XIII CONGRESO INTERNACIONAL DE CARDIOLOGIA

CARDIOLOGIA INTERVENCIONISTA - LII JORNADA ACCI-SOLACI

DE LA

PREVENCIÓN

A LA **INTERVENCIÓN**

8, 9 y 10 de octubre

Lugar:

INTERCONTINENTAL
SAN JOSÉ, COSTA RICA

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Síndrome coronario agudo asociado a Anomalías coronarias

- Aneurismas coronarios
- Fístulas coronarias.

Cual es el pronóstico?

Alfaro Marchena Noriega
Medicina Interna-Cardiología
Cardiología Intervencionista
8 de octubre de 2025

ANEURISMAS CORONARIOS

TABLE 1 Classifications of Aneurysmal Dilatation of Coronary Artery Disease

Definition	Types and Classifications
Coronary artery aneurysm	
Focal dilation of at least 1.5 times the adjacent normal segment	Morphology: Saccular aneurysm: transverse > longitudinal diameter Fusiform aneurysm: transverse < longitudinal diameter Vessel wall structure by IVUS: True aneurysm: preserved vessel wall integrity with 3 layers (intima, media, and adventitia) Pseudoaneurysm: loss of vessel wall integrity and damage to the adventitia Complex plaque with aneurysmal appearance: stenoses with ruptured plaques or spontaneous or unhealed dissections Normal segment with aneurysmal appearance: normal segment adjacent to stenosis Diameter: Giant aneurysm: diameter >20 mm
Coronary artery ectasia	
Diffuse dilation of at least 1.5 times the adjacent normal segment	Type I: diffuse ectasia of 2 or 3 vessels Type II: diffuse disease in 1 vessel and localized disease in another vessel Type III: diffuse ectasia in 1 vessel Type IV: localized or segmental ectasia

IVUS = intravascular ultrasound.

J Am Coll Cardiol Intv 2018;11:1211–23

INTRODUCCIÓN

- La dilatación aneurismática de las arterias coronarias se observa en hasta el 5% de los pacientes sometidos a angiografía coronaria.
- Desafío para el médico tratante, debido a:
  - La escasa comprensión de sus mecanismos subyacentes.
  - Presentaciones variables.
  - Falta de datos de resultados a gran escala sobre sus diversas modalidades de tratamiento.

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INTRODUCCIÓN

- La presencia de aneurisma coronario o ectasia se ha asociado con malos resultados a largo plazo:
  - Independientemente de la presencia de enfermedad coronaria aterosclerótica concomitante.
- Las presentaciones clínicas varían desde un hallazgo incidental en imágenes cardíacas hasta un síndrome coronario agudo.

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INTRODUCCIÓN

- Las opciones de tratamiento incluyen:
  - Tratamiento médico.
  - Escisión quirúrgica.
  - Cirugía de revascularización coronaria (CABG).
  - Intervención coronaria percutánea (ICP).

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DEFINICIÓN Y CLASIFICACIÓN

- Hasta hace poco, se utilizaban indistintamente dos términos para indicar la presencia de dilatación aneurismática de los vasos coronarios:
  - Aneurisma de la arteria coronaria (AAC).
  - Ectasia de la arteria coronaria (EAC).
- Esto ha generado incertidumbre, ya que estos términos, utilizados como sinónimos, en realidad se refieren a dos fenotipos diferentes.
  - Por lo tanto, se han sugerido criterios arbitrarios para diferenciar entre estos dos.

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DEFINICIÓN Y CLASIFICACIÓN

- Según estos criterios, una dilatación focal de los segmentos coronarios de al menos 1,5 veces el segmento normal adyacente se describe como AAC, mientras que el término EAC se utiliza para definir lesiones similares, pero más difusas.
- Los AAC se dividen en aneurismas saculares, si el diámetro transversal excede el longitudinal, y en aneurismas fusiformes en el caso contrario. También se ha sugerido la subclasificación de AAC y EAC según factores morfológicos o de imagen intravascular.

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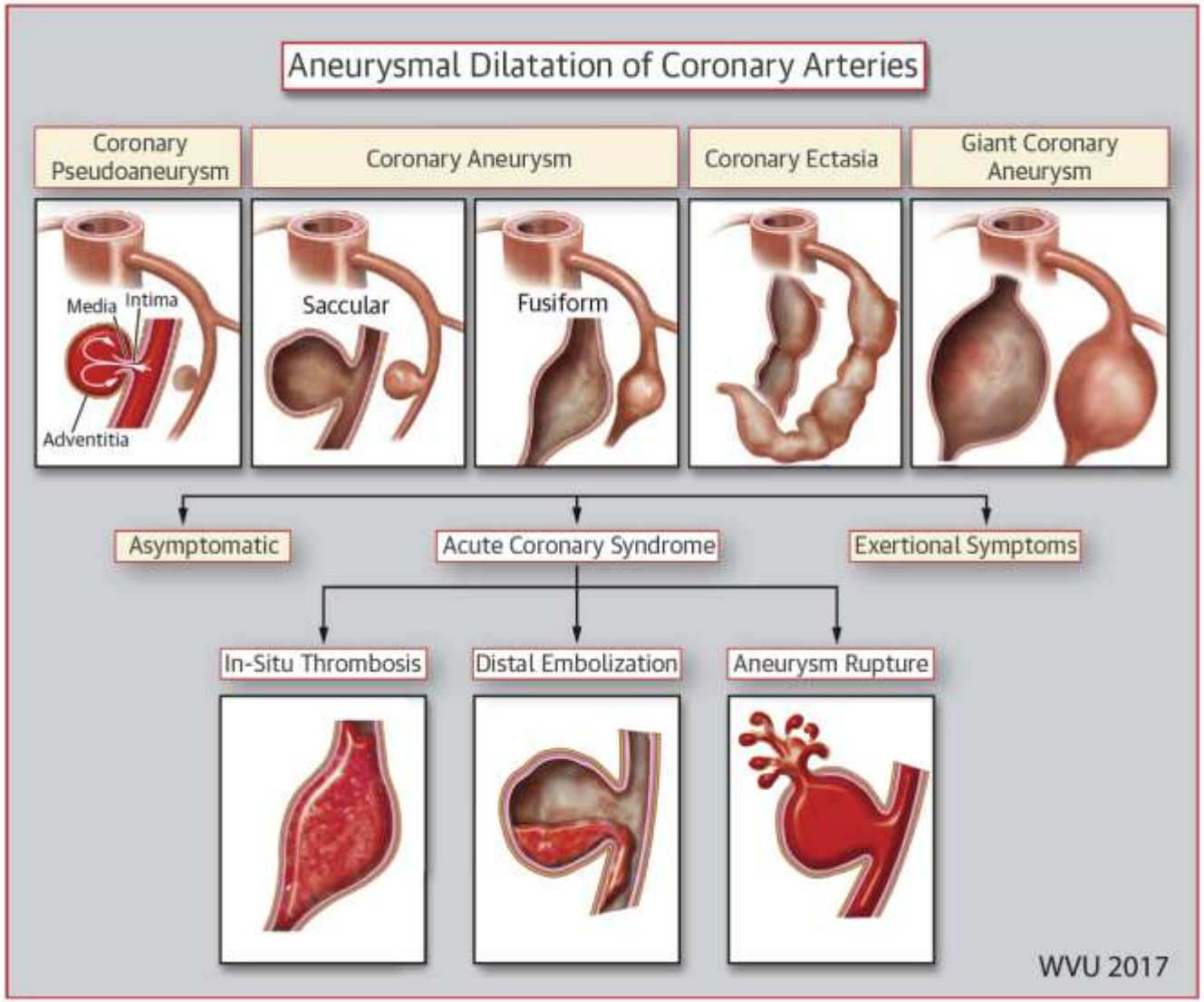
FIGURE 1 Illustration of the Variable Morphologies and Clinical Presentation of Aneurysmal Dilatation Involving Coronary Arteries



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EPIDEMIOLOGÍA Y FISIOPATOLOGÍA

- La incidencia reportada de aneurismas coronarios varía entre el 0,3-5%, con predilección por los hombres y por los segmentos proximales que distales del lecho coronario.
- Este amplio rango, probablemente se deba a los diversos métodos de informe, con una mayor incidencia en estudios que incluyen CAE y CAA juntos, en comparación con aquellos que informan solo CAA.

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EPIDEMIOLOGÍA Y FISIOPATOLOGÍA

- En estudios contemporáneos, la incidencia de AAC verdadera es <1%.
- La arteria coronaria derecha suele ser la más afectada (40%), seguida de la descendente anterior izquierda (32%), y la arteria coronaria principal izquierda es la menos afectada (3,5%).
- Se ha observado que los aneurismas saculares, son más frecuentes en la arteria coronaria descendente anterior izquierda, que en otras arterias coronarias.
- Los aneurismas coronarios ateroescleróticos y vasculíticos, suelen afectar a más de una arteria, mientras que los aneurismas coronarios congénitos e iatrogénicos suelen limitarse a un solo vaso.

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EPIDEMIOLOGÍA Y FISIOPATOLOGÍA

- Un subgrupo poco común, pero importante de aneurismas es la categoría de aneurismas de injerto de vena safena aortocoronaria:
  - Estos aneurismas presentan características distintivas en comparación con los aneurismas coronarios nativos:
    - Suelen presentarse muy tardíamente tras un injerto de bypass. En una revisión sistemática de 168 casos, el 68,5 % se presentó >10 años después de la CABG.
    - Son significativamente más grandes que los AAC.
    - Suelen progresar con el tiempo.
    - No es infrecuente que presenten complicaciones mecánicas (p. ej., compresión de estructuras cardíacas o venosas adyacentes, o rotura.

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TABLE 2 Common Underlying Pathologies in Patients With CAA

Etiology (Ref. #)	Pathogenic Mechanism	Examples
Genetic susceptibility (24)	Specific HLA class II genotypes, such as HLA-DR B1*13, DR16, DQ2, and DQ5, are more detectable in patients with CAA	Idiopathic CAA
Overexpression of certain enzymes (e.g., angiotensin-converting enzyme) (51)	Enhanced inflammatory response Induces proteolysis of extracellular matrix proteins	Atherosclerotic CAA
Autoimmune/inflammatory process (29)	Increased plasma level of intercellular adhesion molecule-1, vascular cell adhesion molecule-1, and E-selectin Imbalances in protein levels of matrix metalloproteinase and its tissue inhibitor	Systemic vasculitis (Kawasaki, Takayasu) Lupus Marfan syndrome
Dynamic wall stress changes (24)	Episodic hypertension and vasoconstriction ± endothelial damage	Cocaine use
Direct vessel wall injury (20,30–38)	Mechanical and shear wall stress Non-healing dissections, and so on	Iatrogenic CAA (post-balloon angioplasty, stenting, atherectomy) Post-stenotic CAA
Infectious (24,39)	Direct invasion of pathogens into the vessel wall Immune complex deposition	Bacterial, mycobacterial, fungal, syphilitic, Lyme, septic emboli, and mycotic aneurysm

CAA = coronary artery aneurysm; HLA = human leukocyte antigen.

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PRESENTACIÓN CLÍNICA Y EVALUACIÓN

- La mayoría de las AAC son clínicamente asintomáticos y solo se detectan incidentalmente, durante una angiografía coronaria o una tomografía computarizada-
- Sin embargo, los síntomas clínicos pueden desarrollarse debido a una de las siguientes razones:
  - La presencia de enfermedad aterosclerótica obstructiva concomitante puede provocar angina de esfuerzo o síndrome coronario agudo
  - La trombosis local en la luz de aneurismas grandes puede provocar embolización distal e infarto de miocardio.
  - El agrandamiento masivo de algunas AAC e injertos de vena safena, puede provocar la compresión de estructuras adyacentes.
  - La rotura de un aneurisma, aunque poco frecuente, puede causar taponamiento cardíaco agudo.
  - La isquemia miocárdica inducida por estrés debido a disfunción microvascular se ha documentado incluso en ausencia de estenosis coronaria significativa.

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FIGURE 2 Coronary Computed Tomography Assessment of Coronary Aneurysms

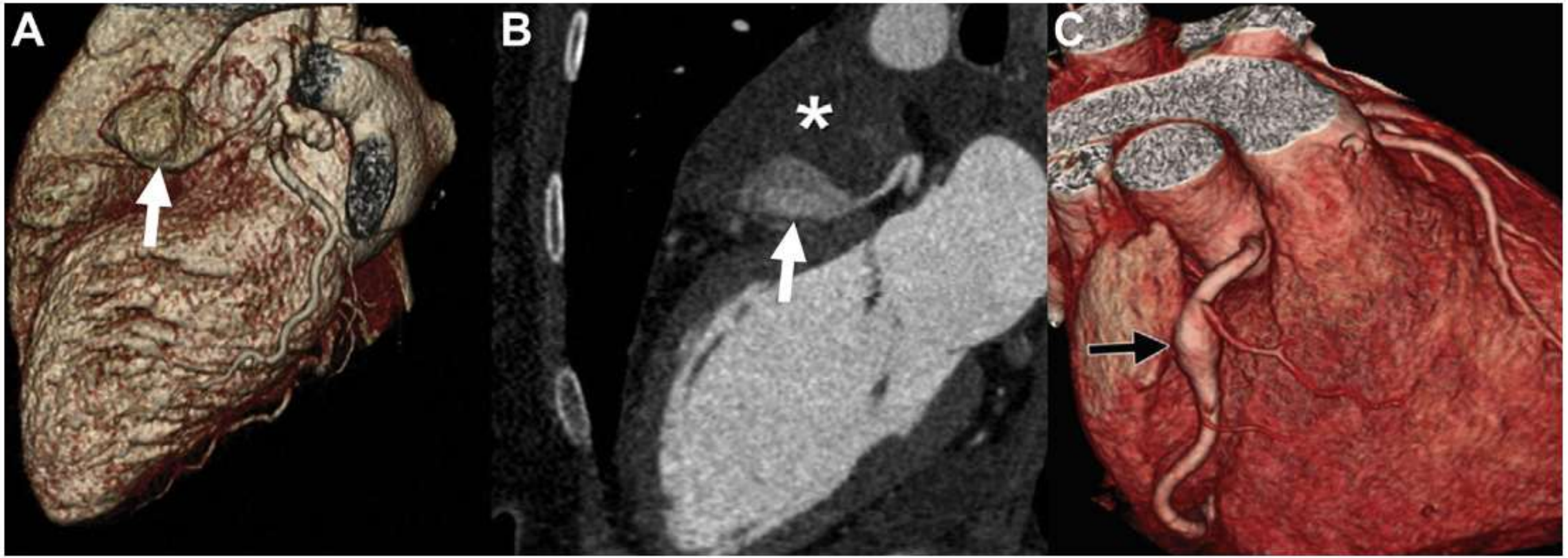

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TABLE 3 Summary of the Studies on Outcomes of PCIs in Patients With Aneurysmal Coronary Disease

First Author (Ref. #) Year	N	Diagnosis	Symptoms	Primary Outcomes	Results
Joo et al. (20) 2017	78	CAA	40% angina 60% ACS	MACE compared with 269 controls after PCI at 16.1 ± 14.6 months f/u	CAA group had higher MACE (26.9% vs. 2.2%; $p < 0.01$), driven by nonfatal MI and TVR
Bogana Shanmugam et al. (53) 2017	25	CAE	STEMI	In-hospital outcomes MACE compared with 80 controls after PCI at 36.6 ± 14.1 months f/u	CAA group had less angiographic success (24% vs. 77%; $p < 0.01$), and higher MACE at f/u (44.0% vs. 16.3%; $p = 0.01$), driven by nonfatal MI, TVR, and sudden death
Iannopollo et al. (18) 2017	32	CAA	STEMI	30-day and 1-yr MACE compared 2,280 controls after PCI	No difference in mortality, more ST in CAA group at 30 days (12.7% vs. 1.5%; $p < 0.01$) and 1 yr (15.5% vs. 2.2%; $p < 0.01$)
Szalat et al. (71) 2005	24	CAA	NR	Short-term MACE post-covered stents	At 4 months, 19 patients had f/u, of whom 4 had restenosis
Ipek et al. (19) 2016	99	CAA	STEMI	In-hospital and 1-yr MACE compared with 1,556 controls	Higher no-reflow rate in CAE patient, but no difference in in-hospital or 1-yr mortality, TVR, or ST
Campanile et al. (72) 2014	101	CAE	STEMI NSTEMI	In-hospital and 2-yr MACE	Procedural success 70.3%, MACE was 6.9%, 17.8%, and 38.5% at 30-day, 1-yr, and 2-yr f/u; 8.9% had ST
Yip et al. (54) 2002	24	CAA	STEMI	In-hospital outcomes, and survival at 19 ± 30 months f/u	No-flow 62%, cardiogenic shock 25%, in-hospital death 8.3%; survival at f/u was 90.9%
Briguori et al. (55) 2002	7	CAA	71% angina 29% none	In-hospital outcomes, and MACE at 35 ± 8 months f/u	Angiographic success 100% 1 (14%) MACE event (TVR)
Nunez-Gil et al. (17) 2017	256	CAA	82% NSTEMI 12% STEMI	MACE compared with 500 controls at 52 months median f/u	Higher odds of mortality (HR: 3.1; 95% CI: 1.8–5.6; $p < 0.01$) and MACE (HR: 2.3; 95% CI: 1.4–3.8; $p < 0.01$) with CAA

ACS = acute coronary syndrome(s); CAA = coronary artery aneurysm; CAE = coronary artery ectasia; CI = confidence interval; f/u = follow-up; HR = hazard ratio; MACE = major adverse cardiovascular event(s); MI = myocardial infarction; PCI = percutaneous coronary intervention; ST = stent thrombosis; STEMI = ST-segment elevation myocardial infarction; TVR = target vessel revascularization.

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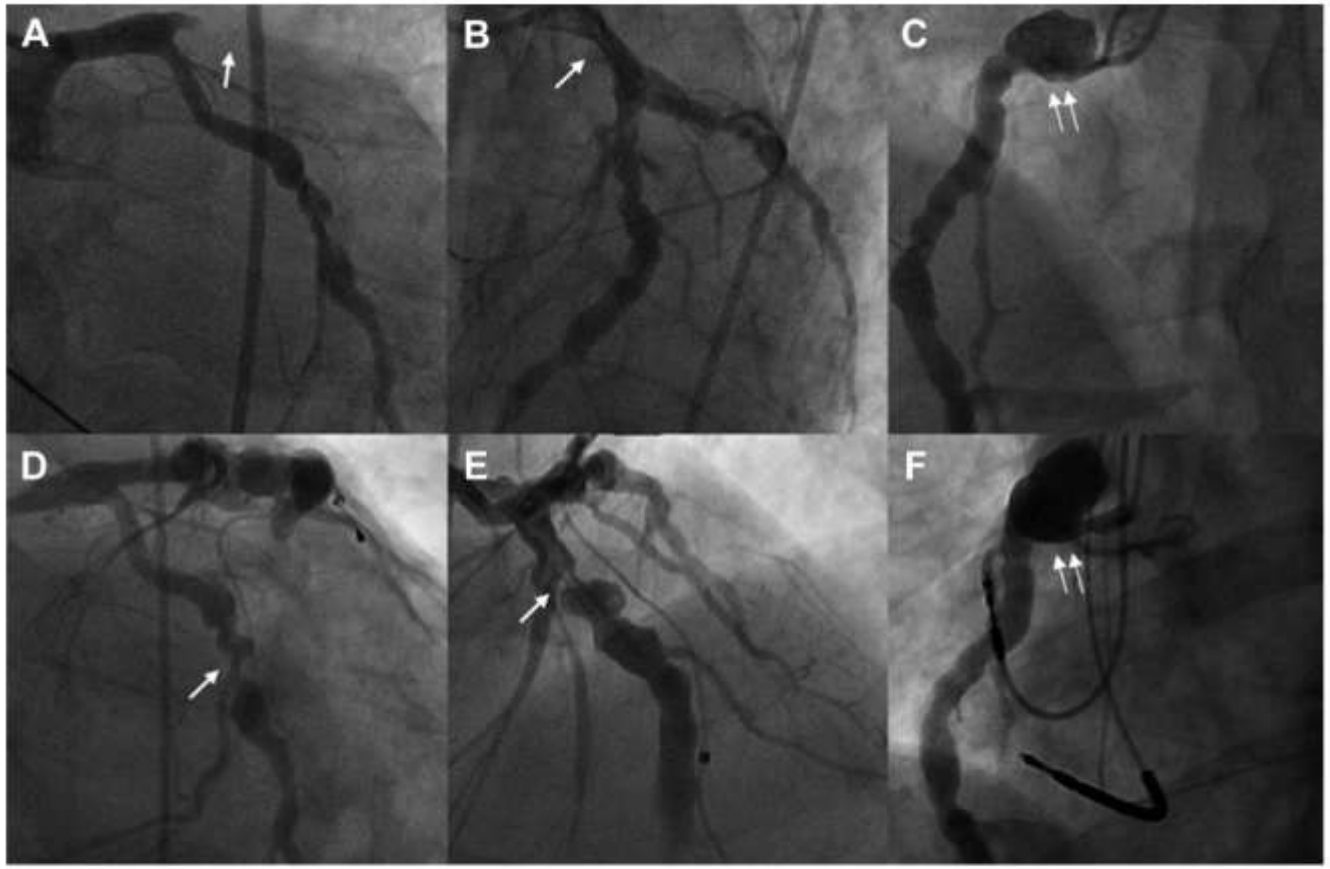
FIGURE 3 **Cine Angiography Illustrating Initial and Follow-Up Findings in a Patient With Diffuse Ectasia and a Fusiform Aneurysm Presented With Anterior Wall STEMI**



(A) Initial angiogram showing a stumped ostial LAD **(arrow)**. **(B)** Initial angiogram following proximal LAD stenting **(arrow)**. **(C)** Initial angiogram showing proximal RCA fusiform aneurysm **(double arrows)**. **(D to F)** Follow-up angiogram 4 years later showing patent proximal LAD stent but worsening mid-LAD and circumflex stenoses **(arrow)** and enlarging proximal RCA fusiform aneurysm **(double arrows)**. See Online Videos 1, 2, and 3. LAD = left anterior descending coronary artery; RCA = right coronary artery; STEMI = ST-segment elevation myocardial infarction.

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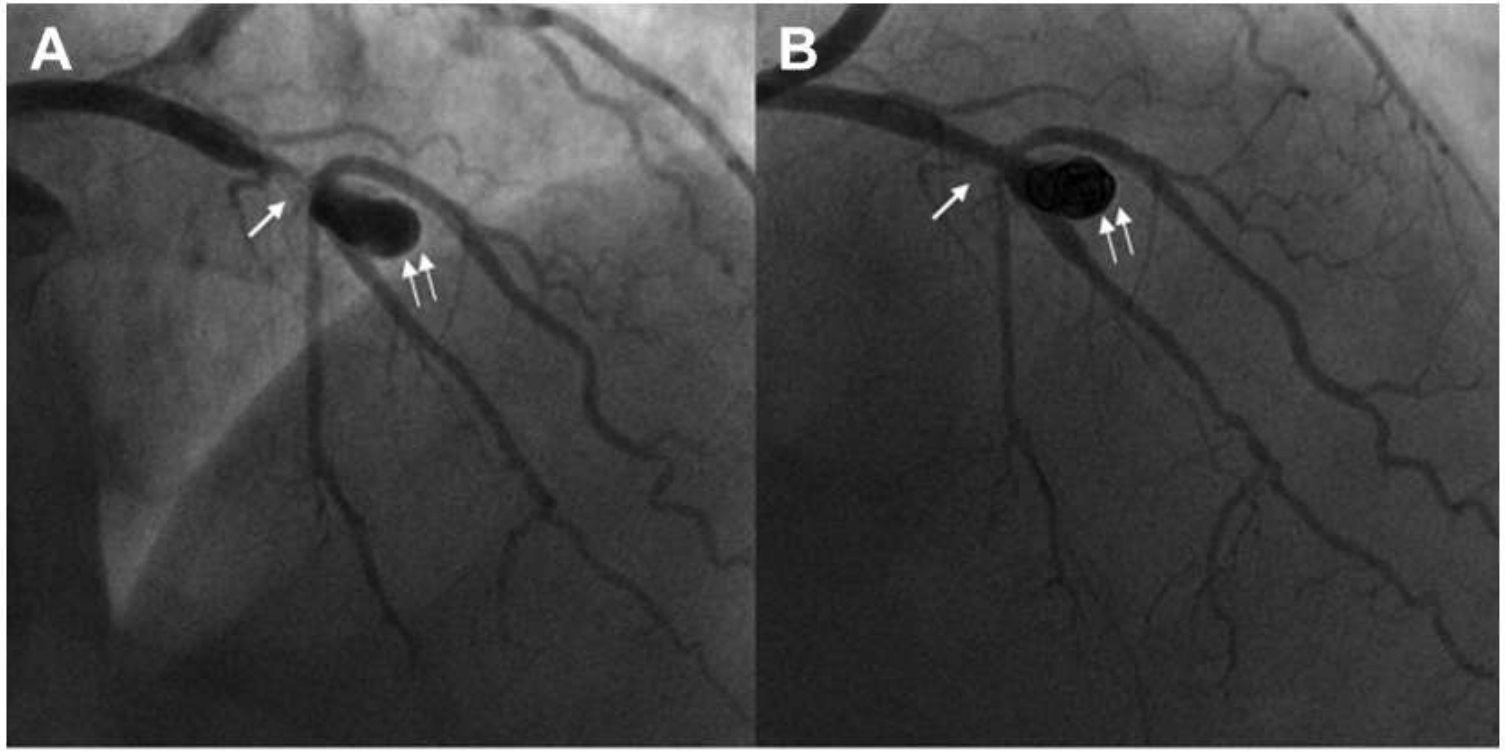
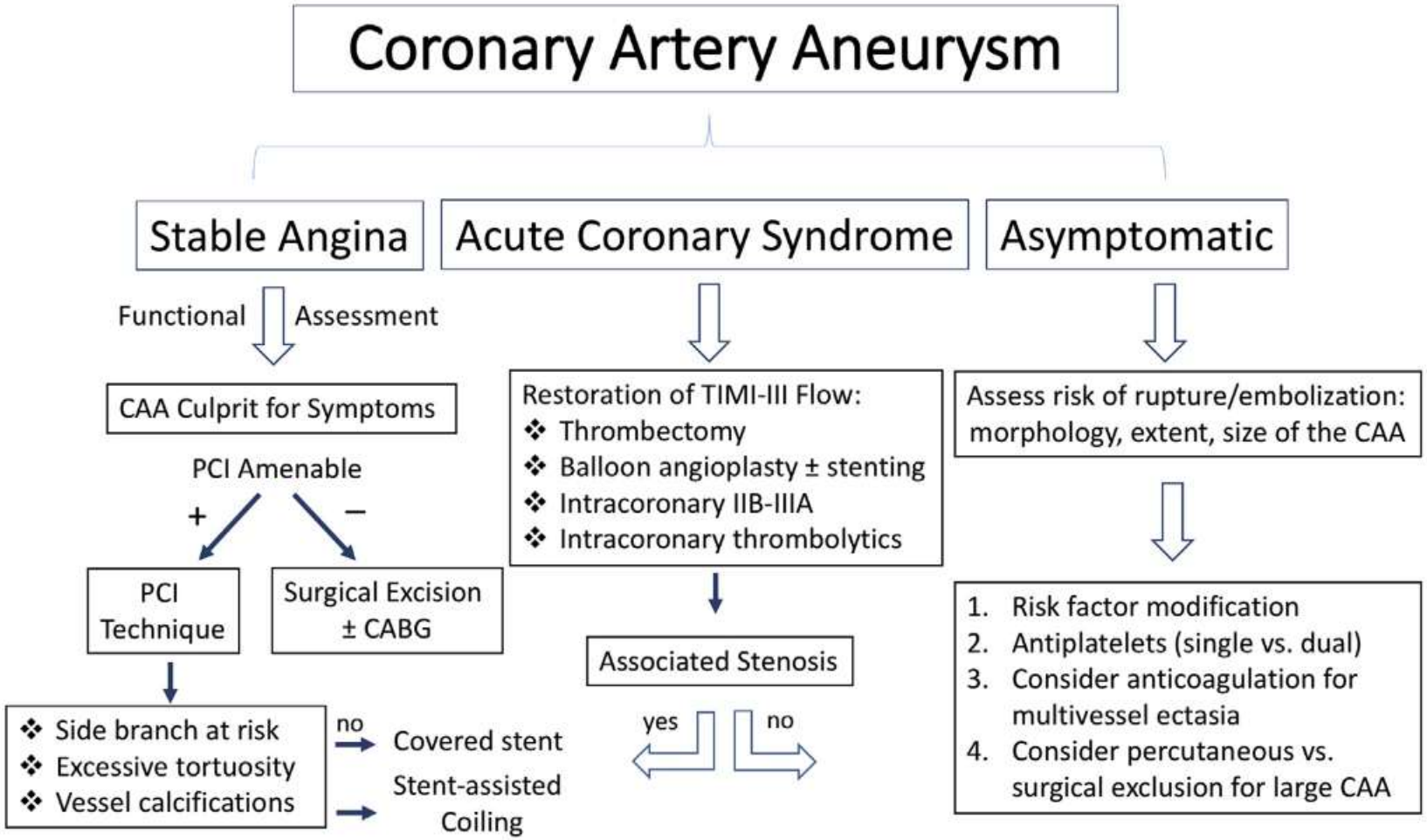
FIGURE 5 **Cine Angiography Illustrating a Moderate Size Saccular Aneurysm in the Mid-LAD Treated With a Modified Stent-Assisted Coil Embolization**



(A) Mid-LAD aneurysm at initial presentation; **(B)** mid-LAD aneurysm after coiling and drug-eluting stent placement. The **single arrows** shows the LAD stenosis before and after stenting. **Double arrows** show the coils. LAD = left anterior descending coronary artery.

FIGURE 6 A Suggested Algorithm for Management of Patients With CAA



See Online Video 6. CABG = coronary artery bypass grafting; TIMI = Thrombolysis In Myocardial Infarction; other abbreviations as in Figure 4.

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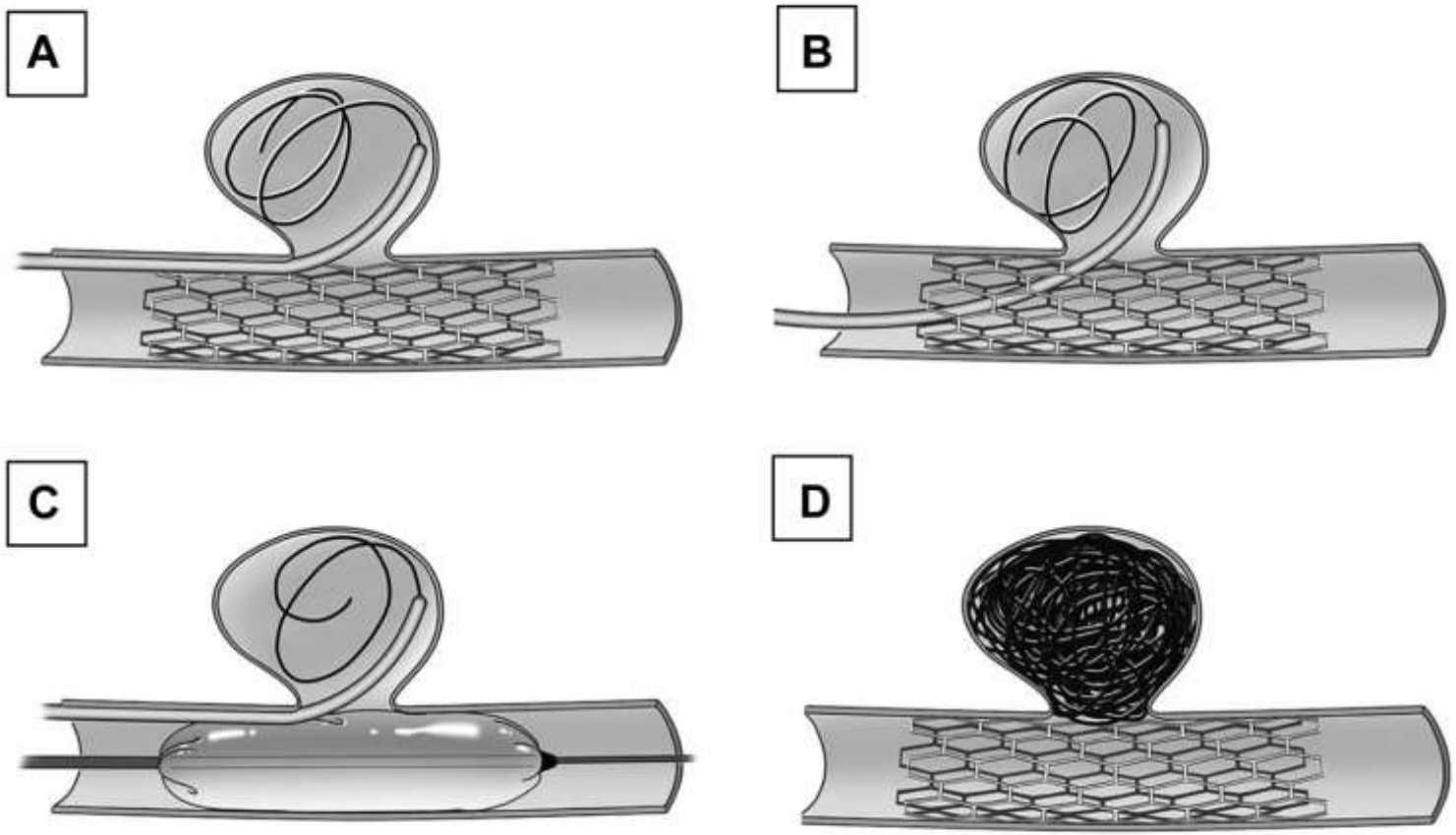
FIGURE 7 Illustration of the Stent-Assisted Coiling Technique



(A) A microcatheter is advanced into the aneurysm, jailed by a noncovered stent, followed by coil delivery via the microcatheter. A final post-dilation of the stent is often performed. **(B)** Coils are delivered through the stent struts after initial stent deployment. **(C)** A microcatheter is advanced into the aneurysm, jailed by a coronary balloon, followed by coil delivery via the microcatheter. A noncovered stent deployment usually follows. **(D)** Final result of stent-assisted coil embolization. Reprinted with permission from Spiotta AM, Wheeler AM, Smithason S, Hui F, Moskowitz S. Comparison of techniques for stent assisted coil embolization of aneurysms. J Neurointerv Surg 2012;4:339–44.

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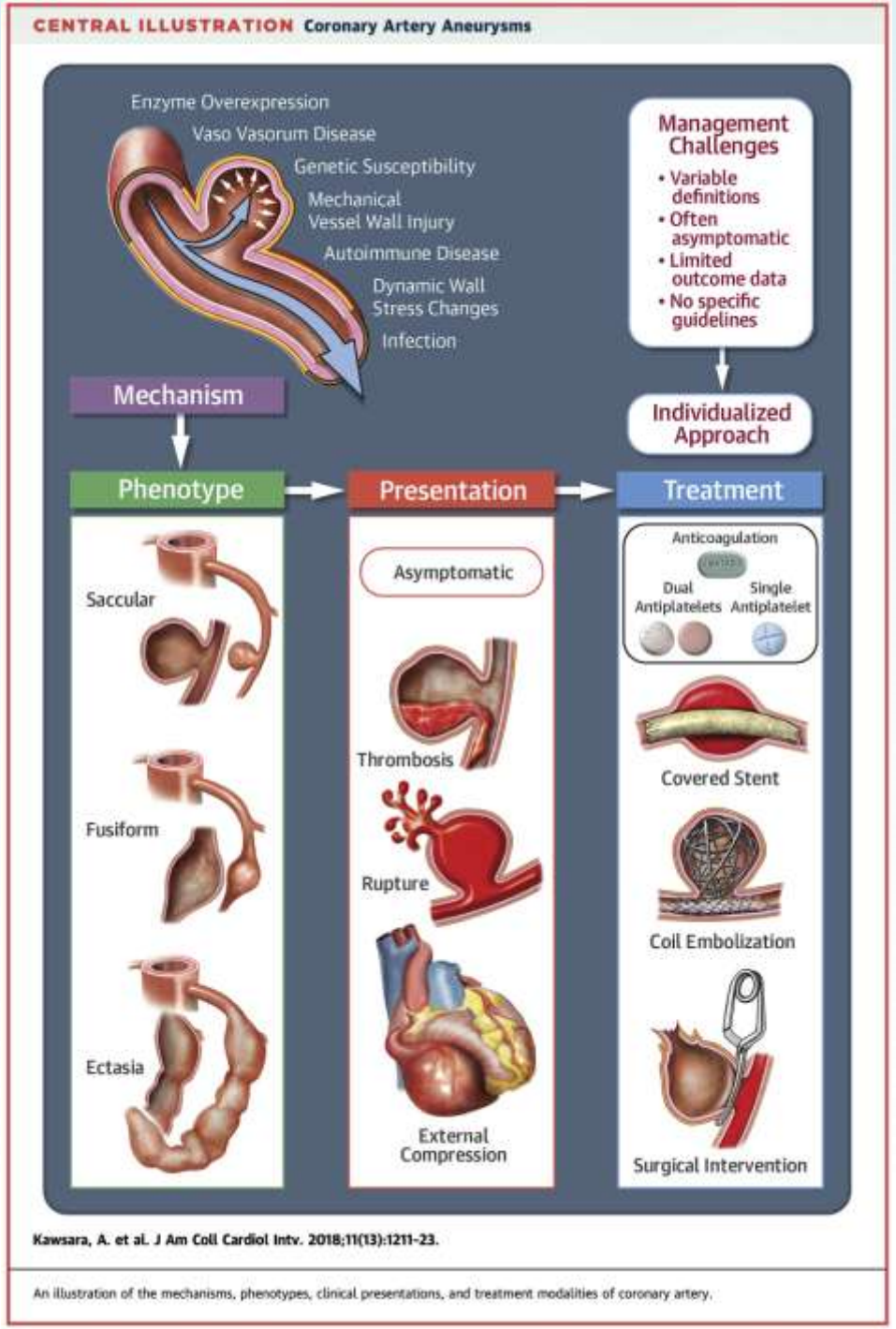

An illustration of the mechanisms, phenotypes, clinical presentations, and treatment modalities of coronary artery.

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FÍSTULAS CORONARIAS

FÍSTULAS CORONARIAS

- Las fístulas arteriovenosas coronarias, son malformaciones vasculares mayores y poco frecuentes en las que existe una conexión anormal entre una arteria coronaria y cualquiera de las cuatro cámaras del corazón o cualquiera de los grandes vasos, evitando el lecho coronario :
  - Vena cava superior
  - Arteria pulmonar
  - Vvenas pulmonares
  - Seno coronario

Rev Med Hosp Gen Méx. 2017;**80(1)**:51-55

FÍSTULAS CORONARIAS

- Están presentes en el 0,1-0-2 % de la población general.
- Representan el 0,4 % de todas las malformaciones cardíacas.
- Se visualizan en casi el 0,25 % de los pacientes sometidos a cateterismo.
- Al menos el 75 % de las fístulas arteriales coronarias que se detectan incidentalmente son pequeñas y clínicamente asintomáticas.
  - Sin embargo, la verdadera incidencia de las fístulas arteriales coronarias es altamente especulativa, ya que muchas pueden ser pequeñas y aproximadamente el 50 % permanecen asintomáticas o solo se detectan incidentalmente mediante imágenes para otra indicación.

Rev Med Hosp Gen Méx. 2017;**80(1)**:51-55
J Am Coll Cardiol Intv 2021;14:1393–406

FÍSTULAS CORONARIAS

- Puede ser congénitas o adquiridas:
  - La forma congénita es, con mucho, la más frecuente y representa una anomalía arterial de terminación (termina en una estructura anormal).
- Se puede encontrar en cualquier grupo de edad y no tiene predilección por género.
- Las adquiridas son extremadamente raras y generalmente iatrogénicas, postraumáticas o causadas por arteritis de Takayasu o irradiación torácica.
- Consecuencias clínicas:
  - Dilatación de cavidades cardíacas (Incluyendo disfunción ventricular).
  - Disnea.
  - Isquemia.
  - Endarteritis

Rev Med Hosp Gen Méx. 2017;**80(1)**:51-55
J Am Coll Cardiol Intv 2021;14:1393–406

FÍSTULAS CORONARIAS

- Se han identificado dos grupos principales:
  - Fístulas solitarias y múltiples:
    - Las fístulas únicas son más comunes, con un rango de 74 a 90%.
    - Las fístulas múltiples están presentes hasta en un 16%.
    - Las fístulas originadas en ambas coronarias en un 5-20%.
    - La forma solitaria es la que se observa en las adquiridas.
- Según la relación con el diámetro del vaso que no da flujo a la fístula:
- Pequeñas: <1
- Medianas: ≥1 to 2
- Grandes: >2

Rev Med Hosp Gen Méx. 2017;**80(1)**:51-55
J Am Coll Cardiol Intv 2021;14:1393–406

FÍSTULAS CORONARIAS

- El 3% de los casos se asocian a la ausencia de la arteria coronaria contralateral.
- Algunas fístulas coronarias congénitas, pueden desaparecer espontáneamente durante la infancia:
  - Especialmente con fístulas de tamaño pequeño o mediano, aunque esto es poco frecuente.
- Entre el 10% y el 30% de los pacientes con una fístula, también presentan otra anomalía cardiovascular congénita:
  - Los defectos más comunes incluyen la tetralogía de Fallot, el conducto arterioso persistente y la comunicación interauricular.
- Se clasifican según la cámara o vaso al que drenan:
  - Tipo 1: Drena a la aurícula derecha.
  - Tipo 2: Drena al ventrículo derecho.
  - Tipo 3: Drena a la arteria pulmonar.
  - Tipo 4 que drena a la aurícula izquierda.
  - Tipo 5: Drena al ventrículo izquierdo.
- El drenaje hacia las cavidades izquierdas es menos frecuente.
- El drenaje fistuloso ocurre hacia el ventrículo derecho en el 40%, la aurícula derecha en el 26%, la arteria pulmonar en el 17%, el ventrículo izquierdo en el 3%, el seno coronario en el 7% y la vena cava superior en el 1%.

Rev Med Hosp Gen Méx. 2017;**80(1)**:51-55

FÍSTULAS CORONARIAS

- En pacientes con enfermedad coronaria aterosclerótica que presentan síndrome coronario agudo, la revascularización coronaria quirúrgica puede asociarse de forma segura a la escisión por ligadura de la fístula.
- En pacientes con coronarias normales, se debe considerar el cierre mediante cardiología intervencionista:
  - Pero el cierre quirúrgico, puede considerarse en casos de alta complejidad con tortuosidad extrema del trayecto fistuloso y/o formación de aneurisma o a petición del paciente.

Rev Med Hosp Gen Méx. 2017;**80(1)**:51-55

TABLE 1 Indications for CAF Closure

Symptomatic medium or large CAF*
1. Evidence of ischemia in the feeder artery territory
2. Arrhythmia thought to be related to CAF
3. Endarteritis
4. Vessel rupture
5. Cardiac chamber enlargement
6. Ventricular dysfunction

*A medium fistula is defined as a vessel diameter that is ≥1 to 2 times the largest diameter of the coronary vessel not feeding the coronary fistula. A large fistula is defined as a vessel diameter that is more than 2 times the largest diameter of the coronary vessel not feeding the coronary fistula.

CAF = coronary artery fistula.

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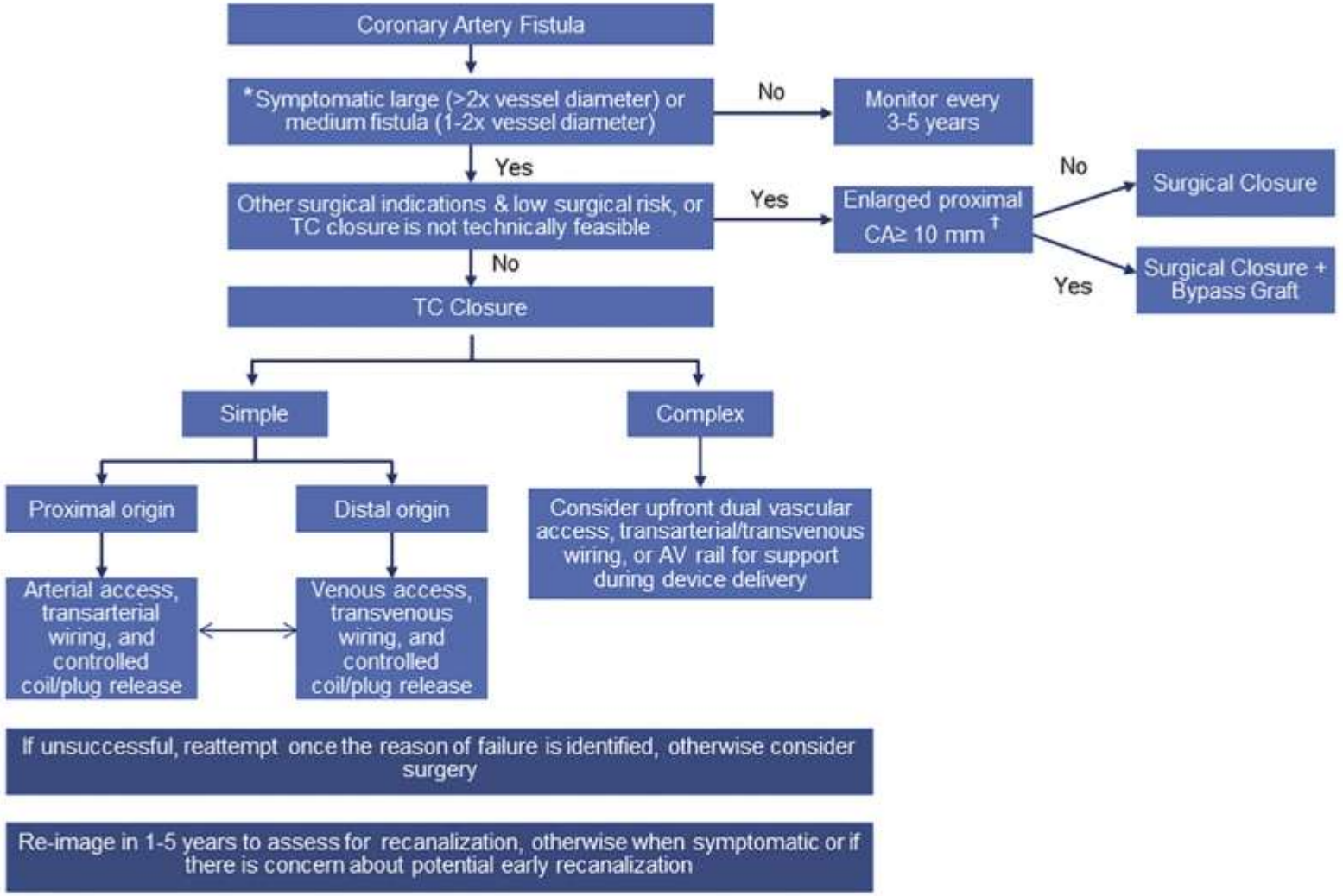
FIGURE 1 Algorithm of Coronary Artery Fistula Evaluation and Management



*Symptomatic fistulas are coronary artery (CA) fistulas that potentially lead to myocardial ischemia, vessel aneurysm and rupture, endocarditis, unexplained cardiac chamber enlargement/dysfunction, or arrhythmia. †An enlarged proximal CA with diameter ≥10 mm has a tendency to thrombose after fistula closure, resulting in myocardial infarction. A simple fistula has a single-vessel origin, simply defined pathways, and a clearly defined termination. A complex fistula is a large fistula with multiple origins and plexiform formation.
AV = arteriovenous; TC = transcatheter.

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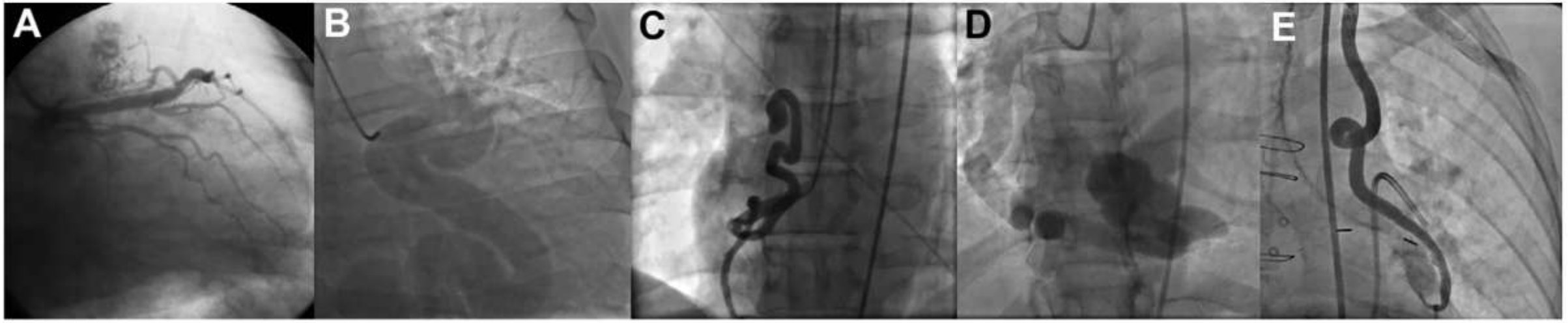
FIGURE 2 Main Types of Coronary Artery Fistulas



(A) Small fistula from left anterior descending coronary artery to pulmonary artery (PA) with weblike communications. **(B)** Large fistula originating from the distal left circumflex coronary artery and terminating into the coronary sinus (CS). **(C)** Moderate-size fistula originating from the right coronary artery (RCA) and emptying into the superior vena cava-right atrium junction. **(D)** Large fistula originating from the RCA and terminating into the CS. **(E)** Fistula from left internal mammary (LIMA) to left PA. LIMA angiography showed a distal segment emptying into the left PA. Also, the PA catheter was positioned in the left PA.

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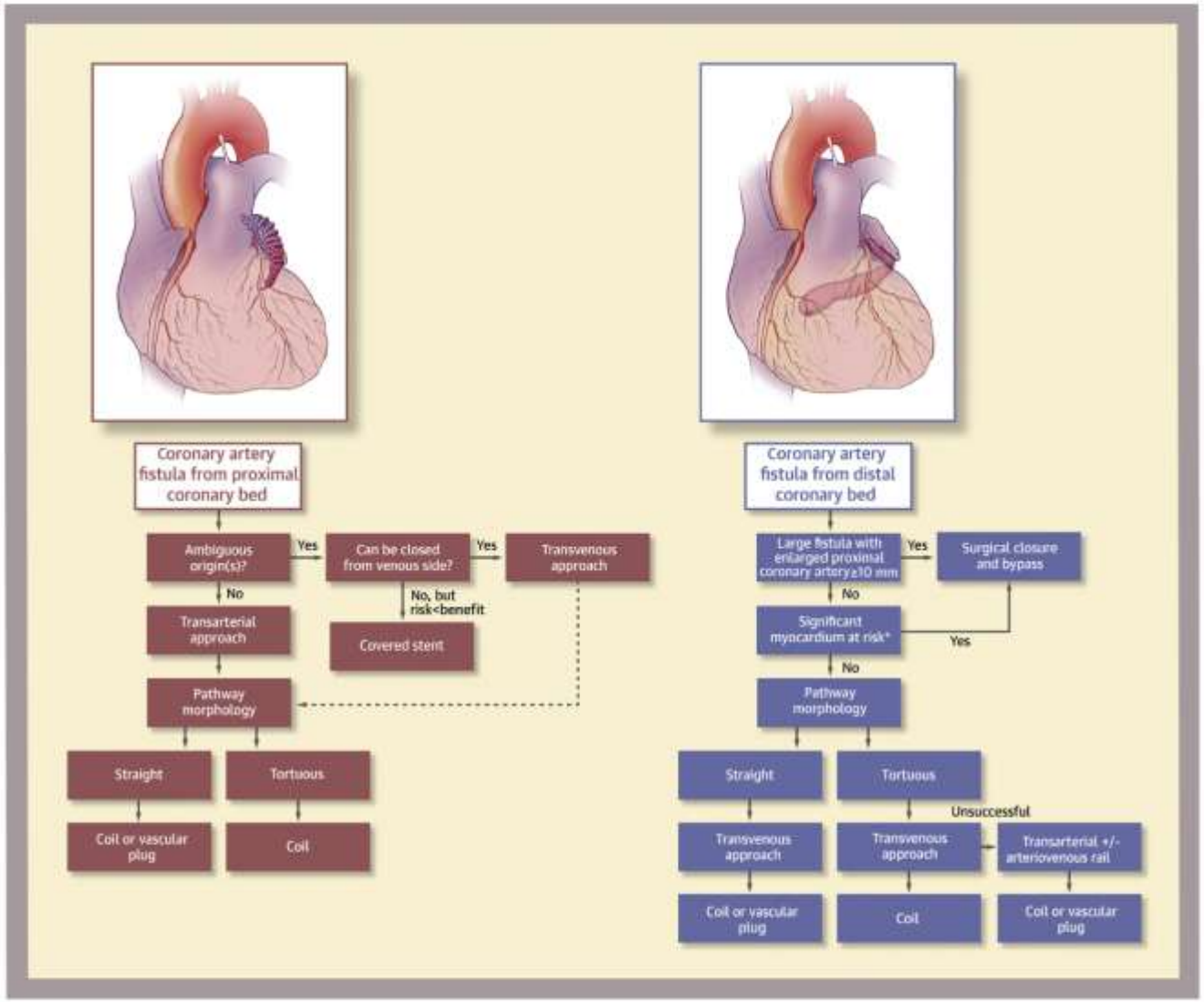
CENTRAL ILLUSTRATION Algorithm of Coronary Artery Fistula Closure for Fistulas Originating From Proximal Coronary Bed and Distal Coronary Bed



Al-Hijji, M. et al. J Am Coll Cardiol Intv. 2021;14(13):1393-406.

*Significant myocardium at risk is defined by the number and sizes of branches that might be compromised with closure of coronary artery fistula.

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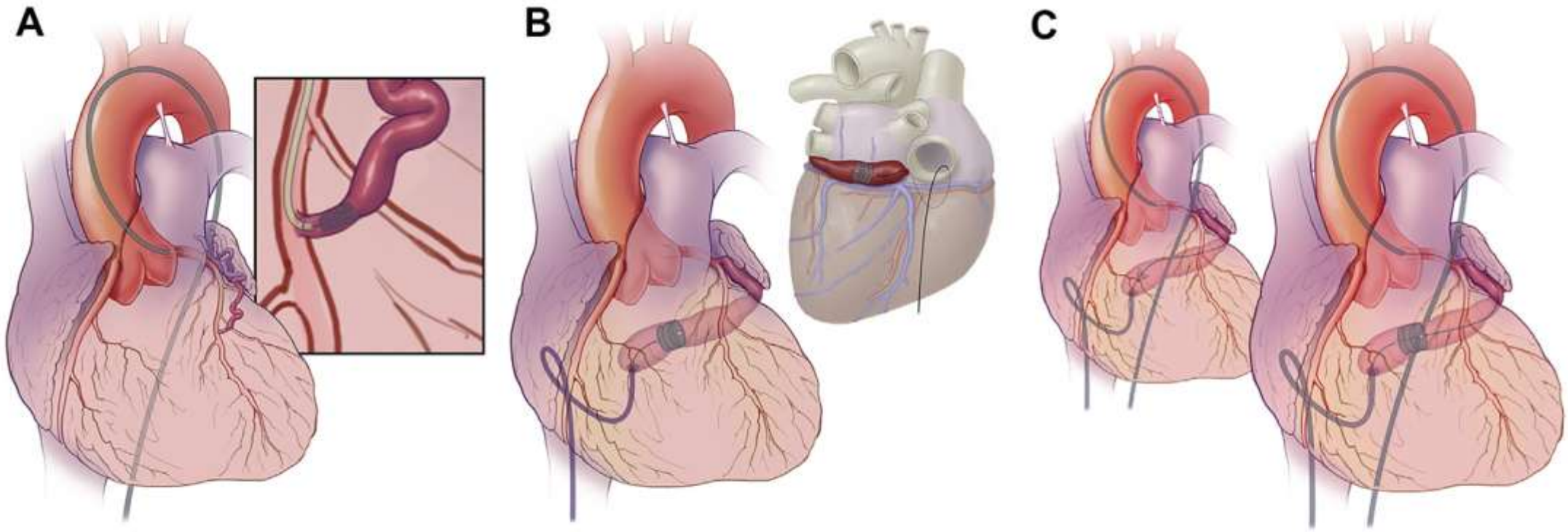
FIGURE 3 Transcatheter Closure Techniques



(A) Transarterial approach. The coronary vessel is intubated, and the fistula is wired from its origin. The delivery catheter can then be delivered to the fistula over a wire for device deployment. The occlusion device is then deployed and released. **(B)** Transvenous approach. The fistula termination site is intubated with the delivery catheter. The delivery catheter is advanced over a wire to the appropriate landing zone. The occlusion device is then deployed and released. **(C)** Arteriovenous (AV) loop approach. In large and tortuous fistulas, AV rail can be formed with the aid of a snare device to maximize support for catheter and device delivery.

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TABLE 2 Equipment List Used for Device Delivery

100-cm guiding catheters
Microcatheter
Guide extension catheter
125-cm, 5-F multipurpose diagnostic catheter (for telescoping technique)
Hydrophilic-coated braided sheath, such as Flexor shuttle sheath (Cook Medical) or Destination sheath (Terumo Medical)
Deflectable sheaths, such as small- and medium-curl Agilis sheaths (Abbott Vascular) or Dexterity sheath (Spirus Medical)
0.014-inch coronary wire
0.035-inch hydrophilic Glidewire (regular and exchange length)
6-F Goose Neck (Medtronic) or En-Snare retrieval catheters (Merit Medical)

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FÍSTULAS CORONARIAS

- El infarto de miocardio puede ocurrir debido a:
  - Formación de un trombo dentro de la arteria coronaria madre aneurismática.
  - Trombosis del dispositivo de cierre de la fístula.
  - Como una complicación de un procedimiento:
    - Cinco de los 46 pacientes (11%) tratados en la Clínica Mayo sufrieron un infarto posoperatorio. En una serie que examinó a 76 pacientes que recibieron tratamiento médico o quirúrgico o cierre transcatéter, el infarto se presentó en el 15%.
      - En la misma serie, los investigadores descubrieron que el drenaje hacia el seno coronario, era un predictor de eventos isquémicos a largo plazo, ya que la mayoría de estas fístulas, se originan en segmentos distales de vasos coronarios ectásicos.

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TABLE 3 Compatibility, Advantages, and Disadvantages of Commonly Used CAF Closure Devices

Type of Device	Examples	Compatibility	Advantages	Disadvantages
Vascular plugs	AVP-II and AVP-IV	Guide or shuttle sheath	Good for large CAFs Repositionable Accelerated thrombogenicity	Large delivery catheter profile Need for additional support to deliver
Pushable coils	Nester coils (Cook Medical)	0.018- to 0.035-inch microcatheter, depending on required coil size	Easier to deliver Good for small, tortuous vessels Accelerated thrombogenicity	Embolization risk with pushable coils, lower risk with detachable coils given controlled release Inability to reposition with pushable coils Multiple coils needed to provide full seal of the flow
	Tornado coils (Cook Medical)	0.018- to 0.035-inch microcatheter, depending on required coil size		
Detachable coils	Retracta (Cook Medical)	0.035-inch internal diameter, 2.5- to 2.9-F, 100- to 150-cm microcatheter such as the Cantata microcatheter (Cook Medical)		
	Ruby (Penumbra)	0.025-inch internal diameter Lantern microcatheter (Penumbra)		
	Azur (Terumo Medical)	0.018- to 0.035-inch internal diameter Progret microcatheter (Terumo Medical)		
	Concerto (Medtronic)	0.017- to 0.021-inch internal diameter		
Stent grafts	JOSTENT GraftMaster (Abbott Vascular)	6-F guide for 2.8–4.0 mm 7-F guide for 4.5–4.8 mm	Treat plexiform fistula	High thrombosis risk
	PK Papyrus stent (Biotronik)	5-F guide for 2.5–4.0 mm 6-F guide for 4.5–5.0 mm		

AVP = Amplatzer Vascular Plug; CAF = coronary artery fistula.

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TABLE 4 Summary of Largest Case Series for Transcatheter Closure of CAF

First Author (Ref. #)	Center	n	Fistula	Devices Used	Follow-Up	Procedural Success	Complications
El-Sabawi et al (18), Jama et al. (8)	Mayo Clinic	45	56	Coils: 40 AVPs: 10 Covered stents: 2 ADOs: 1	Median: 374 days (IQR: 27-2,029 days)	50 (89.3%)	4 MIs, 3 coil embolization, 4 recanalizations of fistula
Armsby et al. (4)	Children's Hospital Boston	35	35	Coils: 28 Umbrella devices: 6 Grifka occluder: 1	Median: 3.7 yrs (IQR: 0.1-11.1 yrs)	30 (86%)	5 ST-T-wave changes, 1 coronary spasm, 1 fistula dissection, 1 coil embolization, 4 transient atrial arrhythmias
Qureshi and Tynan (6)	Guy's Hospital	40	NR	Coils: 45 Balloons: 3 ADO: 1	1 month to 10 yrs	39 (97%)	1 VF arrest, 6 embolizations
Ilkay et al. (33)	Multicenter, Turkey	20	20	Coils: 18 AVPs: 2	Mean: 4 ± 1.6 yrs	20 (100%)	1 AV block
Shah et al. (34)	Toronto General Hospital	25	26		76 months (IQR: 5-214 months)	21 (81%)	2 MIs, 1 coronary dissection, 1 transient ST-segment elevation, 1 coil embolization

ADO = Amplatzer Duct Occluder; AV = atrioventricular; IQR = interquartile range; MI = myocardial infarction; NR = not reported; VF = ventricular fibrillation; other abbreviations as in Table 3.

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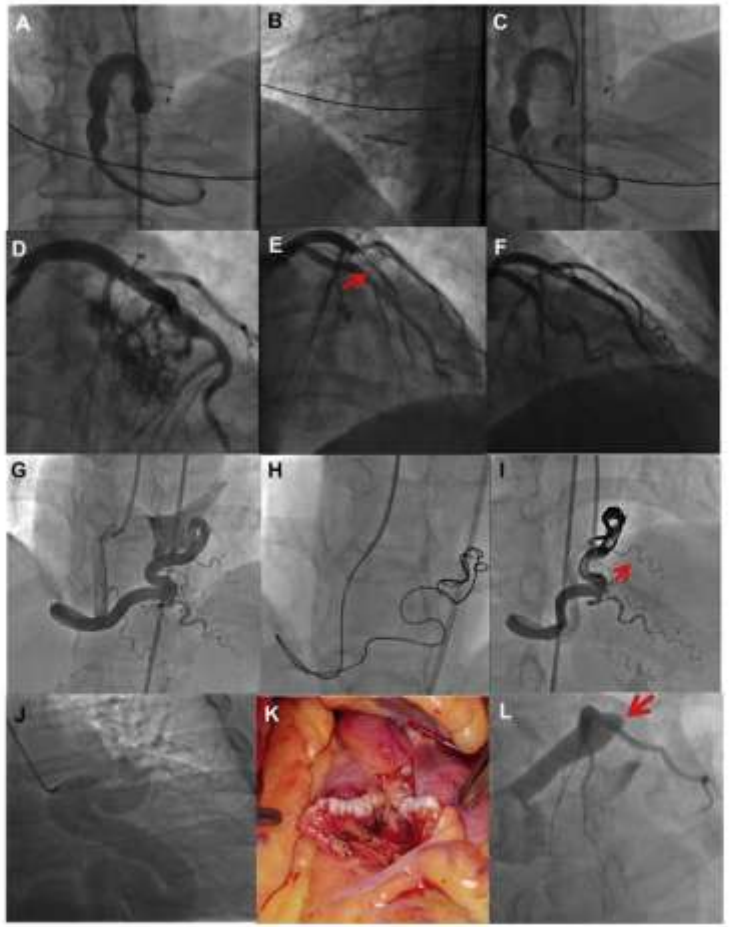
FIGURE 7 Examples of Myocardial Infarction With Fistula Closure



(A) Coronary angiography in a patient presenting with inferior ST-segment elevation myocardial infarction (STEMI) after successful closure of a distal coronary fistula 3 months prior to presentation revealed disruption of flow to the distal RCA with a large thrombus. **(B)** The patient was treated with balloon angioplasty and thrombectomy. **(C)** Subsequent angiography revealed minimal improvement of flow to the distal vessel. The patient was treated with systemic and then oral anticoagulation. **(D to F)** A case of a 48-year-old woman with complex plexiform fistula originating from the LAD and emptying directly into the left ventricle. The flow into the fistula was terminated with deployment of two 5.0 × 16 mm tandem iCast covered stents. The double-layered stents increase the risk for stent thrombosis. **(E)** The patient presented few days later with anterior STEMI due to stent thrombosis **(red arrow)**. **(F)** The patient was successfully treated with balloon angioplasty and drug-eluting stent placement. **(G to I)** A 45-year-old woman with RCA enlargement and a large fistula originating from the distal segment emptying into the CS. **(G)** Coronary angiography using a 7-F × 45-cm sheath and a 7-F Judkins right 4 guiding catheter demonstrated the tortuous fistula and meshlike origin. **(H)** A Penumbra Pod detachable 8 mm × 60 cm coil was delivered distally through a 2.9-F, 150-cm Lantern microcatheter with controlled deployment. **(I)** Coronary angiography showed complete release of the detachable coil, abolishing flow to the CS. The patient had a mild increase in troponin level after the procedure because of occlusion of a small distal branch **(red arrow)** that was covered with the coil. **(J to L)** A 56-year-old woman with heart failure and a large fistula originating from ectatic LCx (>10 mm in diameter) and emptying into the CS. **(K)** Because of the large size of the fistula, the patient underwent surgical fistula closure without bypassing the distal coronary segments. The patient developed ventricular fibrillation due to inferior STEMI the night of the surgery. **(L)** Coronary angiography revealed thrombotic occlusion of the ectatic LCx **(red arrow)**. Abbreviations as in Figures 2 and 4.

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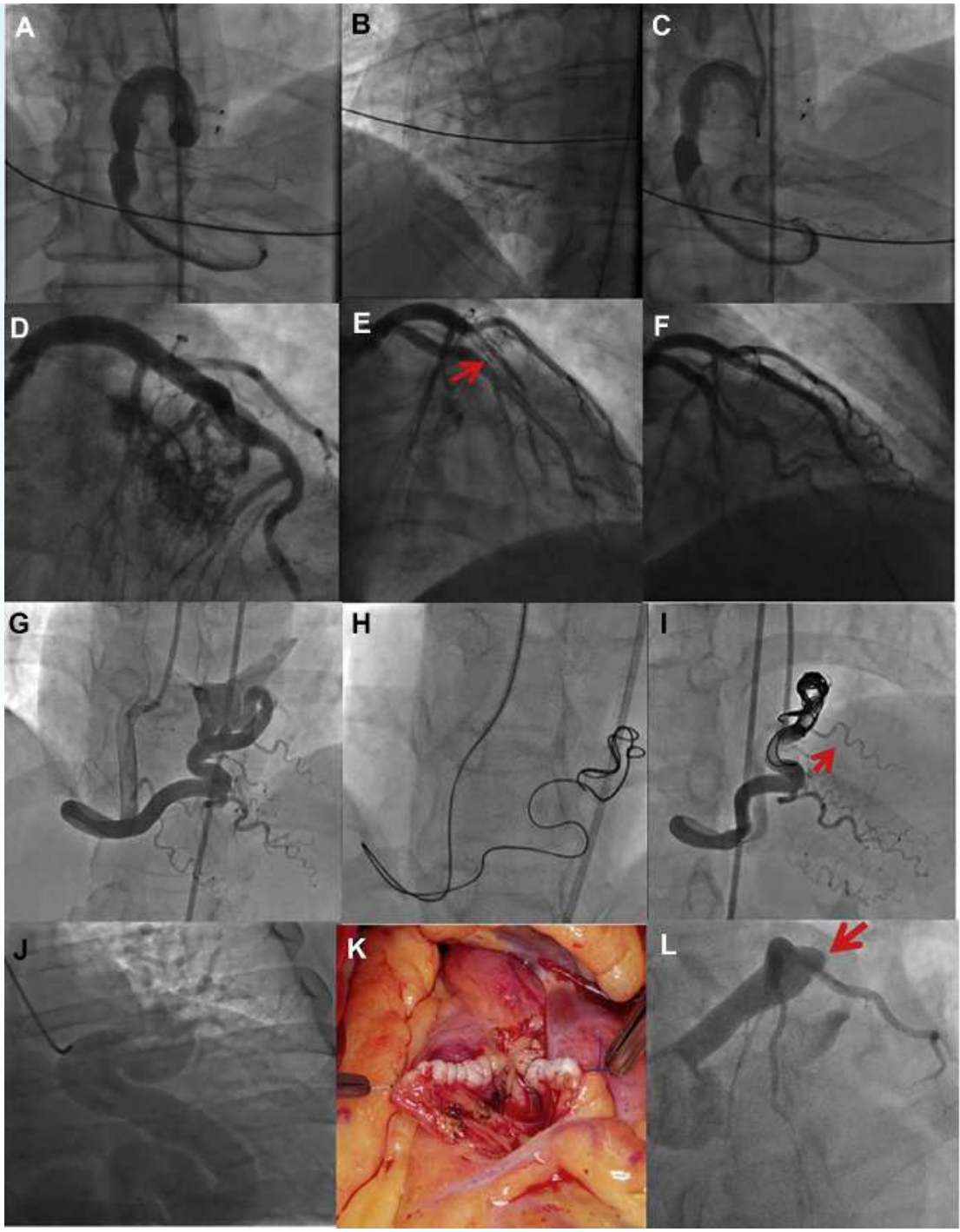

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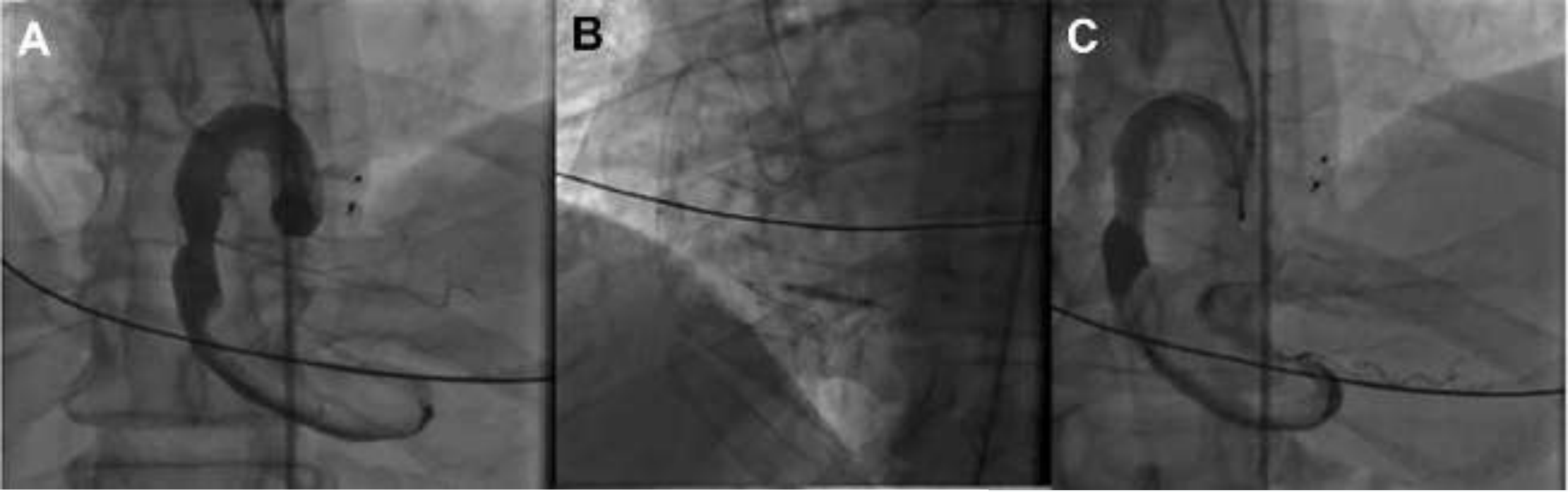

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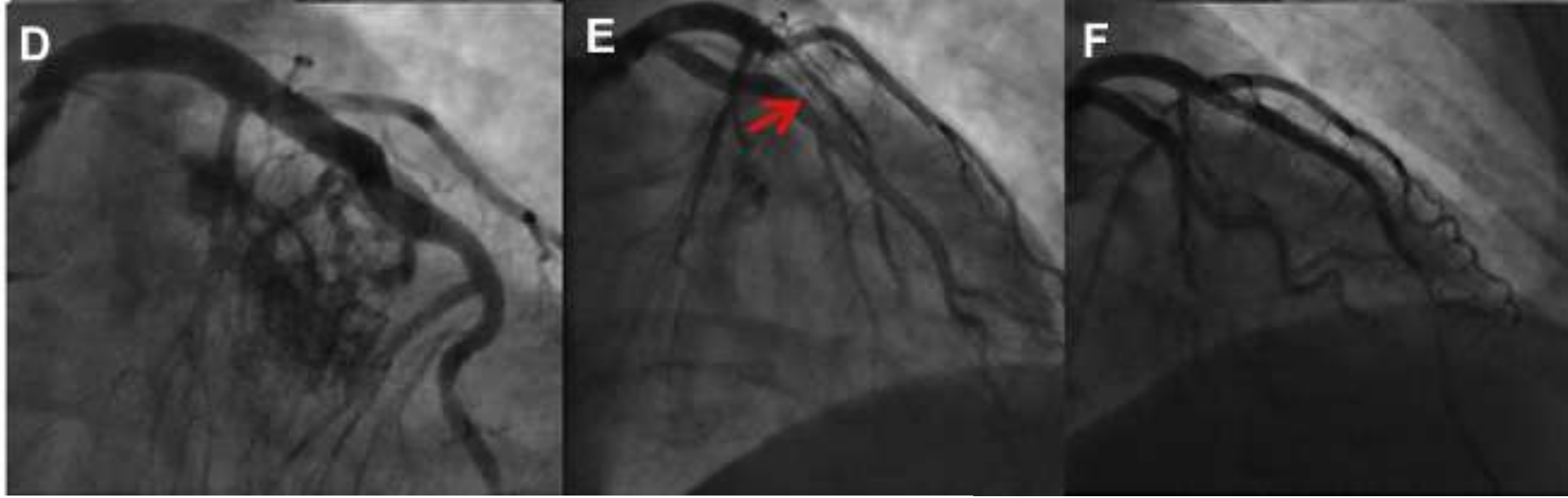

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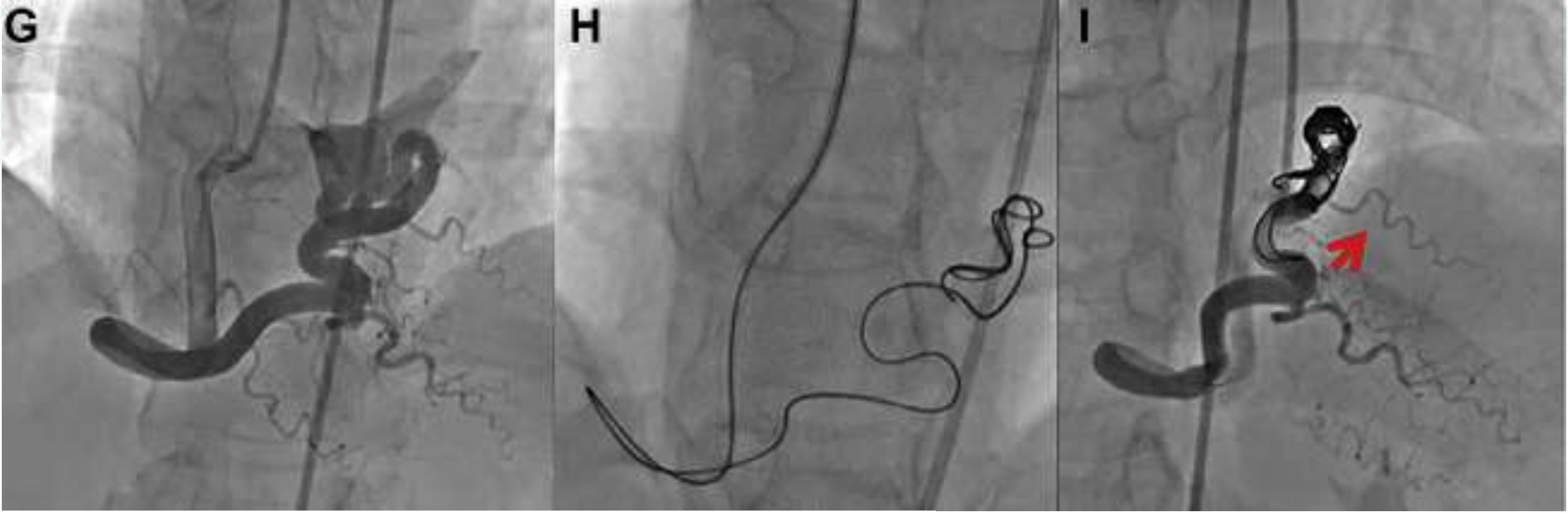

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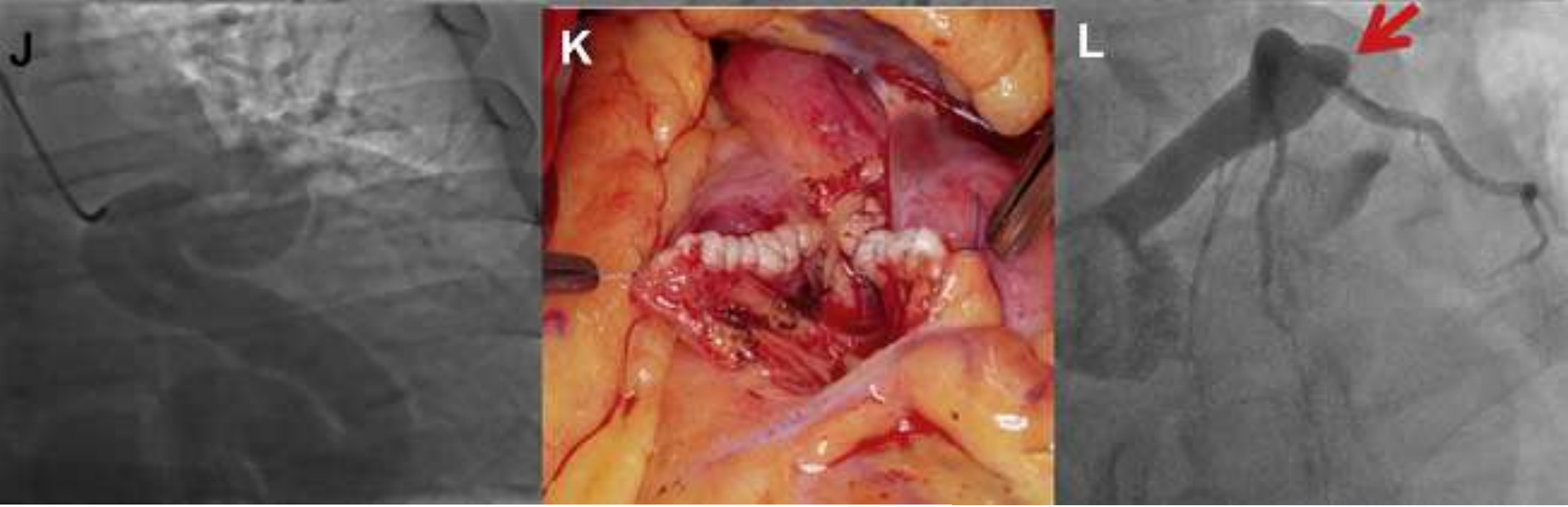

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CONCLUSIONES

- La dilatación aneurismática de los vasos coronarios no es infrecuente y su tratamiento supone un desafío.
- El conocimiento de los aspectos relacionados con la historia natural, la evaluación y el tratamiento intervencionista de esta entidad es esencial para lograr resultados óptimos.

CONCLUSIONES

- Cuando está clínicamente indicado, el cierre transcatéter es un tratamiento eficaz para ciertas fístulas coronarias coronarias de tamaño mediano a grande o sintomáticas.
- Las fístulas coronarias son anatómicamente complejas y requieren técnicas y equipos especializados:
  - Por lo tanto, estas intervenciones se realizan mejor en centros terciarios con experiencia en el cierre de estas fístula, tras evaluar los beneficios y riesgos previstos del procedimiento.
- Todos los pacientes deben someterse a estudios coronarios de seguimiento para evaluar la recanalización.
- En el caso de aneurismas coronarios grandes, el tratamiento ideal es la derivación quirúrgica concomitante y la anticoagulación oral para reducir el riesgo de infarto de miocardio perioperatorio.

XIII CONGRESO INTERNACIONAL DE CARDIOLOGIA

CARDIOLOGIA INTERVENCIONISTA - LII JORNADA ACCI-SOLACI

DE LA PREVENCIÓN A LA INTERVENCIÓN

ASOCAR
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JORNADAS SOLACI