Endovenous radiofrequency ablation vs laser ablation in patients with lower extremity varicose veins: A meta-analysis

Wenhong Jiang, PhD, Yanying Liang, BD, Zhen Long, MD, Ming Hu, PhD, Han Yang, PhD, and Xiao Qin, MD, Nanning, Guangxi, China

ABSTRACT

Background: Endovenous radiofrequency ablation (RFA) and laser ablation (LA) have been commonly used for treating lower extremity varicose veins (LEVVs). Their therapeutic effects have been widely recognized compared with conventional surgery. However, there have been some controversies regarding the choice between RFA and LA. The objective of our study was to conduct a systematic review and meta-analysis comparing the early and long-term outcomes of RFA and LA.

Methods: A comprehensive search was performed in the PubMed, Embase, and Cochrane databases to identify relevant literature on endovenous thermal ablation for primary LEVV up until June 2023. Randomized controlled trials, cohort studies, and case-control studies involving RFA and LA for LEVV treatment were included. The primary endpoints were the occlusion rate of the great saphenous vein (GSV) and occurrence of venous thrombotic events. Secondary outcomes included nerve injury, hyperpigmentation, burns, recurrence of VVs, postoperative pain, and phlebitis. Data were analyzed using Review Manager 5.3 software.

Results: A total of 29 studies met the inclusion criteria, consisting of 16 randomized controlled trials and 13 cohort studies. At 1 month, the occlusion rates of CSV were 98.35% for RFA and 98.04% for LA, whereas at 1 year, the rates were 93.13% for RFA and 94.18% for LA. Subgroup analyses revealed that RFA had higher GSV occlusion rates at 1 year since 2016 (93.27% vs 91.24%; odds ratio [OR], 1.35; 95% confidence interval [CI], 1.0-1.83; P = .05). The incidence of postoperative venous thrombotic events was 0.78% for RFA and 0.87% for LA at 1 month (OR, 1.46; 95% CI, 0.77-2.74; P = .24). RFA showed a reduced risk of burns and ecchymosis (OR, 0.65; 95% CI, 0.48-0.87; P = .005), postprocedural pain (mean difference, -0.85; 95% CI, -1.06 to -0.64; P < .001), recurrence of VVs (OR, 0.58; 95% CI, 0.36-0.92; P = .02), and paresthesia since 2016 (OR, 0.42; 95% CI, 0.19-0.91; P = .03), but an increased risk of skin pigmentation (OR, 1.75; 95% CI, 0.33-2.27; P = .78).

Conclusions: RFA and LA demonstrated similar efficacy in terms of early and long-term occlusion rates of GSV and the incidence of thrombotic and phlebitis complications. However, since 2016, RFA has shown higher GSV occlusion rates compared with LA. Furthermore, RFA was associated with fewer complications such as paresthesia, burns and ecchymosis, and recurrence of VVs when compared with LA. (J Vasc Surg Venous Lymphat Disord 2024;12:101842.)

Keywords: Lower extremity varicose veins; Radiofrequency ablation; Laser ablation; complications; prognosis

Primary lower extremity varicose veins (LEVVs) are a common chronic venous disease characterized by venous wall weakness, venous valve defects, and elevated superficial venous pressure, leading to venous reflux. The prevalence rate of LEVV is reported to be 25% in Western countries and 10% to 15% or 20% to 25% in Chinese men or women.¹ LEVVs not only affect the aesthetics of the body, but also significantly

Additional material for this article may be found online at www.jvsvenous.org. Correspondence: Xiao Qin, MD, The First Affiliated Hospital of Guangxi Medical University, Vascular Surgery Ward, No.6 of Shuangyong Road, Nanning, Guangxi 530021, China (e-mail: dr_qinxiao@hotmail.com). decreases the quality of life, causing pigmentation, dermatitis, eczema, and ulcers.

Over the past few decades, various treatment strategies for LEVVs have been developed, including high ligation and stripping (HL/S) of the great saphenous vein (GSV), compression stockings, and foam sclerosing agents. However, HL/S has several disadvantages, such as trauma, bleeding, and prolonged hospital stays.² With

https://doi.org/10.1016/j.jvsv.2024.101842

From the Department of Vascular Surgery, The First Affiliated Hospital of Guangxi Medical University.

This work was funded by the Natural Science Foundation project of Guangxi (No. 2021JJB140329) and the National Natural Science Foundation of China (No. 81960091, No. 8226020117). They had no involvement in the study design or collection, analysis, and interpretation of data. They paid for a professional editor to assist with language polishing of the manuscript. They were not involved in the decision to submit the manuscript for publication.

The editors and reviewers of this article have no relevant financial relationships to disclose per the Journal policy that requires reviewers to decline review of any manuscript for which they may have a conflict of interest.

²²¹³⁻³³³X

Copyright © 2024 The Author(s). Published by Elsevier Inc. on behalf of the Society for Vascular Surgery. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

the advancement of endovascular technology, endovenous thermal ablation (ETA) has emerged as the firstline therapy for LEVV. ETA includes radiofrequency ablation (RFA) and laser ablation (LA), which are minimally invasive procedures.³ ETA occludes VVs by generating thermal energy to burn the endovenous membrane, leading to fibrotic occlusion.^{4,5} Compared with HL/S, ETA has demonstrated similar or even superior efficacy and safety. Several studies have reported comparable or better results for RFA and LA in terms of technical success, recanalization, clinical recurrence, and reoperation, as well as improved return to routine activities, postoperative pain, and quality of life.⁶⁻⁹

Both RFA and LA are ETA methods with distinct ablation mechanisms. RFA uses a radiofrequency generator to produce energy through an electrode catheter, which contacts the endothelium directly and heats the local venous tissues near the catheter, causing endothelial injury. In contrast, LA uses laser energy transmitted via an optical fiber, which is absorbed by blood components, generating steam bubbles at the tip of the fiber and resulting in thermal damage to the endothelium.^{4,5} Despite both RFA and LA being considered first-line treatments for LEVVs, their therapeutic effects may vary. Several studies have reported conflicting results between RFA and LA. Yoon et al, Aurshina et al, and Wozniak et al found higher recanalization rates in the RFA group compared with the LA group in both early and longterm outcomes. However, El Kilic et al discovered the opposite result, with lower recanalization rates in the RFA group compared with the LA group at 3 and 5 years of follow-up.¹⁰⁻¹⁴ Another study demonstrated similar recanalization rates between the RFA and LA groups after 1 year of postoperative follow-up. Other complications, such as postoperative pain scores, time to return to normal activity, and ecchymosis, were more severe or more frequent in the RFA group compared with the LA group. However, the results from Helin et al, Shepherd et al, and Sydnor et al contradicted these findings.¹⁴⁻¹⁷ Despite RFA and LA being recommended as first-line treatments for LEVV in domestic and foreign guidelines. it remains unclear which method is more efficient. A meta-analysis comparing the efficacy between RFA and LA has been conducted, but it only included literature published before January 5, 2016, in the PubMed database, and limited the inclusion criteria to studies with 4 to 5 years of follow-up. Furthermore, they only focused on long-term technical success rates and recanalization rates.¹ Therefore, a systematic review and comprehensive meta-analysis are necessary to compare the early and long-term efficacy of RFA and LA.

The objective of this study was to conduct a comprehensive meta-analysis of all relevant publications on the treatment of LEVV using RFA and LA. We aim to compare the short-term and long-term outcomes of these treatments and determine which ETA is more effective for LEVVs. The primary outcomes of interest include occlusion rates and recurrence of VVs, which will be assessed at the 1-month and 1-year follow-ups. Additionally, we will analyze the occurrence of thrombotic events (TEs), burns, ecchymosis, paresthesia, postprocedural pain, and phlebitis as the main short-term results at the 1month follow-up.

METHODS

This study was approved by the Ethics Committee of the First Affiliated Hospital of Guangxi Medical University. The systematic review and comprehensive metaanalysis were conducted in accordance with the PRISMAguidelines.¹⁸

Search strategy and selection criteria. In June 2023, the PubMed, Embase, and Cochrane databases were selected as the primary databases to search for relevant literature. The search terms used for LEVV included "great saphenous vein," "chronic venous disorder," "lower extremity vein," "superficial venous disease," "varicose veins," and "lower limb varicosity." The second search term focused on "radiofrequency" and included related terms such as "ablation, radiofrequency," and "radio frequency ablation." The third search term was "laser" and included terms like "lasers, Q-switched" and "pulsed lasers." Supplementary Table I (online only) provides the detailed retrieval strategies used in the PubMed, Embase, and Cochrane databases.

All retrieved articles were imported into EndNote software, and any duplicate literature was removed. Two different authors independently screened the remaining studies by reviewing titles, abstracts, and full texts. The eligible literature had to meet several criteria: (1) it had to focus on GSV trunk varicosity; (2) it had to be a comparative study comparing at least RFA vs LA; (3) the articles needed to provide relevant results and have full-text availability; and (4) the articles had to be published in English. Case reports, abstracts, reviews, conference records, comments, animal studies, and recurrent varicosity of GSV were all excluded from the analysis.

Data extraction and outcome measures. Data extraction was conducted by two independent authors. In case of any discrepancies or disagreements regarding the data, a consensus was reached through discussion among all reviewers. The relevant information from the eligible studies was extracted and recorded, including study type, authors, publication year, sample size (number of patients and limbs), population characteristics, intervention type, duration of follow-up, and the outcomes of interest. The primary outcomes of interest were the occlusion rate and the occurrence of VTEs. Secondary outcomes included nerve injury, recurrence of VVs, postoperative pain, and other postoperative adverse complications.



Fig 1. PRISMA flow diagram of the literature screened in the study.

Quality assessment for risk of bias. The Cochrane risk of bias tool (www.cochrane.org/resources/handbook) and the Newcastle-Ottawa Scale (NOS) were used to assess the risk of bias and quality of each included randomized controlled trials (RCTs) and cohort studies, respectively. For RCTs, all potential sources of bias were evaluated, such as random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessors, attrition, reporting, and other sources of bias. For cohort studies, the quality was assessed based on the selection of subjects, comparability between groups, and the assessment of exposure or outcome. The NOS ranking system used a semiquantitative approach using a star system, with scores ranging from 0 to 9. A study with a score of \geq 7 was considered to be of high quality.

Statistical analysis. The collected data were analyzed using Review Manager 5.3 software. For categorical data, the random-effects model was used to calculate the odds ratio (OR) and 95% confidence intervals (CIs). For measurement data, the random effects model was used to calculate the mean and standard deviation (SD) with 95% Cl. Heterogeneity was assessed using the Cochran Q statistic (χ^2 test) and the l^2 statistic.^{19,20} A Q value of <0.1 indicated the presence of heterogeneity. The l^2 values ranged from 0% to 100% and were categorized into four levels to evaluate the degree of heterogeneity: 0% to 25% (no heterogeneity), 25% to 50% (low heterogeneity), 50% to 75% (moderate heterogeneity), and 75% to 100% (substantial heterogeneity). Subgroup and sensitivity analyses were performed based on study type or publication time. Additionally, funnel plots were used to assess publication bias. Statistical significance was defined as a *P* value of <.05.

RESULTS

Study selection and characteristics

The detailed process of literature screening is presented in Fig 1. Initially, a total of 397 studies were retrieved from the PubMed, Embase, and Cochrane databases using

Table I. Characteristics of the included studies

First author	Year	Design	Modality	No. of patients	No. of limbs Treated	Male/female	Age, years, mean/range	CEAP clinical classification
Vähäaho	2019	RCT	RFA EVLA MOCA	125	125	Not reported	RFA: 50.3 EVLA: 49.5 MOCA: 50.9	C2-C4
Vähäaho	2020	RCT	RFA EVLA MOCA	106	106	Not reported	RFA: 50.6 EVLA: 49.9 MOCA: 50.5	C2-C4
Lawaetz	2017	RCT	RFA EVLA UGFS HL/S	499	577	132/367	RFA: 51 EVLA: 52 UGFS: 51 HL/S: 50	C2-C6
Rasmussen	2011	RCT	RFA EVLA UGFS HL/S	498	578	131/367	RFA: 51 EVLA: 52 UGFS: 51 HL/S: 50	C2-C6
Rasmussen	2013	RCT	RFA EVLA UGFS HL/S	499	578	132/367	RFA: 51 EVLA: 52 UGFS: 51 HL/S: 50	C2-C6
Almeida	2009	RCT	RFA EVLA	69	87	9/60	RFA: 51.6 EVLA: 52.4	C2-C6
Shepherd	2010	RCT	RFA EVLA (980)	131	131	42/89	RFA: 49 EVLA: 48	C1-C6
Hamann	2019	RCT	iRFA dRFA EVLA	450	450	145/305	iRFA: 49.3 dRFA: 52.6 EVLA: 51.1	C2-C6
Gale	2010	RCT	RFA EVLA (810)	118	141	33/85	RFA: 46 EVLA: 49	Not reported
Goode	2010	RCT	RFA EVLA (810)	66	87	17/45	RFA: 45.9 EVLA: 47.6	Not reported
Tofigh	2020	RCT	RFA EVLA (980)	1090	1090	280/810	RFA: 37.26 EVLA: 36.9	C2-C4
Mese	2015	RCT	RFA EVLA (1470)	120	120	Not reported	Not reported	Not reported
Nordon	2011	RCT	RFA EVLA (810)	159	159	60/99	RFA: 46.9 EVLA: 46.7	C2-C6
Kempeeneers	2022	RCT	RFA EVLA (1470)	280	280	103/177	RFA: 51.54 EVLA: 51.48	C2-C6
Sydnor	2016	RCT	RFA EVLA (980)	200	200	43/157	RFA: 47 EVLA: 48.5	Not reported
Woz'niak	2016	RCT	RFA EVLA (980)	110	110	20/90	RFA: 57.9 EVLA: 52.09	C2-C6
Karathanos	2020	PCS	RFA EVLA (1470-R) EVLA (1470-J)	153	160	60/93	RFA: 53.9 EVLA-R: 51 EVLA-J: 49.8	C2-C6
Lawson	2017	PCS	RFA EVLA (1470)	311	346	81/230	RFA: 49.9 EVLA: 50	C1-C6
Yoon	2017	RCS	RFA EVLA (810)	270	343	81/189	RFA: 59.8 EVLA: 56.6	C2-C6
Kubat	2019	RCS	RFA EVLA (980) EVLA (1470) HL/S CAC	671	697	305/366	RFA: 49.5 EVLA (980): 48.8 EVLA (1470): 47.4 HL/S: 49.6 CAC: 50.6	C2-C5

Table I. Continued.

First author	Voar	Design	Modality	No. of	No. of limbs Treated	Male/female	Age, years,	CEAP clinical
	Teal	Design	Modality	patients	neateu		mean/range	classification
Gianesini	2020	RCS	RFA EVLA	79	85	30/49	RFA: 56 EVLA: 54	C3
Öntas	2019	RCS	RFA EVLA (1470)	50	50	25/25	RFA: 28-65 EVLA: 28-65	C2-C4
Izzo	2020	RCS	RFA EVLA (980)	95	95	22/73		Not reported
Sanioglu	2017	RCS	RFA EVLA (1470)	96	96	31/65	RFA: 46 EVLA: 45	C1-C4
Almeida	2006	RCS	RFA EVLA	694	899	Not reported	Not reported	Not reported
Puggioni	2005	RCS	RFA EVLA	92	130	15/77	RFA: 50.28 EVLA: 52.2	C2-C6
Ravi	2006	RCS	RFA EVLA	981	1149	211/770	51 (15-90)	C2-C6
Bozoglan	2016	RCS	RFA EVLA (1470)	60	120	28/32	RFA: 42.2 EVLA: 42.2	Not reported
Park	2020	RCS	RFA EVLA	80	147	25/55	RFA: 40.4 EVLA: 47.4	C1-C5

CAC, Cyanoacrylate closure; CEAP, Clinical Etiologic Anatomic Pathophysiologic; *dRFA*, directly endovenous radiofrequency ablation; HL/S, high ligation and stripping; *iRFA*, indirectly endovenous radiofrequency ablation; *LA*, laser ablation; *MOCA*, mechanochemical ablation; *PCS*, prospective comparative study; *RCS*, retrospective comparative study; *RCT*, randomized clinical trial; *RFA*, endovenous radiofrequency ablation; *UGFS*, ultrasound-guided foam sclerotherapy.

the specified keywords. Among these, 168 duplicate papers were identified and removed using EndNote software. The remaining 229 articles underwent title and abstract screening, leading to the exclusion of 174 articles. Subsequently, full-text evaluation was performed on the remaining 55 articles. During this process, an additional t6hree articles were identified through a thorough examination of similar articles and references. Ultimately, 29 studies met the inclusion criteria, comprising 16 RCTs,^{8,13,15-17,21-31} 2 prospective cohort studies,^{32,33} and 11 retrospective studies,^{10,34-43} which reported comparisons between RFA and LA.

The characteristics of the included studies are summarized in Table. These studies collectively involved a total of 7303 patients and 7877 legs. However, it should be noted that six studies reported multiple treatment methods in addition to RFA and LA.^{8,21,22,30,31} Moreover, Vähäaho et al^{21,22} published two papers based on the same patients but at different follow-up times. Similarly, Lawaetz et al and Rasmussen et al described three articles that contained data from the same individuals at 1, 3, and 5 years after the operation.^{8,30,31} Duplicate data were removed during the final analysis, ensuring that each cohort was included only once. Therefore, a total of approximately 2634 patients and 2458 limbs were investigated in the RFA group, and 4053 patients and 4405 limbs were investigated in the LA group. Among the included studies, 23 specifically compared RFA and

LA in terms of outcomes. One study reported two different types of LA using a 1470-nm dual radial fiber or a 1470-nm jacket-tip fiber for the treatment of LEVVs.³² Another study also reported two different RFAs, namely, direct RFA (radiofrequency-induced thermotherapy) and indirect RFA (the VNUS ClosureFast system) for the treatment of LEVVs.²⁴ In our review, both the LA with a 1470nm dual radial fiber and indirect RFA were included. Quality assessment indicated that 16 RCTs had a low risk of bias based on Cochrane criteria, whereas the other 13 studies were deemed to be of high quality according to the NOS standard (Fig 2 and Supplementary Table II, online only).

Primary outcomes

The occlusion rate of the treated GSV at 1 month after surgery was reported and collected from 16 of the 29 included studies.13,16,17,21,23,25,26,28,29,30,35,36,40,41,42,43In the RFA group, the occlusion rate ranged from 90.9% to 100%, whereas in the LA group, it ranged from 94.4% to 100%. Specifically, 10 studies reported a 100% occlusion rate for RFA, whereas 12 studies reported the same rate for LA. The overall pooled results from these 16 studies indicated that the occlusion rate of the treated GSV was similar for both procedures. Furthermore, neither RFA nor LA increased the risk of recanalization at 1 month (OR, 0.68; 95% CI, 0.34-1.36; $l^2 = 0\%$; P = .28) (Fig 3, A). In addition, we performed a subgroup analysis based on the research



Fig 2. The assessment of biased risk of the 16 included randomized controlled trials (RCTs) in this study.

type in all included studies. There were 10 RCTs and 6 cohort studies reporting the data of the occlusion rate of the treated GSV at 1 month after surgery. Our metaanalysis showed the effect of RFA and LA was similar (OR, 0.6; 95% CI, 0.16-2.26; $I^2 = 0\%$; P = .45), (OR, 0.72; 95% CI, 0.32-1.6; $I^2 = 0\%$; P = .42) (Supplementary Fig 1, A and B) both in RCTs and cohort studies, which supported our original results.

Fifteen of the 26 eligible studies described the occlusion rate of the treated GSV at 1 year after surgery.^{13,17,23-} ^{30,32,34-36,39} The closure rate ranged from 73.5% to 100% for RFA and from 75% to 100% for LA. A comprehensive analysis showed that the efficiency of RFA and LA was similar in terms of closure rate at the 1-year follow-up (OR, 0.94; 95% CI, 0.62-1.42; P = .76), but there was significant heterogeneity (P = .03; $I^2 = 47\%$) (Fig 3, B). To analyze this heterogeneity, we first checked all included data and performed a sensitivity analysis for all included studies. There were no problems in data extraction and no significant change in the pooled results was found for any one study. In view of technological progress in RFA or LA system, we decided to perform a subgroup analysis based on the publication date of the study. These included studies were bundled based on the

chronological order of publication and we found when comparing between those published before 2016 with those after 2016 had statistical significance without heterogeneity. Furthermore, the numbers of included studies in the two group were similar. Therefore, we chose 2016 as the dividing point. The subgroup analysis based on the publication year revealed that seven studies were published before 2016, and their closure rates were similar for RFA and LA (OR. 0.58: 95% Cl. 0.28-1.19; P = .14) (Fig 3, C).^{13,17,25,26,28,30,39} In contrast, eight included studies were published after 2016, showing that RFA increased the closure rate of the treated GSV compared with LA (OR, 1.35; 95% CI, 1.0-1.83; P = .05) without any heterogeneity (P = .56; $I^2 = 0\%$) (Fig 3, C).^{21,24,27,29,32,34-36} In addition, we also performed a subgroup analysis separately based on the RCTs and cohort studies. There were 10 RCTs and 5 cohort studies reporting the data of the occlusion rate of the treated GSV at 1year follow-up. The effect of RFA and LA on occlusion of the treated GSV was also similar (OR, 1.02; 95% CI, 0.69-1.51; $I^2 = 19\%$; P = .91), (OR, 0.92; 95% CI, 0.29-2.93; $I^2 =$ 77%; P = .89) (Supplementary Fig 1, C and D) both in RCTs and cohort studies, but there was significant heterogeneity (P = .005; $I^2 = 77\%$) in cohort studies, which



Fig 3. Forest plots showing the odds ratios (ORs) for occlusion rate of the treated great saphenous vein (GSV) with radiofrequency ablation (RFA) vs laser ablation (LA). **(A)** OR for occlusion rate at 1 month postoperative. **(B)** OR for occlusion rate at 1 year postoperative. **(C)** Subgroup analysis of OR for occlusion rate at 1 year postoperative. *CI*, confidence interval; *M-H*, Manzel-Heinz.

Bander Standing Test Test Test Park Te		Radiofrequency al	lation	lacar abl	ation		Odde Patio	Odde Patio
Namela 2000 0 128 2 191 4.55 1.27	Study or Subgroup	Events	Total	Events	Total	Weight	M-H. Random, 95% C	M-H. Random, 95% Cl
Namely 2000 (a) 0 40 1 40 10 No 10 <td>Almeida 2006</td> <td>0</td> <td>128</td> <td>2</td> <td>819</td> <td>4.3%</td> <td>1.27 [0.06, 26.65]</td> <td></td>	Almeida 2006	0	128	2	819	4.3%	1.27 [0.06, 26.65]	
Barba 2010 Barba	Almeida 2009	0	46	1	41	3.8%	0.29 [0.01, 7.33]	
Dan Samo Dan Sa	Bozogla 2016	0	60	0	60		Not estimable	
bind with the set of t	Catherine 2022	0	135	0	142	0.00/	Not estimable	
Numericanity 1000 101 102 103	Gale 2010 Cianasini 2020	0	46	1	48	3.8%	0.34 [0.01, 8.57]	
Number 2010 Image of the second	Hamann 2019	0	150	0	148		Not estimable	
Name: 2019 0 284 0 280 No No 281 (0 + 10) Name: 2019 0 74 97 98 No 281 (0 + 10) 100	Karathanos 2020	4	53	5	107	21.6%	1.67 [0.43, 6.48]	
Lancen 2017 1 0 0 175 0 1 172 376 1 172 376 N 2316 01.4 03 Per elimitation of the second of the se	Kubat 2019	0	264	0	260		Not estimable	
MEE 2015 0<	Lawson 2017	0	175	1	172	3.9%	0.33 [0.01, 8.05]	
Nacion 2011 Personal 2000 Personal	MESE 2015	0	60	0	60		Not estimable	
Strate Strate Strate Strate Strate Strate Strate Resurvation 0	Nordon 2011	0	76	0	78		Not estimable	
Park 2000 Park 2000	ontas 2019	0	25	0	25		Not estimable	
Tugoni Doni 0 13 3 77 4.5% CO (20 (0.1.30) Shope 2010 0 13 0 14 0 14 0 14 0 0 14 0 <t< td=""><td>Park 2020</td><td>0</td><td>64</td><td>1</td><td>83</td><td>3.9%</td><td>0.43 [0.02, 10.64]</td><td></td></t<>	Park 2020	0	64	1	83	3.9%	0.43 [0.02, 10.64]	
Hammannon Image: Section of the sec	Puggioni 2005	0	53	3	77	4.5%	0.20 [0.01, 3.93]	
Single John 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Rasmussen 2011	0	141	0	144		Not estimable	
Subprint 2010 <	Sanioglu 2017	0	41	0	55	0.00/	Not estimable	
System System<	Shephera 2010	1	100	0	100	3.9%	2.91 [U.12, 72.74]	
Vignation of the set o	Sydnor 2016 Vabaaba 2019	0	100	0	100		Not estimable	
Value 2017 $\frac{1}{10}$	Wozniak 2016	0	54	0	56		Not estimable	
$ \begin{array}{c} \text{Link (Ph C)} & \textbf{i} & \textbf{k} $	Yoon 2017	10	97	11	246	50.3%	2 46 [1 01 5 99]	
Tail (19K, C) 191 200 10.0.4 (19) 200 10.0.5 (14) (10) 200 10.0.5 (14) 200 10	TOUTEOTT	10	01		2.10	00.070	2.10 [1.01, 0.00]	
The lenses $1 - 0$ and $1 + 0$	Total (95% CI)		1911		2860	100.0%	1.46 [0.77, 2.74]	*
$\frac{1}{2} \frac{\operatorname{rel}(\operatorname{rec}(re$	Total events Heterogeneity: Tau ² = Test for overall effect:	15 0.00; Chi ² = 6.55, df = Z = 1.17 (P = 0.24)	8 (P = 0	25 .59); I ² = 0'	%			0.01 0.1 1 10 10 Radiofrequency ablation laser ablation
radio registery abation Line are abation Odds Ratio Odds Ratio Odds Ratio Odds Ratio Odds Ratio MAX Rest are abation Six Cl Amount 2010 2 4 03 20 7.6% 0.700.05.2.09 1 4 0.000.05.2.09 General 2020 0 4 0 4 0.4 0.000.05.2.09 General 2020 0 4.4 0.4 0.000.05.2.09 0.000.05.2.09 General 2020 0 4.4 0.4 0.000.000.000.000.000.000.000.000.000.	3							
Statuy consumption First Network Total Weak Media 2000 Media 2	-	radiofrequency ab	lation	laser abla	ation		Odds Ratio	Odds Ratio
Almedia 2009 14 4 4 4 4 2 8 5 7 7 8 0 19 10 7 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% C	M-H, Random, 95% Cl
Bacupia 2016 16 0 00 19 00 15% 0.78 10.31.73 Gine 2010 2 2 4 6 5 4 4 3.04 3.05 0.07.213 4 Gine 2010 2 4 6 5 4 4 3.04 3.05 0.07.213 4 Gine 2010 2 4 6 5 4 4 3.07 10% 0.05 0.0.123 Use 2020 10 5 3 2 3 107 10.6% 0.05 10.27.134 Gine 2010 11 2 2 4 20 20 12.3% 0.05 10.27.134 Gine 2010 11 2 2 4 20 20 12.3% 0.05 10.23.173 Gine 2010 11 2 4 20 20 12.3% 0.05 10.23.173 Gine 2010 11 2 4 20 20 12.3% 0.05 10.23.173 Gine 2010 11 2 4 20 20 12.3% 0.05 10.23.173 Gine 2010 11 5 5 10 11 5 0 17 10.03 1.73 Gine 2010 1 1 5 5 10 11 5 0 17 10.03 1.73 Gine 2010 1 1 5 5 2 5 2 2 5 2 5 2 5 2 5 2 5 2 5 2	Almeida 2009	14	40	26	35	7.8%	0.19 [0.07, 0.51]	
Catheres 2022 2 1 135 21 142 15.1% 1.06 [0.5, 2.05] General 2020 2 4 4 5 4 6 3 0/4 3 0/4 10, Not estimate Readbace 2020 10 2 4 4 0 0/4 4 10, Not estimate Note simulate Nuclear 2010 11 2 26 20 200 12.3% 0.05 [0.2, 2.13] Mea 2015 16 6 00 19 00 15.5% 0.76 [0.4, 1.13] Mea 2015 16 6 00 19 00 15.5% 0.76 [0.4, 1.13] Mea 2015 16 6 00 19 00 15.5% 0.76 [0.4, 1.13] Mea 2015 16 6 00 19 00 15.5% 0.76 [0.4, 1.13] Mea 2016 1 1 76 2 2 70 15% 0.05 [0.4, 5.71] Mea 2016 4 100 8 100 54% 0.44 [0.4, 1.65] Note simulate Subdy of 2016 4 100 8 100 54% 0.44 [0.14, 1.65] Mea 2016 1 1 64 0 05 0.9% 0.37 [0.13, 7.84] Mea 2016 1 1 64 0 05 0.9% 0.45 [0.4, 5.71] Mea 2016 4 100 2 41 000 54% 0.46 [0.14, 1.65] Mea 2016 4 100 0 48 100 54% 0.46 [0.14, 1.65] Mea 2016 4 100 54% 0.46 [0.14, 1.65] Mea 2010 0 1 152 1 147 100.9% 0.45 [0.44, 2.61] Mea 2010 1 1 22 70 [0.22] P ± 16% Mea 2010 1 1 46 2 41 41% 0.43 [0.04, 2.61] Mea 2010 1 46 2 100 2.61 (0.16, 0.15] Mea 2010 1 1 22 76 1 73 (0.16, 0.15] Mea 2010 1 1 22 76 1 73 (0.16, 0.15] Mea 2010 1 1 22 4 10 2.6% 1 3.06 (0.16, 0.15] Mea 2010 1 1 22 4 10 2.6% 1 3.06 (0.16, 0.15] Mea 2010 1 1 22 4 10 2.6% 1 3.06 (0.16, 0.15] Mea 2010 1 1 22 4 10 0.7% 1 3.7% 0.48 [0.16, 0.15] Mea 2010 1 1 22 4 4 4 7% 0.24 [0.02, 10.14] Mea 2010 1 1 22 4 4 4 7% 0.24 [0.02, 10.14] Mea 2010 1 1 22 4 4 4 7% 0.24 [0.02, 10.14] Mea 2010 1 1 22 4 4 4 7% 0.24 [0.02, 10.14] Mea 2000 1 1 22 77 11 7% 0.026 [0.16, 0.23] Mea 2000 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Bozogla 2016	16	60	19	60	11.5%	0.78 [0.36, 1.73]	
Gale 2010 2 2 44 0 4 10 Not estimated Care 2010 0 0 88 4 3 71 0.05 0.05 (0.0, 1.22) Linexe, 2020 0 0 88 4 3 71 0.05 (0.0, 1.22) Linexe, 2010 0 0 88 4 3 71 0.05 (0.0, 1.22) Linexe, 2010 0 0 88 4 3 71 0.05 (0.0, 1.22) Linexe, 2010 1 2 8 0 19 8 0 19 8 0 19 8 0 0 19 10 1 1 0 0 1 0 10 10 0 0 1 0 0 0 1 0 0 0 1 10 0 0 1 10 0 10 1	Cathérine 2022	21	135	21	142	15.1%	1.06 [0.55, 2.05]	
Glamesia 2020 0 0 44 0 41 Wetering and the set of the s	Gale 2010	2	46	5	48	3.0%	0.39 [0.07, 2.12]	
$ \begin{aligned} \text{Lize} 2020 & 0 & 0 & 88 & 4 & 37 & 10\% & 0.06 [0.0.1, 22) \\ \text{Katal Coll 1} & 1 & 264 & 20 & 200 & 12.3\% & 0.25 [0.37, 1.04] \\ \text{Katal Coll 1} & 1 & 12 & 264 & 20 & 200 & 12.3\% & 0.25 [0.37, 1.04] \\ \text{More 2015} & 26 & 107 & 207 & 10.5\% & 0.55 [0.37, 1.04] \\ \text{Nodes 2016} & 0 & 53 & 0.27 & 12.3\% & 0.25 [0.34, 1.13] \\ \text{Nodes 2016} & 0 & 53 & 0.27 & 12.3\% & 0.55 [0.34, 5.71] \\ \text{Nodes 2016} & 0 & 53 & 0.27 & 12.3\% & 0.55 [0.34, 5.71] \\ \text{Nodes 2016} & 0 & 67 & 2 & 64 & 10\% & 0.19 [0.01, 3.23] \\ \text{Synber 2010} & 0 & 67 & 2 & 64 & 10\% & 0.49 [0.14, 4.69] \\ \text{Synber 2010} & 0 & 67 & 2 & 64 & 10\% & 0.49 [0.14, 4.69] \\ \text{Synber 2010} & 0 & 155 & 1 & 1417 & 100.5\% & 0.65 [0.46, 0.87] \\ \text{Taal corents} & -147 & 206 \\ \text{Heterogenery, Tau2 - 0.05 (Ch2 = 14.22, 2d = 12 (P - 0.20); P = 16\% \\ \text{Taal corents} & -147 & 206 \\ \text{Heterogenery, Tau2 - 0.05 (Ch2 = 14.22, 2d = 12 (P - 0.20); P = 16\% \\ \text{Taal corents} & -147 & 206 \\ \text{Heterogenery, Tau2 - 0.05 (Ch2 = 14.22, 2d = 12 (P - 0.20); P = 16\% \\ \text{Taal corents} & -164 & -174 & -104$	Gianesini 2020	0	44	0	41		Not estimable	
Kanshano 2020 10 53 22 107 106% 085 [0.37, 1.94] Lanco 2017 23 173 33 22 107 106% 085 [0.37, 1.94] Marka 2013 11 6 6 11 25% 0.76 [0.31, 3.9] Paggon 2005 0 1 67 12% 0.76 [0.31, 3.9] Paggon 2005 0 1 67 2 64 10% 0.19 [0.1, 3.9] Paggon 2005 1 0 67 2 64 10% 0.48 [0.4, 1.65 Shepher 2010 0 67 2 64 10% 0.48 [0.4, 1.65 Shepher 2010 1 67 2 64 10% 0.48 [0.4, 1.65 Shepher 2010 1 67 2 64 10% 0.48 [0.4, 1.65 Shepher 2010 1 155 1 147 100.0% 0.65 [0.46, 6.87] Total cevits 147 2 .25 25 25 25 25 25 25 25 25 25 25 25 25 2	Izzo 2020	0	58	4	37	1.0%	0.06 [0.00, 1.22]	•
Kicht 2019 11 264 20 200 123% 025 [024, 11] Mere 2015 16 60 19 60 113% 076 [0.3, 1.3] Mere 2015 17 33 075 0.76 [0.4, 1.6] Sancipu 2007 0 0 41 0 75 5 20 [0.4, 5.7] Sancipu 2007 0 0 41 0 0 54 00 57 5 00 [0.4, 5.7] Sancipu 2016 4 100 6 109 54% 0.48 [0.1, 4.6] Syndro 2016 4 100 6 109 54% 0.48 [0.1, 4.6] Syndro 2016 4 100 6 0 095 177 [0.3, 7.9] Oras 2019 2.5 25 22 25 28 28 5 Nrt estimate Syndro 2016 1 147 2025 177 [0.3, 7.9] Trail lensor, 107 10 0.5 CH = 14.22 d = 12 (P - 0.29); P = 16% Trail lensor, 107 10 0.5 CH = 14.22 d = 12 (P - 0.29); P = 16% Trail lensor, 107 10 0.5 CH = 14.22 d = 12 (P - 0.29); P = 16% Trail lensor, 107 10 0.5 CH = 14.22 d = 12 (P - 0.29); P = 16% Trail lensor, 107 10 0.5 CH = 14.22 d = 12 (P - 0.29); P = 16% Trail lensor, 107 10 0.7 4 0.05 (0.4, 0.47] Cathering 2022 0 106 2 110 2.8% 0.29 (0.0, 1.2) Radiorequency ablation Laser ablation Sancipu 202 0 106 2 100 2.8% 0.20 (0.0, 1.2) Radiorequency ablation Laser ablation Cathering 2022 0 106 2 100 2.8% 0.20 (0.0, 1.2) Rectorequency ablation Laser ablation Cathering 2022 0 106 2 100 2.8% 0.20 (0.0, 1.2) Park 2020 0 6 8 4 37 30% 0.68 (0.0, 1.2) Park 2020 0 6 8 4 37 30% 0.68 (0.0, 1.2) Park 2020 0 6 8 4 4 37 30% 0.68 (0.0, 1.2) Park 2020 0 6 8 4 4 170 No estimate Rectorequency ablation Laser ablation Cathering 2022 0 106 2 100 2.8% 0.20 (0.0, 1.2) Park 2020 1 6 0 0 6 0 70 42.8% 0.20 (0.0, 1.2) Park 2020 2 6 4 11 95 6 13 131 (0.6, 5.61 Rectorequency ablation Laser ablation Soncy 20 16 2 3 100 16 100 16.7% 137 (0.1, 2.0) Park 2020 1 6 100 16.7% 137 (0.1, 2.0) Park 2020 1 6 100 16.7% 137 (0.1, 2.0) Park 2020 1 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Karathanos 2020	10	53	23	107	10.6%	0.85 [0.37, 1.94]	
Lances 2017 26 175 32 172 184% 076 [0.43, 1.53] Neede 2015 16 60 19 60 11.5% 0.76 [0.43, 1.53] Neede 2015 177 Net definable Define 2017 0 0 477 0.76 [0.46, 7.7] Net definable Shidy and 2010 0 477 0.04 48 [0.44, 168] Works 2016 1 164 0 56 0.99% 3.77 [0.13, 52] Works 2016 1 164 0 56 0.99% 3.77 [0.13, 52] Total covers 1 47 2 25 25 25 25 Net definable Notes a 2019 25 25 25 25 25 Net definable Total covers 1 47 2 2.64 100, 8 100 58 (0.46, 0.47] Total covers 1 47 2 2.64 100, 8 100 58 (0.46, 0.47] Total covers 1 47 2 2.63 ($P = 0.23$); $P = 16\%$ Total covers 1 47 2 2.64 100, 8 100 58 (0.46, 0.47] Total covers 1 47 2 2.64 100, 8 100 58 (0.46, 0.47] Total covers 1 47 2 2.64 100, 8 100 58 (0.46, 0.47] Total covers 1 47 2 2.63 ($P = 0.23$); $P = 16\%$ Total covers 1 47 2 2.64 100 0.9% 0.85 [0.46, 0.47] Total covers 1 48 2 41 41 9 0.05 [0.46, 0.47] America 2006 2 1 128 2 281 9 5.9% 0.48 (0.91, 4.46] America 2006 1 148 2 41 41 9 0.43 [0.04, 4.69] America 2006 1 148 2 41 41 9 0.43 [0.04, 4.69] America 2007 1 4 175 9 172 11.7% 0.42 [0.13, 4.49] America 2008 1 148 2 41 41 9 0.54 [0.25, 0.27] Total covers 1 40 2 20 49% 0.24 [0.03, 219] America 2008 1 148 2 81 10 0.06 [0.0 0.00 0 0.00 [0.00, 1.29] America 2007 0 1 12 2 76 1 17 2.25% 0.20 [0.05, 1.29] Kinato 2019 1 2.24 4 2.63 5.68 1.31 [0.16, 5.61] Total covers 1 40 7 0.42 [0.13, 4.40] America 2017 4 175 9 172 17.7% 0.24 [0.03, 219] America 2016 1 12 2.76 1 178 4.25% 0.24 [0.03, 219] America 2017 4 47 0 5 64 2.55% 4.11 [0.16, 10.353] America 2017 1 4 47 0 5 64 2.55% 4.11 [0.16, 10.353] America 2017 1 5 17 077 1.18 40 0.54 2.25% 4.11 [0.16, 10.353] America 2017 1 5 17 077 1.19 40 0 5 64 2.55% 4.11 [0.16, 10.353] America 2017 1 5 17 077 1.19 47 0.22 (0.24, 0.03, 229] America 2016 1 2 3 100 10 17% 12 0.20 [0.1, 4.29] America 2017 1 5 17 07 0.17 19 40 0 5 62 2.55% 4.11 [0.16, 10.353] America 2017 1 5 4 2.2 4 14 4.00 0.36 [0.2, 5.11] America 2017 1 12 2.76 1 178 2.24% 2.20 [0.16, 2.214] America 2017 1 12 2.77 1 12 2.25% 2.21 [0.16, 2.17] Ameri	Kubat 2019	11	264	20	260	12.3%	0.52 [0.24, 1.11]	
Mare 2015 16 60 19 60 19 50 77 Not estimable Puggion 2005 0 53 0 77 Not estimable Not estimable Syndre 2016 0 64 100 64 105 Not estimable Syndre 2016 1 140 100 64 107 124 Vocank 2016 1 141 100 147 100.0% 0.05 [0.44, 0.07] Taia (95%, CI) 125 25 25 25 25 Not estimable Taia (95%, CI) 125 147 100.0% 0.05 [0.44, 0.07] 10 10 10 Taia (95%, CI) 125 128 2 10 2.9% 0.05 [0.44, 0.07] 10 10 10 Taia (95%, CI) 140 2.0 (0.1, 0.07, 0.06) M-H. Bandom. 95%, CI M-H. Bandom. 95%, CI M-H. Bandom. 95%, CI Annoisa 2006 2 128 2 10 2.9% 0.20 (0.1, 4.20) M-H. Bandom. 95%, CI Annoisa 2006 1 12 10 10 10 10	Lawson 2017	26	175	32	172	18.4%	0.76 [0.43, 1.35]	
Norden 2011 1 1 76 2 78 1.5% 0.51 [0.04, 5.71] Not estimated Samople 2077 0 0 41 0 55 Not estimated Not est	Mese 2015	16	60	19	60	11.5%	0.78 [0.36, 1.73]	
Pingon 2000 0 63 0 77 Not estimable Shapind 2010 0 67 2 64 10% 0.19 (0.1.3.93) Shapind 2010 1 100 64 0.99 3.77 (b.1.7.048) Monias 2019 2.5 2.5 2.5 2.5 2.5 2.5 0.65 [0.48, 0.87] Total Contins 147 20.00 0.55 [0.48, 0.87] 0.65 [0.48, 0.87] Total Contins 147 20.00 0.55 [0.48, 0.87] 0.64 [0.14, 0.87] Metorgamely, Tan ²⁺ 0.05; Ch ²⁺ = 14.22, df = 12 (P = 0.29); t= 16%. 0.45 [0.44, 0.87] 0.44 [0.44] Metorgamely ablation Laser ablation 0.45 [0.44, 0.87] 0.44 [0.44] Annexia 2006 1 1.48 = 2.1 (1.17) 0.20 [0.1, 2.9] Bacogla 2015 0 0.60 = 0 0.43 [0.01, 4.29] 0.43 [0.01, 4.29] Calherine 202 0 6.8 4 = 7.3 0.9% 0.44 [0.02, 7.19] 0.44 [0.02, 7.19] Mande 2008 1 1.28 4 5 8.6 % 1.31 [0.16, 5.6] 0.41 [0.10, 1.52] Singlard 2010 <td>Nordon 2011</td> <td>1</td> <td>76</td> <td>2</td> <td>78</td> <td>1.5%</td> <td>0.51 [0.04, 5.71]</td> <td></td>	Nordon 2011	1	76	2	78	1.5%	0.51 [0.04, 5.71]	
Samogu 2017 0 0 41 0 55 Not estimate Spheric 2010 0 67 2 64 10% 0.19 [0.01, 3.83 Spheric 2016 1 4 000 8 100 5.4% 0.49 [0.14, 1.85] Spheric 2016 1 54 0 08 0.9% 0.49 [0.14, 1.85] Spheric 2016 1 54 0 08 0.9% 0.49 [0.14, 1.85] Spheric 2016 1 54 0 08 0.9% 0.48 [0.44, 0.87] Total events 1 47 2.25 25 25 10 Not estimate Total events 147 2.25 (21 = 2 (P = 0.23); P = 16% Tead lefts; C1) 1 151 1 1417 100.9% 0.65 [0.48, 0.87] Tead events 147 2.25 (21 = 2 (P = 0.23); P = 16% Tead for overall effect: Z = 2.83 (P = 0.005) Reading 200 1 44 0 2 140 2.25% 0.20 [0.01, 428] Channels 2020 0 164 0 2 140 2.25% 0.20 [0.01, 428] Channels 2020 0 164 0 2 140 2.25% 0.20 [0.01, 428] Channels 2020 0 68 4 37 3.0% 0.06 [0.00, 1.22] Channels 2020 0 68 4 37 3.0% 0.06 [0.00, 1.22] Lawson 2017 1 4 175 9 172 11.7% 0.42 [0.13, 1.40] Not estimate Ned 2015 0 160 0 192 21.17% 0.42 [0.13, 1.40] Not estimate Ned 2015 0 166 0 10.95; 2.11 17% 0.42 [0.13, 1.40] Not estimate Ned 2015 0 166 0 10.97, 2.19 Not estimate Nodes 2017 1 4 175 9 172 11.7% 0.42 [0.13, 1.40] Not estimate Nodes 2017 1 4 175 9 172 11.7% 0.42 [0.13, 1.40] Not estimate Nodes 2017 1 4 175 9 172 11.7% 0.42 [0.13, 1.40] Not estimate Nodes 2017 1 4 175 9 172 11.7% 0.42 [0.13, 1.40] Not estimate Nodes 2017 1 4 175 9 172 11.7% 0.42 [0.13, 1.40] Not estimate Nodes 2016 1 2 76 1 78 4.2% 2.08 [0.13, 2.44] Park 2000 2 1 16 16 0 11.9% 1.42 10.075, 1.62 Not estimate Nodes 2016 1 16 141 3 144 6.6% 2.09 [0.31, 6.52] Not estimate Nodes 2016 1 16 141 3 144 9.6% 2.09 [0.31, 6.52] Not estimate Nodes 2016 1 16 6 214 100.6% 0.48 [0.47, 1.68] Nodes 2016 1 10 10 Read/decourse ablation Not estimate Nodes 2016 1 16 6 214 100.6% 0.48 [0.54, 1.65] Not estimate Nodes 2016 1 16 6 214 100.6% 0.48 [0.54, 1.65] Nodes 2016 1 16 6 214 100.6% 0.48 [0.16, 2.54] Nodes 2016 0 0 60 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Puggioni 2005	0	53	0	77		Not estimable	
Shepherd 2010 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sanioglu 2017	0	41	0	55		Not estimable	
Syntha 2016 1 4 100 8 100 54% 0.4(10.4, 159) Orans 2016 25 25 25 25 25 100 0.4 100.0% 0.65 [0.46, 0.87] Total events 147 2 205 Not estimate Total events 147 2 205 Rediofrequency ablation Laser ablation Sharky or Subgroup 2 (1 = 2 (P = 0.29); P = 16%; Test for overall effect: Z = 2.83 (P = 0.005) Rediofrequency ablation Laser ablation Sharky or Subgroup 2 (2 = 2 = 2 = 2 = 2 = 2 = 2 = 2 = 2 =	Shepherd 2010	0	67	2	64	1.0%	0.19 [0.01, 3.93]	
$\begin{aligned} & \text{Vacuums 2019} & 1 & 94 & 0 & 95 & 0.975 & 3.7 (-103, 1/48) \\ & \text{Not estimates} \\ & \text{Total PSS CI)} & 1351 & 1417 100.0% & 0.65 [0.40, 0.87] \\ & \text{Heterogeneiny: Tatal = 0.05; CM2 = 14.22, df = 12 (p = 0.29); l^2 = 16% \\ & \text{Heterogeneiny: Tatal = 0.05; CM2 = 14.22, df = 12 (p = 0.29); l^2 = 16% \\ & \text{Test for overall effect Z = 2.83 (p = 0.005)} \\ \hline \\ & \text{Redicfrequency ablation} & \text{Laser ablation} \\ & Study cristing and the expension of the ex$	Sydnor 2016	4	100	8	100	5.4%	0.48 [0.14, 1.65]	
Units 2019 C. D Total events 147 202 Total events 147 202 Total events 147 202 Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.29$); $p = 169$, Text for overall effect: Z = 2.25 ($P = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.29$); $p = 169$, Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Study or Subgroup C. Public 12 ($p = 0.005$) Redicifrequency ablation Laser ablation Redicifrequency ablation Lase	Wozniak 2016	1	54	0	56	0.9%	3.17 [0.13, 79.48]	
Total (SN: Cl) 1351 1417 100.0% 0.55 [0.48, 0.67] Haterogenehy: Tar# = 0.05; Ch ² = 14.22, df = 12 (P = 0.29); P = 16%; Test for overall effect Z = 2.83 (P = 0.005) Radiofrequency ablation Laser ablation Study cost Studyrou Events Total Events Total Weight M-H. Random, 55%; Cl Annela 2000 1 162 2 110 2.6% 0.43 [0.44, 486] Annela 2000 1 162 2 110 2.6% 0.43 [0.44, 486] Annela 2000 1 162 2 110 2.6% 0.43 [0.44, 486] Annela 2000 1 162 2 110 2.6% 0.43 [0.44, 486] Annela 2000 1 2 46 2 41 4.1% 0.43 [0.44, 486] Annela 2000 1 2 46 4 2 70 10 2.6% 0.20 [0.01, 4.25] Kolanzing 10 1 264 4 200 4.9% 0.20 [0.01, 4.25] Kolanzing 10 1 264 4 200 4.9% 0.20 [0.01, 4.25] Kolanzing 10 1 264 4 2.00 4.9% 0.20 [0.01, 4.25] Kolanzing 10 1 264 4 2.00 4.9% 0.20 [0.01, 4.25] Kolanzing 10 1 264 4 2.00 4.9% 0.20 [0.01, 4.25] Kolanzing 10 1 264 4 2.00 4.9% 0.20 [0.01, 126] Haterogenehy: Tar# - 0.27; Ch ¹ = 18.2, df = 13 (P = 0.15); P = 29%. Kolanzing 10 1 6 161 13 144 9.6% 2.08 [0.16, 51.82] Kolanzing 10 1 6 161 13.7% 0.157 [0.7, 3.19] Warnink 2016 4 4 6 6 50 10.3% 0.67 [0.18, 2.51] Kolanzing 10 1 8 67 5 6 4 11.9% 1.57 [0.77, 3.19] Warnink 2016 4 4 6 6 50 10.3% 0.67 [0.18, 2.51] Kolanzing 10 1 1 22 4 11 10.0% 0.96 [0.56, 11.65] Kolanzing 10 1 1 22 4 11 10.0% 0.96 [0.56, 11.65] Kolanzing 10 1 1 22 4 11 10.0% 0.96 [0.56, 11.65] Kolanzing 10 1 1 22 4 11 10.0% 0.96 [0.56, 11.65] Kolanzing 10 1 1 22 4 11 10.0% 0.96 [0.56, 11.65] Kolanzing 10 1 1 22 4 11 10.0% 0.96 [0.56, 11.65] Kolanzing 10 1 1 22 4 11 10.0% 0.96 [0.56, 11.65] Kolanzing 10 1 1 22 4 14 0.0% 0.96 [0.56, 11.65] Kolanzing 10 1 1 22 4 14 0.0% 0.96 [0.56, 11.65] Kolanzing 10 1 1 22 4 14 0.0% 0.96 [0.56, 11.65] Kolanzing 10 1 1 20 4 4 2 0.00; 1.27% 0.17 (0.10, 1.85 cm) Kolanzing 10 1 1 20 4 4 2 0.00; 1.27% 0.17 (0.10, 1.85 cm) Kolanzing 10 1 1 20 4 4 2 0.00; 1.27% 0.17 (0.10, 1.85 cm) Kolanzing 10 1 1 20 4 4 2 0.00; 1.27% 0.17 (0.10, 1.85 cm) Kolanzing 10 1 1 20 4 4 2 0.00; 1.27% 0.17 (0.10, 1.85 cm) Kolanzing 10 1 1 20 4 4 2 0.00; 1.27% 0.100 100; 1	Untas 2019	25	25	25	25		Not estimable	
Instruction Inf Inf District and the second s	Total (95% CI)		1351		1417	100.0%	0.65 (0.48, 0.87)	•
Tables parally: Tard = 0.85; Cl = 14 22, Gl = 12 (P = 0.29); P = 16%; Test for overall effect: Z = 2.83 (P = 0.05) Radiofrequency ablation Laser ablation Odds Ratio Odds Rati	Total quante	147	1001	206		1001070	eree ferrer erer 1	
The term over all effect: $Z = 2.83$ (P = 0.005) P = 0.005 P = 0.	Heterogeneity: Tau? =	0.05 Chil = 14.22 di	= 12 /P	= 0 20) 12	= 16%			
Amenia 2006 2 102 10 2 10 2 10 2 10 2 10 2 10	Study or Subgroup	Radiofrequency ab Events	lation Total	Laser abl Events	ation Total	Weight	Odds Ratio M-H. Random. 95% CI	Odds Ratio M-H. Random, 95% Cl
Alfreide 2009 Alfreide 2009 Calibration 2200 Calibration 2200	Almeida 2006	2	128	2	819	5.9%	6.48 [0.91, 46.45]	
Bacogla 2110 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Almeida 2009	1	40	2	41	4.1%	0.43 [0.04, 4.96]	
Lamberha 2022 0 0 106 2 110 26% Laboration L	Bozogla 2016	0	60	0	60	0.00	NOT estimable	
Construction Construction Construction Variability 0 33 0 37 0.0% Construction Variability 0 33 0 37 0.0% Construction Variability 0 17 10% Construction Construction Model 2015 0 60 00 Not download Not download Not download Nordon 2011 2 76 1 78 4.2% 2.26 [0.05, 6.52] Shopherd 2016 2.3 100 16 10 118, 75 5.75 [0.77, 3.19] Variank 2019 1 3.2 4 3.4 4.7% 0.24 [0.03, 2.29] Variank 2016 4 5.4 6.5 10.3% 0.67 [0.18, 2.51] Total (95% Ci) 1516 2214 10.0.4% 0.36 [0.56, 1.65] 0.01 0.1 1 0.01 0.1 1 0.01 0.1 1.00 10 Radiofrequency ablation Laser ablation Odds Ratio	Califernie 2022		100			2.076	0 20 10 01 4 201	· · · · · · · · · · · · · · · · · · ·
$ \begin{array}{c} \label{eq:constraints} \\ \mbox{constraints} \\ \mbox{constraints}$	Gianesini 2020	0	106	2	110		0.20 [0.01, 4.29]	• • • • • • • • • • • • • • • • • • • •
Name 2015 1 20 4 9 0 10 0.00 10 Neede 2015 0 1070 1177 10 1070 1070 1177 10 1070 1070 1177 10 1070 1070 1177 10 1070 1177 10 1070 1070 1177 1070 1177 1070 1178 1070 1178 1070 1178 1070 1178 1070 1178 1070 1178 1070 1178 1070 1178 1070 1178 1070 1178 1070 1178 1070 1070 1177 1178 1070 1070 1178 1070	12.201.201.201	0	106 44	0	41	2.09/	0.20 [0.01, 4.29] Not estimable	
Label 2017 • • • • • • • • • • • • • • • • • • •	Kubat 2010	0	106 44 58	0 4	41 37	3.0%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22]	
Integradual Digit 0	Kubat 2019	0 0 1	106 44 58 264	0 4 4 0	41 37 260	3.0% 4.9%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19]	
No.001.2011 2 09 1 87.42.8 2.09.16.6.2.48 Samapla 2011 6 14 3 144 65.7 1.29.10.6.2.48 Samapla 2017 6 141 3 144 65.7 1.29.10.6.2.48 Samapla 2017 6 141 3 144 65.7 1.29.10.6.2.48 Samapla 2017 6 141 3 144 65.7 1.29.10.6.2.48 Syndra 2016 23 100 16 100 18.7% 1.57.10.77.3.19 Waznik 2016 4 54 6 56 10.3% 0.67.10.18.2.51 Total works 0.01 1.57.6 2.214 100.7% 0.56.16.57 Total works Total works Total 2.20.1% Total 2.20.1% 0.40.10.14.46.41 America 2009 1 142 2.41.9% 0.42.10.4.4.6.41 0.44.6.10 America 2009 1 142 2.41.9% 1.50.10.4.6.4.6.1 0.44.6.10.4.4.6.4.1 America 2009 1 142 2.41.9% 1.50.10.4.6.4.6.1 0.44.6.10.4.4.6.4.1 America 2009	Kubat 2019 Lawson 2017	0 0 1 4	106 44 58 264 175	04490	41 37 260 172	3.0% 4.9% 11.7%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40]	·
Part Analog 2011 2 1 2 0	Kubat 2019 Lawson 2017 Mese 2015	0 0 1 4 0	106 44 58 264 175 60 78	0 4 4 9 0	41 37 260 172 60 78	3.0% 4.9% 11.7%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable	
Sancigu 2017 . 1 1 1 0 1 1 2 2 4 1 0 0 1 5 2 5 5 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Kubat 2019 Lawson 2017 Mese 2015 Nordon 2011	0 0 1 4 0 2	106 44 58 264 175 60 76	0 4 4 9 0 1	41 37 260 172 60 78	3.0% 4.9% 11.7% 4.2%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23,44]	
Singland 2010 8 67 5 64 11.9% 1.18 [0.40.5.18] Vahaab 2019 23 100 16 10 18.7% 1.57 [0.77.3.19] Vahaab 2019 1 32 4 34 47% 0.24 [0.03.2.29] Vacanik 2016 4 54 6 55 10.3% 0.67 [0.18, 2.51] Total events 55 60 Heterogenety: Tau' = 0.27; Ch' = 18.32, d' = 13 (P = 0.15; P = 29% Test for overall effect: Z = 0.14 (P = 0.59) Radiofrequency ablation Study or Studycours Radiofrequency ablation Code Ratio Study or Studycours Ratio Ra	Kubat 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020	0 0 1 4 0 2 2	106 44 58 264 175 60 76 64	0 4 9 0 1 2	41 37 260 172 60 78 83	3.0% 4.9% 11.7% 4.2% 5.8%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.18, 9.54]	
Sudvar 2016 0 Sudvar 2016 0 2 100 16 100 18.7% 1.57 [0.77, 3.19] Wearha 2016 1 1 22 4 4 4 4 4 47, 57 [0.77, 3.19] Wearha 2016 4 54 6 56 10.3% 0.57 [0.16, 2.63] Heterogeneity: Tau' = 0.27; Chi ² = 13.(2 + 0.15; 1 ² = 29% Test for overall effect; Z = 0.14 (<i>P</i> = 0.89) Radiofrequency ablation Laser ablation Study or Subgroup Radiofrequency ablation Radiofrequency ablation Laser ablation Study or Subgroup Radiofrequency ablation Laser ablation Study or Subgroup Radiofrequency ablation Radiofrequency ablation Laser ablation Not estimate Not	Kubat 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanjoglu 2017	0 0 1 4 0 2 2 6 1	106 44 58 264 175 60 76 64 141	0 4 9 0 1 2 3 0	41 37 260 172 60 78 83 144	3.0% 4.9% 11.7% 4.2% 5.8% 9.6%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.18, 9.54] 2.09 [0.51, 8.52]	
Valuation 2219 1 1 22 1 4 24 4.7% 122 [0.01, 2.28] Wacnick 2016 4 54 6 56 10.3% 0.07 [0.16, 2.51] Total events 55 6 0 Heterogenetic, Tau' = 0.27; Chi [*] = 13.2, d = 13.(P = 0.15; P = 23% Test for overall effect; Z = 0.14 (P = 0.89) Radiofrequency ablation Radiofrequency ablation Radiofrequency ablation 1.1 Elements 10 40 (0.4, 4.89) Norden 2016 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 0 60 0 00 Not estimate Bacaga 2016 0 1 0 0 0 0 Not estimate Bacaga 2016 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 2 128 2 819 5.9% 6.48 [0.51, 4.64] Amenda 2006 1 0 0 0 Not estimate Bacaga 2016 0 1 0 0 0 0 Not estimate Bacaga 2016 1 0 1 1 2 46 1 0 0.0% 0.29 [0.51, 8.24] Test for overall effect; Z = 1.73 (P = 0.08) F = 0.5K 12.2 AMEN 2016 0 1 0 5 2 110 2.8% 1.32 [0.04, 2.49] Gametaria 2200 0 84 4 37 3.0% 0.028 [0.03, 120] Table werets 4 3 0 0.02 [0.07] 4.29 [0.04, 2.10] Call effect; Z = 1.73 (P = 0.08) F = 0.5K 12.2 AMEN 2016 0 1 2 24 4 0 0.02 [0.07, 12.24] Gametaria 2200 0 84 4 37 3.0% 0.028 [0.03, 120] Gametaria 2200 0 10 5 2.5% 4.110 [1.6, 10.33] Table werets 4 3 0 0.02 [0.07] 4.29 [0.24, 10.33, 210] Table werets 5 0.00, Chi [*] - 5.46, Uf = 0 (-0.6), F = 0.5K Test for overall effect; Z = 1.72 (P = 0.03) T Table werets 5 0 0.00, Chi [*] - 5.46, Uf = 0 (-0.6), F = 0.5K Table 2240 0 0.00, Chi [*] - 5.46, Uf = 0 (P = 0.50), F = 0.5K Table 2240 0 0.00, Chi [*] - 5.46, Uf = 0 (P = 0.50), F = 0.5K Table 2240 0 0.00, Chi [*] - 5.46, Uf = 0 (P = 0.50), F = 0.5K Table 2240 0 0.00, Chi [*] - 5.46, Uf = 0	Kubat 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shenberd 2010	0 0 1 4 0 2 2 6 1 8	106 44 58 264 175 60 76 64 141 41 67	0 4 4 9 0 1 2 3 0 5	41 37 260 172 60 78 83 144 55	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.18, 9.54] 2.09 [0.51, 8.52] 4.11 [0.16, 103.53] 1.60 [0.49, 5, 18]	
Wearniak 2016 4 54 6 56 10.3% 0.87 0.18 251 Total 90% CI) 1516 2214 100.0% 0.96 [0.56, 1.65] 0.077 0.18, 2.51] Total works 55 60 0 0.96 [0.56, 1.65] 0.01 0.1 1 10 10 Total works Test for overall effect: Z = 0.14 (P = 0.89) Colds Ratio Odds Rati	Kubat 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shepherd 2016	0 0 1 4 0 2 2 6 1 8 23	106 44 58 264 175 60 76 64 141 41 67 100	0 4 4 9 0 1 2 3 0 5	41 37 260 172 60 78 83 144 55 64	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 18.7%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.18, 9.54] 2.09 [0.51, 8.52] 4.11 [0.16, 103.53] 1.60 [0.49, 5.18] 1.57 [0.77, 3.19]	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Kubat 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shepherd 2010 Sydnor 2016 Vahaaho 2019	0 0 1 4 0 2 2 6 1 8 23 1	106 44 58 264 175 60 76 64 141 41 41 67 100 32	0 4 9 0 1 2 3 0 5 16 4	41 37 260 172 60 78 83 144 55 64 100 34	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 18.7% 4.7%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.18, 9.54] 2.09 [0.51, 8.52] 4.11 [0.16, 103.53] 1.60 [0.49, 5.18] 1.57 [0.77, 3.19] 0.24 [10.03, 2.29]	
Total 199% C) 1516 2214 100.0% 0.96 [0.56, 1.65] Heterogenety: Tau' = 0.27: Ch ² = 18.32; df = 13 (P = 0.15); P = 29% Test for overall effect: Z = 0.14 (P = 0.89) Radiofrequency ablation Laser ablation Study or Studgroup Events Total Events Total Weight Meth Random, 25%; Cl 1.15. Its Juno 2016 Radiofrequency ablation Laser ablation Study or Studgroup Events Total Events Total Events Total Weight Meth Random, 25%; Cl 1.15. Its Juno 2017 Amenda 2009 2 1 42 2 419 0.0% Amenda 2009 2 1 42 2 419 0.0% Amenda 2009 2 1 42 2 419 0.0% Amenda 2009 2 1 42 2 419 0.0% Radiofrequency ablation Laser ablation Mode Studgroup Events Total Events Total Weight Meth Random, 25%; Cl Meth Random, 25%; Cl 1.15. Its Juno 2016 0 000 Not estimate Meso 2015 0 0 00 000 Not estimate Meso 2016 1 1 31 44 0.0% 1.5% Shepherd 2016 2 3 100 116 100 18.7% 1.5% 1.6% 1.5% 10.7%, 3.19 Weight 2010 0 4 72 3 40 10.2% 2.0% 10.51.6% 1.2% Heterogenetity: Tau' = 0.0%; Cl ^m = 4.88, df = 6 (P = 2.5%); P = 0% Taal events C = 1.73 (P = 0.5%); P = 0% Taal events C = 1.73 (P = 0.5%); P = 0% Taal events C = 1.73 (P = 0.5%); P = 0% Taal events C = 1.73 (P = 0.5%); P = 0% Taal events C = 1.73 (P = 0.5%); P = 0% Taal events C = 1.73 (P = 0.5%); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 1.73 (P = 0.5%); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.88, df = 6 (P = -4.98); P = 0% Taal events C = 0.05 (P = -4.8	Kubat 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shepherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2016	0 0 1 4 0 2 6 1 8 23 1 4	106 44 58 264 175 60 76 64 141 41 67 100 32 54	2 0 4 4 9 0 1 2 3 0 5 16 4 6	41 37 260 172 60 78 83 144 55 64 100 34 56	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 18.7% 4.7% 10.3%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.18, 9.54] 2.09 [0.51, 8.52] 4.119 [0.16, 10.353] 1.60 [0.45, 5.18] 1.57 [0.77, 3.19] 0.24 [0.03, 2.29] 0.67 [0.18, 2.51]	
Close Hereings Display 100 (minimized provide)	Kubat 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shepherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2016	0 0 1 4 0 2 2 6 1 8 23 1 4	106 44 58 264 175 60 76 64 141 41 100 32 54	2 4 4 9 0 1 2 3 0 5 16 4 6	41 37 260 172 60 78 83 144 55 64 100 34 56	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 18.7% 4.7% 10.3%	0.20 [0.01, 4.29] Not estimable 0.66 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 234] 4.131 [0.18, 9.54] 2.09 [0.51, 8.52] 4.11 [0.16, 103.53] 1.60 [0.49, 5.18] 1.57 [0.77, 3.19] 0.24 [0.03, 2.29] 0.67 [0.18, 2.51]	
Califor equency ablation Unit of the set of th	Kubat 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shepherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2016 Total (95% CI)	0 0 1 4 0 2 2 6 1 8 23 1 4	106 44 58 264 175 60 76 64 141 41 41 67 100 32 54 1516	2 4 4 9 0 1 2 3 0 5 16 4 6	41 37 260 172 60 78 83 144 55 64 100 34 56 2214	3.0% 4.9% 11.7% 4.2% 5.8% 2.5% 11.9% 18.7% 4.7% 10.3%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.16, 9.54] 1.29 [0.57, 8.52] 4.11 [0.16, 103.53] 1.60 [0.40, 5.18] 1.67 [0.77, 3.19] 0.24 [0.03, 2.29] 0.67 [0.18, 2.51] 0.96 [0.56, 1.65]	
Radiofrequency shalton Laser shalton Odds Ratio Odds Ratio Odds Ratio Sindy or Subgroup Events Total Events Total Media	kubat 2019 Lawson 2017 Mordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Sydnor 2016 Yahaaho 2019 Wozniak 2016 Total (95% CI) Total events Heterogeneity: Tau ² =	0 0 1 4 0 2 2 6 1 8 23 1 4 0.27: Chi ² = 18.32, df	106 44 58 264 175 60 76 64 141 41 67 100 32 54 1516 = 13 (P =	2 4 4 9 0 1 2 3 0 5 16 4 6 0 .0.15); ² =	41 37 260 172 60 78 83 144 55 64 100 34 56 2214 29%	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 18.7% 4.7% 10.3%	$\begin{array}{c} 0.20 \; [0.01, 4.29] \\ \text{Not estimable} \\ 0.06 \; [0.00, 1.22] \\ 0.24 \; [0.13, 1.40] \\ \text{Not estimable} \\ 2.08 \; [0.18, 23.44] \\ 1.31 \; [0.18, 53.44] \\ 2.09 \; [0.51, 8.52] \\ 4.11 \; [0.16, 10.53, 1.52] \\ 1.57 \; [0.77, 3.19] \\ 0.24 \; [0.13, 2.54] \\ 0.57 \; [0.16, 2.54] \\ 0.56 \; [0.56, 1.65] \end{array}$	
Study or Subgroup Fronts Total Front Total Events Total Media Media <td>Kubal 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Shopherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2016 Vahaaho 2019 Wozniak 2016 Total (95% CI) Total events Heterogeneity: Tau⁹ = Test for overall effect:</td> <td>0 0 1 4 0 2 2 6 1 8 2 3 1 4 0.27; Chi² = 18.32; df 2 = 0.14 (P = 0.89)</td> <td>106 44 58 264 175 60 76 64 141 41 41 67 100 32 54 1516 = 13 (P =</td> <td>2 4 4 9 0 1 2 3 0 5 16 4 6 6 0 . (15); ² =</td> <td>41 37 260 172 60 78 83 144 55 64 100 34 56 2214 29%</td> <td>3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 4.7% 10.3%</td> <td>0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.18, 9.54] 2.09 [0.51, 8.22] 1.40 [0.49, 5.18] 1.57 [0.77, 3.19] 0.24 [0.03, 2.29] 0.76 [0.18, 2.54] 0.36 [0.56, 1.65]</td> <td>0.01 0.1 Laser ablation</td>	Kubal 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Shopherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2016 Vahaaho 2019 Wozniak 2016 Total (95% CI) Total events Heterogeneity: Tau ⁹ = Test for overall effect:	0 0 1 4 0 2 2 6 1 8 2 3 1 4 0.27; Chi ² = 18.32; df 2 = 0.14 (P = 0.89)	106 44 58 264 175 60 76 64 141 41 41 67 100 32 54 1516 = 13 (P =	2 4 4 9 0 1 2 3 0 5 16 4 6 6 0 . (15); ² =	41 37 260 172 60 78 83 144 55 64 100 34 56 2214 29%	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 4.7% 10.3%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.18, 9.54] 2.09 [0.51, 8.22] 1.40 [0.49, 5.18] 1.57 [0.77, 3.19] 0.24 [0.03, 2.29] 0.76 [0.18, 2.54] 0.36 [0.56, 1.65]	0.01 0.1 Laser ablation
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Kubat 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Shepherd 2010 Syndror 2016 Vahaaho 2019 Wozniak 2016 Total (95% CI) Total (95% CI) Total vents Heterogeneity: Tau ² = Test for overall effect:	0 0 1 4 2 2 6 1 8 23 1 4 0.27: Chi ² = 18.32, df 2 = 0.14 (P = 0.89) Radiofrequency ab	106 44 58 264 175 60 76 64 141 41 41 41 67 100 32 54 1516 = 13 (P =	0 4 4 9 0 1 2 3 0 5 16 4 6 0 0.15); l ² =	41 37 260 172 60 78 83 144 55 64 100 34 55 64 100 34 55 64 2214 29%	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 18.7% 4.7% 10.3%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.16, 103.53] 1.46 [0.49, 5, 16] 0.57 [0.17, 3.19] 0.24 [0.32, 22] 0.56 [0.16, 2.51] 0.36 [0.56, 1.65]	0.01 0.1 Laser ablation
Animuma account 1 40 2 4 1.7. 0.7.3 [0.04, 4.06] Mondag2015 0 0.0 0.0 0.0 Note metables Mondag2015 0 0.0 0.0 0.0 Note metables Macmasen 2011 2 7.6 1 7.8 4.2% 2.0.8 [0.18, 23.44] Shaphard 2010 3 0.7 5 6.4 11.9% 1.40 [0.44, 5.18] Shaphard [05% c)1 2 0.7 5 6.4 1.57 1.52 [0.34, 2.45] Metoragenetity: Tau* = 0.00, Clu ⁴ = 0.60; PT = 0.50; PT	Kubal 2019 Lawson 2017 Mase 2015 Nordon 2011 Park 2020 Sknghrd 2010 Sknghrd 2010 Sknghrd 2010 Sknghrd 2010 Sknghrd 2010 Vahaaha 2019 Wozniak 2019 Hoterogeneily: Tau ^y = Test for overall effect: Study or <u>Subgroup</u> 1.1. Before 2016	0 0 1 4 2 2 6 1 8 23 1 4 0.27; Chi ² = 18.32, df 2 = 0.14 (P = 0.89) Radiofrequency ab Events	106 44 58 264 175 60 76 64 141 41 67 100 32 54 1516 = 13 (P =	2 4 4 9 0 1 2 3 0 5 16 4 6 60 0.15); I ² =	41 37 260 172 60 78 83 3144 55 64 100 34 56 2214 29%	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 4.7% 10.3% 100.0%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.18, 9.54] 2.09 [0.51, 8.22] 1.41 [0.16, 103.53] 1.460 [0.49, 7.31] 0.24 [0.03, 2.29] 0.47 [0.16, 16.5] 0.46 [0.56, 1.65]	0.01 0.1 1.10 10 Radiofrequency ablation Laser ablation M-H. Randgem. 95%. Cl
Names 2015 0 0 0 0 0 Not retinnable Nordon 2011 2 76 1 78 4.28 2.08 0.16 8.344 Reamusen 2011 6 14 3 144 0.6% 2.06 0.16 8.344 Maphendt 2010 6 0 6.00 10.37% 0.067 0.16 1.49 Vacanak 2016 4 9.4 0 50 10.37% 0.077 1.52 0.047 0.58 0.017 1.52 0.047 0.58 0.017 0.58 0.017<	Kuhat 2019 Luwson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shipherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2019 Wozniak 2019 Total (95% CI) Total 95% CI) Total 95% CI) Total 95% CI) Total 90% CI) Total	0 0 1 4 0 2 2 6 1 8 23 1 4 0 27; Chi ² = 18.32, df 2 = 0.14 (P = 0.89) Radiofrequency ab Events	106 44 58 264 175 60 76 64 141 41 41 41 67 100 32 54 1516 = 13 (P =	2 4 4 9 0 1 2 3 0 5 16 4 6 0 5 16 4 6 0 0.15); ² =	110 41 37 260 172 60 78 83 144 55 64 145 56 4 145 56 4 100 34 56 2214 29% 819 70 819 70 819 70 819 70 70 819 70 70 70 70 70 70 70 70 70 70 70 70 70	3.0% 4.9% 11.7% 4.2% 5.8% 2.5% 11.9% 18.7% 10.3% 100.0%	0.20 [0.01, 4.29] Not estimable 0.06 [0.01, 122] 0.24 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 1.40] 1.51 [0.18, 9.54] 2.09 [0.18, 2.54] 1.51 [0.18, 9.54] 1.57 [0.77, 10.18] 0.24 [0.36, 2.51] 0.36 [0.56, 1.65] Odds Ratio MH. Random. 955; CI 6.48 [0.31, 46.45]	0.01 0.1 10 10 Radiofrequency ablation Laser ablation
Nordon 2011 2 76 1 78 4.2% 2.08 [0.16, 23.44]	Kubal 2019 Lawson 2017 Mase 2015 Nordon 2011 Park 2020 Swghor 2010 Swghor 2010 Swghor 2010 Swghor 2010 Wanaha 2019 Wanaha 2019 Wanaha 2019 Wanaha 2019 Manaha 2019 Manaha 2019 Later or a subarong Study or Subarong Study or Subarong Amenda 2009 Amenda 2009	0 0 1 4 2 2 6 1 8 23 1 4 0.27: Chi ^p = 18.32, df 2 = 0.14 (P = 0.89) Radiofrequency ab Events 2 1 1	106 44 58 264 175 60 76 64 141 157 100 32 54 1516 = 13 (P =	0 4 4 9 0 1 2 3 0 5 16 4 6 0 0.15); P = Events	110 41 37 260 172 60 78 83 144 55 64 100 34 56 2214 29% 819 41 819 41	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 18.7% 4.7% 10.3% 100.0% Weight 5.9% 4.1%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 2.34] 1.31 [0.18, 9.54] 2.09 [0.51, 8.22] 1.47 [0.16, 103.53] 1.46 [0.49, 7.81] 0.42 [0.30, 2.29] 0.47 [0.16, 165] 0.46 [0.56, 1.65]	0.01 0.1 1.0 10 Radiofrequency ablation Laser ablation
Haamaban 2011 6 141 3 144 0.6% 2.09 [0.51, 8.52] Magnatus 2010 5 0 67 64 11.9% 1.68 [0.46, 510] Waanaba 2010 2 4 54 0 50 10.3% 0.67 [0.16, 2.51] Waanaba 2010 4 54 0 50 10.3% 0.67 [0.16, 2.51] Stobata (9% 0.68] 0 6 0.68] 1.22 Alar 2016 2 - 10 0 50 (P - 0.6) 1.22 Alar 2016 2 - 10 0 0 0 - 10 0 0 - 0 - 0 - 0 - 0 - 0	Kuhal 2019 Luwson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shipherd 2010 Sydnor 2016 Vahaaho 2019 Woznikk 2016 Total (95% CI) Total 95% CI) Monton 2019 National 2019 National 2019 National 2019 National 2019 National 2019	0 0 1 4 0 2 2 6 1 8 23 1 4 0 27; Chi ² = 18.32; df 2 = 0.14 (P = 0.89) Rediofrequency ab Events 2 1 0	106 44 45 82 64 175 60 64 175 60 64 141 41 41 41 41 67 100 32 54 1516 = 13 (P = 128 846 60 60	2 4 4 9 0 1 2 3 3 0 5 16 6 4 6 0 0.15); l ² =	110 41 37 260 172 60 172 60 78 83 144 55 64 100 34 56 2214 29% 2214 819 41 60 60 60	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 11.9% 18.7% 4.7% 103% 100.0% Weight 5.9% 4.1%	0.20 [0.01, 4.29] Not estimable 0.06 [0.01, 122] 0.24 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 1.40] 1.51 [0.18, 9.54] 2.09 [0.19, 2.34] 1.51 [0.18, 9.54] 2.09 [0.51, 6.25] 1.66 [0.48, 5.18] 1.57 [0.77, 10.18] 0.24 [0.32, 2.59] 0.67 [0.18, 2.51] 0.36 [0.56, 1.65] Odds Ratio MH. Random95% CI 6.68 [0.14, 6.46] 0.49 [0.04, 4.69] 0.49 [0.04, 4.69] 0.4	0.01 0.1 1 10 10 Radiofrequency ablation Laser ablation M+H. Random. 92% Cl
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Kubal 2019 Lawson 2017 Mase 2015 Nordon 2011 Park 2020 Swphor 2010 Synphor 2010 Synphor 2010 Synphor 2010 Synphor 2010 Synhor 2010 Wahasho 2019 Wahasho 2019 Wahasho 2019 Mataba 2019 Listed events Listed or Subtaroup Study or Subtaroup Subtaroup 2016 Amedia 2020 Subtaroup 2016 Mese 2015 Nordon 2011	0 0 1 4 2 2 6 1 8 23 1 4 55 52 6 1 8 23 1 4 55 23 1 4 22 2 6 1 8 22 6 1 8 22 6 1 8 22 4 5 5 22 6 1 8 27 6 1 8 27 6 1 8 27 6 1 8 28 1 1 7 1 8 27 6 1 8 28 1 1 7 1 8 28 1 1 7 1 8 28 1 1 1 8 28 1 1 1 8 28 1 1 1 8 28 1 1 8 2 1 1 8 2 1 1 8 2 1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1	106 44 58 264 175 64 141 141 41 67 100 32 54 1516 = 13 (P = 128 128 1410 1516 16 6 6 4 6 6 0 6 0 6 0 6 0 6 0 6 7 6	0 4 4 9 0 1 2 3 0 5 16 4 6 0.15); I ² = Laser abl. Events 2 2 0 0 1	atton 819 41 37 260 172 60 78 83 144 100 34 45 64 100 34 45 64 100 34 45 64 100 34 45 60 78 83 144 155 64 100 34 60 78 83 144 155 64 100 34 60 78 83 144 155 64 100 34 60 78 83 144 155 64 100 34 60 78 83 144 155 64 100 34 165 164 175 164 175 164 175 164 175 164 175 164 175 164 175 175 175 175 175 175 175 175	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 2.5% 4.7% 10.3% 100.0% Weight 5.9% 4.1%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 2.14] 1.31 [0.18, 9.54] 2.09 [0.18, 9.54] 1.31 [0.18, 9.54] 2.09 [0.51, 8.22] 0.411 [0.16, 103.53] 1.460 [0.49, 5.18] 0.47 [0.16, 103.53] 0.47 [0.16, 103.53] 0.46 [0.56, 1.65] 0.46 [0.91, 46.46] 0.43 [0.44, 460] 0.43 [0.44, 460] 0	0.01 0.1 1.0 10 Radiofrequency ablation Laser ablation
Wacmark 2010 4 54 0 50 10.37 0.077 0.177<	Kuhal 2019 Luwson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shipherd 2010 Sydnor 2016 Vahaaho 2019 Woznikk 2016 Total (95% CI) Total 95% CI) Total 90% CI) Nardon 2019 Nardon 2011 Nardon 2011	0 0 1 4 0 2 2 6 1 8 23 1 4 0.27; Chi ² = 18.32; df 2 = 0.14 (P = 0.89) Rediofrequency ab Events 2 1 2 2 6 1 3 4 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	106 44 58 264 475 60 76 60 76 60 76 44 141 41 41 1516 = 13 (P = 13 (P = 13 (P	0 4 4 9 0 1 2 3 3 0 5 6 60 0.15); ² = Laser abl Events 2 2 0 0 1 3 5	110 11 11 12 12 12 12 14 13 14 15 14 15 14 15 14 15 14 15 14 15 14 15 16 17 200 0 78 83 14 15 16 17 26 0 78 83 14 15 16 17 26 17 26 17 26 17 26 17 26 17 26 17 26 17 26 17 26 17 26 17 26 17 26 17 26 17 26 10 17 26 10 10 10 10 10 10 10 10 10 10	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 11.9% 18.7% 10.3% 100.0% Weight 5.9% 4.1%	0.20 [0.01, 4.29] Net estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.10, 32, 14] 0.42 [0.11, 10, 16] 1.31 [0.16, 9.54] 2.09 [0.16, 23, 44] 0.41 [0.16, 16] 0.42 [0.07, 518] 0.42 [0.07, 518] 0.42 [0.07, 518] 0.44 [0.44, 45] 0.45 [0.44, 45] 0.46 [0.54, 46.45] 0.43 [0.14, 45] 0.44 [0.14, 46.45] 0.45 [0.14, 46] 0.45 [0.1	0.01 0.1 1 10 10 Radiofrequency ablation Laser ablation M+H. Random. 92% CI
Subotal (9%) (C) 732 1422 64.6% 1.52 (0.94, 2.45) Heinorganetity: Tuu ² = 0.00, Chi ⁰ = 4.88, df = 6 (P = 0.56); P = 0%; Test (c oronal diffect 2 = 1.73 (P = 0.56); P = 0%; Test (c oronal diffect 2 = 1.73 (P = 0.56); P = 0%; Test (c oronal diffect 2 = 1.73 (P = 0.56); P = 0%; Test (c oronal diffect 2 = 1.73 (P = 0.56); P = 0%; Test (c oronal diffect 2 = 2.17 (P = 0.30); Test (C oronal diffect 2 = 2.17 (P = 0.30); Test (C oronal diffect 2 = 2.17 (P = 0.30); Test (C oronal diffect 2 = 1.27 (P = 0.30); Test (C oronal diffect 2 = 1.27 (P = 0.30); Test (C oronal diffect 2 = 2.17 (P = 0.30); Test (C oronal diffect 2 = 0.15 (P = 2.15 (P = 2.15 (P = 2.15 (P = 0.15 (P = 0.	Kubał 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shophard 2010 Sydnor 2016 Vuhanało 2019 Wozniak 2016 Total (9%K CI) Total events Lat Before 2016 Amesida 2006 Brozojna 2016 Amesida 2016 Mese 2015 Nordon 2011 Rasmussen 2011	0 0 1 4 2 2 6 1 8 23 1 4 55 52, ChP = 18.32, df 2 = 0.14 (P = 0.89) Radiofrequency ab Events 2 2 0 2 2 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5	106 44 58 264 175 60 76 64 141 1516 = 13 (P = = 13 (P = = 13 (P = 128 86 60 76 60 76 61 11 128 84 60 76 60 77 100 76 11 75 11 75 11 75 75 75 75 75 75 75 75 75 75 75 75 75	0 4 4 9 0 1 2 3 0 5 16 4 6 0 0.15); P = Laser abl Events 2 2 0 0 1 3 5 5 16	atton 784 20% 141 37 260 78 83 144 55 64 100 34 55 64 100 34 55 64 100 34 56 819 41 819 41 819 41 41 819 41 41 60 60 78 819 819 819 819 819 819 819 81	3.0% 4.9% 11.7% 4.2% 5.8% 2.5% 11.9% 4.7% 4.7% 10.3% 100.0% Weight 5.9% 4.1% 5.9% 4.1%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.18, 2.34] 1.31 [0.18, 9.54] 2.09 [0.18, 2.34] 1.31 [0.18, 9.54] 2.09 [0.51, 8.22] 0.47 [0.16, 103.53] 1.47 [0.77, 3.18] 0.42 [0.91, 4.64] 0.43 [0.54, 4.64] 0.43 [0.54, 4.64] 0.45 [0.51, 4.64]\\ 0.45 [0.51, 4.64]\\ 0.45 [0.51, 4.6	0.01 0.1 1 Laser ablation 0.01 0.1 Laser ablation 10 0.05 Ratio M-H. Random. 95%. Cl
1 colar entrols 48 35 1 colar entrols 48 df = 6 (P = 0.66), P = 06, 1 colar entrols 1 colar entrols 1 colar entrols 1 colar entrols 1 colar entrols 1 colar entrols 2 A fate 2016 0 1 colar entrols 0 colar entrols 2 A fate 2017 0 1 colar entrols 0 colar entrols 2 A fate 2018 0 1 colar entrols 0 colar entrols 2 A fate 2018 0 1 colar entrols 0 colar entrols 2 Colar entrols 0 1 colar entrols 0 colar entrols 2 Colar entrols 0 1 colar entrols 0 colar entrols 2 Colar entrols 0 1 colar entrols 0 colar entrols 2 Colar entrols 0 1 colar entrols 0 colar entrols 2 Colar entrols 0 1 colar entrols 0 colar entrols 2 Colar entrols 0 1 colar entrols 0 colar entrols 2 Colar entrols 0 1 colar entrols 0 colar entrols 2 Colar entrols 0 1 colar entrols	Kubał 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Shopherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2019 Wozniak 2019 Wozniak 2019 Utała wonts Totał (9% CI) Totał (9% CI) Totał vonts La.1 Before 2016 Almeida 2006 Almeida 200	0 0 1 4 2 2 6 1 8 23 1 4 0.27; Chi ^p = 18.32, df Z = 0.14 (P = 0.89) Redisfrequency ab Events 2 1 2 2 3 4	106 44 58 264 175 60 76 64 141 1516 67 100 32 54 1516 = 13 (P = = 13 (P = = 13 (P = 128 46 60 60 60 60 60 76 141 155 167 167 167 175 175 175 175 175 175 175 175 175 17	2 0 4 4 9 9 0 1 2 2 3 0 5 16 4 6 0 0.15); P = 2 2 2 0 0 0 1 3 5 5 16 6 0 0 15; P = 2 2 5 0 0 5 5 16 16 16 16 16 16 16 16 16 16 16 16 16	atton Total 819% 229% 819% 819% 8144 55 64 55 64 145 56 41 100 34 56 2214 819 41 60 60 78 8144 41 60 60 78 8144 100 78 819 819 70 70 70 70 70 70 70 70 70 70 70 70 70	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 5.8% 11.9% 10.3% 100.0% Weight 5.9% 4.1% 4.2% 9.6%	0.20 [0.01, 4.29] Net estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2, 19] 0.42 [0.03, 2, 19] 0.42 [0.13, 1.40] 1.51 [0.16, 9.54] 2.09 [0.51, 8.22] 1.60 [0.49, 5.18] 1.57 [0.10, 5.18] 1.57 [0.10, 5.18] 0.67 [0.16, 2.51] 0.46 [0.56, 1.65] 0.47 [0.16, 2.51] 0.46 [0.1, 6.24] 0.47 [0.16, 2.51] 0.46 [0.1, 6.25] 0.47 [0.16, 2.51] 0.46 [0.1, 6.25] 0.47 [0.16, 2.51] 0.46 [0.1, 6.25] 0.47 [0.16, 2.51] 0.46 [0.1, 6.25] 0.47 [0.16, 2.51] 0.47 [0.16, 1.65] 0.48 [0.1, 6.25] 0.49 [0.1, 6.25] 0.40 [0.1, 6.25] 1.00 [0.1, 6	0.01 0.1 1 10 10 Radiofrequency ablation Laser ablation
Table Transmitter 100 100 2 110 2.05% 0.20 [0.01, 4.29] 1.2.2 After 2016 Catherine 2022 0 100 2 110 2.0% Not estimate Catherine 2022 0 100 2 110 2.0% Not estimate Catherine 2022 0 100 2 110 2.0% Not estimate Record 2010 1 264 4 20 4.9% 0.20 [0.01, 4.29] Head 2024 0 4.9% 4.9% 0.4% 0.24 [0.33, 1.40] Prex 2020 2 64 2.8 5.6% 1.31 [0.16, 0.6.4] Stocholar 100 1 4.0 55 2.5% 4.11 [0.16, 10.3.53] Stocholar 100% 724 35.4% 6.24 [0.16, 0.31] 1.46 Total events 9 25 4.21 [0.16, 10.3.5] 1.41 Total events 5 00 4.24 [0.16, 0.3.6] 1.41 Total events 55 00 1.56 [0.56, 1.6.5] 0.01	Kubał 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shipherd 2010 Sydnor 2016 Vahaaho 2016 Vahaaho 2016 Vahaaho 2019 Vahaaho 2019 Vahaaho 2019 Totał rewnis Hoterogonejky Tau ^y = Test for overall effect: Distance 45 Sketowork Ameeta 2006 Ameeta 2006 Biocogla 2016 Nardon 2011 Rasmussan 2011 Shapherd 2010	0 0 1 4 2 2 6 1 8 23 1 4 55 55 23 1 4 55 23 1 4 2 2 1 4 2 2 1 4 2 2 2 1 4 4 2 2 2 1 4 4 2 2 2 1 1 4 2 2 2 1 1 4 2 2 2 1 1 4 2 2 2 1 1 4 2 2 2 1 1 4 2 2 1 1 4 2 2 2 1 1 4 4 2 2 2 1 1 4 4 2 2 1 1 4 4 2 2 1 1 4 4 2 2 1 1 4 4 2 2 1 1 4 4 2 2 1 1 4 4 2 2 1 1 4 4 2 2 1 1 4 2 2 1 1 4 2 2 1 1 4 2 2 1 1 4 2 2 1 1 4 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	106 44 58 264 175 60 76 64 141 141 41 67 100 32 54 1516 = 13 (P = 128 46 80 80 76 141 67 70 128 128 70 712 732	2 0 4 4 9 0 1 2 3 0 5 16 4 6 0 0 5 5 16 4 6 0 0 5 5 16 2 2 2 2 0 0 0 1 3 5 5 16 6 0 5 5 16 16 16 10 5 5 16 16 16 10 5 5 16 16 10 10 5 10 5	attion 141 37 2600 172 60 78 83 144 55 64 100 34 55 64 100 34 55 64 100 34 55 64 100 34 56 60 34 56 60 78 83 34 55 64 102 29% 81 81 81 81 81 81 81 81 81 81	3.0% 4.9% 11.7% 4.2% 5.8% 2.5% 11.9% 4.7% 10.3% 100.0% Weight 100.0%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.16] 0.42 [0.03, 2.16] 0.42 [0.03, 2.16] 0.42 [0.16, 3.24] 1.31 [0.16, 9.54] 1.31 [0.16, 9.54] 1.31 [0.16, 9.54] 1.47 [0.17, 16, 103, 53] 1.46 [0.49, 5.18] 1.47 [0.17, 16, 103, 53] 0.46 [0.56, 1.65] 0.46 [0.56, 1.65] 0.46 [0.51, 4.45] 0.43 [0.04, 4.96] 0.43 [0.04, 4.96] 0.43 [0.04, 9.518] 0.43 [0.04, 4.96] Not estimable 0.43 [0.04, 9.518] 0.43 [0.04, 9.518]	0.01 0.1 1 Laser ablation
1.2.2. After 2016 Catherine 2022 0 106 2 110 2.8% 0.20 [0.01, 4.29] Image: 2020 0 64 0 11 Not estimate Lizz 2020 0 0 64 0 11 Not estimate Image: 2020 0 0.68 4 37 3.0% 0.06 [0.00, 1.22] Image: 2020 12 117, 17, 17, 14 0.17, 17, 17, 14 0.17, 17, 17, 14 12 13, 10, 18, 0.64] Image: 2020 2 64 2 53, 58% 131 [0.18, 0.54] Image: 2020 12 14, 7% 0.24 [0.03, 2.29] Image: 2020 12 13, 7% 0.24 [0.03, 0.22] Image: 2020 Image: 2020 Image: 2020 12 13, 7% 0.24 [0.03, 0.22] Image: 2020	Kubał 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Shopherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2019 Ukahaho 2019 Wozniak 2019 Total (9% CI) Total (9% CI) Total 90% CI) Total 90% CI) Total 90% CI Total 90% CI) Total 90% CI) Studt or Subgroup Amedia 2006 Amedia 2	0 0 1 4 0 2 6 1 8 23 1 4 0.27; Chi ⁰ = 18.32, df 2 = 0.14 (P = 0.89) Events 2 1 2 0 0 1 4 0 0 2 1 4 0 0 1 2 0 1 4 0 0 1 1 4 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	106 44 44 58 264 44 145 175 60 76 64 141 141 41 175 64 141 141 175 54 1516 = 13 (P =	0 4 4 9 0 1 1 2 3 0 5 5 6 6 0 0,15); ^p = 2 2 2 0 0 0,15); ^p = 2 2 2 5 16 6 0 0,15); ^p = 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	attion Total 819 41 37 260 78 83 144 55 64 45 56 44 56 2214 29% 819 41 60 60 78 819 41 60 60 78 229% 819 819 819 819 819 819 819 819	3.0% 4.9% 11.7% 4.2% 5.8% 4.2% 4.7% 100.0% 100.0% Weight 5.9% 4.1% 4.2% 5.9% 4.1% 11.9% 11.9% 4.2% 64.6%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2, 19] 0.42 [0.03, 2, 19] 0.42 [0.13, 1.40] 1.51 [0.16, 9, 54] 2.09 [0.51, 6.32] 1.60 [0.51, 6.32] 1.60 [0.49, 5, 18] 1.57 [0.77, 3, 19] 0.24 [0.04, 2, 61] 0.46 [0.56, 1.65] 0.46 [0.54, 4.65] 0.46 [0.54, 4.64] 0.43 [0.4, 6.54] 0.46 [0.16, 1.65] 0.46 [0.16, 1.65] 1.60 [0.45,	Odds Ratio
1.2.2. After 2016 0 106 2 110 2.0% 0.20 [0.01, 4.29] Gamenai 2020 0 44 0 47 No Not estimate Gamenai 2020 0 44 0 47 No Not estimate Kohal 2019 1 2.84 0 47 No Not estimate Lawson 2017 4 125 47 20 4.9% 0.24 [0.13, 1.40] Park 2020 2 64 2.8 3.6.8% 1.31 [0.16, 0.5.4] Sincipu 2017 1 41 0 55 2.5% 4.11 [0.16, 10.3.63] Subtolat (9% C) 784 792 36.4% -24 [0.14, 0.41]	Kubal 2019 Lewson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shipherd 2010 Sydnor 2016 Vahahab 2019 Waznikk 2019 Ukahaba 2019 Waznikk 2019 Total dewnis Heterogonely Tau ^y = Test for overall effect: D Statu or stategroup Anmedia 2009 Bacogla 2019 Mamedia 2009 Bacogla 2019 Mamedia 2009 Bacogla 2019 Mamedia 2009 Bacogla 2019 Mamedia 2009 Bacogla 2019 Subtota (05% c.1) Total events Heterogenely, Tetro-	0 0 0 1 4 0 2 6 1 8 23 1 4 0 2, 6 1 8 23 1 4 2, 2, 6 1 8 23 1 4 2, 2, 6 1 8 2, 2, 6 1 8 2, 2, 1 4 2, 2, 2, 1 4 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	106 44 58 264 44 58 264 141 175 66 4 141 167 100 32 54 1516 6 6 6 6 7 6 128 6 6 7 6 6 7 6 6 7 6 6 7 6 7 6 7 6 7 6	2 0 4 4 9 9 0 1 2 3 0 5 5 16 4 6 6 0 0 5 5 16 4 6 6 0 0.15); I ^a = 2 2 2 0 0 0 1 3 5 5 16 6 16 16 16 16 16 16 16 16 16 16 16 1	ation 141 37 260 78 83 144 55 64 100 34 56 4 100 34 56 2214 819 9 41 60 60 83 144 56 64 100 34 66 78 83 144 56 66 78 83 144 56 66 78 83 144 56 66 78 83 144 56 66 78 83 144 56 66 78 83 144 56 66 78 78 78 78 78 78 78 78 78 78	3.0% 4.9% 11.7% 4.2% 9.6% 2.5% 10.3% 100.0% Weight 5.9% 4.1% 4.1% 4.1% 4.1% 4.1% 4.2% 6% 9.6% 10.3%	0.20 [0.01, 2.30] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.16] 0.42 [0.03, 2.16] 0.42 [0.03, 2.16] 0.42 [0.16, 3.24] 1.31 [0.16, 9.54] 2.08 [0.18, 2.34] 1.31 [0.16, 10.53] 1.45 [0.74, 7.18] 1.47 [0.77, 7.18] 0.42 [0.36, 2.55] 0.46 [0.56, 1.65] 0.46 [0.56, 1.65] 0.43 [0.04, 4.90] Not estimable 0.43 [0.04, 4.90] Not estimable 0.43 [0.04, 4.91] 1.50 [0.74, 5.18] 1.50 [0.74, 5.18] 1.50 [0.74, 5.18] 0.43 [0.04, 4.90] Not estimable 0.43 [0.04, 4.90] Not estimable 0.43 [0.04, 4.90] Not estimable 1.50 [0.74, 5.18] 1.52 [0.94, 2.44]	0.01 0.1 1 Laser ablation 0.01 0.1 Laser ablation 10 0 ddis Ratio M-H. Random. 95% Cl
Catheme 2022 0 106 2 110 2.0% 0.20 [0.1 4.29] Catheme 2022 0 4 4 0 41 Not estimate Liza 2020 0 5 8 4 37 30% 0.06 [0.0, 1.22] Maximum 2017 1 47 275 0 172 117% 0.42 [0.13, 140] Park 2020 2 4 64 2 83 5.8% 1.31 [0.16, 0.54] Park 2020 2 4 64 2 83 5.8% 1.31 [0.16, 0.54] Park 2020 1 1 32 4 34 4.7% 0.24 [0.0, 2.29] Stotball (9%% 0) 0 0 (0 ⁺ - 3.40 d' - 0 (P - 0.49), P - 0% Total events Total events Total events Total events Total events Total events Total 2.2% 0 (0.16, 0.48] Total events Total events Tota	Kuhal 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Shiphterd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2019 Wozniak 2019 Wozniak 2019 Total (9% CI) Total (9% CI) Total 9% CI) Total 90% CI) Total	0 0 1 4 2 2 6 1 8 23 1 4 0.27; Chi ² = 18.32, df 2 = 0.14 (P = 0.89) Events 2 1 2 0 0 2 1 4 0 0 2 1 4 0 0 2 1 4 0 0 2 1 4 0 0 2 1 4 0 0 0 0 0 0 0 0 0 0 0 0 0	106 44 48 264 44 58 264 175 60 76 64 141 41 41 41 41 41 67 100 32 54 1516 = 13 (P = 128 76 76 66 41 167 70 70 76 76 76 76 76 76 76 76 76 76 76 76 76	0 4 4 9 0 0 1 2 3 0 5 5 16 6 4 6 6 0 0,15); P = 2 2 2 0 0 0 1 3 5 5 16 6 0 0,5; P = 2 2 5 0 0 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	110 41 37 260 78 83 144 55 64 100 34 56 64 100 34 56 2214 29% 819 41 40 60 80 80 819 41 40 819 819 41 40 819 41 40 83 819 41 40 83 819 819 819 819 819 819 819 819 819 819	3.0% 4.9% 111.7% 4.2% 5.8% 2.5% 11.9% 11.9% 18.7% 4.7% 100.0% 100.0%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2.19] 0.42 [0.13, 1.40] Not estimable 2.08 [0.18, 23.44] 1.31 [0.16, 9.54] 2.09 [0.51, 8.22] 1.60 [0.49, 5.18] 1.57 [0.77, 3.19] 0.24 [0.03, 2.51] 0.36 [0.46, 1.65] 0.46 [0.51, 6.42] 0.46 [0.46, 1.65] 0.43 [0.4, 4.51] 0.46 [0.4, 6.51] 0.46 [0.4, 6.51] 0.46 [0.4, 6.51] 0.47 [0.16, 8.251] 0.46 [0.4, 6.45] 0.43 [0.4, 4.51] 0.46 [0.4, 6.45] 0.43 [0.4, 4.52] 1.00 [0.4, 6.51] 0.46 [0.51, 6.42] 1.00 [0.4, 6.51] 0.46 [0.51, 6.42] 1.00 [0.4, 6.51] 1.57 [0.77, 3.16] 0.49 [0.44, 2.46] 1.52 [0.44, 2.46]	0.01 0.1 10 10 Radiofrequency ablation Laser ablation
Summeran Out 64 0 41 No.1 No.1 Statistical Large 2020 0 264 0 41 No.1 No.1 Statistical Large 2020 0 264 200 457 0.04 D(0.01 127 Large 2020 1 296 4 200 457 0.04 D(0.01 127 Large 2020 2 64 283 5.65% 1.31 D(1.8 6.42 D(1.9 5.45 D(1.9 D(1	Kubal 2019 Luwson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shipherd 2010 Sydnor 2016 Vahahab 2019 Woznikk 2016 Total 98% CI) Total 98% CI) Rasmussen 2011 Rasmussen 2015 Subcotal 90% CI) Total 99% CI) T	0 0 0 1 4 0 2 2 6 1 8 2 3 1 4 0 2 5 5 5 5 5 5 5 5 5 5 5 5 5		2 4 4 9 0 0 5 5 16 6 6 0 0 5 5 5 6 6 0 0 0 5 5 5 7 8 6 6 0 0 5 5 5 7 8 6 6 0 0 5 5 5 7 8 6 7 8 6 7 8 7 8 7 8 7 8 7 8 7 8 7 8	ation 7 7 7 7 7 7 7 7	3.0% 4.9% 111.7% 4.2% 5.8% 2.5% 111.9% 11.9% 18.7% 4.7% 4.7% 4.1% 100.0%	0.20 [0.01, 2.30] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.16] 0.42 [0.03, 2.16] 0.42 [0.03, 2.16] 0.42 [0.16, 3.24] 1.31 [0.16, 9.54] 1.31 [0.16, 9.54] 1.31 [0.16, 9.54] 1.47 [0.75, 7.18] 1.57 [0.77, 7.18] 0.46 [0.56, 1.65] 0.46 [0.56, 1.65] 0.46 [0.56, 1.65] 0.46 [0.56, 4.65] 0.47 [0.04, 4.90] Not estimated Not estimated No	0.01 0.1 Laser ablation
Late across v sol sol sol sol box (0,00, 1,22) Value1201017 1 278 252 177, 0 240 0.30 100 Pack 20207 2 64 2 83 5.8% 1.31 10.18, 0.54 Sinciplu 2017 1 41 0.55 2.5% 4.11 (0.16, 10.35.3) Valuatio 2019 1 32 4 4.7% 0.24 (0.03, 2.29) Total events 720 36.4% 0.42 (0.19, 0.31) 1 Total events 76 702 36.4% 0.42 (0.03, 2.29) Total events 76 702 36.4% 0.42 (0.03, 2.29) Total events 76 702 36.4% 0.42 (0.03, 2.29) Total events 76 702 36.4% 0.42 (0.03, 0.21 (0.16, 0.48) Total events 55 00 10.6% 0.96 (0.66, 1.68) Total events 55 00 0.01 (0.1 1 10) 10	Kubal 2019 Luwson 2017 Mase 2015 Nordon 2011 Park 2020 Shopherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2019 Wozniak 2019 Wozniak 2019 Wozniak 2019 Total (9%% CI) Total 9%%	0 0 1 4 2 2 6 1 8 23 1 4 0.27; Chi ² = 18.32, df Z = 0.14 (P = 0.89) Events 2 1 0 0 2 1 4 0 0 2 1 4 0 0 2 1 0 2 1 0 0 2 1 0 0 2 1 0 0 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0	106 44 58 264 45 58 264 175 60 64 141 41 41 67 100 32 54 1516 = 13 (P = 128 46 60 76 60 76 60 710 100 54 46 101 732 732 732 732 732 732 732 732 732 732	2 0 4 4 9 0 0 5 5 1 2 3 0 0 0 5 5 1 6 6 6 0 1 2 2 2 5 5 1 6 5 5 1 7 9 9 0 0 5 5 1 7 9 1 2 2 2 5 5 1 8 9 9 1 2 5 5 1 1 2 1 2 9 1 2 1 2 1 1 2 1 2 1 2 1 2 1	ation Total 100 100 100 100 100 100 100 10	3.0% 4.9% 11.7% 4.2% 5.9% 9.6% 2.5% 10.3% 100.0% 4.7% 4.7% 4.7% 4.7% 4.7% 4.7% 4.7% 4.6% 4.1% 10.3% 64.6%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 1.40] 1.31 [0.18, 9.54] 2.09 [0.18, 2.34] 1.31 [0.18, 9.54] 2.09 [0.18, 9.54] 2.09 [0.18, 9.54] 2.09 [0.18, 9.54] 2.09 [0.18, 9.54] 1.57 [0.77, 3.19] 0.57 [0.18, 2.51] 0.56 [0.16, 2.51] 0.56 [0.16, 2.51] 0.56 [0.16, 2.51] 0.56 [0.16, 2.51] 0.56 [0.16, 2.51] 0.56 [0.16, 2.51] 0.57 [0.16, 2.51] 0.56 [0.16, 1.65] 0.43 [0.04, 9.51] 0.57 [0.16, 1.65] 1.57 [0.77, 3.19] 0.57 [0.16, 1.65] 0.59 [0.54, 1.65] 0.59 [0.55, 1.65]	0.01 0.1 10 10 Radofreguency ablation Laser ablation
Lanesco 2017 4 175 0 172 11.7% 0.42 [0.13, 1.40] Park 2020 2 64 28 5.6% 1.31 [0.16, 6.44] Sanoplu 2017 1 41 0 65 2.5% 4.11 [0.16, 10.3.53] Valuation 2017 1 41 0 65 2.5% 4.11 [0.16, 10.3.53] Total events 9 74 25 Total events 9 74 25 Total events (Kubal 2019 Luwson 2017 Mese 2015 Nordon 2011 Park 2020 Shopherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2016 Vahaaho 2019 Wozniak 2016 Total events Total events Test for overall effects 1.1.1 Before 2016 Aumedia 2009 Biocogla 2019 Mese 2015 Nordon 2015 Catal events Heterogonetic, Tau ² = Test for overall effect: 1.2.2 Attra 2016 Catherine 2022 Catherine 2022	0 0 0 1 4 0 2 2 6 1 8 23 1 4 0.27; Chi ² = 18.32, df Z = 0.14 (P = 0.89) Radiofrequency ab Events 2 1 0 2 2 4 0 0 2 1 2 0 2 1 2 2 1 4 0 2 2 1 4 0 2 2 1 4 0 2 2 1 4 0 2 2 1 4 0 2 2 1 4 0 2 2 1 2 1 4 0 2 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 1 4 2 4 1 2 1 2 1 4 2 1 2 1 4 2 1 2 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 2 3 2 2 2 3 2 2 1 2 2 3 2 2 3 2 2 2 3 2 2 2 3 2 2 2 3 2 2 2 3 2 2 3 2 2 3 2 2 2 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2	106 44 58 264 175 60 76 64 141 1516 64 141 1516 = 13 (P = 128 46 60 60 60 60 76 141 175 100 701 701 701 702 702 702 702 702 702 702 702 702 702		atton Total 141 37 260 07 83 144 55 64 100 34 55 64 100 2214 819 41 60 07 8 819 41 29% 819 142 29% 819 142 29% 819 142 29% 819 142 29% 819 142 29% 819 142 29% 819 142 29% 819 142 29% 819 142 29% 819 142 29% 819 142 29% 819 144 142 29% 819 144 142 29% 144 144 142 142 144 144 144 144	3.0% 4.9% 111.7% 4.2% 5.8% 9.6% 9.6% 11.9% 10.3% 100.0% Weight 4.1% 4.1% 4.1% 4.1% 4.1% 64.6%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 2.40] 1.31 [0.18, 9.44] 1.31 [0.18, 9.44] 1.31 [0.18, 9.44] 1.32 [0.18, 2.34] 0.47 [0.18, 2.51] 0.46 [0.49, 5.18] 1.57 [0.77, 10, 18, 2.51] 0.46 [0.56, 1.65] 0.43 [0.04, 4.99] Not estimable 0.43 [0.04, 4.99] Not estimable 1.57 [0.77, 319] 0.52 [0.34, 2.49] 1.57 [0.77, 319] 0.52 [0.34, 2.49]	0.01 0.1 10 10 Radiofrequency ablation Laser ablation
Park 2020 2 04 2 83 5.8% 131 [0:18, 0.64] SmolpL 2017 1 41 05 2.5% 411 [0:16, 10:35] Vahaaho 2019 1 32 4 34 4.7% 0.24 [0:03, 32] Total events, Taur - 0.00, Cl + - 0.40, U - 0.40, U - 0.5% Text for overall effect: Z = 2.21 (P = 0.03) Total events, Taur - 0.20, Cl + - 0.40, U - 0.40, U - 0.5% Text for overall effect: Z = 2.22 (D = 0.03) Total events, Taur - 0.22 (D = 10.32, df = 13, U = 0.15), U = 20% Total events, Taur - 0.22 (D = 13.22, df = 13, U = 0.15), U = 20%	Kubal 2019 Luwson 2017 Mase 2015 Nordon 2011 Park 2020 Shopherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2016 Vahaaho 2019 Wozniak 2016 Total (95% CI) Total 95% CI) Total 95% CI) Total 95% CI Total 95% CI Total 95% CI Total 95% CI Total 95% CI Total 90% C	0 0 1 4 2 2 6 1 8 23 1 4 0.27; Chi ^p = 18.32, df 2 = 0.14 (P = 0.89) Radiofrequency ab Events 2 1 0 0 2 6 1 4 4 0 0 2 1 3 4 0 0 2 1 1 4 0 2 1 1 4 0 2 1 1 4 0 2 1 1 4 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	106 44 58 264 175 60 76 64 41 141 41 1516 = 13 (P = 108 86 64 141 1516 = 13 (P = 106 60 00 54 46 76 6 (P = 0. 106 54 20 54 54 55 50 50 50 50 50 50 50 50 50 50 50 50	0 4 4 9 0 1 1 2 3 3 0 0 5 5 1 6 6 0 0.15); P = 2 2 0 0 0 1 3 5 5 5 6; P = 2 0 0 1 3 5 5 5 1 6 7 5 7 8 5 7 8 5 7 8 5 7 8 7 8 9 8 9 8 9 8 9 9 9 9 9 9 9 9 9 9	1100 1102 1102 1102 1102 1102 1102 1102 1102 1100 1100 1100 1100 1102 110 110	3.0%, 4.9% 111.7% 4.2%, 5.2% 9.6%, 4.7% 10.3% 100.0% Weight 5.9%, 4.1% 4.1% 4.2%, 5.9% 4.1% 5.9% 4.1% 5.9% 4.6%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 1.40] 1.31 [0.18, 9.54] 1.31 [0.18, 9.54] 1.31 [0.18, 9.54] 1.41 [0.16, 103.53] 1.46 [0.49, 51, 16] 0.47 [0.18, 2.51] 0.46 [0.49, 51, 16] 0.47 [0.18, 2.51] 0.46 [0.56, 1.65] 0.48 [0.44, 4.51] 1.57 [0.77, 3.19] 0.47 [0.18, 2.51] 0.46 [0.44, 4.51] 1.57 [0.77, 3.19] 0.47 [0.18, 2.51] 1.50 [0.77, 3.19] 0.47 [0.18, 2.51] 1.50 [0.77, 3.19] 0.47 [0.18, 2.54] 1.50 [0.44, 2.44] 1.57 [0.77, 3.19] 0.47 [0.14, 2.54] 1.57 [0.77, 3.19] 0.47 [0.14, 2.54] 0.40 [0.44, 2.54] 1.57 [0.57, 3.19] 0.47 [0.14, 2.54] 0.40 [0.44, 2.54] 1.57 [0.57, 3.19] 0.47 [0.14, 2.54] 1.57 [0.57, 3.19] 1.57 [0.57,	0.01 0.1 10 10 Radofrequency ablation Laser ablation
Samoplu 2017 1 41 0 55 2.5% 4.11 [0.16, 10.3.53] Valuation 2019 1 32 43 4.2% 0.24 [0.13, 2.29] Total events 9 72 25.4% 0.42 [0.13, 0.37] Total events 9 72 25.4% 0.42 [0.13, 0.37] Table events 9 72 25.4% 0.42 [0.13, 0.37] Table events 9 72 25.4% 0.42 [0.10, 0.37] Table events 9 72 25.4% 0.42 [0.10, 0.37] Table events 9 72 72 72 71 72 72 72 72 72 72 72 72 72 72 72 72 72	Kubal 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Shopherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2019 Wozniak 2019 Wozniak 2019 Total (9% CI) Total (9% CI) Total 9% CI) Studted 10% CI) Studted 20% CI Studted	0 0 0 1 4 0 2 2 6 1 8 23 1 4 0 0.27; Chi ² = 18.32; df 2 = 0.14 (P = 0.89) Readiofrequency ab Events 2 1 0 2 0 4 0 0 2 1 0.27; Chi ² = 18.32; df 2 0 2 0 4 0 0 2 1 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	106 44 58 264 175 60 76 64 41 141 41 177 100 32 54 1516 6 41 128 86 80 66 67 67 107 732 732 732 732 732 732 732 732 732 73	0 4 4 9 0 1 2 3 3 0 5 5 16 4 6 0 0 5 5 16 4 6 0 0 0 5 5 16 4 4 6 0 0 0 5 5 16 4 6 0 0 0 5 5 16 16 4 5 6 0 0 0 5 5 5 16 16 4 9 0 0 0 5 5 5 16 16 12 2 3 0 0 5 5 5 16 16 16 16 16 16 16 16 16 16 16 16 16	ation 141 37 2600 172 60 78 83 144 55 64 100 34 55 64 100 34 55 64 100 34 56 41 22214 819 941 60 60 78 84 142 29% 81 142 29% 81 142 29% 81 142 142 142 142 142 142 142 14	3.0% 4.9% 11.7% 4.2% 5.8% 5.8% 11.9% 10.0% Weight 4.7% 4.7% 4.7% 4.7% 4.7% 4.7% 4.7% 4.7%	0.20 [0.01, 4.29] Net estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2, 19] 0.42 [0.03, 2, 19] 0.42 [0.13, 1.40] 1.51 [0.16, 9.54] 2.06 [0.16, 2.54] 1.50 [0.46, 5.16] 1.57 [0.75, 3.16] 0.67 [0.16, 2.51] 0.46 [0.54, 1.65] 0.47 [0.16, 2.51] 0.46 [0.54, 1.65] 0.47 [0.16, 2.51] 0.46 [0.54, 1.65] 0.47 [0.16, 2.51] 0.46 [0.54, 1.65] 0.47 [0.16, 2.51] 0.46 [0.54, 1.65] 0.48 [0.16, 2.54] 0.49 [0.54, 4.64] 0.49 [0.54, 4.64] 0.49 [0.16, 2.64] 1.52 [0.54, 4.64] 0.49 [0.16, 2.64] 0.49 [0.16, 2.64] 1.52 [0.34, 2.45] 0.40 [0.01, 4.26] Not estimable 0.69 [0.01, 4.26] Not estimable 0.69 [0.01, 4.26]	0.01 0.1 1 10 10 Radiofrequency ablation Laser ablation M-H, Random, 35% CI
Vanamo 2111 1 32 4 34 4.7% 0.24 [0.03, 2.29] Total events Total event	Kubai 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Total revents Total revents Tot	$\begin{array}{c} 0\\ 0\\ 0\\ 1\\ 4\\ 4\\ 0\\ 2\\ 2\\ 6\\ 1\\ 8\\ 23\\ 1\\ 4\\ 4\\ 0\\ 0.27, Chi^{2} = 18.32, df\\ 2\\ 0.27, Chi^{2} = 18.32, df\\ 2\\ 0.27, Chi^{2} = 18.32, df\\ 4\\ 0.27, Chi^{2} = 18.32, df\\ 2\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 2\\ 1\\ 4\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$	106 44 58 264 175 60 76 64 41 141 41 100 32 24 51 1216 = 13 (P = 106 6 (P = 0. 76 6 (P = 0. 732 6 (P = 0. 732 6 (P = 0. 732 6 (P = 0. 732 732 732 732 733 733 733 733 733 733	0 4 4 9 0 1 2 3 3 0 5 5 16 4 6 0 0,15); ^p = 2 2 2 2 2 2 2 5 5 5 5 5 5 5 5 5 5 5 5	1100 112 102 112 102 112 102 112 102 112 102 112 102 110 102 110 102 102	3.0% 4.9% 11.7% 5.8% 9.6% 4.2% 5.8% 4.7% 10.3% 100.0% Weight 100.0% Weight 100.0% 5.9% 5.9% 4.1% 5.9% 64.6% 2.8% 2.8% 5.8% 5.8% 5.8% 5.9% 5.9% 5.9% 5.9% 5.9% 5.9% 5.9% 5.9	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2,19] 0.42 [0.03, 2,19] 0.42 [0.03, 2,19] 0.42 [0.13, 1.40] 1.31 [0.18, 9.54] 1.31 [0.18, 9.54] 1.31 [0.18, 9.54] 1.47 [0.17, 3.19] 0.42 [0.31, 8.25] 0.96 [0.56, 1.65] 0.96 [0.56, 1.65] 0.96 [0.56, 1.65] 0.96 [0.56, 1.65] 0.96 [0.56, 1.65] 0.96 [0.57, 3.19] 0.47 [0.18, 1.54] 0.96 [0.56, 1.65] 0.96 [0.57, 3.19] 0.47 [0.18, 1.54] 0.96 [0.56, 1.65] 0.96 [0.57, 3.19] 0.47 [0.18, 2.54] 1.52 [0.34, 4.25] 1.52 [0.34, 4.25] 0.42 [0.01, 4.26] Not estimable 0.06 [0.06, 1.22] 0.20 [0.01, 4.26] Not estimable 0.06 [0.06, 1.22] 0.20 [0.01, 4.26] 1.52 [0.34, 4.26] 0.20 [0.01, 4.26] 0.42 [0.34, 2.65] 0.42 [0.34, 2.65] 0.43 [0.34, 2.65] 0.44 [0.34, 2.65] 0.45 [0.01 0.1 10 10 Radiofrequency ablation Laser ablation
State versits 9 25 0.44 0.44 0.45 <th0.45< th=""> <th0.45< th=""> <</th0.45<></th0.45<>	Kuha 2019 Luwson 2017 Mese 2015 Nordon 2011 Park 2020 Shepherd 2010 Sydnor 2016 Vahaaho 2019 Woznikk 2016 Total (95% Ct) Total 95% Ct) Study orf SubGroup Amedia 2009 Study orf SubGroup Amedia 2009 Study of SubGroup SubGroup (195% Ct) SubGroup (195% C	0 0 0 1 4 0 2 2 6 1 8 23 1 4 0.27; Ch ² = 18.32, df 2 = 0.14 (P = 0.89) Rediofrequency ab Events 2 0 2 1 0 0 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0	106 44 58 264 175 60 76 64 41 141 41 175 54 1516 6 75 128 86 80 76 141 1516 75 128 86 80 76 141 1516 75 128 86 80 76 80 76 80 76 80 76 80 76 80 76 80 76 80 76 80 76 80 76 76 76 80 76 80 76 80 76 80 76 80 76 80 76 80 76 80 76 76 76 76 76 76 76 76 76 76 76 76 76	0 4 4 9 0 1 2 3 3 0 5 5 16 4 6 6 0 0 5 5 16 4 6 6 0 0 0 5 5 16 16 4 6 0 0 5 5 16 16 2 2 2 0 0 0 5 5 5 16 16 12 2 2 2 0 0 5 5 5 16 16 12 2 2 2 0 0 5 5 5 16 16 12 2 2 2 0 0 5 5 5 16 16 12 2 2 0 0 5 5 5 16 16 12 2 2 2 0 0 5 5 5 16 16 12 2 2 2 0 0 5 5 5 16 16 16 12 2 2 2 0 0 5 5 5 16 16 16 16 16 16 16 16 16 16 17 12 2 2 2 0 0 15 17 17 12 2 2 2 0 0 15 17 17 17 17 17 17 17 17 17 17 17 17 17	ation Total 100 100 100 100 100 100 100 10	3.0% 4.9% 11.7% 4.2% 9.6% 2.8% 4.7% 10.3% 100.0% Weight 4.7% 4.1% 5.9% 4.1% 5.9% 4.1% 5.8% 5.8%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2, 19] 0.42 [0.03, 2, 19] 0.42 [0.13, 1.40] 1.51 [0.16, 9, 54] 2.09 [0.51, 6.32] 1.60 [0.49, 5, 18] 1.57 [0.77, 3, 19] 0.24 [0.03, 2, 19] 0.46 [0.54, 1.65] 0.46 [0.54, 1.65] 0.46 [0.54, 1.65] 0.46 [0.54, 1.65] 0.46 [0.54, 1.65] 0.46 [0.16, 1.65] 0.47 [0.16, 1.65] 0.46 [0.16, 1.65] 0.46 [0.16, 1.65] 0.47 [0.16, 1.65] 0.46 [0.16, 1.65] 1.52 [0.91, 4.245] 0.47 [0.16, 1.65] 1.52 [0.94, 2.45] 0.47 [0.16, 1.65] 1.52 [0.94, 2.45] 0.47 [0.16, 1.65] 0.47 [0.16] 0.47	O.01 O.1 1 10 10 Radiofrequency ablation Laser ablation
Texter operation Text for overall effect: Z = 2.21 (P = 0.03) Text for overall effect: Z = 2.21 (P = 0.03) 1516 Total etworks 55 Total events 55 Total events 50 Total events 50 Total events 50 Total events 0.05 (P = 20%) 0.01 0.1 10 10	Kubal 2019 Luwson 2017 Mese 2015 Nordon 2011 Park 2020 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Chall 45% CI) Total events Heterogonaly Trau ⁺ = Test for overall effect: D Status of a shipherd 2009 Racopia 2019 Meses 2020 Racopia 2019 Meses 2020 Racopia 2019 Rasmusaen 2011 Rasmusaen 2011 Shipherd 2010 Shipherd 2010 Shiph	0 0 1 4 0 2 2 6 1 8 2 3 1 4 0 2 2 6 1 8 2 3 1 4 0 2 2 6 1 8 2 3 1 4 0 2 2 6 1 8 2 3 1 4 0 2 2 1 4 0 2 1 4 0 2 1 4 0 2 1 4 0 2 1 4 0 2 1 4 0 2 1 4 0 2 1 4 0 2 1 4 0 2 1 4 0 2 1 1 4 0 2 1 1 4 0 2 1 1 4 0 2 1 1 4 0 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 2 1 1 2 1 1 2 1 2 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	106 44 58 264 175 60 76 64 141 41 1516 = 13 (P = 106 54 1516 = 13 (P = 106 6 (P = 0. 106 54 46 80 60 54 1516 128 86 6 (P = 0. 106 54 107 55 80 107 107 107 107 107 107 107 107 107 10	0 4 4 9 0 1 2 3 3 0 5 5 16 4 6 0 0,15); ^p = 2 2 2 2 2 0 0 0 1 3 3 5 5 5 6 0,15); ^p = 0; 2 2 2 2 0 0 0 1 2 3 3 0 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	atton Total 229% 410 229% 410 34 55 64 455 64 4100 34 55 64 4229% 410 60 60 60 60 60 60 60 60 60 60 60 60 60	3.0% 4.9% 11.7% 4.2% 5.8% 9.6% 4.2% 11.9% 4.2% 4.2% 4.2% 4.2% 4.7% 10.3% 100.0%	0.20 (0.01, 4.29) Not estimable 0.06 (0.00, 1.22) 0.42 (0.03, 2.19) 0.42 (0.03, 2.19) 0.42 (0.03, 2.19) 0.42 (0.13, 1.40) 1.31 (0.18, 9.54) 1.31 (0.18, 9.54) 1.31 (0.18, 9.54) 1.47 (0.17, 1.19) 0.42 (0.03, 2.29) 0.47 (0.16, 103, 53) 1.57 (0.77, 3.19) 0.42 (0.03, 2.29) 0.47 (0.16, 12, 23) 0.49 (0.16, 23, 44) 2.08 (0.16, 23, 44) 2.09 (0.11, 28) Not estimated 0.08 (0.00, 1.22) 0.48 (0.03, 2.19) 0.48 (0.03, 2.29) 0.48 (0	0.01 0.1 10 10 Radiofrequency ablation Laser ablation
Test for overnall effect: Z = 2.21 (P = 0.03) Total (95% Ct) 1516 2214 100.0% 0.96 [0.56, 1.65] Meterogrammely: Taut = 0.27; CtP = 18.32; eff = 13 (P = 0.15); P = 29% Total days worth 2 = 0.4 (B = 0.4 (B = 0.15); P = 29% 0.01 0.1 1 10 10	Kubal 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Shopherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2016 Uvahaaho 2019 Wozniak 2016 Uvahaaho 2019 Wozniak 2016 Total (9%K CI) Total 9%K CI) Total 9%K CI) Total 9%K CI Total 90%K CI T	0 0 1 4 0 2 6 1 8 23 1 4 0.27; Chi ^p = 18.32, df 2 = 0.14 (P = 0.89) Radiofrequency ab Events 2 0 2 4 0 0 2 1 1 2 0 1 1 4 0 0 2 1 1 4 0 0 2 1 1 4 0 0 2 1 1 4 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	$\begin{array}{c} 106\\ 106\\ 44\\ 58\\ 264\\ 175\\ 60\\ 66\\ 44\\ 175\\ 66\\ 44\\ 16\\ 16\\ 16\\ 10\\ 22\\ 54\\ 1516\\ 10\\ 10\\ 6\\ 10\\ 10\\ 10\\ 6\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10$	0 4 4 9 9 0 1 2 3 3 5 5 6 6 0 0 5 5 5 6 6 0 0 15); μ ² = 4 6 6 0 0 15; μ ² = 2 2 0 0 0 5 5 5 6 6 6 0 0 1 2 3 3 5 5 5 6 6 6 0 0 1 2 3 3 5 5 5 6 6 6 0 0 1 2 3 3 5 5 5 6 6 6 0 0 1 2 2 3 3 5 5 5 6 6 0 0 0 5 5 5 5 6 6 6 0 0 0 5 5 5 5	1100 41 37 260 600 172 600 78 83 144 55 64 400 34 456 22214 819 41 400 78 83 44 456 46 60 78 8142 29%	3.0% 4.9% 11.7% 2.8% 9.6% 2.8% 4.1% 11.9% 10.0% 4.1% 4.1% 4.2% 4.4% 4.4% 64.6% 2.8% 5.8% 5.8%	0.20 (0.01, 4.29) Not estimable 0.06 (0.00, 1.22) 0.42 (0.03, 2.19) 0.42 (0.03, 2.19) 0.42 (0.03, 2.19) 0.42 (0.16, 9, 64) 1.31 (0.16, 9, 64) 1.31 (0.16, 9, 64) 1.57 (0.77, 3.19) 0.42 (0.04, 9, 61) 1.57 (0.77, 3.19) 0.47 (0.16, 2.51) 0.46 (0.16, 2.51) 0.46 (0.16, 2.51) Not estimable 0.46 (0.16, 2.52) 1.52 (0.31, 4.245) Not estimable 0.66 (0.06, 1.22) 1.52 (0.31, 4.245) Not estimable 0.66 (0.00, 1.22) 1.52 (0.34, 2.45) Not estimable 0.66 (0.02, 1.20) 0.41 (0.16, 10.35) 0.42 (0.16, 0.36) 0.42	Odds Ratio
Total (95% Cl) 55 0214 100.0% 0.36 [0.56, 1.65]	Kubal 2019 Luwson 2017 Mese 2015 Nordon 2011 Park 2020 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Shipherd 2010 Chall (Shipherd 2010 Chall (Shipherd 2010 Chall (Shipherd 2010 Chall (Shipherd 2010 Chall (Shipherd 2010 Shipherd 2	0 0 1 4 0 2 6 1 8 23 1 4 0.02; Chi ^p = 18.32, df 2 7 1 2 1 0 0 2 1 2 1 4 0 2 2 1 4 0 2 2 1 4 0 2 2 1 4 0 2 2 1 4 0 2 2 1 4 0 2 1 4 0 2 2 1 4 0 2 2 1 4 0 2 1 4 0 2 1 4 0 2 1 4 0 2 1 1 4 0 2 1 1 4 0 0 0 0 0 0 0 0 0 0 0 0 0	106 44 58 264 175 60 76 64 141 41 141 47 700 32 54 1516 = 13 (P = 106 6 (P = 0. 54 46 6 (P = 0. 54 167 167 167 167 167 175 175 175 175 175 175 175 175 175 17	0 4 4 4 9 0 0 1 2 3 0 5 5 16 6 6 0 0 5 5 16 5 18 4 6 18 4 6 18 4 6 18 18 18 18 18 18 18 18 18 18	ation 1100 2214 411 377 260 172 60 78 83 144 55 64 100 34 45 56 41 229% 41 142 29% 41 142 29% 41 142 55 64 142 55 64 144 55 64 144 55 64 144 55 64 144 55 64 144 55 64 144 55 64 144 55 64 144 100 34 60 60 819 41 102 102 102 102 102 102 102 10	3.0% 4.9% 11.1% 5.8% 2.5% 4.7% 10.3% 100.0% Weight 4.7% 10.3% 100.0% 4.4.1% 5.9% 4.4.1% 11.9% 11.9% 11.9% 5.8% 64.8%	0.20 (0.01, 4.29) Not estimable 0.06 (0.00, 1.22) 0.42 (0.03, 2.19) 0.42 (0.03, 2.19) 0.42 (0.03, 2.19) 0.42 (0.13, 2.10) 1.31 (0.18, 9.44) 1.31 (0.18, 10.15, 31) 1.46 (0.49, 5.18) 1.47 (0.17, 5.18) 0.46 (0.39, 2.29) 0.47 (0.16, 10.55) 0.46 (0.16, 2.344) 2.06 (0.16, 2.344) 2	0.01 0.1 10 10 Radiofrequency ablation Laser ablation
Total events 55 60 Heterogeneity: Tau? = 0.27; ChP = 18.32; df = 13 (P = 0.15); P = 29% Total for oursell afford: 7 = 0.14 (P = 0.80) 0.01 0.1 1 10 10	Kubal 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Shipherd 2010 Sydnor 2016 Vahaaho 2019 Wozniak 2019 Wozniak 2019 Ukahaho 2019 Wozniak 2019 Total (9%K Ch) Total 9%K Ch) Total 9%K Ch Total 9%K Ch	0 0 0 1 4 0 2 6 1 8 23 1 4 0.27; Chi ^p = 18.32, df 2 = 0.14 (P = 0.89) Rediofrequency ab Events 2 0 0 2 1 0 0 2 1 0 0 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0	$ \begin{aligned} & 106 \\ & 64 \\ & 44 \\ & 58 \\ & 264 \\ & 175 \\ & 60 \\ & 76 \\ & 64 \\ & 141 \\ & 41 \\ & 41 \\ & 67 \\ & 100 \\ & 32 \\ & 54 \\ & 1516 \\ & 67 \\ & 100 \\ & 125 \\ & 76 \\ & 100 \\ & 100 \\ & 60 \\ & 70 \\ & 732 \\ & 732 \\ & 732 \\ & 66 \\ & 69 \\ & 0 \\ & 70 \\ & 732 \\ & 732 \\ & 732 \\ & 732 \\ & 734 \\ & 784 \\ & 90 \\ & (P-0) \\ & 0 \\ \end{aligned} $	0 4 4 9 9 0 1 2 3 3 0 5 5 5 16 4 6 6 0 0 0,15); P = 2 2 2 0 0 0 1 3 5 5 6; P 2 2 2 0 0 5 5; P 5 5 16 4 6 6 0 0 0,15); P = 2 2 2 2 0 0 5 5 5 16 6 6 0 0,055; P = 2 2 2 2 0 0 5 5 5 16 6 0 0 0,155; P = 2 2 2 0 0 5 5 5 16 6 0 0 0,155; P = 2 2 2 2 0 0 5 5 5 16 6 0 0 0,155; P = 2 2 2 2 0 0 5 5 5 16 6 0 0 0 5 5 16 6 0 0 0 5 5 16 6 0 0 0 5 5 16 6 0 0 0 5 5 16 6 0 0 0 5 5 16 6 0 0 0 5 5 16 6 0 0 0 5 5 16 6 0 0 0 5 5 16 6 0 0 15 5 16 6 0 0 0 15; P = 2 2 2 2 0 0 1 1 3 5 5 16 6 0 15; P = 2 2 2 0 0 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1100 172 600 172 600 172 600 172 600 172 883 144 56 4 100 34 56 4 2214 229% 819 941 600 788 819 941 600 788 1422 29%	3.0% 4.9% 11.7% 2.5% 11.9% 2.5% 11.9% 4.7% 100.0% Weight 100.0% 4.1% 4.2% 4.4% 4.4% 4.4% 4.4% 4.4% 5.8% 4.4% 5.8% 4.4%	0.20 (0.01, 4.29) Not estimable 0.06 (0.00, 1.22) 0.42 (0.03, 2.19) 0.42 (0.03, 2.19) 0.42 (0.13, 2.10) 1.51 (0.16, 9.54) 1.51 (0.16, 9.54) 1.51 (0.16, 10.53) 1.60 (0.49, 5.18) 1.57 (0.77, 3.19) 0.42 (0.3, 2.69) 0.47 (0.16, 2.51) 0.46 (0.3, 2.69) 0.43 (0.34, 2.69) Not estimable 0.46 (0.16, 2.54) 1.52 (0.16, 2.52) 1.52 (0.34, 2.62) 1.52 (0.34, 2.62) 0.42 (0.03, 2.70) 0.44 (0.14, 2.45) 0.44 (0.14, 2.45) 0.44 (0.14, 2.45) 0.44 (0.14, 2.45) 0.44 (0.14, 2.45) 0.4	Odds Ratio
Heterogeneity: Tau* = 0.27; Chi ² = 18.32; df = 13 (P = 0.15); l ² = 29%	Kubai 2019 Lawson 2017 Mese 2015 Nordon 2011 Park 2020 Shipherd 2010 Shipherd 2019 Total events Heterogeneity Tau ² = Test for overall effect: Distribution 2006 Amenda 2006 Amenda 2006 Amenda 2006 Amenda 2006 Amenda 2006 Shipherd 2010 Shipherd 2010 Ship	$\begin{array}{c} 0\\ 0\\ 0\\ 1\\ 1\\ 2\\ 2\\ 6\\ 1\\ 1\\ 3\\ 2\\ 2\\ 3\\ 1\\ 4\\ 1\\ 2\\ 2\\ 3\\ 3\\ 2\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\$	106 44 58 264 1755 60 76 64 141 1516 1516 1516 128 6 6 732 732 732 6 (P = 0. 106 6 732 732 732 734 1776 100 100 6 6 732 732 734 100 100 100 100 100 100 100 100 100 10	$ \begin{array}{c} & 0 \\ & 0 \\ & 4 \\ & 4 \\ & 4 \\ & 9 \\ & 9 \\ & 0 \\ & 0 \\ & 5 \\ & 16 \\ & 6$	1100 141 37 260 060 172 260 078 83 144 55 64 100 34 55 64 100 34 55 64 100 34 142 29% 819 819 142 29% 819 142 142 29% 819 144 100 00 849 144 100 172 144 100 172 144 100 172 144 100 172 144 100 144 100 172 144 100 144 100 100 144 100 100	3.0% 4.9% 111.7% 5.8% 9.25% 4.2% 119% 119% 119% 5.9% 4.2% 5.9% 4.2% 5.9% 4.2% 5.9% 4.2% 5.9% 5.9% 64.6% 2.8% 2.8% 11.9% 11.9% 5.9% 5.4% 5.8% 5.8% 5.8% 5.8% 5.8% 5.8% 5.8% 5.8	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.03, 2.19] 0.42 [0.13, 1.40] 1.31 [0.18, 9.54] 1.31 [0.18, 9.54] 1.31 [0.18, 10.35, 31] 1.46 [0.49, 51, 10] 0.47 [0.18, 10, 10] 0.47 [0.18, 21] 0.47 [0.18, 10] 0.47 [0.18, 21] 0.47 [0.18, 22] 0.47 [0.18, 21] 0.47 [0.18, 22] 0.47 [0.18,	0.01 0.1 10 10 Radiofrequency ablation Laser ablation
101 101 01001 01001 (= 0.14 (P = 0.90)	Kubal 2019 Luwson 2017 Mese 2015 Nordon 2011 Park 2020 Rasmussen 2011 Sanioglu 2017 Shopherd 2010 Sydnor 2016 Vuhanho 2019 Woznikk 2016 Total (95% CI) Total 90% CI) Total 90% CI) Total 90% CI) Total 90% CI) Total 90% CI) Study or Subgroup Mese 2015 Nordon 2011 Rasmussen 2016 Subgroup (10% CI) Subgroup (10% CI) Subgroup (10% CI) Subgroup (10% CI) Subgroup (20% CI) S	$\begin{array}{c} 0\\ 0\\ 0\\ 1\\ 4\\ 0\\ 2\\ 2\\ 6\\ 1\\ 8\\ 23\\ 1\\ 4\\ 0\\ 22\\ 6\\ 1\\ 4\\ 0\\ 0.27; Ch ^2 = 18.32; df\\ 1\\ 0\\ 0.27; Ch ^2 = 18.32; df\\ 0\\ 0.00; Ch ^2 = 0.89; 0\\ 0\\ 0\\ 2\\ 2\\ 2\\ 3\\ 4\\ 0\\ 0\\ 2\\ 1\\ 1\\ 1\\ 0\\ 0\\ 0\\ 0\\ 0\\ 1\\ 4\\ 2\\ 2\\ 1\\ 1\\ 1\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 1\\ 4\\ 2\\ 2\\ 2\\ 2\\ 3\\ 4\\ 6\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$	$ \begin{aligned} & 106 \\ & 106 \\ & 44 \\ & 58 \\ & 264 \\ & 175 \\ & 60 \\ & 76 \\ & 60 \\ & 76 \\ & 60 \\ & 76 \\ & 60 \\ & 76 \\ & 141 \\ & 17 \\ & 100 \\ & 32 \\ & 54 \\ & 1516 \\ & 1516 \\ & 100 \\ & 100 \\ & 54 \\ & 732 \\ & 60 $	0 4 4 4 9 0 0 5 16 6 6 0 0 15 17 2 2 2 2 2 2 0 0 1 3 3 0 5 16 4 5 16 4 5 16 16 2 2 2 2 2 2 2 3 0 0 15 17 1 2 15 16 16 16 15 17 17 10 10 10 10 10 10 10 10 10 10	1100 141 37 260 000 172 600 172 600 78 83 144 55 64 100 34 56 64 100 34 56 60 142 29% 20% 1100 56 60 1422 56 1422 56 1422 56 1422 56 2214	3.0% 4.9% 11.7% 5.8% 9.2.5% 18.7% 10.3% 100.0% Weight 4.7% 4.7% 10.3% 6.4.6% 2.8% 2.8% 3.0% 4.9% 10.3% 6.4.6% 2.8% 2.8% 2.8% 2.8% 100.3% 100.0%	0.20 [0.01, 4.29] Not estimable 0.06 [0.00, 1.22] 0.24 [0.03, 2, 19] 0.42 [0.13, 2, 19] 0.42 [0.13, 2, 19] 0.42 [0.13, 2, 19] 0.42 [0.13, 2, 19] 0.42 [0.14, 9, 54] 1.51 [0.16, 19, 54] 1.51 [0.17, 3, 19] 0.42 [0.14, 24] 0.46 [0.46, 1, 65] 0.46 [0.46, 1, 65] 0.47 [0.1, 4, 26] Not estimable 0.66 [0.0, 1, 2, 24] 1.52 [0.0, 1, 4, 24] 0.20 [0.0, 1, 4, 24] 0.40 [0.3, 2, 10] 0.47 [0.1, 4, 26] 0.48 [0.3, 2, 10] 0.47 [0.1, 3, 20] 0.47 [0.1, 4, 26] 0.48 [0.3, 2, 10] 0.47 [0.1, 3, 20] 0.48 [0.3, 2, 10] 0.48 [0.1, 3, 3, 10] 0.48 [0.1, 4, 6] 0.48 [0.1, 4] 0.48 [0.1, 4]	Odd Allo Odd Ratio MHR Random 35% Cl

Fig 4. Forest plots showing the odds ratio (OR) for venous thrombotic event (VTE), burns and ecchymosis, and paresthesia in all included patients underwent radiofrequency ablation (RFA) vs laser ablation (LA) at 1 month postoperative. **(A)** OR for VTE. **(B)** OR for burns and ecchymosis. **(C)** OR for paresthesia. **(D)** Subgroup analysis of OR for paresthesia at 1 month postoperative. *CI*, confidence interval; *M*-*H*, Manzel-Heinz.

also was similar to our original results. We did not observe significant publication bias in funnel plot (Supplementary Fig 2, *A*). Venous TEs (VTEs) refer to deep venous thrombosis, pulmonary embolism, and endothermal heat-induced thrombosis (EHIT) in our study, which occurring 1 month after surgery were another primary outcome assessed in our review. Of the 29 studies included, 22 provided information on the occurrence of thrombogenesis.^{10,13,15-} 17,21,23-25,28-30,32-36,38-40,42,43 Among them, 13 studies reported that no VTE occurred both in the RFA and LA groups, whereas VTE occurred in the RFA or LA groups in the other 9 studies. A total of 15 cases of VTE in the RFA group, including 1 pulmonary embolism, 2 superficial vein thromboses, and 12 EHIT, in contrast with 25 cases of VTE in the LA group, including 8 deep venous thromboses involving the peroneal vein or femoral vein, 2 superficial vein thromboses, and 15 EHIT. The incidence rates of thrombogenesis ranged from 0% to 10.31% in the RFA group and from 0% to 4.67% in the LA group. Our meta-analysis indicated that RFA showed an increased risk of VTEs compared with LA; however, this difference was not statistically significant (OR, 1.46; 95% CI, 0.77-2.74; P = .24), and there was no heterogeneity among the studies (Fig 4, A). In addition, we also performed a subgroup analysis separately based on the RCTs and cohort studies. There were 11 RCTs and 11 cohort studies reporting the data of VTEs during the first month after surgery. The effects of RFA and LA were also similar (OR, 0.66; 95% CI, 0.1-4.26; $I^2 = 0\%$; P = .66), (OR, 1.61; 95% CI, 0.82-3.16; $I^2 = 0\%$; P = .16) (Supplementary Fig 3, A and B) both in RCTs and cohort studies, which was similar to our original results.

Secondary outcomes

Burns and ecchymosis. Seventeen of the 29 included studies reported on burns and ecchymosis during the first postoperative month.^{13,15-17,23,25,28,29,32-38,40,42} The morbidity rates were 10.88% for RFA and 14.54% for LA. The meta-analysis revealed that RFA decreased the risk of burns and ecchymosis compared with LA significantly (OR. 0.65: 95% Cl. 0.48-0.87: P = .005) without heterogeneity ($I^2 = 16\%$; P = .29) (Fig 4, B). In addition, a subgroup analysis was performed based on the RCTs and cohort studies. There were eight RCTs and nine cohort studies reporting data on burns and ecchymosis at 1 month after surgery. RFA had a better effect in decreasing the risk of burns and ecchymosis than LA both in RCTs (OR, 0.56; 95% CI, 0.32-0.98; I² = 34%; P = .04) (Supplementary Fig 3, C) and cohort studies (OR, 0.7; 95% CI, 0.49-0.99; $I^2 = 0\%$; P = .04) (Supplementary Fig 3, D), which supported our original results.

Paresthesia

Similarly, 17 studies also reported data on paresthesia during the first postoperative month.^{10,13,15-17,21,23,28-30,33-35,37-39,42,43} In these studies, 3.63% of patients experienced paresthesia in the RFA group, and 2.71% experienced it in the LA group. The overall pooled OR was 0.96, indicating no significant difference (95% Cl, 0.56-1.65; P = .89), with mild heterogeneity ($I^2 = 29\%$; P = .15) (Fig 4, *C*). To address the heterogeneity, subgroup analysis based on

publication time was conducted. We chose to split the groups into two subgroups, using 2016 at the dividing point and then analyzed the occlusion of the treated GSV; we also did this for paresthesia. Nine studies published before 2016^{13,15-17,23,28,30,39,42} were arouped together, and eight studies published after 2016^{10,21,29,33-} ^{35,37,38,43} were classified into a second group. In studies published before 2016, 83.64% and 58.33% of patients experienced paresthesia in the RFA and LA groups, respectively. The pooled analysis indicated that the risk of paresthesia was similar between RFA and LA without statistical significance or heterogeneity (OR, 1.52; 95% CI, 0.94-2.45; $I^2 = 0\%$; P = .08) (Fig 4, D). However, only 16.36% of all patients with paresthesia were from the RFA group, whereas 41.67% were from the LA group in studies published after 2016. Therefore, we observed that RFA was associated with a decreased risk of paresthesia compared with LA with significant difference and no heterogeneity (OR, 0.42; 95% CI, 0.19-0.91; $I^2 =$ 0%; P = .03) (Fig 4, D). In addition, a subgroup analysis also was performed based on the RCTs and cohort studies. There were nine RCTs and eight cohort studies reporting data on paresthesia at 1 month after surgery. The effect of RFA and LA was similar (OR, 1.23; 95% CI, 0.76-1.97; $I^2 = 0\%$; P = .4), (OR, 0.79, 95%CI:0.22-2.77; $I^2 =$ 54%; P = .71) (Supplementary Fig 4, A and B) both in RCTs and cohort studies, but there was significant heterogeneity (P = .06; $I^2 = 54\%$) in cohort studies, which also was similar to our original results. No significant publication bias was detected in funnel plots (Supplementary Fig 2, B).

Pigmentation

Eight eligible studies described pigmentation conditions during the first postoperative month. Among these studies, 7.35% of patients in the RFA group and 4.06% in the LA group experienced pigmentation. The pooled outcomes suggested that RFA was associated with an increased risk of pigmentation compared with LA with significant difference and no heterogeneity (OR, 1.75; 95% Cl, 1.06-2.90; $l^2 = 0\%$; P = .03) (Fig 5, A).

Phlebitis

Seven studies provided data on phlebitis during the first postoperative month.^{15,17,23,28,30,40,43} The incidence rate of phlebitis was 3.86% in the RFA group and 3.95% in the LA group. The location of phlebitis was along with the treated target veins or main trunks. In the meta-analysis, no statistical significance was observed between RFA and LA in all included studies, with mild heterogeneity (OR, 0.87; 95% CI, 0.33-2.27; $I^2 = 39\%$; P = .78) (Fig 5, *B*).

Recurrence of VVs

Five studies reported data on the recurrence of VVs at 1 year after surgery.^{10,13,17,30,34} The incidence rate of recurrence in the RFA group was 4.89% compared

Α	radiofrequency at	olation	laser abla	tion		Odds Ratio			Odds Ratio)	
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% C		M-H,	Random, 9	5% CI	
Almeida 2009	1	46	0	41	2.4%	2.74 [0.11, 69.04]					
Cathérine 2022	20	133	13	139	45.6%	1.72 [0.82, 3.61]			- + - -	_	
Karathanos 2020	2	53	2	107	6.4%	2.06 [0.28, 15.04]			· ·		
Park 2020	1	64	1	83	3.2%	1.30 [0.08, 21.22]					
Rasmussen 2011	8	141	3	144	13.9%	2.83 [0.73, 10.88]			+		
Sanioglu 2017	1	41	2	55	4.2%	0.66 [0.06, 7.57]			-		
Shepherd 2010	6	67	2	64	9.4%	3.05 [0.59, 15.70]				-	
Wozniak 2016	5	54	5	56	14.9%	1.04 [0.28, 3.82]		-	-	_	
Total (95% CI)		599		689	100.0%	1.75 [1.06, 2.90]			•		
Total events	44		28								
Heterogeneity: Tau ² =	0.00; Chi ² = 2.30, df	= 7 (P = 0	0.94); l ² = 0	%						10	400
Test for overall effect:	Z = 2.20 (P = 0.03)						radiofr	equency abla	ation laser	10 ablation	100

В	radiofrequency a	laser abl	ation		Odds Ratio	Odds Ratio					
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% Cl		М-Н,	Random, 9	5% CI	
Almeida 2009	0	46	5	41	8.4%	0.07 [0.00, 1.33]	←				
Nordon 2011	1	76	2	78	11.2%	0.51 [0.04, 5.71]					
Park 2020	2	64	4	83	17.3%	0.64 [0.11, 3.59]			•	_	
Puggioni 2005	0	53	4	77	8.4%	0.15 [0.01, 2.90]	←	•			
Rasmussen 2011	12	141	4	144	25.1%	3.26 [1.02, 10.35]					
Shepherd 2010	5	67	3	64	20.4%	1.64 [0.38, 7.16]					
Sydnor 2016	1	97	1	96	9.1%	0.99 [0.06, 16.05]			-		
Total (95% CI)		544		583	100.0%	0.87 [0.33, 2.27]		-			
Total events	21		23								
Heterogeneity: Tau ² =	0.61; Chi ² = 9.77, df	= 6 (P = 0	0.13); l² = 3	39%						10	400
Test for overall effect:	Z = 0.28 (P = 0.78)						radiofre	0.1 equency abla	ation laser	ablation	100

С	Radiofrequency a	blation	laser abla	ation		Odds Ratio	Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% C	M-H, Random, 95% Cl
Kubat 2019	15	264	28	260	51.1%	0.50 [0.26, 0.96]	
Rasmussen 2011	9	124	14	121	28.2%	0.60 [0.25, 1.44]	
Sydnor 2016	5	74	6	79	14.3%	0.88 [0.26, 3.02]	
Wozniak 2016	0	54	1	56	2.1%	0.34 [0.01, 8.52]	
Yoon 2017	1	97	3	246	4.2%	0.84 [0.09, 8.21]	
Total (95% CI)		613		762	100.0%	0.58 [0.36, 0.92]	•
Total events	30		52				
Heterogeneity: Tau ² =	0.00; Chi ² = 0.86, df	= 4 (P = 0	.93); l ² = 0	%			
Test for overall effect:	Z = 2.30 (P = 0.02)						Radiofrequency ablation Laser ablation

Fig 5. Forest plots showing the odds ratio (OR) for pigmentation, phlebitis, and recurrence of varicose veins (VVs) in all included patients who underwent radiofrequency ablation (RFA) vs laser ablation (LA) at 1 month post-operative and 1 year, respectively. **(A)** OR for pigmentation. **(B)** OR for phlebitis. **(C)** OR for recurrence of VVs. *Cl,* confidence interval; *M-H,* Manzel-Heinz.

with 6.82% in the LA group. The pooled outcomes indicated that RFA was significantly associated with a decreased risk of VV recurrence without heterogeneity (OR, 0.58; 95% CI, 0.36-0.92; $I^2 = 0\%$; P = .02) (Fig 5, *C*).

Postoperative pain scores

Most of the included studies reported postoperative pain scores using the visual analogue scale, which ranged from 0 to 10 during the first month after surgery. However, the time points of postoperative pain score evaluations varied across the different studies. Additionally, some studies presented postoperative pain scores as means or numerical ranges without SDs, preventing us from conducting a systematic analysis with mean \pm SD. We ultimately included and analyzed 12 studies comprising 13 comparisons.^{15,16,23,24,27-30,33-35,38} The pooled results indicated that RFA significantly decreased postoperative pain severity compared with LA, although there was significant heterogeneity (mean difference [MD], -0.57; 95% CI, -0.94 to -0.2; I² = 93%; P = .002) (Fig 6, A). The major source of heterogeneity was the variation in pain score data at different time points. Therefore, a subgroup analysis was performed,

Mean

0.7

1 /6

Α

Study or Subgroup

Almeida 2009

Cathérine 2022

	1.40	1.42	100	1.0	1.00	142	0.270	-0.04 [-0.00, -0.02]					
Gianesini 2020	1.9	0.9	44	2.2	1.1	41	8.7%	-0.30 [-0.73, 0.13]			1		
Hamann 2019	0.4	0	150	2.2	1.9	148		Not estimable					
Kubat (1470) 2019	0.6	1.2	249	0.5	1.3	109	9.3%	0.10 [-0.19, 0.39]			- t		
Kubat (980) 2019	1.1	2	109	1.1	2	148	8.4%	0.00 [-0.49, 0.49]					
Lawson 2019	2.05	2.05	163	2.18	2.05	158	8.6%	-0.13 [-0.58, 0.32]			1		
Mese 2015	1.4	0.5	60	1.2	0.4	60	9.7%	0.20 [0.04, 0.36]			- t		
Mohammadi 2020	4.67	1.044	560	5.58	1.017	530	9.8%	-0.91 [-1.03, -0.79]			1		
Nordon 2011	0.95	3.42	76	2.8	3.42	78	5.3%	-1.85 [-2.93, -0.77]			1		
Rasmussen 2011	1.21	1.72	121	2.58	2.41	125	8.2%	-1.37 [-1.89, -0.85]			1		
Sanioglu 2017	2.8	1.1	41	3.6	1.8	55	7.9%	-0.80 [-1.38, -0.22]			1		
Shepherd 2010	2.64	2.21	66	3.68	2.25	61	6.9%	-1.04 [-1.82, -0.26]			1		
Total (95% CI)			1823			1696	100.0%	-0.57 [-0.94, -0.20]					
Heterogeneity: $Tau^2 = 0$	36 [.] Chi ² = 1	65 17 df =	= 11 (P <	0 0000	$ 1\rangle ^2 = 2$	93%			H				
The second secon	0.05 (D	0.000		0.0000	.,, .	0070			-100	-50	0	50	100
l est for overall effect: Z	= 3.05 (P =	0.002)							Padiof	aquancy abl	ation Lacor	ablation	

Radiofrequency ablation Laser ablation

В	Radiofrequency ablation Laser ablation							Mean Difference	Mean Difference		
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% C	IV, Random, 95% CI		
Almeida 2009	0.7	0.9	46	1.9	1.6	41	11.7%	-1.20 [-1.75, -0.65]	4		
Kubat (980) 2019	0.6	1.2	249	1.1	2	148	22.2%	-0.50 [-0.86, -0.14]	•		
Mohammadi 2020	4.67	1.044	560	5.58	1.017	530	48.6%	-0.91 [-1.03, -0.79]	•		
Sanioglu 2017	2.8	1.1	41	3.6	1.8	55	10.8%	-0.80 [-1.38, -0.22]			
Shepherd 2010	2.64	2.21	66	3.68	2.25	61	6.6%	-1.04 [-1.82, -0.26]			
Total (95% CI) Heterogeneity: Tau ² = (Test for overall effect: 2	0.02; Chi² = 0 Z = 7.83 (P <	6.15, df = 4 0.00001)	962 (P = 0.1	9); ² =	35%	835	100.0%	-0.85 [-1.06, -0.64]	-100 -50 0 50	100	
	,	,							Radiofrequency adiation Laser adiation		

С	Radiofreq	uency abl	ation	Lase	r ablat	ion		Mean Difference	Me	an Differen	ce	
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, F	Random, 959	% CI	
Almeida 2009	0.2	0.3	40	1.8	1.8	36	32.8%	-1.60 [-2.20, -1.00]		•		
Rasmussen 2011	1.21	1.72	121	2.58	2.41	125	42.7%	-1.37 [-1.89, -0.85]				
Sanioglu 2017	4.81	5.4	41	4.49	7.6	55	1.7%	0.32 [-2.28, 2.92]		+		
Shepherd 2010	2.2	1.98	66	3.43	2.11	61	22.8%	-1.23 [-1.94, -0.52]		1		
Total (95% CI)			268			277	100.0%	-1.38 [-1.73, -1.04]	LI	(
Heterogeneity: Tau ² = 0 Test for overall effect: 2	$2.00; Chi^2 = 2$ Z = 7.96 (P < 2)	2.34, df = 3 0.00001)	(P = 0.5	51); l ² = (0%				-100 -50 Radiofrequency abla	0 ition Laser	50 ablation	100

Fig 6. Forest plots showing the mean difference (MD) for postoperative pain scores in all included patients with radiofrequency ablation (RFA) vs laser ablation (LA). (A) MD for postoperative pain scores at 1 month postoperative. (B) MD for postoperative pain scores at 0 to 3 days. (C) MD for postoperative pain scores at 7 to 10 days. Cl, confidence interval; SD, standard deviation.

revealing that RFA significantly decreased postoperative pain severity compared with LA with low-grade heterogeneity within the first 3 days after surgery (MD, -0.85; 95% CI, -1.06 to -0.64; $I^2 = 35\%$; P < .001) (Fig 6, B).^{15,23,27,34,38} Furthermore, pain scores collected between 7 and 10 days postoperatively were grouped separately,^{15,23,30,38} and the meta-analysis demonstrated that RFA still resulted in a significantly decreased risk of pain compared with LA without heterogeneity (MD, -1.38; 95% CI, -1.73 to -1.04; $I^2 = 0\%$; P < .001)

(Fig 6, C). Therefore, RFA seems to be superior to LA in terms of pain severity during the first 10 days after surgery.

DISCUSSION

Over the past decade, both RFA and LA have been incorporated into guidelines as first-line treatments for LEVVs. However, there remains controversy and contradiction regarding their efficacy and safety. In this metaanalysis, we included 29 studies, comprising 16 RCTs, 2

prospective cohort studies, and 11 retrospective cohort studies, to analyze the early and long-term outcomes of RFA and LA for LEVVs. We found that RFA and LA had similar effects on the occlusion rate of treated GSV, VTE, and phlebitis at the 1-month follow-up. However, RFA was associated with a lower risk of burns, ecchymosis, paresthesia, and pain severity, as well as an increased risk of pigmentation compared with LA in the early postoperative period. For long-term follow-up, RFA decreased the risk of VV recurrence and increased the occlusion rate of treated GSV in studies published after 2016. Therefore, to some extent, RFA may be considered superior to LA for LEVV treatment, but further RCTs are needed to confirm this finding.

The latest Clinical Practice Guidelines of Varicose Veins of the American Venous Forum considers the ETA, including RFA and LA, a preferred option for patients with symptomatic VVs and axial reflux of the GSV.⁴⁴ Even though our results indicated some potential differences between RFA and LA, they had their own advantages and all showed a good therapeutic effect for LEVV, which supported the opinion of the American Venous Forum.

Six years ago, He et al⁴⁵ conducted a similar study comparing RFA with LA for the treatment of LEVVs. Their findings indicated no significant difference in the occlusion rate of GSV at 3 months postoperatively and in postoperative complications, such as pain scores at 3 and 10 days, thrombophlebitis, and so on.⁴⁵ However, our analysis confirmed that the closure rate of GSV, based on data from 13 studies, was similar between RFA and LA at the 1-month and 1-year follow-up. Subgroup analyses revealed that RFA increased the closure rate of GSV based on data from eight studies published after 2016, with a significant difference and no heterogeneity. The contrasting results between He et al's study and our study may be attributed to the fact that He et al only investigated the occlusion rate of GSV based on two articles published before 2016. In addition, the difference between the devices used before and after 2016 may be a major reason leading to different closure rate. Before 2016 in our study, the VNUS ClosureFAST system, the ClosurePLUS system, the Celon RFiTT system, and an 810nm or a 980-nm laser system were used in RFA group and LA group, respectively, whereas the VNUS Closure-FAST system and a 980-nm or a 1470-nm laser system were the main equipment in RFA and LA groups, respectively, in studies published after 2016. The VNUS Closure-FAST system and 1470-nm laser system had a better effect than the ClosurePLUS system and 980-nm laser system.46,47

Furthermore, our results demonstrated that RFA can decrease pain scores compared with LA within the first 3 days and 7 to 10 days postoperatively, which was not observed in He et al's study. The difference between the two studies might be due to the limited number of papers reporting pain scores in He et al's study, leading to significant heterogeneity. Only two studies reported postoperative pain scores were higher for LA than for RFA.^{16,34} In another network meta-analysis comparing six interventions for LEVV management, it was found that complete closure of the treated vein within 6 months after intervention was higher with RFA than with LA. Additionally, the frequency of adverse events was higher with LA compared with RFA.⁴⁸

Furthermore, Bontinis et al indirectly demonstrated in their recent network meta-analysis comparing thermal and nonthermal endovenous ablation treatments for LEVV that RFA had a greater odds value for GSV closure compared with LA, and LA at 1470 nm increased the pain profile compared with RFA.⁴⁹Additionally, Vangelis et al found that LA significantly increased the risk of postoperative paresthesia with a risk ratio of 6.96 when compared with RFA, which supported our findings that RFA decreased the OR of postoperative paresthesia compared with LA. In summary, the aforementioned analysis suggests that RFA is more advantageous than LA for LEVV treatment in terms of the closure rate of the treated GSV, pain scores, and postoperative paresthesia.

Thromboembolic events are serious complications after LEVV surgery, leading to swelling, pain in the affected limb, and even death. Post-thrombotic syndrome significantly impacts survival and quality of life.50.51 Fortunately, the incidence rate of venous thromboembolism is low in ETA for LEVV treatment. In our study, both RFA and LA had a low overall morbidity of VTEs, with rates of 0.84%, and the percentage was similar between RFA and LA. Dermody et al's study⁵² was also in agreement with our findings. However, some reports have suggested that the incidence of thromboembolism was higher with LA than with RFA and indicated a positive relationship between LA and the type of vein and increased thrombotic complications. Nonetheless, there were differences between our study and others. For example, in Benarroch-Gampel et al's study,⁵³ there were more older, obese, and diabetic patients in the RFA group compared with the LA group, and multiple veins were treated simultaneously. Aurshina et al's research¹¹ included patients who underwent RFA and LA for GSV, small saphenous vein, anterior accessory saphenous vein, and perforator veins, whereas our study focused only on data from ETA for GSV. These differences may explain the divergent outcomes between our study and others.

Another important factor in evaluating surgical treatment for LEVV is the recurrence of VVs, which can be classified as clinical or anatomical recurrence. Previous studies comparing the incidence of VV recurrence between LA or RFA and HL/S of GSV showed no significant differences, but the reasons for recurrence were significantly different.⁵⁴ In our study, we specifically examined

the clinical recurrence of VVs and found that RFA had a lower recurrence rate (4.89%) compared with LA (6.82%), significantly lowering the odds value compared with LA with notable differences and no heterogeneity at the 1year follow-up. A 3-year follow-up study by Rasmussen et al³¹ also reported that RFA reduced VV recurrence compared with LA. with rates of 14.9% vs 20.0%. A similar trend was observed in a 5-year follow-up, with recurrence rates of 18.7% for RFA and 38.6% for LA.⁸ However, contrary to these studies. Kheirelseid et al reported no significant difference in VV recurrence between LA and conventional surgery or when comparing LA with RFA at the 5-year follow-up.55 It is worth mentioning that the recurrence of VVs in Elrasheid et al's study included both anatomical and clinical recurrence, whereas our study only considered clinical recurrence.

There were several limitations in our study. First, a few of the eligible studies were retrospective cohort studies, which may introduce selection bias. More RCTs comparing RFA and LA for LEVV treatment would be needed to provide level 1 evidence regarding their efficacy and safety. Second, although we included 26 studies, the primary or secondary outcomes were only provided in some of them, resulting in relatively limited data. Third, certain effects, such as quality of life, venous clinical severity score, recovery time to normal activity or work, and hospitalization expenses, were not analyzed owing to insufficient collected data in these aspects. Therefore, a more comprehensive comparison between RFA and LA in terms of their effectiveness would be needed in future research.

CONCLUSIONS

RFA and LA are effective and safe treatments for LEVVs. RFA has shown increased occlusion rates of treated GSV in recent years and has demonstrated a decrease in postoperative complications, such as burns, ecchymosis, paresthesia, postoperative pain scores, and recurrence of VVs compared with LA. RFA seems to be superior to LA in these aspects of LEVV therapy. Further wellmatched RCTs are needed to confirm these findings.

AUTHOR CONTRIBUTIONS

Conception and design: WJ, YL, ZL, MH, HY, XQ Analysis and interpretation: WJ, YL, ZL, MH, HY, XQ Data collection: WJ, YL, ZL, MH, HY, XQ Writing the article: WJ, YL, ZL, MH, HY, XQ Critical revision of the article: WJ, YL, ZL, MH, HY, XQ Final approval of the article: WJ, YL, ZL, MH, HY, XQ Statistical analysis: WJ, YL, ZL, MH, HY, XQ Obtained funding: WJ, XQ Overall responsibility: XQ

DISCLOSURES

None.

REFERENCES

- Balint R, Farics A, Parti K, et al. Which endovenous ablation method does offer a better long-term technical success in the treatment of the incompetent great saphenous vein? Review. *Vascular*. 2016;24: 649–657.
- Gao RD, Qian SY, Wang HH, Liu YS, Ren SY. Strategies and challenges in treatment of varicose veins and venous insufficiency. *World J Clin Cases.* 2022;10:5946–5956.
- Vlachovsky R, Novotny T, Staffa R, Bednarik Z. Endovenous ablation of varicose veins current status and overview of methods. *Rozhl Chir.* 2022;101:200–210.
- Proebstle TM, Sandhofer M, Kargl A, et al. Thermal damage of the inner vein wall during endovenous laser treatment: key role of energy absorption by intravascular blood. *Dermatol Surg.* 2002;28: 596–600.
- Labropoulos N, Bhatti A, Leon L, Borge M, Rodriguez H, Kalman P. Neovascularization after great saphenous vein ablation. *Eur J Vasc Endovasc Surg.* 2006;31:219–222.
- 6. Gonzalez Canas E, Florit Lopez S, Vilagut RV, et al. A randomized controlled noninferiority trial comparing radiofrequency with stripping and conservative hemodynamic cure for venous insufficiency technique for insufficiency of the great saphenous vein. *J Vasc Surg Venous Lymphat Disord*. 2021;9:101–112.
- Flessenkamper I, Hartmann M, Hartmann K, Stenger D, Roll S. Endovenous laser ablation with and without high ligation compared to high ligation and stripping for treatment of great saphenous varicose veins: results of a multicentre randomised controlled trial with up to 6 years follow-up. *Phlebology*. 2016;31:23–33.
- Lawaetz M, Serup J, Lawaetz B, et al. Comparison of endovenous ablation techniques, foam sclerotherapy and surgical stripping for great saphenous varicose veins. Extended 5-year follow-up of a RCT. *Int Angiol.* 2017;36:281–288.
- 9. Subramonia S, Lees T. Randomized clinical trial of radiofrequency ablation or conventional high ligation and stripping for great saphenous varicose veins. *Br J Surg.* 2010;97:328–336.
- Yoon WJ, Dresher M, Crisostomo PR, Halandras PM, Bechara CF, Aulivola B. Delineating the durability outcome differences after saphenous ablation with laser versus radiofrequency. J Vasc Surg Venous Lymphat Disord. 2019;7:486–492.
- Aurshina A, Ascher E, Victory J, et al. Clinical correlation of success and acute thrombotic complications of lower extremity endovenous thermal ablation. J Vasc Surg Venous Lymphat Disord. 2018;6: 25–30.
- Aurshina A, Alsheekh A, Kibrik P, Hingorani A, Marks N, Ascher E. Recanalization after endovenous thermal ablation. *Ann Vasc Surg.* 2018;52:158–162.
- Wozniak W, Mlosek RK, Ciostek P. Complications and failure of endovenous laser ablation and radiofrequency ablation procedures in patients with lower extremity varicose veins in a 5-year follow-up. *Vasc Endovascular Surg.* 2016;50:475–483.
- El Kilic H, Bektas N, Bitargil M, Balkaya IA, Demir T, Koramaz I. Longterm outcomes of endovenous laser ablation, n-butyl cyanoacrylate, and radiofrequency ablation for treatment of chronic venous insufficiency. J Vasc Surg Venous Lymphat Disord. 2022;10:865–871.
- Shepherd AC, Cohel MS, Brown LC, Metcalfe MJ, Hamish M, Davies AH. Randomized clinical trial of VNUS®ClosureFAST™ radiofrequency ablation versus laser for varicose veins. *Br J Surg.* 2010;97: 810–818.
- Mese B, Bozoglan O, Eroglu E, et al. A comparison of 1,470-nm endovenous laser ablation and radiofrequency ablation in the treatment of great saphenous veins 10 mm or more in size. *Ann Vasc Surg.* 2015;29:1368–1372.
- Sydnor M, Mavropoulos J, Slobodnik N, Wolfe L, Strife B, Komorowski D. A randomized prospective long-term (>1 year) clinical trial comparing the efficacy and safety of radiofrequency ablation to 980 nm laser ablation of the great saphenous vein. *Phlebology*. 2017;32:415–424.
- Moher D, Liberati A, Tetzlaff J, Altman DG, PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *BMJ*. 2009;339:b2535.
- Higgins JP, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. *BMJ*. 2003;327:557–560.
- 20. Ioannidis JP. Interpretation of tests of heterogeneity and bias in meta-analysis. *J Eval Clin Pract.* 2008;14:951–957.

- 21. Vähäaho S, Mahmoud O, Halmesmäki K, et al. Randomized clinical trial of mechanochemical and endovenous thermal ablation of great saphenous varicose veins. *Br J Surg.* 2019;106:548–554.
- 22. Vähäaho S, Halmesmäki K, Mahmoud O, Albäck A, Noronen K, Venermo M. Three-year results of a randomized controlled trial comparing mechanochemical and thermal ablation in the treatment of insufficient great saphenous veins. *J Vasc Surg Venous Lymphat Disord*. 2021;9:652–659.
- Almeida JI, Kaufman J, Göckeritz O, et al. Radiofrequency endovenous ClosureFAST versus laser ablation for the treatment of great saphenous reflux: a multicenter, single-blinded, randomized study (RECOVERY study). J Vasc Interv Radiol. 2009;20:752–759.
- 24. Hamann SAS, Timmer-de Mik L, Fritschy WM, Kuiters GRR, Nijsten TEC, van den Bos RR. Randomized clinical trial of endovenous laser ablation versus direct and indirect radiofrequency ablation for the treatment of great saphenous varicose veins. *Br J Surg.* 2019;106:998–1004.
- 25. Gale SS, Lee JN, Walsh ME, Wojnarowski DL, Comerota AJ. A randomized, controlled trial of endovenous thermal ablation using the 810-nm wavelength laser and the ClosurePLUS radiofrequency ablation methods for superficial venous insufficiency of the great saphenous vein. J Vasc Surg. 2010;52:645–650.
- Goode SD, Chowdhury A, Crockett M, et al. Laser and radiofrequency ablation study (LARA study): a randomised study comparing radiofrequency ablation and endovenous laser ablation (810 nm). *Eur J Vasc Endovasc Surg.* 2010;40:246–253.
- 27. Mohammadi Tofigh A, Tahmasebi H, Zebarjadi J. Comparing the success rate and side effects of endovenous laser ablation and radiofrequency ablation to Treat varicose veins in the lower limbs: a randomized clinical trial. J Laser Med Sci. 2020;11(Suppl 1):S43–S48.
- Nordon IM, Hinchliffe RJ, Brar R, et al. A prospective double-blind randomized controlled trial of radiofrequency versus laser treatment of the great saphenous vein in patients with varicose veins. *Ann Surg.* 2011;254:876–881.
- 29. Kempeneers AC, Bechter-Hugl B, Thomis S, van den Bussche D, Vuylsteke ME, Vuylsteke MM. A prospective multicenter randomized clinical trial comparing endovenous laser ablation, using a 1470 nm diode laser in combination with a Tulip-TipTM fiber versus radiofrequency (Closure FAST™ VNUS®), in the treatment of primary varicose veins. Int Angiol. 2022;41:322–331.
- Rasmussen LH, Lawaetz M, Bjoern L, Vennits B, Blemings A, Eklof B. Randomized clinical trial comparing endovenous laser ablation, radiofrequency ablation, foam sclerotherapy and surgical stripping for great saphenous varicose veins. *Br J Surg.* 2011;98:1079–1087.
- Rasmussen L, Lawaetz M, Serup J, et al. Randomized clinical trial comparing endovenous laser ablation, radiofrequency ablation, foam sclerotherapy, and surgical stripping for great saphenous varicose veins with 3-year follow-up. J Vasc Surg Venous Lymphat Disord. 2013;1:349–356.
- Karathanos C, Spanos K, Batzalexis K, et al. Prospective comparative study of different endovenous thermal ablation systems for treatment of great saphenous vein reflux. J Vasc Surg Venous Lymphat Disord. 2021;9:660–668.
- 33. Lawson JA, Gauw SA, van Vlijmen CJ, et al. Prospective comparative cohort study evaluating incompetent great saphenous vein closure using radiofrequency-powered segmental ablation or 1470-nm endovenous laser ablation with radial-tip fibers (Varico 2 study). J Vasc Surg Venous Lymphat Disord. 2018;6:31–40.
- 34. Kubat E, Ünal CS, Geldi O, Çetin E, Keskin A. What is the optimal treatment technique for great saphenous vein diameter of ≥10 mm? Comparison of five different approaches. Acta Chir Belg. 2021;121: 94–101.
- Gianesini S, Menegatti E, Occhionorelli S, Grazia Sibilla M, Mucignat M, Zamboni P. Segmental saphenous ablation for chronic venous disease treatment. *Phlebology*. 2021;36:63–69.
- Ontas H, Yavuz T, Acar AN, Uysal D. Comparison of ultrasound results following endovenous laser ablation and radiofrequency ablation in the treatment of varicose veins. *Ann Ital Chir.* 2019;90:457–462.
- Izzo L, Pugliese F, Pieretti G, et al. High ligation of sapheno-femoral junction and thermal ablation for lower limb primary varicosity in day hospital setting. *Ann Ital Chir.* 2020;91:61–64.

- Sanioglu S, Yerebakan H, Farsak MB. Effects of two current great saphenous vein thermal ablation methods on visual analog scale and quality of life. *BioMed Res Int.* 2017;2017:8532149.
- 39. Almeida JI, Raines JK. Radiofrequency ablation and laser ablation in the treatment of varicose veins. *Ann Vasc Surg.* 2006;20:547–552.
- Puggioni A, Kalra M, Carmo M, Mozes G, Gloviczki P. Endovenous laser therapy and radiofrequency ablation of the great saphenous vein: analysis of early efficacy and complications. *J Vasc Surg.* 2005;42:488–493.
- Ravi R, Rodriguez-Lopez JA, Trayler EA, Barrett DA, Ramaiah V, Diethrich EB. Endovenous ablation of incompetent saphenous veins: a large single-center experience. J Endovasc Ther. 2006;13:244–248.
- Bozoglan O, Mese B, Eroglu E, et al. Comparison of endovenous laser and radiofrequency ablation in treating varicose veins in the same patient. *Vasc Endovascular Surg.* 2016;50:47–51.
- Park I, Park SC. Comparison of short-term outcomes between endovenous 1,940-nm laser ablation and radiofrequency ablation for incompetent saphenous veins. *Front Surg.* 2020;7:620034.
- 44. Gloviczki P, Lawrence PF, Wasan SM, et al. The 2023 society for vascular surgery, American venous Forum, and American vein and lymphatic society clinical practice guidelines for the management of varicose veins of the lower extremities. Part II: endorsed by the society of interventional radiology and the society for vascular medicine. J Vasc Surg Venous Lymphat Disord. 2023;29:101670.
- 45. He G, Zheng C, Yu MA, Zhang H. Comparison of ultrasound-guided endovenous laser ablation and radiofrequency for the varicose veins treatment: an updated meta-analysis. *Int J Surg.* 2017;39: 267–275.
- García-Madrid C, Pastor Manrique JO, Gómez-Blasco F, Sala Planell E. César garcía-madrid 1, J oscar pastor manrique, félix gómez-blasco, eusebi sala planell. Ann Vasc Surg. 2012;26:281–291.
- 47. Hirokawa M, Ogawa T, Sugawara H, Shokoku S, Sato S. Comparison of 1470 nm laser and radial 2ring fiber with 980 nm laser and bare-tip fiber in endovenous laser ablation of saphenous varicose veins: a multicenter, prospective, randomized, non-blind study. *Ann Vasc Dis.* 2015;8:282–289.
- Kolluri R, Chung J, Kim S, et al. Network meta-analysis to compare VenaSeal with other superficial venous therapies for chronic venous insufficiency. J Vasc Surg Venous Lymphat Disord. 2020;8:472–481.e3.
- 49. Bontinis V, Bontinis A, Koutsoumpelis A, et al. A network metaanalysis on the efficacy and safety of thermal and nonthermal endovenous ablation treatments. *J Vasc Surg Venous Lymphat Disord.* 2023;11:854–865.e5.
- Fang MC, Fan D, Sung SH, et al. Treatment and outcomes of acute pulmonary embolism and deep venous thrombosis: the CVRN VTE study. Am J Med. 2019;132:1450–1457.e1.
- Ashrani AA, Heit JA. Incidence and cost burden of post-thrombotic syndrome. J Thromb Thrombolysis. 2009;28:465–476.
- Dermody M, Schul MW, O'Donnell TF. Thromboembolic complications of endovenous thermal ablation and foam sclerotherapy in the treatment of great saphenous vein insufficiency. *Phlebology*. 2015;30: 357–364.
- Benarroch-Gampel J, Sheffield KM, Boyd CA, Riall TS, Killewich LA. Analysis of venous thromboembolic events after saphenous ablation. J Vasc Surg Venous Lymphat Disord. 2013;1:26–32.
- O'Donnell TF, Balk EM, Dermody M, Tangney E, lafrati MD. Recurrence of varicose veins after endovenous ablation of the great saphenous vein in randomized trials. *J Vasc Surg Venous Lymphat Disord*. 2016;4:97–105.
- 55. Kheirelseid EAH, Crowe G, Sehgal R, et al. Systematic review and meta-analysis of randomized controlled trials evaluating long-term outcomes of endovenous management of lower extremity varicose veins. *J Vasc Surg Venous Lymphat Disord*. 2018;6:256–270.

Submitted Sep 26, 2023; accepted Jan 20, 2024.

Additional material for this article may be found online at www.jvsvenous.org.



В	radiofrequency at	lation	Laser ab	lation		Odds Ratio		Odd	s Ratio	
Study or Subgroup	Events	Total	Events	Total	Weight	M-H. Random, 95% Cl		M-H, Rano	dom, 95% CI	
Bozogla 2016	56	60	60	60	7.4%	0.10 [0.01, 1.97]		•	-	
Gianesini 2020	44	44	41	41		Not estimable				
Park 2020	63	63	79	79		Not estimable				
Puggioni 2005	10	11	51	54	11.4%	0.59 [0.06, 6.25]		· · · ·	<u> </u>	
Ravi 2006	153	159	957	990	81.2%	0.88 [0.36, 2.13]		_	-	
Öntas 2019	25	25	25	25		Not estimable				
Total (95% CI)		362		1249	100.0%	0.72 [0.32, 1.60]		-		
Total events	351		1213							
Heterogeneity: Tau ² =	0.00; Chi ² = 1.98, df	= 2 (P = (0.37); l ² = 0	1%			0.005	0.1		200
Test for overall effect:	Z = 0.81 (P = 0.42)						Radiofre	quency ablation	Laser ablatic	200 in

C	Radiofrequency a	blation	Laser ab	lation		Odds Ratio	Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% C	M-H, Random, 95% Cl
AMohammadi 2020	528	560	494	530	30.7%	1.20 [0.74, 1.97]	
Catherine 2022	102	108	108	112	7.8%	0.63 [0.17, 2.30]	
Gale 2010	32	43	43	45	5.5%	0.14 [0.03, 0.65]	
Goode 2010	25	34	25	32	9.8%	0.78 [0.25, 2.41]	
Hamann 2019	122	150	111	148	27.1%	1.45 [0.83, 2.53]	+
Nordon 2011	68	70	65	68	4.2%	1.57 [0.25, 9.70]	
Rasmussen 2011	118	124	114	121	10.0%	1.21 [0.39, 3.70]	
Sydnor 2016	72	74	78	79	2.5%	0.46 [0.04, 5.20]	
Vahaaho 2019	29	29	33	33		Not estimable	
Wozniak 2016	53	54	54	56	2.4%	1.96 [0.17, 22.30]	
Total (95% CI)		1246		1224	100.0%	1.02 [0.69, 1.51]	+
Total events	1149		1125				
Heterogeneity: Tau ² =	0.06; Chi ² = 9.92, df =	= 8 (P = 0	.27); 12 = 19	9%			
Test for overall effect:	Z = 0.11 (P = 0.91)						Laser ablation Radiofrequency ablation

D	Radiofrequency a	Laser ab	ation	on Odds Ratio			Odds Ratio				
Study or Subgroup	Events	Total	Events	Total	Weight	M-H. Random, 95% C		M-H, Rand	om, 95% CI		
Almeida 2006	121	128	807	819	27.7%	0.26 [0.10, 0.67]		_			
Gianesini 2020	42	44	38	41	18.3%	1.66 [0.26, 10.46]			•		
Karathanos 2020	49	53	100	107	24.1%	0.86 [0.24, 3.07]					
Kubat 2019	253	264	237	260	29.9%	2.23 [1.06, 4.68]			-		
ontas 2019	25	25	25	25		Not estimable					
Total (95% CI)		514		1252	100.0%	0.92 [0.29, 2.93]					
Total events	490		1207								
Heterogeneity: Tau ² = 1	1.02; Chi ² = 12.91, d	f = 3 (P =	0.005); l ² =	77%				01		0	100
Test for overall effect: 2	Z = 0.14 (P = 0.89)						0.01	Laser ablation	Radiofreque	ncy abla	ation

Supplementary Fig 1 (online only). Forest plots showing the odds ratio (OR) for occlusion rate of the treated great saphenous vein (GSV) with radiofrequency ablation (RFA) vs laser ablation (LA) in randomized controlled trials (RCTs) and cohort studies. (A) OR for occlusion rate at 1 month postoperative in RCTs. (B) OR for occlusion rate at 1 month postoperative in RCTs. (D) OR for occlusion rate at 1 year postoperative in RCTs. (D) OR for occlusion rate at 1 year postoperative in RCTs. (D) OR for occlusion rate at 1 year postoperative in RCTs. (D) OR for occlusion rate at 1 year postoperative in cohort studies. *CI*, confidence interval; *M*-*H*, Manzel-Heinz.



Α



	Radiofrequency ablation		laser ablation		Odds Ratio		Odds Ratio				
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% C		M-H, Rand	lom, 95% Cl		
Almeida 2006	0	128	2	819	4.9%	1.27 [0.06, 26.65]			•		
Bozogla 2016	0	60	0	60		Not estimable					
Gianesini 2020	0	44	0	41		Not estimable					
Karathanos 2020	4	53	5	107	24.5%	1.67 [0.43, 6.48]			-		
Kubat 2019	0	264	0	260		Not estimable					
Lawson 2017	0	175	1	172	4.4%	0.33 [0.01, 8.05]					
ontas 2019	0	25	0	25		Not estimable					
Park 2020	0	64	1	83	4.4%	0.43 [0.02, 10.64]				-	
Puggioni 2005	0	53	3	77	5.1%	0.20 [0.01, 3.93]					
Sanioglu 2017	0	41	0	55		Not estimable					
Yoon 2017	10	97	11	246	56.8%	2.46 [1.01, 5.99]					
Total (95% CI)		1004		1945	100.0%	1.61 [0.82, 3.16]		-			
Total events	14		23								
Heterogeneity: Tau ² = 0.00; Chi ² = 4.52, df = 5 (P = 0.48); l ² = 0%								-	<u> </u>	+	
Test for overall effect: $Z = 1.40$ (P = 0.16)							0.01 0	.T	1 Jacob aklatis	.0	100
							Rauloffeque	ncy ablation	laser ablatio	/11	

С	radiofrequency ablation		laser ablation			Odds Ratio	Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI	M-H, Random, 95% Cl
Almeida 2009	14	40	26	35	17.9%	0.19 [0.07, 0.51]	
Cathérine 2022	21	135	21	142	26.5%	1.06 [0.55, 2.05]	
Gale 2010	2	46	5	48	8.6%	0.39 [0.07, 2.12]	
Mese 2015	16	60	19	60	22.8%	0.78 [0.36, 1.73]	
Nordon 2011	1	76	2	78	4.7%	0.51 [0.04, 5.71]	
Shepherd 2010	0	67	2	64	3.1%	0.19 [0.01, 3.93]	• • • •
Sydnor 2016	4	100	8	100	13.7%	0.48 [0.14, 1.65]	
Wozniak 2016	1	54	0	56	2.8%	3.17 [0.13, 79.48]	
Total (95% CI)		578		583	100.0%	0.56 [0.32, 0.98]	•
Total events	59		83				
Heterogeneity: Tau ² =	0.19; Chi ² = 10.55, df	= 7 (P =	0.16); l ² =	34%			
Test for overall effect: Z = 2.02 (P = 0.04)							radiofrequency ablation laser ablation



Supplementary Fig 3 (online only). Forest plots showing the odds ratio (OR) for venous thrombotic event (VTE), burns and ecchymosis with radiofrequency ablation (RFA) vs laser ablation (LA) in randomized controlled trials (RCTs) and cohort studies. (A) OR for VTE in RCTs. (B) OR for VTE in cohort studies. (C) OR for burns and ecchymosis in RCTs. (D) OR for burns and ecchymosis in cohort studies. Cl, confidence interval; M-H, Manzel-Heinz.

Α	Radiofrequency ablation		Laser ablation		Odds Ratio		Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% C	M-H, Random, 95% Cl
Almeida 2009	1	46	2	41	3.8%	0.43 [0.04, 4.96]	
Catherine 2022	0	106	2	110	2.4%	0.20 [0.01, 4.29]	• • • • • • • • • • • • • • • • • • • •
Mese 2015	0	60	0	60		Not estimable	
Nordon 2011	2	76	1	78	3.8%	2.08 [0.18, 23.44]	
Rasmussen 2011	6	141	3	144	11.4%	2.09 [0.51, 8.52]	
Shepherd 2010	8	67	5	64	16.4%	1.60 [0.49, 5.18]	
Sydnor 2016	23	100	16	100	44.9%	1.57 [0.77, 3.19]	+ -
Vahaaho 2019	1	32	4	34	4.5%	0.24 [0.03, 2.29]	
Wozniak 2016	4	54	6	56	12.9%	0.67 [0.18, 2.51]	
Total (95% CI)		682		687	100.0%	1.23 [0.76, 1.97]	•
Total events	45		39				
Heterogeneity: Tau ² = 0	0.00; Chi² = 6.27, df =	7 (P = 0	.51); I ² = 0%				
Test for overall effect: 2	Z = 0.85 (P = 0.40)						Radiofrequency ablation Laser ablation

В	Radiofrequency ablation		Laser ab	ation		Odds Ratio	Odds Ratio				
Study or Subgroup	Events Total E		Events Total		Weight	M-H, Random, 95% C	M-H, Ran	dom, 95% Cl			
Almeida 2006	2	128	2	819	18.2%	6.48 [0.91, 46.45]					
Bozogla 2016	0	60	0	60		Not estimable					
Gianesini 2020	0	44	0	41		Not estimable					
Izzo 2020	0	58	4	37	11.7%	0.06 [0.00, 1.22]	•	+			
Kubat 2019	1	264	4	260	16.4%	0.24 [0.03, 2.19]		<u>+-</u>			
Lawson 2017	4	175	9	172	25.3%	0.42 [0.13, 1.40]		+			
Park 2020	2	64	2	83	18.0%	1.31 [0.18, 9.54]		-			
Sanioglu 2017	1	41	0	55	10.4%	4.11 [0.16, 103.53]					
Total (95% CI)		834		1527	100.0%	0.79 [0.22, 2.77]					
Total events	10		21								
Heterogeneity: Tau ² = 1.25; Chi ² = 10.79, df = 5 (P = 0.06); l ² = 54%									100		
Test for overall effect: Z	Z = 0.37 (P = 0.71)						Radiofrequency ablation	Laser ablation	100		

Supplementary Fig 4 (online only). Forest plots showing the odds ratio (OR) for paresthesia with radiofrequency ablation (RFA) vs laser ablation (LA) in randomized controlled trials (RCTs) and cohort studies. **(A)** OR for paresthesia in RCTs. **(B)** OR for paresthesia in cohort studies. *CI*, confidence interval; *M-H*, Manzel-Heinz.

Supplementary Table I (online only). Detailed search strategies

Pubmed

EMBASE

('great saphenous vein':ab,ti OR 'chronic venous disorder':ab,ti OR 'lower extremity vein':ab,ti OR 'superficial venous disease':ab,ti OR 'lower limb varicosity':ab,ti) AND (radiofrequency:ab,ti OR 'ablation, radiofrequency':ab,ti OR 'radio frequency ablation':ab,ti OR 'ablation, radio frequency':ab,ti OR 'radio-frequency ablation':ab,ti OR 'ablation, radio-frequency':ab,ti) AND (laser:ab,ti OR 'qswitched lasers':ab,ti OR 'laser, q-switched':ab,ti OR 'lasers, q-switched':ab,ti OR 'q switched lasers':ab,ti OR 'q-switched laser:ab,ti OR 'pulsed lasers':ab,ti OR 'laser, pulsed':ab,ti OR 'lasers, pulsed':ab,ti OR 'pulsed laser:ab,ti OR 'continuous wave lasers':ab,ti OR 'continuous wave laser:ab,ti OR 'laser, continuous wave':ab,ti OR 'lasers, continuous wave:ab,ti OR maser:ab,ti OR

Cochrane Database

((great saphenous vein):ti,ab,kw OR (chronic venous disorder):ti,ab,kw OR (lower extremity vein):ti,ab,kw OR (superficial venous disease):ti,ab,kw OR (lower limb varicosity):ti,ab,kw) AND ((Radiofrequency):ti,ab,kw OR (Ablation, Radiofrequency):ti,ab,kw OR (Ablation, Radiofrequency):ti,ab,kw OR (Ablation, Radiofrequency):ti,ab,kw OR (Radio-Frequency Ablation):ti,ab,kw OR (Ablation, Radio Frequency):ti,ab,kw OR (Radio-Frequency Ablation):ti,ab,kw OR (Ablation, Radio Frequency):ti,ab,kw OR (Radio-Frequency Ablation):ti,ab,kw OR (Ablation, Radio Frequency):ti,ab,kw OR (Caser, Q-Switched):ti,ab,kw OR (Laser, Q-Switched):ti,ab,kw OR (Lasers, Q-Switched):ti,ab,kw OR (Continuous Wave Lasers):ti,ab,kw OR (Continuous Wave Laser):ti,ab,kw OR (Laser, Continuous Wave):ti,ab,kw OR (Laser, Continuous Wave):ti,ab,kw OR (Masers):ti,ab,kw OR (Masers):ti,ab,kw)

Supplementary Table II (online only). Quality assessment of the included cohort studies according to the Newcastle-Ottawa scale (NOS)

		Sele	ction		Comparability		Exposure		
Study	Representa- tiveness of the exposed cohort	Selection of the nonex- posed cohort	Ascertainment of exposure	Outcome of interest not pre- sented at the start of study	Comparability of cohorts on the basis of the design or analysis	Assessment of outcome	Was follow-up long enough for out- comes to occur	Adequacy of the follow-up of cohorts	
Karathanos et al, 2020	*	*	*	*	*	*	*	*	
Lawsonet al, 2017	*	*	*	*	*	*	*	N/A	
Yoon et al, 2017	*	*	*	*	*	*	*	N/A	
Kubat et al, 2019	N/A	*	*	*	*	*	*	N/A	
Gianesini et al, 2020	*	*	*	*	*	*	*	*	
Öntas et al 2019	N/A	*	*	*	*	*	N/A	*	
Izzo et al 2020	N/A	*	*	*	*	*	N/A	*	
Sanioglu et al 2017	*	*	*	*	*	*	*	*	
Almeida et al 2006	*	*	*	*	*	*	*	N/A	
Puggioni et al 2005	*	*	*	*	*	*	*	N/A	
Ravi et al 2006	*	*	*	*	*	*	*	N/A	
Bozoglan et al 2016	N/A	*	*	*	*	*	N/A	*	
Park et al, 2020	N/A	*	*	*	*	*	N/A	*	

★, yes; N/A, not applicable. This table identifies high-quality choices with a star. A study can be awarded a maximum of 1 star for each numbered item within the selection and exposure categories. A maximum of 2 stars can be given for comparability.