Study	**Author**	Agmon *et al.*[111]
	Date	2001
	Location	USA (part of study of random sample of patients in Minnesota, encompassing several health-care providers)
	Study design	Case–control, subjects from another study (SPARC – a cohort study of a random selection of a geographical population)
Population	**Population, eligibility criteria**	Part of SPARC study: cases AF; controls without AF
	Sample size	AF $n = 42$, control subjects $n = 539$
	Male/female	AF male $n = 23$ (54.8%); control subjects male $n = 266$ (49.4%)
	Mean age (years)	AF mean 82 (SD 10), median 84 (range 50–98). Control subjects mean 66 (SD 13), median 63 (range 46–95)
	Diagnosis of AF	Electrocardiography and TOE at time of study recruitment or diagnosed prior to study recruitment
	Mean duration of AF	NR
	Underlying cardiac conditions	Hypertension AF 66.7%, control subjects 53.4% Hyperlipidaemia AF 55.6%, control subjects 45.5% Coronary artery disease AF 35.7%, control subjects 11.7% Previous MI AF 19.1%, control subjects 6.1% Angina AF 23.8%, control subjects 10.2% Cerebrovascular disease AF 23.8%, control subjects 4.8% Carotid artery stenosis of 50% or more AF 12.5%, control subjects 8.9% Mitral stenosis AF 2.4%, control subjects 0.4% MR AF 4.8%, control subjects 0.4% Aortic stenosis AF 2.4%, control subjects 1.3% AR AF 0, control subjects 0.4% History of CHF AF 21.4%, control subjects 2.6%
	Comorbidities (non-cardiac diseases)	DM AF 14.3%, control subjects 8.9%
	Treatment	Insulin for DM AF 4.8%, control subjects 1.9% CABG AF 14.3%, control subjects 3.2% PTCA AF 4.8%, control subjects 2.4% Previous mitral valve surgery AF 7.1%, control subjects 0
Methods	**Diagnostic instrument(s) for pathology**	TOE
	Diagnostic criteria for pathology	Home interview and medical records, TOE 'atherosclerosis defined as irregular intimal thickening with increased echogenicity. Complex atherosclerosis defined as the presence of protruding atheroma greater than 4 mm thick, mobile atherosclerotic debris, or plaque ulceration'
	Description of assessor(s)	NR (cardiology department, presume assessors qualified)
Results	**Pathology (no. of subjects)**	Aortic atherosclerosis AF $n = 31$, control subjects $n = 267$ Complex atherosclerosis AF $n = 7$, control subjects $n = 37$
	Pathology prevalence	Aortic atherosclerosis AF $n = 31/42 = 73.8\%$, control subjects $n = 267/539 = 49.5\%$ Complex atherosclerosis AF $n = 7/42 = 16.7\%$, control subjects $n = 37/539 = 6.9\%$

AR, aeortic regurgitation; CABG, coronary artery bypass graft; NR, not reported; PTCA, percutaneous transluminal coronary angioplasty; SD, standard deviation; SPARC, Stroke Prevention Assessment of Risk in a Community.

Study	**Author**	Archer[112]
	Date	1995
	Location	Multicentre, USA
	Study design	Retrospective observational study
Population	**Population, eligibility criteria**	Patients who had completed a larger study ($n = 525$) (SPINAF) comparing placebo and warfarin in the prevention of stroke. Patients were eligible for the 'Transoesophageal Echocardiography substudy' if they had completed SPINAF without an event
	Sample size	Patients with AF = 55 (warfarin $n = 32$, placebo $n = 23$)
	Male/female	Male $n = 55$ (100%)
	Mean age (years)	70.8 ± 6.6
	Diagnosis of AF	NR (reported in prior publication)
	Mean duration of AF	6.2 ± 4.3 years
	Underlying cardiac conditions	NR
	Comorbidities (non-cardiac diseases)	NR
	Treatment	Not described
Methods	**Diagnostic instrument(s) for pathology**	TOE
	Diagnostic criteria for pathology	An echodense mass seen on multiple views in which no flow could be demonstrated by pulsed or colour Doppler
	Description of assessor(s)	NR
Results	**Pathology (no. of subjects)**	LA thrombus $n = 5$; LV thrombus – 2 patent foramen ovale $n = 22$; atrial septal aneurysm $n = 4$
	Pathology prevalence	LA thrombus = 9.1%; LV thrombus – 3.6% patent foramen ovale = 40%; atrial septal aneurysm = 7.3%

NR, not reported; SPINAF, Stroke Prevention In Non-rheumatic Atrial Fibrillation.

Study	**Author**	Blackshear *et al.*[113] (additional details in other references[127,169])
	Date	1999
	Location	USA (multicentre, cardiovascular department)
	Study design	Cross-section study, prospectively sought aortic plaque in patients with AF who were part of a RCT of high-risk (SPAF III study, warfarin vs. warfarin + aspirin) looking at stroke in AF or were part of a prospective cohort study of low-risk patients. Assessed within 3 months of enrolment to RCT
Population	**Population, eligibility criteria**	From two studies: high-risk patients with AF who were part of a RCT (SPAF III study, warfarin vs. warfarin + aspirin) looking at stroke in AF, or were part of a prospective cohort study of low-risk patients
	Sample size	A total of 770 people with AF (786 had TOE but 770 of these had images sufficient to assess or exclude atherosclerotic plaque)
	Male/female	76% male, 24% female
	Mean age (years)	Mean age 69 years, SD 9 (of 786 patients; of 770 patients, mean between 66 and 71 years)
	Diagnosis of AF	Details not in this publication, but patients part of a RCT (SPAF III study, warfarin vs. warfarin + aspirin) looking at stroke in AF; other publications on this trial give details[127]
	Mean duration of AF	Overall, 73% (of 786) had duration of >1 year (19% intermittent AF). Of 7896 patients who had TOE, 404 were considered low risk for stroke, and 382 were considered at high risk for stroke (defined in the study as having at least one of 'prior thromboembolism, systolic blood pressure >160 mmHg, recent heart failure or fractional shortening at least 25%, or female sex and aged >75 years'
	Underlying cardiac conditions	19% (of 786) prior thromboembolism; 25% history of CHF; 13% recent CHF; 26% ischaemic heart disease
	Comorbidities (non-cardiac diseases)	15% DM (of 786); 54% history of hypertension; 14% systolic blood pressure >160 mmHg at entry
	Treatment	High-risk patients, as part of RCT, randomised to adjusted-dose warfarin vs. low, fixed doses of warfarin plus aspirin in combination. Low-risk patients treated with aspirin alone
Methods	**Diagnostic instrument(s) for pathology**	Diagnosis of atherosclerotic plaque by TOE
	Diagnostic criteria for pathology	Atherosclerotic plaque in the thoracic aorta was defined in terms of location and morphology. The aorta was divided into ascending, transverse and descending segments, and plaque was classified as simple (sessile) or complex on the basis of thickness at least 4 mm, ulceration, pedunculation or mobile elements. More information in other publication of the study[169]
	Description of assessor(s)	(In other publication of study, includes interobserver reliability.[169])
Results	**Pathology (no. of subjects)**	Presence of aortic plaque $n = 334$ (of whom simple plaque only $n = 243$) Complex plaque ($n = 193$)
	Pathology prevalence	Aortic plaque 436/770 = 56.6% Complex plaque 193/770 = 25.1%

SD, standard deviation; SPAF, Stroke Prevention in Atrial Fibrillation.

Study	**Author**	Corrado *et al.*[114]
	Date	2004
	Location	Italy, cardiology department, single centre
	Study design	Cross-section, retrospective, patients selected prior to treatment
Population	**Population, eligibility criteria**	AF or atrial flutter, subtherapeutic INR anticoagulation therapy, TOE before cardioversion
	Sample size	41
	Male/female	Male patients without thrombi $n = 23$ (62%) Male patients with thrombi $n = 2$ (50%)
	Mean age (years)	Patients without thrombi 64.35 (SD 10.28) Patients with thrombi 66.25 (SD 0.96)
	Diagnosis of AF	NR
	Mean duration of AF	NR
	Underlying cardiac conditions	Hypertension patients without thrombi $n = 20$ (54%) Hypertension patients with thrombi $n = 2$ (50%) Structural heart disease patients without thrombi $n = 20$ (54%) Structural heart disease patients with thrombi $n = 3$ (75%)
	Comorbidities (non-cardiac diseases)	NR
	Treatment	All anticoagulated
Methods	**Diagnostic instrument(s) for pathology**	TOE
	Diagnostic criteria for pathology	'An atrial thrombus was defined as circumscribed and uniformly consistent echoreflective mass of different texture than atrial wall'
	Description of assessor(s)	Three experienced echocardiographers
Results	**Pathology (no. of subjects)**	LAA thrombus $n = 4$
	Pathology prevalence	9.80%

NR, not reported; SD, standard deviation.

Study	**Author**	Dang *et al.*[115]
	Date	2004
	Location	USA
	Study design	Retrospective review of ECGs ($n = 3935$), which were then matched to patients' discharge records to identify patients with AF
Population	**Population, eligibility criteria**	Patients with AF during the year 1999
	Sample size	Patients with matched ECG and discharge notes of hospital admission ($n = 737$)
	Male/female	Male $n = 413$ (56%)
	Mean age (years)	62.3
	Diagnosis of AF	('Index') ECG – first ECG of any particular patient with a diagnosis of AF Note: One patient could have multiple ECGs
	Mean duration of AF	NR
	Underlying cardiac conditions	Hypertension 45.6%; heart failure 31.1%; AMI 8.1%; cardiomyopathy 4.5%
	Comorbidities (non-cardiac diseases)	Diabetes 22.9%; cerebrovascular disease 6.6%
	Treatment	NR
Methods	**Diagnostic instrument(s) for pathology**	Echocardiography not described further in terms of position of probe (i.e. transoesophageal or transthoracic)
	Diagnostic criteria for pathology	Not described
	Description of assessor(s)	NR
Results	**Pathology (no. of subjects)**	CAD 136/737, mitral valve disease 77/737, all valve diseases 98/737, cardiomyopathy 33/737
	Pathology prevalence	CAD 18.5%, mitral valve disease 10.4%, all valve diseases 13.4%, cardiomyopathy 4.5%

CAD, coronary artery disease; NR, not reported.

Study	**Author**	de Devitiis[28]
	Date	1999
	Location	Germany, single centre, cardiology department
	Study design	Cohort, consecutive patients, prospective
Population	**Population, eligibility criteria**	AF, referred for TOE
	Sample size	Ninety with AF [from 102 studied, 90 (88%) had visualised RAA and LAA]
	Male/female	Patients with AF male $n = 69$, female $n = 21$ out of 90 Control subjects male $n = 15$, female $n = 7$ out of 22
	Mean age (years)	AF mean 60 (SD 13) Controls mean 58 (SD 17)
	Diagnosis of AF	Clinical criteria and 12-lead ECG
	Mean duration of AF	For those with RA thrombi, mean duration 1670 days (SD 1596); for those without RA thrombi, mean 480 days (SD 924)
	Underlying cardiac conditions	Coronary heart disease AF $n = 20$ (out of 90), arterial hypertension AF $n = 19$ [control subjects $n = 1$ (out of 22)], mitral stenosis AF $n = 8$, MR AF $n = 6$, aortic stenosis AF $n = 4$, AR AF $n = 3$, dilated cardiomyopathy AF $n = 10$, myocarditis AF $n = 5$
	Comorbidities (non-cardiac diseases)	Neurological deficit AF $n = 10$, control subjects $n = 18$ Acute peripheral ischaemia AF $n = 4$ PE AF $n = 2$
	Treatment	Anticoagulation therapy AF $n = 50$ Control subjects $n = 7$
Methods	**Diagnostic instrument(s) for pathology**	TTE and TOE
	Diagnostic criteria for pathology	Visualised by echocardiography (TOE)
	Description of assessor(s)	NR (cardiology department, presume assessors qualified)
Results	**Pathology (no. of subjects)**	Twelve patients with left or right or both (included five with both), incorporate 6 RAA thrombosis, 11 LAA thrombosis
	Pathology prevalence	Either or both 13% (RAA 6.7%, LAA 12.2%)

NR, not reported; SD, standard deviation.

Study	**Author**	Heppell[116]
	Date	1997
	Location	Hospital setting, two hospitals in Leeds, UK
	Study design	Prospective observational study
Population	**Population, eligibility criteria**	Patients with evidence of AF from presenting ECG tracings reporting at the inpatients or outpatients departments. AF was confirmed at the time of venous blood sampling and echocardiography
	Sample size	109
	Male/female	Male $n = 69$ (64%); female $n = 38$ (36%)
	Mean age (years)	69.4
	Diagnosis of AF	Diagnosis of AF was obtained from presenting ECG tracing. Diagnosis was subsequently confirmed at the time of venous sampling and echocardiography. Patients who were in sinus rhythm at either of these sessions were reported as having paroxysmal AF
	Mean duration of AF	NR
	Underlying cardiac conditions	Hypertension ($n = 47$) 44%; ischaemic heart disease ($n = 40$) 37%; paroxysmal AF ($n = 14$) 13%; previous stroke ($n = 23$) 21%
	Comorbidities (non-cardiac diseases)	NR
	Treatment	Aspirin use ($n = 54$) 50%
Methods	**Diagnostic instrument(s) for pathology**	TOE. Examination by means of a 5-MHz single-plane probe or 5-MHz multiplane probe
	Diagnostic criteria for pathology	Atrial thrombus was defined as a discrete echodense mass of >5 mm diameter and acoustically distinct from the underlying endocardium
	Description of assessor(s)	Images were analysed online by two observers (authors)
Results	**Pathology (no. of subjects)**	LA thrombi 19/107
	Pathology prevalence	LA thrombi 18%

NR, not reported.

Study	**Author**	Kleemann[117]
	Date	2009
	Location	Hospital, single centre, Germany
	Study design	Prospective observational study
Population	**Population, eligibility criteria**	(Data source: ANTIKoagulation Registry). Patients with short AF (<48 hours in duration) admitted for planned cardioversion between 1994 and 2000
	Sample size	Patients in TOE group = 207
	Male/female	Male *n* = 152 (73%); female *n* = 55 (27%)
	Mean age (years)	Median 63 (range 57–72)
	Diagnosis of AF	From admission notes
	Mean duration of AF	NR
	Underlying cardiac conditions	Hypertensive heart disease (46%); coronary artery disease (53%); hypertrophic valvular disease (7%); dilated cardiomyopathy (17%)
	Comorbidities (non-cardiac diseases)	NR
	Treatment	Prior anticoagulation 63%
Methods	**Diagnostic instrument(s) for pathology**	TOE
	Diagnostic criteria for pathology	Mass present in more than one plane, in the body of the atrium or appendage which is distinct from the underlying endocardium
	Description of assessor(s)	NR
Results	**Pathology (no. of subjects)**	LA thrombus 1.4% (*n* = 3). None of these patients had prior anticoagulation
	Pathology prevalence	LA thrombus 1%; aortic plaques 12%

NR, not reported.

Study	**Author**	Levy *et al.*[118]
	Date	1999
	Location	General practice, multicentre, France
	Study design	Prospective observational study
Population	**Population, eligibility criteria**	Patients presenting in AF or with a history of AF, with at least one episode documented in an ECG report. Study involved 206 cardiologists. Each agreed to enrol and follow up six patients
	Sample size	756
	Male/female	Male $n = 436$ (58%); female $n = 320$ (42%)
	Mean age (years)	68.6 ± 11.4
	Diagnosis of AF	Electrocardiographic diagnosis of AF was made according to Bellet's definition. AF was subdivided into three types: • paroxysmal (history of recurrent episodes of AF lasting >2 minutes and <7 days *or* first episode of AF lasting <7 days or cardioverted within 7 days were also classified in this group) ($n = 167$) • chronic (AF present for >1 month) ($n = 389$), or • recent onset (persistent non-self-terminating AF lasting ≥7 days and <1 month *or* a first symptomatic attack of AF lasting ≥7 days and <1 month *or* an asymptomatic/mildly symptomatic AF of recent discovery *or* an AF episode for which the onset could not be determined were classified in this group) Should the physician opt for cardioversion (either pharmacological or electrical) of AF lasting >7 days but <1 month, the patient was classified in the recent-onset AF group ($n = 200$)
	Mean duration of AF	Patients with CAF 54 ± 77 months
	Underlying cardiac conditions	
	Comorbidities (non-cardiac diseases)	Diabetes ($n = 81$) 10.7%; bronchopulmonary disease ($n = 85$) 11.2%
	Treatment	Antiarrhythmic treatment ($n = 550$) 72.7%; warfarin or similar agent ($n = 276$) 36%; aspirin ($n = 177$) 23.4%; heparin ($n = 18$) 2.4%
Methods	**Diagnostic instrument(s) for pathology**	M-mode and 2D echocardiography (type unspecified)
	Diagnostic criteria for pathology	NR
	Description of assessor(s)	NR
Results	**Pathology (no. of subjects)**	CAD $n = 126$; hypertensive heart disease $n = 162$; valvular (rheumatic) disease $n = 115$; cardiomyopathy includes those with dilated/hypertrophic/other forms of cardiomyopathy $n = 116$; CHF $n = 226$; hypertension $n = 298$
	Pathology prevalence	CAD 16.6%; hypertensive heart disease 21.4%; valvular (rheumatic) disease 15.2%; cardiomyopathy includes those with dilated/hypertrophic/other forms of cardiomyopathy 15%; CHF 29.8%; hypertension 39.4%

CAD, coronary artery disease; NR, not reported.

Study	**Author**	Lip *et al.*[119]
	Date	1997
	Location	UK, primary care
	Study design	Cross-section of patient records (retrospective), looking at prevalence and management of AF in primary care
Population	**Population, eligibility criteria**	AF (in primary care), aged ≥50 years
	Sample size	111
	Male/female	42/111 male (38%)
	Mean age (years)	Mean 72.7 (SD 9.9)
	Diagnosis of AF	ECG
	Mean duration of AF	73% of AF population had CAF, i.e. >6 months
	Underlying cardiac conditions	
	Comorbidities (non-cardiac diseases)	Previous hyperthyroidism 15.3%; alcohol excess 5.4%
	Treatment	NR
Methods	**Diagnostic instrument(s) for pathology**	Investigations by GP or hospital
	Diagnostic criteria for pathology	From patient records
	Description of assessor(s)	NR
Results	**Pathology (no. of subjects)**	Ischaemic heart disease $n = 32$ (including $n = 20$ MI); valvular heart disease $n = 29$; cardiomyopathy $n = 6$; atrial septal defect $n = 1$
	Pathology prevalence	Ischaemic heart disease 28.8%; valvular heart disease 26.1%; cardiomyopathy 5.4%; atrial septal defect 0.9%

NR, not recorded; SD, standard deviation.

Study	**Author**	Maltagliati[120]
	Date	2006
	Location	Hospital setting, Italy
	Study design	Observational study
Population	**Population, eligibility criteria**	Eligible AF (83.6%) or flutter (16.4%) patients on different anticoagulation regimens undergoing cardioversion by TOE
	Sample size	Patients categorised into four groups according to anticoagulant regimen: (1) oral anticoagulation (warfarin) INR>2 ($n = 744$); (2) short-term anticoagulation with unfractionated heparin or with unfractionated heparin plus warfarin for <4 days ($n = 235$); (3) ineffective oral anticoagulation (warfarin) >3 weeks ($n = 43$); and (4) effective oral anticoagulation (warfarin) <3 weeks ($n = 82$). Total = 1104
	Male/female	Male $n = 368$ (67%); female $n = 368$ (33%)
	Mean age (years)	66.3 ± 9.8
	Diagnosis of AF	Not described
	Mean duration of AF	Group 1, 104 ± 121 days; group 4, 35 ± 124 days
	Underlying cardiac conditions	Hypertension (42%), coronary artery disease (20.1%), dilative cardiomyopathy (11.7%), mitral prosthetic valve (5.6%), aortic prosthetic valve (2.3%), history of ictus (2%), history of transient ischaemic attack (2.4%), recent embolic episodes (0.7%), mitral valve disease (11%), dilated cardiomyopathy (10%) and coronary artery disease (7%)
	Comorbidities (non-cardiac diseases)	NR
	Treatment	Anticoagulation
Methods	**Diagnostic instrument(s) for pathology**	TOE
	Diagnostic criteria for pathology	Thrombi identified as presence of echodense masses, mobile or immobile connected to the LA or LAA wall. Images were obtained in different planes from 0º–180º
	Description of assessor(s)	NR
Results	**Pathology (no. of subjects)**	65; LA thrombi $n = 2$; LAA thrombi $n = 59$; RAA thrombi $n = 4$
	Pathology prevalence	6.3%; LA 5.5%; LAA thrombi 0.3%; RAA thrombi 0.5%

NR, not reported.

Study	**Author**	Narumiya[121]
	Date	2003
	Location	Japan, cardiology department single centre
	Study design	Retrospective cross-sectional
Population	**Population, eligibility criteria**	Non-valvular CAF or atrial flutter, had undergone TOE. Excluded left ventricular ejection fraction <0.5
	Sample size	AF $n = 50$ (of which 14 lone AF, 36 non-lone AF); atrial flutter $n = 12$
	Male/female	53 male, 9 female
	Mean age (years)	60 (SD 9.7)
	Diagnosis of AF	Non-valvular CAF was defined by conventional ECG on two occasions separated by at least 1 month, and absence of rheumatic heart disease as determined by echocardiography. Lone AF was defined by excluding coronary artery disease (clinical or laboratory criteria), hyperthyroidism, valvular heart diseases, CHF, cardiomyopathy, chronic obstructive pulmonary disease, cardiomegaly, history of hypertension, age >60 years, insulin-dependent DM, AF only during trauma/surgery, acute medical illness
	Mean duration of AF	NR
	Underlying cardiac conditions	NR
	Comorbidities (non-cardiac diseases)	NR
	Treatment	NR
Methods	**Diagnostic instrument(s) for pathology**	TTE and TOE
	Diagnostic criteria for pathology	Presence of LA or LAA thrombus was defined in TOE views as (1) masses adhering to wall of LA or appendage; (2) motion independent of LAA wall; (3) different echogenic density from LAA wall; and (4) evidence in more than one imaging plane
	Description of assessor(s)	NR
Results	**Pathology (no. of subjects)**	$n = 6$ (all had non-lone AF)
	Pathology prevalence	6/36 non-lone AF = 16.7% (if take all AF/flutter as denominator then 6/62 = 9.7%; if take all AF then 6/50 = 12%)

NR, not reported.

Study	**Author**	Santiago[122]
	Date	1994
	Location	USA, cardiology department, single centre
	Study design	Cross-sectional, prospective
Population	**Population, eligibility criteria**	Group 1, atrial 'fibrillation-flutter'; group 2, AF; group 3, atrial flutter
	Sample size	A total of 61 (out of 63 – two excluded because of mitral regurgitant jet that disallowed adequate echocardiogram) of which 14 'fibrillation-flutter', 30 AF, 17 flutter
	Male/female	AF group: 16 male, 14 female
	Mean age (years)	AF group: 69 (SD 10)
	Diagnosis of AF	ECG
	Mean duration of AF	New arrhythmia (<7 days) 13% of AF group ($n = 4$)
	Underlying cardiac conditions	AF group hypertension 53%, coronary artery disease 13%, neurovascular event 23%, rheumatic heart disease 27%
	Comorbidities (non-cardiac diseases)	NR
	Treatment	AF group anticoagulant (≥21 days) 57%
Methods	**Diagnostic instrument(s) for pathology**	TOE
	Diagnostic criteria for pathology	Thrombi defined as masses adherent to wall of LAA. MR assessed qualitatively on the basis of maximal area of the regurgitant jet
	Description of assessor(s)	NR
Results	**Pathology (no. of subjects)**	AF group LAA thrombus $n = 12$, MR $n = 9$
	Pathology prevalence	AF group LAA thrombus 40%, MR 30%

NR, not reported.

Study	**Author**	Scherr[123]
	Date	2009
	Location	USA
	Study design	Prospective observational study
Population	**Population, eligibility criteria**	Patients with AF referred for catheter ablation of AF
	Sample size	A total of 585 patients undergoing 732 catheter ablations (from 590 patients referred for 737 catheter ablations, of which two procedures were terminated owing to technical difficulties, whereas three cases demonstrating unexpected findings were excluded, giving a total of five cases excluded from the final analysis)
	Male/female	Male $n = 564$ (77%); female $n = 168$ (23%)
	Mean age (years)	57 ± 11 (5% of cases were >75 years old)
	Diagnosis of AF	Diagnosis of AF not clearly stated. However, patient history was examined before the procedure. Paroxysmal AF defined as two or more recurrent AF terminating spontaneously within 7 days. Persistent AF was defined as recurrent AF lasting >7 days or sustained for <7 days owing to pharmacological or electrical cardioversion [$n = 353$ (48%)]
	Mean duration of AF	75.6 ± 69.6 months (calculated using 6.3 ± 5.8 years from the paper)
	Underlying cardiac conditions	Hypertension ($n = 298$) 41%; CHF ($n = 88$) 12%; previous stroke or transient ischaemic attack ($n = 39$) 5%
	Comorbidities (non-cardiac diseases)	DM ($n = 49$) 7%
	Treatment	Unsuccessful class I and III antiarrhythmic treatment, ($n = 1.4 \pm 1.0$); preprocedural anticoagulation ($n = 689$) 94%. At least 4 weeks before ablation patients received warfarin to maintain an INR of between 2 and 3. Warfarin was stopped 5 days before catheter ablation. A bridging treatment with enoxaparin, 0.5–1 mg/kg every 12 hours, was started from the fifth day before procedure. Patients for whom warfarin was contraindicated received antiplatelet agents at the discretion of attending doctor
Methods	**Diagnostic instrument(s) for pathology**	TOE
	Diagnostic criteria for pathology	Patients underwent TOE 24 hours before ablation. The LA cavity and LAA were examined for the presence of thrombi. Atrial thrombus was present if there was a well-circumscribed echodense mass seen in more than one imaging plane that was distinct from the surrounding endocardium and pectinate muscles
	Description of assessor(s)	The presence or absence of LA thrombus was determined by the attending echocardiographer at the time that the TOE was performed. All attending echocardiographers performing and interpreting the TOEs were more than 3 years post training and highly experienced (>50 TOEs per year per physician)
Results	**Pathology (no. of subjects)**	LA thrombus 12/732
	Pathology prevalence	1.60%

Study	**Author**	Shen[124]
	Date	2002
	Location	USA
	Study design	Retrospective (subjects were identified from chart review of consecutive patients who underwent TOE to rule out intra-atrial thrombi before cardioversion of AF – January 1996 and June 2001)
Population	**Population, eligibility criteria**	Patients with subtherapeutic INRs after receiving adequate doses of anticoagulation for ≥3 weeks. Eligibility: AF >48 hours; warfarin treatment ≥3 weeks; completion of full warfarin loading dose (defined as achievement of INR >2 after starting treatment); INR <2 at one or more measurements in the last 3 weeks preceding TOE, with at least one measurement within 7 days of scheduled TOE
	Sample size	182
	Male/female	NR
	Mean age (years)	NR
	Diagnosis of AF	NR
	Mean duration of AF	7.3 ± 16.9 months (reported as duration of AF onset to TOE)
	Underlying cardiac conditions	Hypertension ($n = 48$) 26%; valvular heart disease ($n = 46$) 25%; dilated cardiomyopathy ($n = 2$) 1%; hypertrophic cardiomyopathy ($n = 2$) 1%; congenital atrial septal defect ($n = 1$) 1%; coronary artery disease ($n = 50$) 28%
	Comorbidities (non-cardiac diseases)	DM ($n = 2$) 1%
	Treatment	NR
Methods	**Diagnostic instrument(s) for pathology**	TOE
	Diagnostic criteria for pathology	Atrial thrombus was defined as a uniformly consistent echo-reflective and circumscribed mass, which was distinct in texture from the surrounding wall of the atrium
	Description of assessor(s)	NR
Results	**Pathology (no. of subjects)**	18/182
	Pathology prevalence	9.90%

NR, not reported.

Study	**Author**	Tsai[125]
	Date	1996
	Location	China
	Study design	Prospective observational study (consecutive patients with chronic non-rheumatic AF undergoing TOE)
Population	**Population, eligibility criteria**	Patients with chronic non-rheumatic AF (i.e. AF persisting for >30 days) admitted as inpatients or seen as outpatients, undergoing TOE. (Patients were excluded if they had oesophageal disease or could not tolerate TOE)
	Sample size	A total of 219 (of 222 patients included in the study, three had 'non-diagnostic images' on TOE)
	Male/female	Male $n = 161$ (74%); female $n = 58$ (26%)
	Mean age (years)	65 (range 28–82)
	Diagnosis of AF	Serial ECG
	Mean duration of AF	NR
	Underlying cardiac conditions	Hypertension ($n = 97$) 44%; coronary artery disease ($n = 20$) 9%; idiopathic dilated cardiomyopathy ($n = 27$) 12%; non-rheumatic valvular disease ($n = 16$) 7%; hypertrophic cardiomyopathy ($n = 3$) 1%; sick sinus syndrome ($n = 1$) 0.4%; previous thromboembolism ($n = 77$) 35.1%
	Comorbidities (non-cardiac diseases)	Hyperthyroidism ($n = 9$) 4%
	Treatment	Anticoagulation treatment ($n = 15$) 7%; anti-platelet agents ($n = 38$) 17%
Methods	**Diagnostic instrument(s) for pathology**	TOE
	Diagnostic criteria for pathology	Atrial thrombus was defined as a well-circumscribed echogenic mass in the LA cavity or appendage which was distinct from the surrounding pectinate muscles
	Description of assessor(s)	NR
Results	**Pathology (no. of subjects)**	15/219
	Pathology prevalence	6.80%

NR, not reported.