2024 [51]	Italy; Robotic	1/70 patients	Full text
Singh V. K. 2024 [52]	India; Laparoscopic	1/38 patients	Full text
Ye 2024 [53]	China; Robotic	0/20 patients	Full text
Huang 2025 [54]	Taiwan; Robotic	12/544 patients	Full text
Kahn 2026 [55]	USA; Robotic	21/581 patients	Abstract only
Kaufmann 2026 [56]	Switzerland; Robotic	1/61 patients	Abstract only
Li 2026 [57]	China; Robotic	4/60 patients	Full text
Matsumoto 2026 [58]	Japan; Robotic	2/73 patients	Full text

TAE, transarterial embolization; PN, partial nephrectomy. Bibliographic years follow the original manuscript, including Li 2026. Morita and Gomella use procedure denominators. All other denominators are reported patients, without patient-level deduplication across studies. Reference numbers correspond to the main manuscript.

Table S2 Selected patient, lesion and session distinctions

Report	Reported aneurysm/vascular count	TAE patients	TAE sessions	Key distinction
Matsumoto 2026, full text	Four RAP patients; three detected by ultrasound	2	NR	Two observed; additional RAP detected on angiography
Huang 2025, full text	14 RAP patients	12	12	Two managed conservatively
Takayama 2021, full text	28 RAP lesions in 23 people	4	NR	19 RAP patients not embolized
Kriegmair 2015, full text	13 RAP patients	12	NR	One managed conservatively
Mahmud 2024, full text	17 RAP patients	17	18	One repeat TAE
Loffroy 2023 referral series, full text	47 RAP lesions + nine AVFs in 25 people	25	26	Includes the 12 local incidence patients
Morita 2020, full text	139 vascular lesions; 168 embolized branches	82	83	One repeat TAE; source denominator is PN procedures
Jeon 2016, full text	40 embolized arteries	29	29	Arteries are not patient events
Motoyama 2020, abstract	Seven RAP patients	2	NR	Five did not require TAE
Ghoneim 2011, abstract	15 RAP patients	15	16	One successful repeat embolization

NR means not reported or not separately extractable, never zero. RAP, renal artery pseudoaneurysm; AVF, arteriovenous fistula. Loffroy's referral series includes the local incidence patients and must not be added again.

Counting and comparative audit notes

Morita reported 1,168 PN procedures in 1,142 people before excluding two patients aged under 18, leaving 1,166 PN procedures. Gomella reported 1,256 PN procedures in a hereditary/multifocal population. Both remain outside the main patient-denominator pool. Their source procedures may be correlated within patients. The mixed-unit sensitivity includes 526 treated patients over 20,253 reported denominator units and must not be described as 20,253 unique people [3, 49].

Alyami's completed-PN denominator is 51 after one radical conversion from 52 attempted operations; Touma's is 147 after five radical conversions from 152. Other conversions prevent labeling these as pure laparoscopic cohorts. Loffroy's local incidence is 12/298; its treatment series of 25 includes 13 external referrals and is analyzed separately for lesion and procedural outcomes. The full referral series must not be divided by 298 [5, 20, 21].

The continued-aspirin abstract contributes only the explicitly described 1/17 subgroup, not 1/430 for all LPN cases. The matched renorrhaphy abstract has 15 cases plus 30 controls, or 45 people. In the bilateral

PN cohort, 249 renal masses in 76 patients are tumors, not 249 vascular lesions or patient observations. These selected populations limit generalizability [24, 28, 32].

The audit retains overlapping companion counts for reference without treating them as new people. When a report merely says that several patients required additional embolization, the session count is recorded as a minimum, not an exact total. For example, 36 initially treated patients and two patients requiring further treatment imply at least 38 sessions, not a verified total of 38. Vascular lesion counts, patient counts and procedural counts must remain distinct in later bias discussion.

Table S3 Scope-preserving event-count audit

Seventy-four rows: 54 primary incidence cohorts, one separately scoped referral treatment cohort, and 19 companions. Do not sum these rows. The complete original fields and source locators are retained in Online Resource 2.

Study / PMID	Cohort scope	TAE patients / sessions	Counting interpretation
Li C 2025 PMID 41354777	Primary incidence cohort	4 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Matsumoto R 2026 PMID 42021064	Primary incidence cohort	2 / NR	Results and Table 2: four RAP patients, including one missed on ultrasound; two treated, two observed. Screening ultrasound alone detected only 3/4 RAP patients; imaging method changes ascertainment.
Huang YP 2025 PMID 40892219	Primary incidence cohort	12 / 12	14 RAP patients; 12 embolized and two managed conservatively; no repeat embolization reported in treatment results. Counting all 14 as TAE would inflate incidence; RAP-only endpoint may miss other vascular TAE.
Ye T 2024 PMID 39382799	Primary incidence cohort	0 / 0	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Mahmud H 2024 PMID 38833079	Primary incidence cohort	17 / 18	16 patients treated once and one twice: $16 + 2 = 18$ sessions in 17 people. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Singh VK 2024 PMID 38799379	Primary incidence cohort	1 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Mazzoleni F 2024 PMID 38633831	Primary incidence cohort	1 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.

Study / PMID	Cohort scope	TAE patients / sessions	Counting interpretation
Loffroy R 2023 PMID 37509574	Primary incidence cohort	12 / NR	Only 12 local TAE cases /298 PN inform incidence. Separate 25-patient referral series is listed below; no allocation of its lesion or repeat counts to the 12 local cases. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Forte F 2023 PMID 37440928	Primary incidence cohort	1 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Schulze L 2022 PMID 35333488	Primary incidence cohort	2 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Takayama T 2021 PMID 34733652	Primary incidence cohort	4 / NR	28 RAP lesions in 23/100 patients; four embolized (two emergency, two preventive); 23-4=19 not embolized. Routine CT, multiple lesions per person, and preventive treatment raise apparent lesion/TAE frequency; six contrast-ineligible patients excluded.
McLarty R 2022 PMID 34464251	Primary incidence cohort	0 / 0	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Styopushkin S 2021 PMID 34103423	Primary incidence cohort	2 / NR	Two TAE patients; one required repeat selective treatment then main renal artery embolization. Exact separate-session count not established. Final hemostasis does not establish selective renal preservation; do not count each embolic action as a separate patient or session.
Saoud R 2021 PMID 33834638	Primary incidence cohort	18 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Qin C 2021 PMID 33545932	Primary incidence cohort	12 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Lee CH 2021 PMID 33047920	Primary incidence cohort	33 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Morita S 2020 PMID 32936351	Primary incidence cohort	82 / 83	82 treated people; one treated twice gives 83 sessions. Table 2: 139 vascular lesions (not all RAP), 168 embolized branches, 376 coils. Source PN denominator remains 1166 procedures. Repeat source PN operations and repeat TAE introduce correlated observations. Do not label 1166 as unique patients or 139 as RAPs. Elective does not mean asymptomatic.
Corongiu E 2019 PMID 31577100	Primary incidence cohort	1 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.

Study / PMID	Cohort scope	TAE patients / sessions	Counting interpretation
Dominique I 2019 PMID 30800173	Primary incidence cohort	8 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Mari A 2017 PMID 27876194	Primary incidence cohort	4 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Jeon CH 2016 PMID 27570638	Primary incidence cohort	29 / 29	29 embolized patients, 40 treated arteries; no repeat TAE. RAP/AVF patient categories are angiographic findings, not counts of all lesions. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Kallingal GJ 2016 PMID 26977144	Primary incidence cohort	1 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Kriegmair MC 2015 PMID 26539549	Primary incidence cohort	12 / NR	13 RAP patients, 12 treated with embolization and one managed conservatively. All RAP events exceed treatment-requiring events; selected open high-complexity cohort.
Larson JA 2015 PMID 25286232	Primary incidence cohort	16 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Jung S 2014 PMID 24466392	Primary incidence cohort	12 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Alyami FA 2013 PMID 23766830	Primary incidence cohort	4 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Touma NJ 2012 PMID 23093528	Primary incidence cohort	2 / NR	NR is unreported, not zero. Patient, lesion and procedure counts are not interchangeable. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Taneja M 2008 PMID 18204772	Primary incidence cohort	4 / NR	Four treated patients: three with RAP (one also AVF); one with four foci of extravasation. Seven arterial bleeding lesions reported; failed glue followed by coils does not prove a separate session. Do not inflate patient incidence by counting multiple lesions or repeat procedures.
Loffroy R 2023 PMID 37509574	Referral treatment cohort; contains the 12 local incidence cases plus 13 external referrals	25 / 26	Table 2: 47 false aneurysms and 9 AVFs; all 25 patients had ≥ 1 RAP; 7 had both RAP and AVF. 24 treated once plus 1 twice = 26 sessions. Referral and local populations overlap. Do not add 25 to 12 or divide 25 by 298.

Study / PMID	Cohort scope	TAE patients / sessions	Counting interpretation
Lasmanovich R 2025 PMID 40100367	Overlapping full-text companion; not independently pooled	18 / NR	18 embolized: 17 vascular pathologies and one perinephric hematoma; 16 RAP patients. Hematuria-selected outcome; overlaps Mahmud 2024. Overlapping patients must not be summed with primary cohorts.
Tsai CH 2023 PMID 36727797	Overlapping full-text companion; not independently pooled	6 / NR	Six patients embolized for AVF; broader hemorrhage endpoint overlaps Huang 2025 RAP cohort. Overlapping patients must not be summed with primary cohorts.
Hoshina H 2024 PMID 39100836	Overlapping full-text companion; not independently pooled	At least 1; total including preventive TAE NR / NR	Matched groups 80+80: 19 RAP patients (1 vs18); one grade IIIa TAE event. Do not interpret grade IIIa count as complete preventive TAE count; overlaps Takayama. Overlapping patients must not be summed with primary cohorts.
Fujisaki A 2020 PMID 33457241	Overlapping full-text companion; not independently pooled	1 / NR	One RAP treated with TAE; same Jichi center and overlapping recruitment as Takayama. Overlapping patients must not be summed with primary cohorts.
Tachibana H 2018 PMID 29244272	Overlapping full-text companion; not independently pooled	6 / NR	Matched groups 43+43: six RAP cases; all asymptomatic and embolized. Overlaps Morita source cohort. Overlapping patients must not be summed with primary cohorts.
Kaufmann E 2026 PMID 42044117	Primary incidence cohort; abstract only	1 / NR	Single-port cohort: 31 transperitoneal and 30 retroperitoneal; one embolization in TP group. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Kahn AE 2026 PMID 40491414	Primary incidence cohort; abstract only	21 / NR	Consecutive single-surgeon cohort; 21 symptomatic RAPs explicitly treated with IR embolization. Overlapping 563-case suture report not pooled. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Kola O 2024 PMID 39470887	Primary incidence cohort; abstract only	8 / NR	Four RAP-only, one AVF-only, four both = nine VC patients. Eight RAP patients and five AVF patients overlap; do not add them to get 13 patients. Eight TAE; subtype of untreated patient unclear. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.

Study / PMID	Cohort scope	TAE patients / sessions	Counting interpretation
Gomella PT 2024 PMID 38614921	Primary incidence cohort; abstract only	24 / NR	Source denominator is PN operations in a hereditary/multifocal setting; cannot assume 1256 unique people. All 24 vascular cases received superselective embolization. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Benamran D 2022 PMID 35398464	Primary incidence cohort; abstract only	1 / NR	Selected same-day-discharge cohort: cT1a, RENAL<6, Charlson<5; one readmission for active bleeding treated by embolization. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Morgan TN 2022 PMID 34537195	Primary incidence cohort; abstract only	1 / NR	Selected pT3a tumors with venous involvement; 30-day embolization explicitly 1/45. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Baboudjian M 2020 PMID 32283170	Primary incidence cohort; abstract only	17 / NR	17 embolization cases in consecutive source cohort; matched 34 controls are not incidence denominator. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Shigeta K 2020 PMID 31629637	Primary incidence cohort; abstract only	11 / NR	All 11 TAE patients in conventional-suture arm ⁸¹ ; TachoSil ³² had no imaging PA. Printed 11% does not equal 11/113; exact counts retained. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Chung DY 2020 PMID 31346763	Primary incidence cohort; abstract only	41 / NR	Use full source ²⁰⁷⁶ , not matched ⁷⁶ . Same-center Shin ²⁰¹⁹ report excluded as overlapping. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.

Study / PMID	Cohort scope	TAE patients / sessions	Counting interpretation
Motoyama D 2020 PMID 30712250	Primary incidence cohort; abstract only	2 / NR	Use 96 entire cohort; matched 45+45 is not source denominator. Seven RAP patients in conventional-clamp group; only two needed TAE. Percentage 13.3% does not describe 96 denominator. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Nouhaud FX 2018 PMID 30370984	Primary incidence cohort; abstract only	1 / NR	All consecutive cohort; one DUS-detected asymptomatic RAP embolized; no symptomatic hemorrhagic complications. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Mattevi D 2019 PMID 30094595	Primary incidence cohort; abstract only	3 / NR	42 standard and 20 NIRF-intended cases; three acute hemorrhages embolized in standard group. Five selective-clamp conversions stay in original 20 group. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Mason RJ 2018 PMID 29603885	Primary incidence cohort; abstract only	2 / NR	76 bilateral-PN patients with 249 masses; do not use 249 masses or double 76 as patient denominator. Cryoablation 13 excluded. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Rassweiler JJ 2017 PMID 27514504	Primary incidence cohort; abstract only	3 / NR	Three AVF patients successfully embolized. Two hand-assisted conversions retained in intended laparoscopic approach; sensitivity concern. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.

Study / PMID	Cohort scope	TAE patients / sessions	Counting interpretation
Strobl FF 2016 PMID 26756934	Primary incidence cohort; abstract only	39 / NR	39 PA/AVF cases all microcoil-embolized. Printed clinical-success 35/39 (89.7%) is arithmetically inconsistent: 35/39=89.7%; use counts, flag uncertainty. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Leavitt DA 2016 PMID 26521717	Primary incidence cohort; abstract only	1 / NR	Only continued-aspirin subgroup 17 has explicitly extractable TAE count. Do not divide 1 by 430 all LPN or 101 aspirin-users. Very selected subgroup. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Bahler CD 2015 PMID 25616087	Primary incidence cohort; abstract only	1 / NR	15 no-cortical-renalorrhaphy cases matched 1:2 to 30 controls: total 45, not 60. One control RAP required embolization. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Suriano F 2014 PMID 24721944	Primary incidence cohort; abstract only	1 / NR	Four tumor-bed bleeds: two transfused, one embolized, one nephrectomy. Possible residual overlap with Italian registry cannot be resolved from abstract. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Volpe A 2014 PMID 24673750	Primary incidence cohort; abstract only	2 / NR	High-complexity PADUA ≥ 10 cohort; two postoperative bleeds required percutaneous embolization. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Ghoneim TP 2011 PMID 21496835	Primary incidence cohort; abstract only	15 / 16	15 patients received initial coil embolization; one received repeat thrombin embolization = 16 sessions. One different patient required nephrectomy for persistent bleeding/coagulopathy. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.

Study / PMID	Cohort scope	TAE patients / sessions	Counting interpretation
Montag S 2011 PMID 20831568	Primary incidence cohort; abstract only	13 / NR	Endpoint restricted to delayed hemorrhage ≥ 7 days; not all perioperative TAE. Off-clamp 68 cases are a subset. Hyams multicenter and Richstone hilar series not pooled due to potential overlap. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Netsch C 2010 PMID 20563584	Primary incidence cohort; abstract only	6 / NR	Six symptomatic RAPs all embolized; source 289 open + 40 lap; event approach not separable. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Shapiro EY 2009 PMID 19647302	Primary incidence cohort; abstract only	6 / NR	Six RAPs all selectively embolized; one incidental. Laparoscopic cases are separate from later robotic cohorts. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Joniau S 2009 PMID 19040528	Primary incidence cohort; abstract only	2 / NR	T1bRCC cohort; two patients required postoperative embolization; operative approach not explicit in abstract. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Seveso M 2005 PMID 16444934	Primary incidence cohort; abstract only	2 / NR	Two delayed AVFs treated by percutaneous sclero-embolization. Two other early bleeds treated surgically, not added to TAE. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.
Singh D 2005 PMID 16280793	Primary incidence cohort; abstract only	6 / NR	Six postoperative RAPs all successfully embolized; precedes Larson robotic 2007–2013 cohort. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified. Abstract-only: detailed counts and eligibility could change after full-text verification. Missing lesion/session counts are not zero.

Study / PMID	Cohort scope	TAE patients / sessions	Counting interpretation
Geldmaker LE 2023 PMID 37673406	Overlapping abstract companion; not independently pooled	NR / NR	21 symptomatic RAPs; treatment not explicitly stated in this abstract; larger Kahn report supplies 21 TAE. Overlapping Mayo Florida 563-case report with 21 symptomatic RAPs; retain Kahn 581-case embolization report.
Walach MT 2019 PMID 30421098	Overlapping abstract companion; not independently pooled	40 / NR	All 40 symptomatic RAPs treated with TAE; overlapping full-text Mannheim cohort retained. Mannheim 1047 PN/40 TAE (2005–2016) overlaps retrieved Kriegmair 233 PN (2013–2015); prioritize full-text-verified cohort.
Shin J 2019 PMID 30395840	Overlapping abstract companion; not independently pooled	36 / At least 38; exact NR	36 initially embolized patients; two needed additional embolization. At least 38 sessions, but exact repeats-per-patient not explicit; primary clinical success 34/36. Yonsei 1187 PN/36 TAE overlaps Chung 2076 PN; retain larger source cohort. Secondary treatment details retained in count audit.
Chavali JSS 2019 PMID 30300074	Overlapping abstract companion; not independently pooled	20 / NR	20 RAP patients received coil embolization; technical 100%, clinical 95%; repeat count NR. Cleveland 1417 PN/20 TAE (2011–2016) potentially overlaps Larson five-center robotic 2007–2013 cohort; not independently pooled.
Yang CM 2014 PMID 25441770	Overlapping abstract companion; not independently pooled	4 / NR	85 lap + 93 robot; seven delayed bleeds but only four embolized. Taipei 178 minimally invasive PN/4 TAE through 2012 potentially overlaps Huang 544 RAPN 2009–2021; cannot separate overlapping robotic cases.
Gahan JC 2013 PMID 24199730	Overlapping abstract companion; not independently pooled	28 / At least 32; exact NR	28 initial patients; four needed additional AE. At least 32 sessions; exact repeats-per-patient not explicit. Chicago 849 PN/28 TAE (2002–2012) overlaps retained Saoud 2002–2018 cohort; outcome/exclusion differences prevent adding counts.
Tanagho YS 2013 PMID 23452807	Overlapping abstract companion; not independently pooled	10 / NR	Ten embolized patients; no session total. Five-center 886 RAPN/10 TAE explicitly precedes expanded Larson 1532 cohort; do not double count.
Kaouk JH 2011 PMID 22001098	Overlapping abstract companion; not independently pooled	2 / NR	252 robotic PN procedures; two patients required TAE; unique PN patient denominator not explicit. 252 robotic PN/2 TAE same institutional contribution/period as Larson multicenter expansion; do not double count.
Hyams ES 2011 PMID 21813164	Overlapping abstract companion; not independently pooled	16 / NR	20 vascular lesion patients: 17 RAP + 3 AVF; 16 embolized, 2 observed, 2 negative angiograms. Untreated RAP-specific count not separable. 998 MIPN/16 TAE multicenter series includes centers represented in Larson and Montag cohorts; exact overlap cannot be separated.

Study / PMID	Cohort scope	TAE patients / sessions	Counting interpretation
Marley CS 2011 PMID 21497840	Overlapping abstract companion; not independently pooled	1 / NR	One postoperative AVF embolized; overlaps largerMSKcohort. MSK31LPN/1TAE(2007–2009) overlaps Ghoneim1461PN(2003–2010).
Khoder WY 2011 PMID 21380537	Overlapping abstract companion; not independently pooled	1 / NR	One AVF embolized among13laserPNcases; overlapsLMUcohort. LMUMunich13laserPN/1TAE overlaps Strobl1425PN2003–2013.
Richstone L 2008 PMID 18242361	Overlapping abstract companion; not independently pooled	1 / NR	Oneembolized patientamong18hilarLPNcases; sourceoverlap. NorthShore18hilarLPN/1TAE overlaps Montag640LPN sourcecohort.
Morita S 2015 PMID 25881511	Overlapping abstract companion; not independently pooled	At least26; all-treatmenttotal NR / NR	26preventiveTAEpatients in312CT-screenedgroup; delayedbleedingandcomparison-groupTAE totalsnotexplicit. TokyoWomen312CT-screenedPN/26preventiveTAE plus comparison groups overlap retained Morita; noindependentpool.
Takagi T 2014 PMID 24712736	Overlapping abstract companion; not independently pooled	12 / NR	17RAPpatients; onebleedingTAE plus11preventiveTAE; five observed. TokyoWomen117PN/12TAE(2012) overlaps retained Morita;17RAPpatients include5observed.

Table S4 Adapted appraisal rationales

Duplicate independent reviewer assessment was performed.

Study / main reference	D1–D6 ratings	Rationale
Li C 2025 [57]	H / U / L / U / H / NA	Selected complex tumors; several prose/table discrepancies; broad sampling and delayed-event completeness unclear.
Matsumoto R 2026 [58]	U / L / U / L / U / NA	Systematic ultrasound cohort; two treated events identifiable; generalizability limited to one center.
Huang YP 2025 [54]	U / L / H / U / L / NA	RAP-specific endpoint may miss TAE for other vascular lesions; overlaps earlier same-center AVF cohort.
Ye T 2024 [53]	H / L / L / L / U / NA	Small prospective selected balloon-occlusion cohort; explicit zero embolizations; 12-month follow-up.
Mahmud H 2024 [7]	U / L / L / U / L / H	Complete approach denominators and events; approach allocation nonrandom and strongly susceptible to case-mix/era confounding.
Singh VK 2024 [52]	H / L / L / U / U / NA	Selected trial control arm; conventional arm retained; trial randomization does not randomize surgical approach.
Mazzoleni F 2024 [51]	H / U / L / U / U / NA	Selected eligible control arm; symptoms and long-term complication capture not fully specified.

Study / main reference	D1–D6 ratings	Rationale
Loffroy R 2023 [5]	U / U / L / U / L / NA	Local incidence subset separated from outside referrals; secondary outcomes cannot be assigned to local12.
Forte F 2023 [48]	H / U / L / U / U / NA	Small selected technique comparison; embolization explicit; completeness of delayed-event capture unclear.
Schulze L 2022 [47]	H / L / L / U / L / NA	Early small technique series; two treated RAPs; limited information on completeness of later-event ascertainment.
Takayama T 2021 [6]	U / H / L / L / U / NA	Contrast-ineligible patients excluded; routine imaging enriches detection; follow-up systematic in included cohort.
McLarty R 2022 [45]	H / L / L / L / U / NA	Small selected PEG-patch cohort; complete90-day outcome capture; limited precision/generalizability.
Styopushkin S 2021 [43]	U / L / L / U / L / H	Source and treatment table clear; two treated of six bleeds; nonrandom approach allocation and variable follow-up.
Saoud R 2021 [42]	U / H / L / U / L / H	Selected exclusions; matched controls cannot provide approach-specific incidence denominators; full685 used.
Qin C 2021 [41]	U / L / L / U / H / NA	810PN source stated; approach denominator unclear and secondary description inconsistently refers to10 vs12patients.
Lee CH 2021 [2]	U / H / L / L / L / H	19of512excluded; complete-case bias possible; outcomes followed12months; approach comparisons unadjusted.
Morita S 2020 [3]	U / L / L / L / L / NA	Routine screening policy affects event definition; denominator is procedures, not unique patients; not primary patient pool.
Corongiu E 2019 [34]	H / L / L / U / L / NA	Selected low-complexity posterior tumors; small technical cohort; follow-up completeness unclear.
Dominique I 2019 [35]	U / L / L / L / L / NA	Prospective collection and30-day definition; short window misses some later events; not all underwent screeningDoppler.
Mari A 2017 [30]	H / H / L / L / L / NA	Patients with intraoperative complications excluded before analysis; likely downward selection of surgical risk.
Jeon CH 2016 [4]	U / L / L / L / L / H	Explicit PN source and treated events; median20-day postTAE follow-up limits late safety conclusions; approach nonrandom.
Kallingal GJ 2016 [27]	H / L / L / U / U / NA	15early Xi cases; explicit single treated event; short surgical-series follow-up.
Kriegmair MC 2015 [25]	H / L / L / L / L / NA	Open surgery selected for high-complexity masses; RN conversions excluded; events counted through42days.
Larson JA 2015 [26]	U / U / L / U / H / NA	Discordant cohort totals1532vs1541 and combined angioembolization/pseudoaneurysm label; sensitivity exclusion.
Jung S 2014 [1]	U / L / L / L / L / H	Treatment-level table separates exploration from12TAEs; approach nonrandom; recruitment end-date discrepant.
Alyami FA 2013 [21]	H / L / L / L / L / NA	Selected tumors>4cm;51completedPN derived after RNconversion; open conversions prevent pureLPN attribution.
Touma NJ 2012 [20]	U / L / L / L / L / NA	147completedPN derived after5RNconversions; mixed final techniques; minor complications under-recorded.
Taneja M 2008 [14]	U / L / L / L / L / NA	96sourcepatients explicit, but source approach mix not clear; treated-patient outcomes available through90days.

Study / main reference	D1–D6 ratings	Rationale
Kaufmann E 2026 [56]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Single-port cohort: 31 transperitoneal and 30 retroperitoneal; one embolization in TP group. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Kahn AE 2026 [55]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Consecutive single-surgeon cohort; 21 symptomatic RAPs explicitly treated with IR embolization. Overlapping 563-case suture report not pooled. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Kola O 2024 [50]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Nine vascular complication patients: four RAP-only, one AVF-only, four both. Eight embolized; which lesion subtype was untreated is not explicit. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Gomella PT 2024 [49]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Source denominator is PN operations in a hereditary/multifocal setting; cannot assume 1256 unique people. All 24 vascular cases received superselective embolization. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Benamran D 2022 [44]	H / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Selected same-day-discharge cohort: cT1a, RENAL<6, Charlson<5; one readmission for active bleeding treated by embolization. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Morgan TN 2022 [46]	H / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Selected pT3a tumors with venous involvement; 30-day embolization explicitly 1/45. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.

Study / main reference	D1–D6 ratings	Rationale
Baboudjian M 2020 [37]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. 17 embolization cases in consecutive source cohort; matched 34 controls are not incidence denominator. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Shigeta K 2020 [40]	U / U / L / U / H / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. All 11 TAE patients in conventional-suture arm 81; TachoSil 32 had no imaging PA. Printed 11% does not equal 11/113; exact counts retained. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Chung DY 2020 [38]	U / U / L / U / U / H	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Use full source 2076, not matched 76. Same-center Shin 2019 report excluded as overlapping. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Motoyama D 2020 [39]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Use 96 entire cohort; matched 45+45 is not source denominator. Seven RAP patients in conventional-clamp group; only two needed TAE. Percentage 13.3% does not describe 96 denominator. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Nouhaud FX 2018 [33]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. All consecutive cohort; one DUS-detected asymptomatic RAP embolized; no symptomatic hemorrhagic complications. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Mattevi D 2019 [36]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. 42 standard and 20 NIRF-intended cases; three acute hemorrhages embolized in standard group. Five selective-clamp conversions stay in original 20 group. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.

Study / main reference	D1–D6 ratings	Rationale
Mason RJ 2018 [32]	H / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. 76 bilateral-PN patients with 249 masses; do not use 249 masses or double 76 as patient denominator. Cryoablation 13 excluded. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Rassweiler JJ 2017 [31]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Three AVF patients successfully embolized. Two hand-assisted conversions retained in intended laparoscopic approach; sensitivity concern. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Strobl FF 2016 [29]	U / U / L / U / H / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. 39 PA/AVF cases all microcoil-embolized. Printed clinical-success 35/39 (89.7%) is arithmetically inconsistent: 35/39=89.7%; use counts, flag uncertainty. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Leavitt DA 2016 [28]	H / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Only continued-aspirin subgroup 17 has explicitly extractable TAE count. Do not divide by 430 all LPN or 101 aspirin-users. Very selected subgroup. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Bahler CD 2015 [24]	H / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. 15 no-cortical-renalorrhaphy cases matched 1:2 to 30 controls: total 45, not 60. One control RAP required embolization. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Suriano F 2014 [22]	H / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Four tumor-bed bleeds: two transfused, one embolized, one nephrectomy. Possible residual overlap with Italian registry cannot be resolved from abstract. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.

Study / main reference	D1–D6 ratings	Rationale
Volpe A 2014 [23]	H / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. High-complexity PADUA $\geq$ 10 cohort; two postoperative bleeds required percutaneous embolization. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Ghoneim TP 2011 [18]	U / U / L / U / U / H	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Seven TAE/1160 open plus 8/301 lap. One repeat embolization; one salvage nephrectomy for coagulopathy/persistent bleeding. Marley 31-case perfusion cohort overlaps and is not pooled. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Montag S 2011 [19]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Endpoint restricted to delayed hemorrhage $\geq$ 7 days; not all perioperative TAE. Off-clamp 68 cases are a subset. Hyams multicenter and Richstone hilar series not pooled due to potential overlap. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Netsch C 2010 [17]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Six symptomatic RAPs all embolized; source 289 open + 40 lap; event approach not separable. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Shapiro EY 2009 [16]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Six RAPs all selectively embolized; one incidental. Laparoscopic cases are separate from later robotic cohorts. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Joniau S 2009 [15]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. T1b RCC cohort; two patients required postoperative embolization; operative approach not explicit in abstract. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.

Study / main reference	D1–D6 ratings	Rationale
Seveso M 2005 [12]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Two delayed AVFs treated by percutaneous sclero-embolization. Two other early bleeds treated surgically, not added to TAE. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.
Singh D 2005 [13]	U / U / L / U / U / NA	Abstract only; source denominator and TAE count are extractable; sampling, detailed cohort exclusions, delayed-event capture and full numerical consistency cannot be fully appraised. Approach allocation is nonrandom where compared. Six postoperative RAPs all successfully embolized; precedes Larson robotic 2007–2013 cohort. Full text unavailable; abstract-level eligibility/extraction. Adult setting supported by demographics/indexing or inferred from renal-tumor setting where age range absent; detailed exclusions and follow-up completeness unverified.

D1 sampling/generalizability; D2 cohort coverage; D3 outcome specificity; D4 delayed-event capture; D5 numerical consistency; D6 approach confounding. L lower concern; H higher concern; U unclear; NA not assessed/no direct comparison. No overall score.

Table S5 Reports pursued but not independently included

Recorded retrieval-stage exclusions and companions are listed below using report identifiers rather than adding new main references. Abstract-based exclusions concern available information, not unseen full texts.

PMID / report	Access / decision	Recorded reason
42294319 Clinical efficacy of membrane anatomy-based 3D laparoscopic partial nephrectomy in a single stage for the treatment of ruptured renal angiomyolipoma.	Retrieved; Excluded	Preoperative embolization; postoperative TAE outcome not established
42260455 Preoperative superselective transarterial ICG-lipiodol embolization for endophytic renal tumors in robot-assisted partial nephrectomy: a preliminary feasibility report.	Retrieved; Excluded	Preoperative ICG embolization focus; eligible standard arm postoperative TAE count not reported
42037887 Rising Trends and Safety of Outpatient Robotic Partial Nephrectomy: A Propensity-Matched National Analysis.	Retrieved; Excluded	No separable postoperative renal arterial embolization outcome (NSQIP complication analysis)
40903319 Evaluation of intraoperative blood pressure and intrinsic tumor features as predictors of pseudoaneurysm formation after partial nephrectomy: A case-control study.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.

PMID / report	Access / decision	Recorded reason
40685419 Research on the spectrum of complications in robotic surgery for obese urologic patients: a 6-year retrospective study.	Retrieved; Excluded	Delayed bleeding reported without its treatment; postoperative TAE count not extractable
40542967 Robotic partial nephrectomy to treat large (T2) cystic renal cell carcinoma: a multi-institutional analysis (ROSULA Collaborative Group).	Unsuccessful; Excluded	TAE/embolism wording and attribution to cystic subgroup versus overall cohort and RNconversion unclear; exact eligible numerator/denominator not established.
40513023 Arterial Embolization versus Robotic Partial Nephrectomy for the Treatment of Renal Angiomyolipomas.	Retrieved; Excluded	Primary AML treatment comparison; postoperative vascular TAE count not extractable
40481379 Percutaneous cryoablation versus robot-assisted partial nephrectomy for small renal cell carcinoma: a retrospective cost analysis at Japanese single-institution.	Retrieved; Excluded	TAE before cryoablation; PN hemorrhage treatment not specified
40100367 Early angiography improves postoperative clinical outcomes compared to delayed angiography among patients with vascular pathologies following partial nephrectomy.	Retrieved; Companion report	Overlapping Sheba cohort; use PMID38833079 for approach-specific incidence; companion hematuria analysis only
39826753 Overview of three decades of management patterns of renal angiomyolipomas.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
39342001 Primary robot-assisted laparoscopic partial nephrectomy for hemorrhage secondary to angiomyolipoma: a retrospective study from a large tertiary hospital in China.	Retrieved; Excluded	No explicit postoperative TAE count; includes one 14-year-old (adult subset otherwise identifiable)
39329887 Comparison of Superselective Renal Artery Embolization versus Retroperitoneal Laparoscopic Partial Nephrectomy in Ruptured Hemorrhagic Renal Angiomyolipoma: A Single-Center Study.	Retrieved; Excluded	Primary AML treatment comparison; no explicit postoperative TAE count
39253898 Comparison of renal function between the artery and vein clamp and artery-only clamp in robot-assisted partial nephrectomy for moderate- to high-complexity renal masses: A propensity-matched study.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
39100836 Effectiveness of soft coagulation in robot-assisted partial nephrectomy in preventing pseudoaneurysms and its influence on renal function based on propensity score-matched analysis.	Retrieved; Companion report	Overlapping Jichi cohort; matched subset and restricted major-event definition; use PMID34733652
38709235 Evolving horizons in renal angiomyolipoma: two decades of management strategies and clinical perspectives in a single institutional study.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.

PMID / report	Access / decision	Recorded reason
38642461 Preoperative aspirin and anticoagulants do not affect partial nephrectomy bleeding.	Retrieved; Excluded	Bleeding procedures and pseudoaneurysms reported without separable TAE counts (full text retrieved via web journal PDF)
38329585 Risk of pseudoaneurysm and bleeding complications after partial nephrectomy: comparison of tumor enucleation to standard margin technique.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
37675217 Clinical application of superselective transarterial embolization of renal tumors in zero ischaemia robotic-assisted laparoscopic partial nephrectomy.	Retrieved; Excluded	Preoperative embolization comparison; postoperative TAE numerator not explicitly reported in eligible control arms
37673406 Impact of Inner Layer Renorrhaphy Suture on Renal Artery Pseudoaneurysm Formation Following Robotic-assisted Partial Nephrectomy.	Unsuccessful; Companion report	Overlapping Mayo Florida563-case report with21symptomatic RAPs; retain Kahn581-case embolization report.
37607303 Renal function assessment after embolization of vascular complications following partial nephrectomy.	Unsuccessful; Excluded	No usable abstract; full text not retrieved.
37485569 Comparisons of the Safety and Effectiveness of Robot-Assisted <i>vs</i> Laparoscopic Partial Nephrectomy for Central Renal Angiomyolipomas: A Propensity Score-Matched Analysis Study.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
37139623 Renal Angiomyolipoma: A Diagnostic and Therapeutic Challenge.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
36746763 Doppler ultrasonography as a screening test for the detection of asymptomatic renal artery pseudoaneurysms following partial nephrectomy: A 15-year single-institution experience.	Unsuccessful; Excluded	No usable abstract; full text not retrieved.
36727797 Risk factors for hemorrhagic complications following robotic-assisted partial nephrectomy.	Retrieved; Companion report	Overlapping Taipei Veterans cohort; alternative to PMID40892219, not added independently
36414115 Iatrogenic Renal Artery Injury in 90 Cases: Arteriographic Findings and Outcomes after Embolization for Bleeding.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
35337767 Off-clamp laparoscopic partial nephrectomy in a hybrid room after tumor embolization versus conventional partial nephrectomy: A propensity score matched pair analysis.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
35260969 Robotic-assisted partial nephrectomy: single-layer cortical renorrhaphy is associated with reduced rate of renal artery pseudoaneurysm compared to double-layer renorrhaphy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.

PMID / report	Access / decision	Recorded reason
34190202 The efficacy evaluation of partial nephrectomy with selective renal artery branch occlusion by laparoscopy.	Retrieved; Excluded	No explicit postoperative TAE outcome; intraoperative branch occlusion is not TAE
33979804 Varying Outcomes among Patients with Large Angiomyolipomas according to the Treatment Method.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
33930459 Use of Pre-operative Pharmacologic Venous Thromboembolism Prophylaxis for Robotic Partial Nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
33476964 iRESCUE - Interventional embolization of Renal arteries after Surgical or traumatic injury with hemorrhage.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
33457241 Utilization of a three-dimensional printed kidney model for favorable TRIFECTA achievement in early experience of robot-assisted partial nephrectomy.	Retrieved; Companion report	Overlapping Jichi2016–2019 cohort; use PMID34733652
33303243 Off-clamp Retroperitoneoscopic Tumour Evacuation for Sporadic Renal Angiomyolipomas with High RENAL Nephrometry Scores: A Novel Surgical Technique and Its Outcomes.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
33300187 Outcomes of gasless laparoendoscopic single-port partial nephrectomy in 356 consecutive patients: Feasibility of a clampless and sutureless technique.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
33248140 Natural History of Asymptomatic Pseudoaneurysm Soon After Robot-assisted Partial Nephrectomy: Single-center Prospective Study.	Unsuccessful; Excluded	Counts60PN/2TAE usable, but adolescent indexing with no minimum age prevents confirming adult-only eligibility; retained in eligibility-audit notes only.
32941944 Omission of Cortical Renorrhaphy During Robotic Partial Nephrectomy: A Vattikuti Collective Quality Initiative Database Analysis.	Unsuccessful; Excluded	Only rounded/possibly weighted embolization percentages0.7%vs1.4%; no exact integer numerator and ambiguity afterweighting.
32228561 Emergency retroperitoneal laparoscopic partial nephrectomy for ruptured renal angiomyolipomas: a retrospective single-center series of 15 cases.	Retrieved; Excluded	No explicit postoperative vascular TAE count; do not infer zero from no tumor recurrence
32219641 Comparisons of the safety and effectiveness of robot-assisted versus laparoscopic partial nephrectomy for large angiomyolipomas: a propensity score-matched analysis.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
32102548 Safety and efficacy of embolotherapy for severe hemorrhage after partial nephrectomy.	Unsuccessful; Excluded	Treatment-only25-patient embolizationseries; no sourcePNdenominator.

PMID / report	Access / decision	Recorded reason
32007820 Image quality of early postoperative CT angiography with reduced contrast material and radiation dose using model-based iterative reconstruction for screening of renal pseudoaneurysms after partial nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
31970068 Absence of asymptomatic unruptured renal artery pseudoaneurysm on contrast-enhanced computed tomography after robot-assisted partial nephrectomy without parenchymal renorrhaphy.	Retrieved; Excluded	Imaging RAP outcome without explicit complete postoperative TAE count; historical LPN anecdote not the evaluated cohort
31588795 Postoperative Complications After Robotic Partial Nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
31257682 Comparison of perioperative outcomes of robot-assisted partial nephrectomy without renorrhaphy: Comparative outcomes of cT1a versus cT1b renal tumors.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
31254571 Reducing Pseudoaneurysm and Urine Leak After Robotic Partial Nephrectomy: Results Using the Early Unclamping Technique.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
30421098 Influence of symptomatic pseudoaneurysms on postoperative renal function after partial nephrectomy: results of a matched pair analysis.	Unsuccessful; Companion report	Mannheim1047PN/40TAE (2005–2016) overlaps retrieved Kriegmair233PN(2013–2015); prioritize full-text-verified cohort.
30395840 Clinical Results of Transarterial Embolization to Control Postoperative Vascular Complications after Partial Nephrectomy.	Unsuccessful; Companion report	Yonsei1187PN/36TAE overlaps Chung2076PN; retain larger source cohort. Secondary treatment details retained in countaudit.
30300074 Renal Arterial Pseudoaneurysm After Partial Nephrectomy: Literature Review and Single-Center Analysis of Predictive Factors and Renal Functional Outcomes.	Unsuccessful; Companion report	Cleveland1417PN/20TAE(2011–2016) potentially overlaps Larson five-center robotic2007–2013 cohort; not independently pooled.
30072310 Laparoscopic Partial Nephrectomy After Selective Embolization and Robot-Assisted Partial Nephrectomy: A Comparison of Short-Term Oncological and Functional Outcomes.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
29846881 Are iatrogenic renal artery pseudoaneurysms more challenging to embolize when associated with an arteriovenous fistula?	Unsuccessful; Excluded	Mixed-cause27-patient/30-procedure embolizationseries; no sourcePNdenominator or separate PN-treatment counts.
29244272 Comparison of perioperative outcomes with or without renorrhaphy during open partial nephrectomy: A propensity score-matched analysis.	Retrieved; Companion report	Overlapping Tokyo Women's2012–2015 cohort; use PMID32936351

PMID / report	Access / decision	Recorded reason
28984770 Management of iatrogenic renal arteriovenous fistula and renal arterial pseudoaneurysm by transarterial embolization: A single center analysis and outcomes.	Retrieved; Excluded	Embolization-only mixed-cause series; source PN denominator not reported
28485071 Absence of renal artery pseudoaneurysm on computed tomography after minimally-invasive partial nephrectomy using clampless and sutureless techniques.	Unsuccessful; Excluded	No usable abstract; full text not retrieved.
28407628 Super-Selective Artery Embolization before Laparoscopic Partial Nephrectomy in Treating Renal Angiomyolipoma.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
28387661 Effectiveness and safety of laparoscopic enucleation combined with selective arterial embolization for renal angiomyolipoma.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
28283215 The use of bovine serum albumin-glutaraldehyde tissue adhesive (BioGlue [®]) for tumor bed closure following open partial nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
27988984 Safety and early effectiveness of robot-assisted partial nephrectomy for large angiomyolipomas.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
27825746 Comparative study of hybrid laparoendoscopic single-site (LESS) partial nephrectomy and conventional multiport laparoscopy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
27805457 Laparoscopic Radiofrequency Ablation Combined with Surgical Excision for Exophytic Renal Angiomyolipoma: A Novel Technique Based on Tumor Vasculature Features of Enhancing Renal Masses Toward Hilar Off-Clamping Nephron-Sparing Surgery.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
27681271 Multiple Renal Artery Pseudoaneurysms in Patients Undergoing Renal Artery Embolization Following Partial Nephrectomy: Correlation with RENAL Nephrometry Scores.	Unsuccessful; Excluded	Treatment-only 25-patient embolization series; no source PN denominator; one nonprimary renal tumor.
27669654 Impact of Anticoagulant and Antiplatelet Drugs on Perioperative Outcomes of Robotic-assisted Partial Nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
27338841 The Impact of Perioperative Aspirin on Bleeding Complications Following Robotic Partial Nephrectomy.	Unsuccessful; Excluded	Rounded group embolization percentages 6%, 3%, 1%; exact total count not uniquely recoverable (131-person group 1% could reflect 1 or 2 events).

PMID / report	Access / decision	Recorded reason
27196028 Asymptomatic Renal Pseudoaneurysm Following Laparoscopic Partial Nephrectomy.	Unsuccessful; Excluded	Single case; not eligible series>10.
26795724 Renal Arterial Pseudoaneurysm and Renal Arteriovenous Fistula Following Partial Nephrectomy.	Unsuccessful; Excluded	Eleven treatedRAP/AVFpatients but no sourcePNdenominator.
26654096 Robotic Partial Nephrectomy in the Treatment of Renal Angiomyolipoma.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
26626222 Risks and Benefits of Pharmacological Prophylaxis for Venous Thromboembolism Prevention in Patients Undergoing Robotic Partial Nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
26597172 Single-Institution Experience with Robotic Partial Nephrectomy for Renal Masses Greater Than 4 cm.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
26432970 Safety of perioperative subcutaneous heparin for partial nephrectomy.	Retrieved; Excluded	Delayed bleeding/pseudoaneurysm reported, but treatment not identified as TAE (full text retrieved via web journal PDF)
26307333 Early unclamping might reduce the risk of renal artery pseudoaneurysm after robot-assisted laparoscopic partial nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
26187014 Assessment of Surgical Outcomes of the Non-renorrhaphy Technique in Open Partial Nephrectomy for $\geq$ T1b Renal Tumors.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
25881511 Early postoperative screening by contrast-enhanced CT and prophylactic embolization of detected pseudoaneurysms prevents delayed hemorrhage after partial nephrectomy.	Unsuccessful; Companion report	TokyoWomen312CT-screenedPN/26preventiv eTAE plus comparison groups overlap retained Morita; noindependentpool.
25820610 The use of hemostatic agents does not prevent hemorrhagic complications of robotic partial nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
25813447 A Phase II Study of Pazopanib in Patients with Localized Renal Cell Carcinoma to Optimize Preservation of Renal Parenchyma.	Unsuccessful; Excluded	Mixedradical/partial neoadjuvanttrial; completedPNdenominator and attribution ofoneembolization not established.
25790190 Perioperative Outcomes of Laparoscopic Partial Nephrectomy Stratified by Body Mass Index.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
25627580 Supers elective renal artery embolization in the treatment of iatrogenic bleeding into the urinary tract.	Retrieved; Excluded	Embolization-only mixed PCNL/PN series; source PN denominator not reported

PMID / report	Access / decision	Recorded reason
25589026 Robotic-assisted partial nephrectomy: experience on 60 cases.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
25581594 Renal sinus exposure as an independent factor predicting asymptomatic unruptured pseudoaneurysm formation detected in the early postoperative period after minimally invasive partial nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
25441770 Standardized analysis of laparoscopic and robotic-assisted partial nephrectomy complications with Clavien classification.	Unsuccessful; Companion report	Taipei178minimallyinvasivePN/4TAE through2012 potentially overlaps Huang544RAPN2009–2021; cannot separate overlapping robotic cases.
25168556 Use of a polytetrafluoroethylene (GORE-TEX) bolster to close the renal parenchymal defect during open partial nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
25048525 Risk evaluation of selective renal arterial embolization in the treatment of delayed hemorrhage from renal artery pseudoaneurysm after partial nephrectomy.	Unsuccessful; Excluded	Ten successfulTAEs reported, but whether two surgical cases had failedTAE is unclear; totalTAEattempted-patient numerator not established.
24857539 Technique and outcomes of robot-assisted retroperitoneoscopic partial nephrectomy: a multicenter study.	Unsuccessful; Excluded	Threepseudoaneurysms required reintervention, but interventiontype not explicitlyTAE.
24712736 Enhanced computed tomography after partial nephrectomy in early postoperative period to detect asymptomatic renal artery pseudoaneurysm.	Unsuccessful; Companion report	TokyoWomen117PN/12TAE(2012) overlaps retained Morita;17RAPpatients include5observed.
24530985 30-day hospital readmission after robotic partial nephrectomy--are we prepared for Medicare readmission reduction program?	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
24297586 Transcatheter embolisation of iatrogenic renal vascular injuries.	Unsuccessful; Excluded	Mixediatrogenicembolizationseries; only4PNcases and no sourcePNdenominator.
24268762 Predictive factors of hemorrhagic complications after partial nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
24199730 Renal function outcomes following selective angioembolization for iatrogenic vascular lesions after partial nephrectomy.	Unsuccessful; Companion report	Chicago849PN/28TAE(2002–2012) overlaps retained Saoud2002–2018 cohort; outcome/exclusion differences prevent adding counts.
23452807 Perioperative complications of robot-assisted partial nephrectomy: analysis of 886 patients at 5 United States centers.	Unsuccessful; Companion report	Five-center886RAPN/10TAE explicitly precedes expanded Larson1532cohort; do notdoublecount.

PMID / report	Access / decision	Recorded reason
23116655 Application of a vasculature model and standardization of the renal hilar approach in laparoscopic partial nephrectomy for precise segmental artery clamping.	Unsuccessful; Excluded	Child/adolescent indexing; adult-only counts not separable from abstract.
22001098 252 robotic partial nephrectomies: evolving renorrhaphy technique and surgical outcomes at a single institution.	Unsuccessful; Companion report	252roboticPN/2TAE same institutional contribution/period as Larson multicenter expansion; do notdoublecount.
21991931 Self-retaining barbed suture for parenchymal repair during laparoscopic partial nephrectomy; initial clinical experience.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
21813164 Iatrogenic vascular lesions after minimally invasive partial nephrectomy: a multi-institutional study of clinical and renal functional outcomes.	Unsuccessful; Companion report	998MIPN/16TAE multicenter series includes centers represented in Larson andMontag cohorts; exact overlap cannot be separated.
21733077 Delayed proximal ureteric stricture formation after complex partial nephrectomy.	Unsuccessful; Excluded	TAEreported only within postoperativestricture subgroup; total sourcecohortTAE cannotbeestablished.
21497840 Cold intravascular organ perfusion for renal hypothermia during laparoscopic partial nephrectomy.	Unsuccessful; Companion report	MSK31LPN/1TAE(2007–2009) overlaps Ghoneim1461PN(2003–2010).
21380537 The 1,318-nm diode laser supported partial nephrectomy in laparoscopic and open surgery: preliminary results of a prospective feasibility study.	Unsuccessful; Companion report	LMUMunich13laserPN/1TAE overlaps Strobl1425PN2003–2013.
20635448 Trends of presentation and clinical outcome of treated renal angiomyolipoma.	Retrieved; Excluded	Primary AML management series; postoperative PN vascular TAE outcome not separable
20423289 Laparoscopic nephron-sparing surgery in the management of angiomyolipoma: a single center experience.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
20367634 Risk factors and clinical management of haemorrhage after open nephron-sparing surgery.	Unsuccessful; Excluded	Age range3–91 includespediatrics; adultsubgroup notseparable.
20064000 Complications of urologic laparoscopic surgery: a single institute experience of 1017 procedures.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
19954351 Renal artery pseudoaneurysm: complication of minimally invasive kidney surgery.	Unsuccessful; Excluded	ThreeRAPpatients/25PN; one hadnephrectomy; embolizationexplicitly described forone but totaltreatedpatients notclear.
19615721 Single-port urological surgery: single-center experience with the first 100 cases.	Unsuccessful; Excluded	Mixed100urologicprocedures; embolization not explicitly attributable to15PNsubset.

PMID / report	Access / decision	Recorded reason
19038432 Robotic-assisted laparoscopic partial nephrectomy: initial clinical experience.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
19012908 Laparoscopic partial nephrectomy for central tumors: analysis of perioperative outcomes and complications.	Unsuccessful; Excluded	Four central-tumorRAPs and embolization described generally; exact number embolized not explicit.
18775030 Balloon occlusion and hypothermic perfusion of the renal artery in laparoscopic partial nephrectomy.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
18484894 Partial nephrectomy using renal artery perfusion for cold ischemia: functional and oncologic outcomes.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
18437524 Transarterial glue embolization in iatrogenic renovascular injuries.	Unsuccessful; Excluded	Mixed iatrogenic embolization series; three PN cases and no source PN denominator.
18242361 Laparoscopic partial nephrectomy for hilar tumors: evaluation of short-term oncologic outcome.	Unsuccessful; Companion report	NorthShore 18 hilar LPN/1 TAE overlaps Montag 640 LPN source cohort.
19675756 Nephron sparing surgery: A single institution experience.	Retrieved; Excluded	Pediatric/adult mixed cohort (age 16–67), adult PN denominator and TAE outcome not separable
15855135 Hemorrhagic complications after nephron-sparing surgery: angiographic diagnosis and management by transcatheter embolization.	Unsuccessful; Excluded	Abstract gives no extractable source PN denominator or TAE numerator.
15616929 Renal angiomyolipoma in Japanese tuberous sclerosis patients.	Unsuccessful; Excluded	Pediatric/tuberous sclerosis mixed primary AML management; no adult post-PN TAE counts.
15149746 Laparoscopic partial nephrectomy using microwave tissue coagulator for small renal tumors: usefulness and complications.	Unsuccessful; Excluded	Abstract does not provide an explicit, separable postoperative TAE numerator for an eligible PN source cohort; absence of a TAE mention is not zero.
11107081 Management of synchronous renal neoplasm and abdominal aortic aneurysm.	Unsuccessful; Excluded	Synchronous AAA/renal neoplasm surgery; no postoperative renal TAE numerator.

An additional retrieved report, Katzendorn 2026 (<https://pmc.ncbi.nlm.nih.gov/articles/PMC13157174/>), was absent from the export. The retrieval record describes angiographic interventions after 3,726 robotic PN procedures without a clean exact TAE numerator distinct from other interventions. It was excluded from quantitative synthesis.