Valvular Heart Disease The Revolution of Data

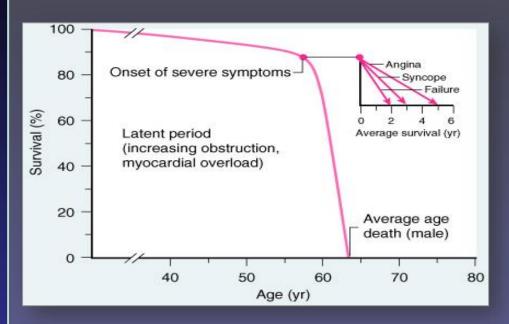
Amit Segev Division of Cardiology Chaim Sheba Medical Center







Symptomatic Severe Aortic Stenosis



"Surgical intervention should be performed promptly once even... minor symptoms occur"

Ross J Jr, Braunwald E. Aortic stenosis. Circulation. 1968

The prognosis of aortic stenosis has not significantly changed since the 60's?

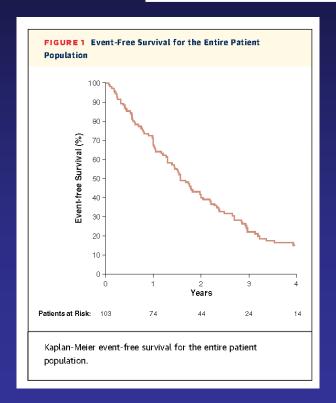


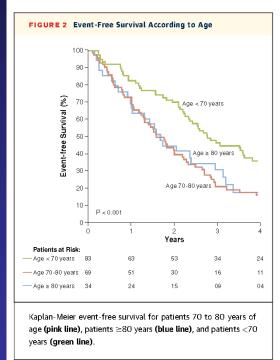


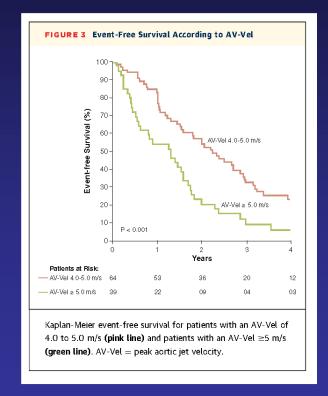
Asymptomatic Severe Aortic Stenosis in the Elderly



Robert Zilberszac, MD, a Harald Gabriel, MD, Michael Schemper, PhD, Günther Laufer, MD, Gerald Maurer, MD, Raphael Rosenhek, MD









Randomized TAVI Studies

The NEW ENGLAND JOURNAL of MEDICINE

Transcatheter Aortic-Valve Implantation for Aortic Stenosis in Patients Who Cannot Undergo Surgery

Martin B. Leon, M.D., Craig, R. Smith, M.D., Michael Mack, M.D., D. Craig Miller, M.D., Jeffrey M. Moses, M.D., Lars G. Svensson, M.D., Ph.D., E. Murat Tuzcu, M.D., John G. Webb, M.D., Gregory P. Fortana, M.D., Rig R. Makkar, M.D., David L. Brown, M.D., Peter C. Block, M.D., Robert A. Guyton, M.D., Augusto D. Pichard, M.D., Joseph E. Bavaria, M.D., Howard C. Hermann, M.D., Parnels S. Douglas, M.D., John L. Petersen, M.D., Jold J. Afon, M.S., William Y., Anderson, Ph.D., Doulos Wang, Ph.D.

ORIGINAL ARTICLE

Transcatheter Aortic-Valve Replacement for Inoperable Severe Aortic Stenosis

The NEW ENGLAND JOURNAL of MEDICINE

Raj R. Makkar, M.D., Gregory P. Fontana, M.D., Hasan Jilaihawi, M.D., Samir Kapadia, M.D., Augusto D. Pichard, M.D., Parnela S. Douglas, M.D., Vinod H. Thorusni, M.D., Vasilis C. Babaliaros, M.D., John G. Webb, M.D., Howard C. Herrmann, M.D., Joseph E. Bavaria, M.D., Susheel Kodali, M.D., David L. Brown, M.D., Bruce Bowers, M.D., Todd M., Dewey, M.D., Lars G., Svensson, M.D., Phi.D., Murat Tuzcu, M.D., Jeffrey W. Moses, M.D., Matthew R. Williams, M.D., Soeber J. Siegel, M.D., Jodj J. Akin, M.S., William N. Anderson, Ph.D., Stuart Pocock, Ph.D., Craig R. Smith, M.D., and Martin B. Leon, M.D., Of the PARTNER Trail investigators*

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 181

VOL. 364 NO. 23

Transcatheter versus Surgical Aortic-Valve Replacement in High-Risk Patients

Craig B, Smith, M.D., Martin B, Leon, M.D., Michael J, Mack, M.D., D. Craig Miller, M.D., Jeffrey W. Mores, M.D., Lars G, Swenson, M.D., Ph.D., E. Murati Tuczu, M.D., John, G. Webb, M.D., Gregoy F. Fortana, M.D., 83; R. Mikker, M.D., Marhow Williams, M.D., Todd Dewey, M.D., Samir Kapadis, M.D., Varsiir Babsluros, M.D., Vinod H, Throuneri, M.D., Padi Coss, M.D., Augusto D, Perland, M.D., Joseph E, Bavaria, M.D., Howard C. Herrmann, M.D., Jodi J, Alin, M.S., William N. Anderson, Ph.D., Duolao Wang, Ph.D., and Staart I Proceed, Ph.D., Ser ibs Patrick R final Investigation and Staart I Proceed, Ph.D., Ser ibs Patrick R final Investigation. The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Two-Year Outcomes after Transcatheter or Surgical Aortic-Valve Replacement

Susheel K. Kodali, M.D., Mathew R. Williams, M.D., Crail R. Smith, M.D., Lara G. Swensson, M.D., Ph.D., John G. Webb, M.D., Sil R. Makkar, M.D., Gregory P. Fortlans, M.D., Todd M. Dewey, M.D., Vinod H. Thourani, M.D., Augusta D. Pichtar, M.D., Michael F. Serbehein, M.D., Ph.D., Wilson Y. Szerb, M.D., Scott Lim, M.D., Kevin L. Greason, M.D., Paul S. Teirstein, M.D., S. Chris Malasra, M.D., Paul S. Douglas, M.D., Rebecca T. Hahn, M.D., Bran Whisenars, M.D., Mark Zajarias, M.D., Duckle Wang, Ph.D., Jod. J. Akin, M.D., Salar Zajarias, M.D., Duckle Wang, Ph.D., Gris Ph. P.R. P. M. S. Stark T. Stall InterStation of B. Loon, M.D., Sor Inter PART INST 1rt Jil InterStation of B. Loon, M.D.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Transcatheter Aortic-Valve Replacement with a Self-Expanding Prosthesis

David H. Adams, M.D., Joffrey J. Popma, M.D., Michael J. Reardon, M.D., Steven J., Yakuboy, M.D., Joseph S. Coselli, M.D., G. Michael Deeb, M.D., Thomas G. Gleason, M.D., Maurice Buchbinder, M.D., James Hermiller, Jr., M.D., Neal S. Kleiman, M.D., Stan Chetzuli, M.D., John Heiser, M.D., William Merhi, D.O., George Zorn, M.D., Peter Tadros, M.D., Newell Robinson, M.D., George Petrossian, M.D., G. Chad Hughes, M.D., J. Kevin Harrison, M.D., John Conte, M.D., Brijschwar Maini, M.D., Mubashir Murrat, M.D., Sharla Chenoweth, M.S., and Jae K. Oh, M.D., for the U.S. CoroValve Clinical Investigators*

The NEW ENGLAND JOURNAL of MEDICINE

CONTRACTOR IN SEC.

8, 2016

VOL. 374 NO. 17

Transcatheter or Surgical Aortic-Valve Replacement in Intermediate-Risk Patients

Martin B. Leon, M.D., Craig E. Smith, M.D. Michael J. Mack, M.D., Taij E. Nakkar, M.D.
Lex G. Semson, M.D., Ph.D., Sacheb K. Kodali, M.D., Vinold H. Thourani, M.D., E. Murat Tizzco, M.D.,
D. Craig Miller, M.D., Housaid C. Herrmann, M.D. Darshan Doshi, M.D., David J. Cohen, M.D.,
Augusto D. Pichard, M.D., Samer Agpash, M.D., Todd Olovey, M.D., Vasili Balailaros, M.D.,
Alagusto D. Pichard, M.D., Samer Agpash, M.D., Todd Olovey, M.D., Vasili Balailaros, M.D.
Keoin L. Greason, M.D., Birts K. Whiterman, M.D., Robert W. Heddon, M.D., piffirp W. Mores, M.D.,
Riffeed Trento, M.D., Durdel E. Brown, M.D., William F. Faces, M.D., Philippe Phases, D.M., William S. Leon, M.D., Philippe Phases, D.M., William S. Leon, M.D., Philippe Phases, D.M., William S. Leon, M.D., Philippe Phases, D.M., William N., Anderson, Ph.D., Maria C. Alu, M.M.,
Rebecca T. Hahn, M.D., Waid A. Jaher, M.D., William N., Anderson, Ph.D., Maria C. Alu, M.M.,

NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Transcatheter Aortic-Valve Replacement with a Self-Expanding Valve in Low-Risk Patients

Jeffrey J. Popma, M.D., G. Michael Deeb, M.D., Steven J. Yakubov, M.D., Mubashir Mumtaz, M.D., Hemal Gada, M.D., Daniel O'Hair, M.D., Tarniv fispiwa, M.D., John C. Heiser, M.D., William Merlhi, D.O., Neal S. Kleiman, M.D., Judah Askew, M.D., Paul Soraja, M.D., Joshua Rovin, M.D., Stanley J. Chectusi, M.D., David H. Adams, M.D., Paul S. Teirstein, M.D., George L. Zorn III, M.D., John K. Forrest, M.D., Dider Tchetche, M.D., Jon Resar, M.D., Antony Walton, M.D., Nicolo Piazza, M.D., Ph.D., Basel Ramlawi, M.D., Newell Robinson, M.D., George Petrossian, M.D., Thomas G. Gleason, M.D., Jae K.O., M.D., Michael J. Boulware, Ph.D., Hongyan Qiao, Ph.D., Andrew S. Mugglin, Ph.D., Michael J. Boulware, Ph.D., Hongyan Qiao, Ph.D., Andrew S. Mugglin, Ph.D., and Michael I. Seardon, M.D., Toft the Evolut Low Risk Trail Investigation.

The NEW ENGLAND JOURNAL of MEDICINE

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RUARY 27, 2020

VOL. 382 NO. 9

Five-Year Outcomes of Transcatheter or Surgical Aortic-Valve Replacement

R.R. Makkin, Y.H. Thourani, M.J. Mack, S.K. Kodali, S. Kapadia, J.G. Webb, S.-H. Yoon, A. Trento, L.G. Svensson, H.C. Hermann, W.Y. Szeto, D.C. Miller, L. Saller, D.J. Cohen, T.M. Dewey, V. Babaliaros, M.R. Williams, D.J. Kreialkes, A. Zajarias, K.L. Gresson, B.K. Whiserant, R.W. Hodson, D.L. Brown, W.F. Fason, M.J. Riasso, P. Pibarot, R.T. Hahn, W.A. Jaber, E. Rogers, K. Xu, J. Wheeler, M.C. Alu, C.R. Smith, and M.B. Leon, for the PARTINEZ in twentsignators*

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

MAY 2, 2019

VOL. 380 NO. 18

Transcatheter Aortic-Valve Replacement with a Balloon-Expandable Valve in Low-Risk Patients

M.J., Mack, M.B., Leon, V.H., Thourani, R. Makkar, S.K. Kodali, M. Russo, S.R. Kapadia, S.C. Malaisrie, D.J. Cohen P. Pibarot, J., Leipuic, R.T. Hahn, P. Blanke, M.R. Williams, J.M. McGabe, D.L. Brown, V. Babilairos, S. Goldman W.Y. Szeto, P. Genereuc, A. Pershad, S.J. Pocock, M.C. Alu, J.G. Webb, and C.R. Smith, for the PARTNER S Investigators* The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Surgical or Transcatheter Aortic-Valve Replacement in Intermediate-Risk Patients

M.J. Reardon, N.M. Van Mieghem, J.J. Popma, N.S. Kleiman, L. Sondergaard, M. Muritaz, D.H. Adams, G.M. Deeb, B. Maini, H. Gada, S. Chetcul, T. Gleason, J. Heiser, R. Lange, W. Merhi, J.K. Oh, P.S. Olsen, N. Piazza, M. Williams, S. Windecker, S.J. Yakubov, E. Grube, R. Makiar, J.S. Lee, J. Conte, E. Vang, H. Nguyen, Y. Chang, A.S. Mugglin, P.W.J.C. Serruys, and A.P. Kappetein, for the SURTAVI Investigators*

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Anticoagulation with or without Clopidogrel after Transcatheter Aortic-Valve Implantation

V.J. Nijenhuis, J. Brouwer, R. Delewi, R.S. Hermanides, W. Holvoet, C.L.F. Dubois P. Frambach, B. De Bruyne, G.K. van Houwelingen, J.A.S. Van Der Heyden, P. TousSek, F. van der Kleyl, a Buysschaert, C. E. Schoblorgh, B. Ferdinande, P. van der Harst, J. Roosen, J. Peper, F.W.F. Thielen, L. Veenstra, D.R.P.P. Chan Pin Yin, M.J. Swaans, B.J.W.M. Rensing, A.W.J. van 't Hof, L. Timmers, J.C. Kelder, P.R. Stella, J. Bean, and J.M. ten Berg The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

A Controlled Trial of Rivaroxaban after Transcatheter Aortic-Valve Replacement

G.D. Dangas, J.G.P. Tijssen, J. Wöhrle, L. Søndergaard, M. Gilard, H. Möllmann, R.R. Makkar, H.C. Herrmann, G. Giustino, S. Baldus, O. De Backer, A.H.C. Guimaries, L. Gullestad, A. Kini, D. von Lewinski, M. Made, R. Moreno, U. Schäfer, J. Seeger, D. Tchetché, K. Thomitzek, M. Valgimigli, P. Vranckx, R.C. Welsh, P. Wildgoose, A.A. Volkl, A. Zazula, R.G.M. van Amsterdam, R. Mehran, and S. Windecker, for the GAULLEO Investigators*

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1

TOBER 6, 2022

VOL. 387 NO. 14

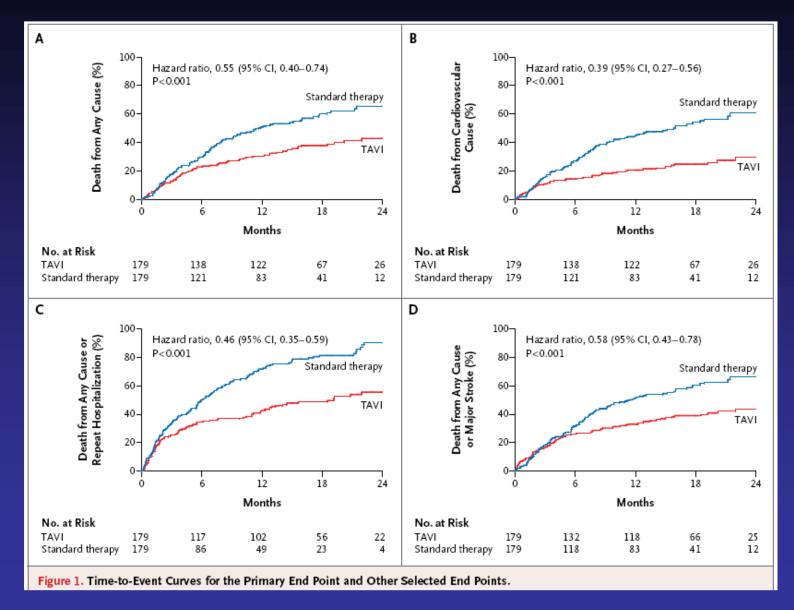
Cerebral Embolic Protection during Transcatheter Aortic-Valve Replacement

Samir III. Kapadia, M.D., Esi Makkar, M.D., Marint Leen, M.D., Mohamed Abdid Wahab, M.D., Thomas Waggener, O.D., Steffen Massage, M.D., Wolfgang Robinstare, M.D., Pich, J.S., Samuel Horn, M.D., Lart Sondergazed, M.D., Juhana Karha, M.D., Robert Goeley, M.B., II.S., Ph.D., Lowell Safeti, M.D., Lart Sondergazed, M.D., Juhana Karha, M.D., Robert Goeley, M.B., II.S., Ph.D., Isonleed Koddi, M.D., Lart Safeti, M.D., Samuel Marint, M.D., Samuel, Barnes, M.D., Janka Report, M.D., Saladed Koddi, M.D., Rodega Modelo, M.D., Ph.D., Dominici, Allocca, M.D., Lart T. Metredith, M.D., Ph.D., and Arel Linke, M.D., for the PROTICTED TANK Trensitions of the Computer Space of the Protice of the Protic





Natural history of medically treated severe AS







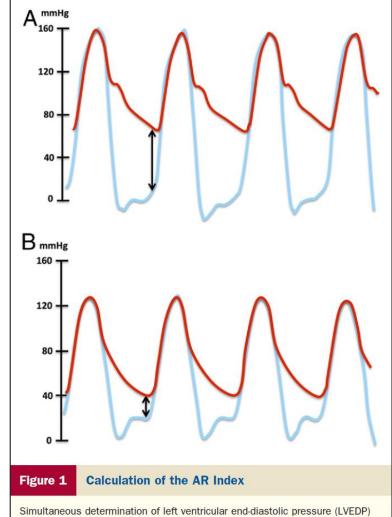
CLINICAL RESEARCH

Bonn, Germany

Valvula

Aortic Regurgitation Index Defines Severity of Peri-Prosthetic Regurgitation and Predicts Outcome in Patients After Transcatheter Aortic Valve Implantation

Jan-Malte Sinning, MD, Christoph Hammerstingl, MD, Mariuca Vasa-Nicotera, MD, Viktoria Adenauer, MD, Sisa Josefina Lema Cachiguango, MD, Anne-Cathérine Schee Sven Hausen, MD, Alexander Sedaghat, MD, Alexander Ghanem, MD, Cornelius Mü Eberhard Grube, MD, Georg Nickenig, MD, Nikos Werner, MD



Simultaneous determination of left ventricular end-diastolic pressure (LVEDP) (blue line) and diastolic blood pressure (DBP) in the aorta (red line) in a patient without peri-prosthetic aortic regurgitation (periAR) (A) and in a patient with moderate periAR (B) for the calculation of the aortic regurgitation (AR) index: ([DBP - LVEDP]/SBP) \times 100. (A) AR index = ([65 - 10]/160) \times 100 = 34.4. (B) AR index = ([40 - 20]/130) \times 100 = 15.4.





High degree AV block requiring PPM

- PARTNER (Sapien) 2y
 - TAVI 7.2%
 - SAVR 6.4%
- France Registry 1y
 - Sapien 11.5%
 - CoreValve 24.2%
- CoreValve US randomized trial 1y
 - TAVI 22.3%
 - **SAVR** 11.3%

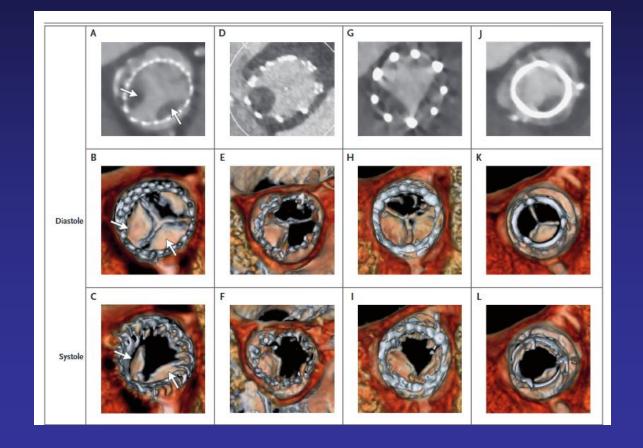




ORIGINAL ARTICLE

Possible Subclinical Leaflet Thrombosis in Bioprosthetic Aortic Valves

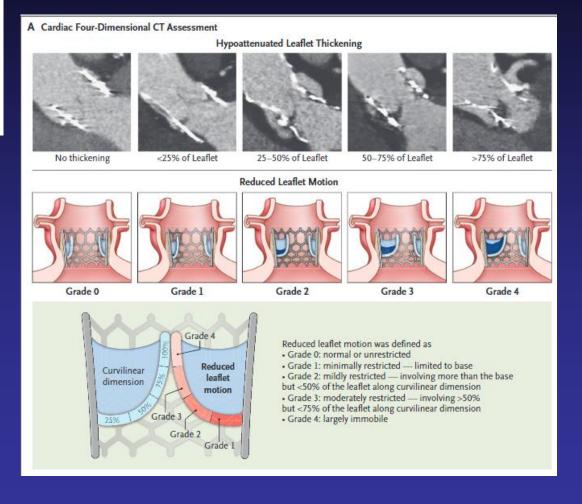
R.R. Makkar, G. Fontana, H. Jilaihawi, T. Chakravarty, K.F. Kofoed, O. De Backer, F.M. Asch, C.E. Ruiz, N.T. Olsen, A. Trento, J. Friedman, D. Berman, W. Cheng, M. Kashif, V. Jelnin, C.A. Kliger, H. Guo, A.D. Pichard, N.J. Weissman, S. Kapadia, E. Manasse, D.L. Bhatt, M.B. Leon, and L. Søndergaard



ORIGINAL ARTICLE

Reduced Leaflet Motion after Transcatheter Aortic-Valve Replacement

Ole De Backer, M.D., Ph.D., George D. Dangas, M.D., Hasan Jilaihawi, M.D., Jonathon A. Leipsic, M.D., Christian J. Terkelsen, M.D., D.M.Sc., Ph.D., Raj Makkar, M.D., Annapoorna S. Kini, M.D., Karsten T. Veien, M.D., Mohamed Abdel-Wahab, M.D., Ph.D., Won-Keun Kim, M.D., Prakash Balan, M.D., Nicolas Van Mieghem, M.D., Ph.D., Ole N. Mathiassen, M.D., Ph.D., Raban V. Jeger, M.D., Martin Arnold, M.D., Roxana Mehran, M.D., Ana H.C. Guimarães, Ph.D., Bjarne L. Nørgaard, M.D., Ph.D., Klaus F. Kofoed, M.D., D.M.Sc., Philipp Blanke, M.D., Stephan Windecker, M.D., and Lars Søndergaard, M.D., D.M.Sc., for the GALILEO-4D Investigators*

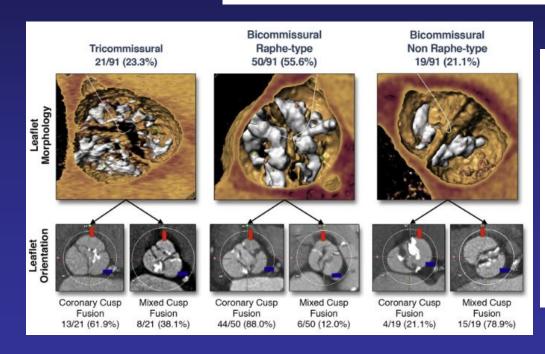


A Bicuspid Aortic Valve Imaging Classification for the TAVR Era





Hasan Jilaihawi, MD,^a Mao Chen, MD,^b John Webb, MD,^c Dominique Himbert, MD,^d Carlos E. Ruiz, MD,^e
Josep Rodés-Cabau, MD,^f Gregor Pache, MD,^g Antonio Colombo, MD,^h Georg Nickenig, MD,ⁱ Michael Lee, MD,ⁱ
Corrado Tamburino, MD,^k Horst Sievert, MD,¹ Yigal Abramowitz, MD,^m Giuseppe Tarantini, MD,ⁿ Faisal Alqoofi, MD,^o
Tarun Chakravarty, MD,^m Mohammad Kashif, MD,^m Nobuyuki Takahashi, MD,^m Yoshio Kazuno, MD,^m
Yoshio Maeno, MD,^m Hiroyuki Kawamori, MD,^m Alaide Chieffo, MD,^h Philipp Blanke, MD,^{c,g} Danny Dvir, MD,^c
Henrique Barbosa Ribeiro, MD,^f Yuan Feng, MD,^b Zhen-Gang Zhao, MD,^b Jan-Malte Sinning, MD,ⁱ
Chad Kliger, MD,^e Gennaro Giustino, MD,^h Basia Pajerski, MD,^c Sebastiano Imme, MD,^k Eberhard Grube, MD,ⁱ
Jonathon Leipsic, MD,^c Alec Vahanian, MD,^d Iassen Michev, MD,^h Vladimir Jelnin, MD,^e Azeem Latib, MD,^h
Wen Cheng, MD,^m Raj Makkar, MD^m



Commonly used terms		quadricuspid	tricuspid	bicuspid		
Scheme of morphological appearance						
func- tional charac- teristics	No of cusps	4	3	2	2	2
morpho- logical charac- teristics	No of raphes	0	0	0	1	2
	No of cusps	4	3	purely bicuspid*	potentially tricuspid*	
				2	3 anlagen, (2 under- and 1 fully developed)	3 anlagen, (2 under- and 1 fully developed)
	Size of cusps	non-equal	equal	equal	non-equal	non-equal
	No of commissures	4	3	2	1 under- and 2 fully developed	2 under- and 1 fully developed



Randomized Mitral Studies

The NEW ENGLAND JOURNAL of MEDICINE

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DECEMBER 13, 2018

VOL. 379 NO. 2

Percutaneous Repair or Medical Treatment for Secondary Mitral Regurgitation

J.-F. Obadia, D. Messika-Zeitoun, G. Leurent, B. Iung, G. Bonnet, N. Piriou, T. Lefèvre, C. Piot, F. Rouleau, D. Carrié, M. Nejjari, P. Ohlmann, F. Leclercq, C. Saint Etienne, E. Teiger, L. Leroux, N. Karam, N. Michel, M. Gilard, E. Donal, J.-N. Trochu, B. Cormier, X. Armoiry, F. Boutitie, D. Maucort-Boulch, C. Barnel, G. Sarnson, P. Guerin, A. Vahanian, and N. Mewton, for the MITRA-FR Investigators*

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Transcatheter Mitral-Valve Repair in Patients with Heart Failure

G.W. Stone, J.A. Lindenfeld, W.T. Abraham, S. Kar, D.S. Lim, J.M. Mishell,
 B. Whisenant, P.A. Grayburn, M. Rinaldi, S.R. Kapadia, V. Rajagopal,
 I.J. Sarembock, A. Brieke, S.O. Marx, D.J. Cohen, N.J. Weissman,
 and M.J. Mack, for the COAPT Investigators*

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

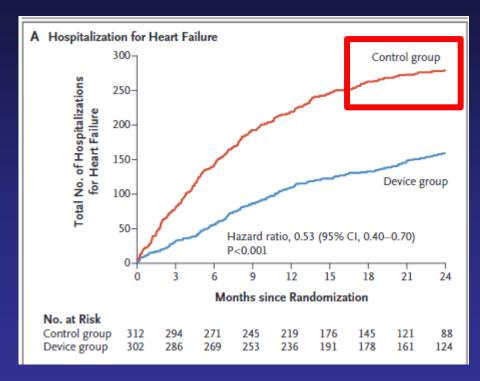
Concomitant Tricuspid Repair in Patients with Degenerative Mitral Regurgitation

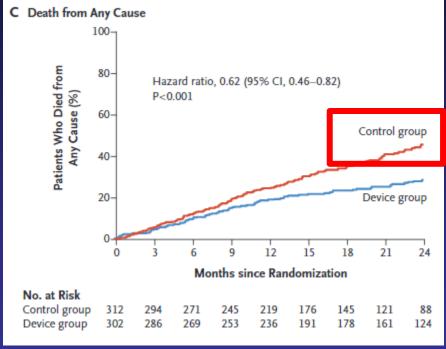
J.S. Gammie, M.W.A. Chu, V. Falk, J.R. Overbey, A.J. Moskowitz, M. Gillinov, M.J. Mack, P. Voisine, M. Krane, B. Yerokun, M.E. Bowdish, L. Conradi, S.F. Bolling, M.A. Miller, W.C. Taddei-Peters, N.O. Jeffries, M.K. Parides, R. Weisel, M. Jessup, E.A. Rose, J.C. Mullen, S. Raymond, E.G. Moquete, K. O'Sullivan, M.E. Marks, A. Iribarne, F. Beyersdorf, M.A. Borger, A. Geirsson, E. Bagiella, J. Hung, A.C. Gelijns, P.T. O'Gara, and G. Ailawadi, for the CTSN Investigators*





Faith of Untreated Severe MR







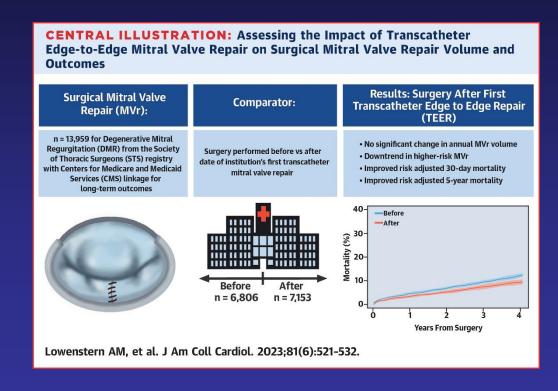


Journal of the American College of Cardiology

JACC Journals , JACC , Archives , Vol. 81 No. 6

Impact of Transcatheter Mitral Valve Repair Availability on Volume and Outcomes of Surgical Repair

GET ACCESS



OR

30d mortality=0.73 (0.54-0.99)

5y mortality=0.75 (0.66-0.86)



תודה רבה כנס מוצלח





