

# **CARDIOVASCULAR RESEARCH PROVE Journal**

## **“CVREP” Journal**

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The **CARDIOVASCULAR RESEARCH PROVE Journal “CVREP”** is the official Journal of **CardioAlex Research, Education Prevention foundation**. It is a peer-reviewed journal, engaged in publishing high quality material on all aspects of Cardiovascular Medicine. It includes updates on cardiology, information to junior doctors, review articles, abstracts, articles related to research findings and technical evaluations. It also provides a forum for the exchange of information in all fields of cardiology.

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# CARDIOVASCULAR RESEARCH PROVE JOURNAL (CVREP)

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SECTION 1: ABSTRACTS  
PRESENTED @  
CARDIOALEX.18

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# Cardiac Functional changes after bariatric surgery at KAMC

Fatma Aboul-Enein, Aly Almontashery, Hajar Halawani, Salman Alamri, Sumayah Fallatah, Shahad Binafeef, Julnar Alfahmi

## ABSTRACT

### BACKGROUND

Bariatric surgery is an effective way for long-term weight loss success. Recent studies have found that weight loss is significantly associated with improved metabolic parameters in addition to overall decrease in cardiovascular morbidity and mortality. Conversely, some studies have observed the development of unexplained sinus bradycardia after significant weight loss.

We conducted a retrospective study to evaluate the electrical and functional cardiac changes on morbidly obese patients who underwent bariatric surgery and to demonstrate the incidence of arrhythmia.

### OBJECTIVE

### METHODS

A retrospective chart review of all patients who underwent bariatric surgery at King Abdullah Medical City (KAMC) to evaluate changes in echocardiographs and ECG. Myocardial performance index (MPI), automated left ventricular ejection fraction (EF) using QLAB, left ventricular end diastolic volume (LVEDV), global longitudinal strain (GLS), and pericardial fat, heart rate, RP, QRS, QT, QTc, BMI, total cholesterol, LDL, HDL, triglycerides and glycated hemoglobin (HgA1c) were

compared before and after at least one year postoperatively.

### RESULTS

800 consecutive patients were identified, 99 had ECG and Echo e and post operatively.

There was significant decrease in BMI, 49 vs 33,  $p < 0.0001$  total cholesterol 198 vs 185  $p < 0.001$  Triglyceride 134 vs 92;  $P < 0.001$ , HgA1c 6.5 vs 5.6 ;  $P < 0.001$ , heart rate 78 vs 70;  $P < 0.001$ .

Pericardial fat improved from 0.64 to 0.42  $P < 0.05$ ; LVEDV decreased from 112.3 to 93.7;  $P < 0.05$ . MPI improved from 0.64 to 0.47  $P = 0.007$  EF increased from 48 % to 61%  $P < 0.005$  and GLS showed tendency for improved from 17.2% to 21.3%  $P > 0.05$ .

### CONCLUSION

Bariatric surgery offers significant improvement in cardiac risk factors. Furthermore, our data shows significant improvement in cardiac structure and function. These findings underscore the role of bariatric surgery on heart health over and above weight loss.

### KEYWORDS

Bariatric surgery; Cardiac function; Obesity; arrhythmia; bradycardia.

# Incidence of Vascular complications among Egyptian population during trans femoral Aortic Valve Implantation

Nasr M. Elsoudi\*, Yousef A Elsayed, Mokarrab M. Ibrahim, Saifelyazel I. Shawky, Aref M, Mohamed Moustafa,

## ABSTRACT

### BACKGROUND

#### OBJECTIVE

To describe the incidence of vascular complications in trans femoral TAVI patients, based on the VARC criteria, and to identify predictors of these serious events among the Egyptian population.

### METHODS

We performed a prospective cohort study of 30 consecutive transfemoral TAVI recipients. Vascular complications were defined by the Valve Academic Research Consortium (VARC) criteria.

### RESULTS

In our cohort of elderly patients ( $74.17 \pm 8.828$  years), the logistic Euro Score was  $25.8\% \pm 11.9\%$ . The Edwards valve was used in 7 cases, the Core Valve in 20, and Evolute R valve in 3 cases. Ejection fraction assessed by ECHO was  $58.27 \pm 10.540$ . The minimal Rt femoral artery diameter was  $10.0 \pm 1.9$

mm. Tortuosity of Rt femoral artery was observed in 5 cases. Vascular complications were observed in 7 patients (23.3 %). The other 23 (76.7 %) patients had no post-procedural complication., (VARC major: 2 (6.7 %), minor: 5 (16.7 %)). There was significant difference between low Ejection fraction, minimal luminal diameter, vascular tortuosity, and incidence of vascular complications. n.

### CONCLUSION

Vascular complications in trans femoral TAVI remain a significant issue despite improving center experience and smaller delivery systems. Vascular complications defined by VARC can be predicted by information from baseline

and Procedural Characteristics of the patients. so good selection of patient may improve TAVI-related outcomes.

### KEYWORDS

transcatheter aortic valve implantation

## Left Atrial size and stiffness as predictor of prevalence and incidence of Atrial Fibrillation in Patients with Rheumatic mitral stenosis

Ahmed Taha Hussein

## ABSTRACT

### BACKGROUND

Stiff left atrial (LA) is independent of LA diameter and associated with low LA compliance. We investigated the physiological and clinical implications of LA compliance among patients with Rheumatic tight Mitral stenosis either in sinus rhythm or in atrial fibrillation (AF).

### OBJECTIVE

This retrospective cohort study was aimed at assessing the demographic & clinical characteristics, immediate and short-term outcome of VEP undergoing PCI.

### PATIENTS AND METHODS

Among 135 consecutive patients with tight rheumatic mitral stenosis, we included 100 patients with sinus rhythm (81.7% female,  $25.7 \pm 10.6$  years) and 35 patients with AF (70.2% female,  $27.3 \pm 12.4$  years). We measured LA compliance, LA diameter and trans-valvular pressure gradient by Doppler echocardiography and compared the values with clinical parameters and the AF prevalence. Results: AF patients had lower compliance compared to sinus rhythm patients ( $3.1 \pm 0.5$  Vs  $5.6 \pm 0.7$  ml/mmHg,  $P=0.009$ ) while there was no significant difference in their LA diameter ( $49.6 \pm 1.6$  Vs  $48.3 \pm 1.3$ ,  $P=0.14$ ) and also insignificant difference in maximum trans-



valvular pressure gradient ( $17.1 \pm 2.9$  Vs  $16.2 \pm 2.1$  mmHg,  $P=0.21$ ). During a mean follow-up of  $32 \pm 17$  months, low LA compliance was independently associated with incidence of AF (HR:4.2; 95%CI:3.077–6.503;  $p = 0.031$ .)]

## CONCLUSION

Low LA compliance, as estimated non-invasively by an Doppler echocardiography was independently associated with higher clinical prevalence of AF and predicts early incidence in patients with Rheumatic Mitral Stenosis.

# Pulmonary vein pulsatility index (PVPI) in fetuses of diabetic mothers: Relationship to intermediate and longterm diabetic control

Habeeb NM, Youssef OI and Hendawy S

## ABSTRACT

### BACKGROUND

Consequences of uncontrolled diabetes during pregnancy are severe for both mothers and fetuses. Cardiovascular abnormalities (CVS) abnormalities are among the most common in infants of diabetic mothers. Fetal echocardiography has increased knowledge about CVS changes in prenatal period.

### METHODS

This cross sectional study was conducted on 42 pregnant mothers, 30 diabetics (gp1) and 12 normal gestational age matched as control (gp2) following up at obstetric clinic Ain Shams university hospital, their gestational ages ranged from 22 to 28 wks with a mean of  $24.4 \pm 1.6$  wks. studied groups were subjected to history taking, clinical examination, laboratory investigations (CBC, HbA1C, serum fructosamine level (colorimetric assay) for long and intermediate term assessment of blood glucose control, fetal echocardiography using standard views (four chamber, five chamber, three vessels and tracheal views) (vivi7, GE, Horten, Norway), fetal TDI at basal part of interventricular septum, mitral annulus and pulsed wave Doppler at junction of upper pulmonary vein with left atrium for pulmonary vein pulsatility index (PVPI) assessment.

### RESULTS

no statistically sig difference was found between

gp1 and gp2 and between uncontrolled diabetic (gp1b (HbA1c more than 7) gp1d (serum fructosamine more than  $285 \mu\text{mol/l}$ ) as regards maternal age and number of births (0.54, 0.28, 0.27 and 0.48 respectively).

A statistically significant increase was found in PVPI in gp1 than gp2 ( $p=0.026$ ), between uncontrolled diabetic mothers {gp1b than 1a ( $p$  less than 0.01) and gp1d than gp1c ( $p$  less than 0.001)}. No significant difference was found between patients and controls ( $p=0.04$ ) between gp1b and gp1c as regards interventricular septal thickness (IVS) thickness (0.02 and 0.03 respectively, no sign diff was found between gp1 and gp2, gp1a and 1b and gp1c and gp1d as regards septal Em, Am, Em/Am. Lateral Em, Am, Em/Am ( $p=0.77, 0.62, 0.16, 0.69, 0.7, 0.10$  and 0.13). A significant positive correlation was found between IVS thickness and age in gp1 ( $p$  less than 0.01).

### CONCLUSION

Fetuses of diabetic mothers showed increased PVPI than control. This increase was significantly marked in fetuses from intermediate and long term blood glucose uncontrolled diabetic mothers than controlled ones denoting ventricular incompliance and some degree of diastolic dysfunction in those fetuses that could not be simply explained by IVS hypertrophy as this was not the case in current study and warrants further research.

# Provocation of left ventricular outflow tract obstruction using nitrate inhalation in Hypertrophic cardiomyopathy: Relation to electromechanical delay

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## ABSTRACT

### BACKGROUND

Left ventricular outflow tract obstruction (LVOT) is an independent predictor of adverse outcome in hypertrophic cardiomyopathy (HCM). It is of major importance that the provocation modalities used are validated against each other.

### OBJECTIVE

To define the magnitude of LVOT gradients provocation during both isosorbide dinitrate (ISDN) inhalation and treadmill exercise in non-obstructive HCM and analyze the correlation to the electromechanical delay using speckle tracking.

### METHODS

We studied 39 HCMpts (64% males, mean age 38 ± 13 years) regional LV longitudinal strain and electromechanical delay (TTP) was analyzed at rest using speckle tracking. LVOT gradient was measured at rest and after ISDN then patients underwent a treadmill exercise echocardiography (EE) and LVOT gradient was measured at peak exercise.

### RESULTS

The maximum effect of ISDN on LVOT gradient was

obtained at 5 minutes, it increased to a significant level in 12 (31%) patients, and in 14 (36%) patients using EE, with 85.6% sensitivity & 100% specificity. Patients with latent obstruction had larger left atrial volume and lower E/A ratio compared to the non-obstructive group (p < 0.01). LVOTG using ISDN was significantly correlated with that using EE (p < 0.0001), resting LVOTG (p < 0.0001), SAM (p < 0.0001), EF% (p = 0.02) and regional electromechanical delay but not related to global LV longitudinal strain. Using multivariate regression, resting LVOTG (p = 0.006) & TTP mid septum (p = 0.01) were found to be independent predictors of latent LVOT obstruction using ISDN.

### CONCLUSION

There is a comparable diagnostic value of nitrate inhalation to exercise testing in provocation of LVOT obstruction in HCM. Latent obstruction is predominantly dependent on regional electromechanical delay.

### KEYWORDS

LVOT obstruction provocation, electromechanical delay, hypertrophic cardiomyopathy

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# Short Term Outcome Of Thoracic Endovascular Aortic Repair In Patients With Thoracic Aortic Diseases

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## ABSTRACT

### BACKGROUND

Open surgical repair for thoracic aortic diseases is associated with a high perioperative mortality and morbidity. Most of type B aortic dissections are uncomplicated and are medically treated which carries a high mortality rate. Thoracic endovascular aortic repair is the first-line therapy for isolated aneurysms of the descending aorta and complicated type B aortic dissection.

### OBJECTIVE

To test the safety of early thoracic endovascular aortic repair in patients with uncomplicated type B aortic dissection and patients with thoracic aortic aneurysms.

### METHODS

A total of 30 patients (24 men and 6 females; mean age  $59 \pm 8$  years) with uncomplicated type B aortic dissection and descending thoracic aortic aneurysm who underwent endovascular aortic repair in National Heart Institute and Cairo University hospitals were followed up. Clinical follow-up data was done at one, three and twelve months thereafter. Clinical follow-up events included death, neurological deficits, symptoms of chronic mal-perfusion syndrome and secondary intervention. Multi-slice computed tomography was performed at three and six months

after intervention.

### RESULTS

Of the 30 patients, 24 patients had aortic dissection, and 6 patients had an aortic aneurysm. 7 patients underwent hybrid technique and the rest underwent the basic endovascular technique in whom success rate was 100%. Two patients developed type Ia endoleak however both improved after short term follow up. The total mortality rate was 10% throughout the follow-up. Both death and endoleak occurred in subacute and chronic cases, while using TEVAR in acute AD and aneurysm showed no side effects. Early thoracic endovascular aortic repair showed better results and less complications.

### CONCLUSION

Along with medical treatment, early thoracic endovascular aortic repair should be considered in uncomplicated type B aortic dissections and thoracic

**KEYWORDS** TEVAR, Thoracic Aortic Diseases, Aortic aneurysm

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# Selective use of thrombus aspiration in ST segment elevation myocardial infarction guided by the thr

Ahmed Yehia Khalil

## ABSTRACT

### BACKGROUND

Thrombus aspiration (TA) has the potential for reducing distal embolization and improving microvascular perfusion. However, according to the results from the latest trials, routine TA failed to establish better clinical outcomes and was associated with significantly increased risk of stroke. Hence routine use of thrombus aspiration has been downgraded to class III according to the latest STEMI guidelines. Our aim was to study the impact of selective use of thrombus aspiration guided by the thrombus burden on both procedural and clinical outcomes at 30 days, 6 and 18 months of follow up.

### METHODS

132 Consecutive STEMI patients undergoing PCI were assigned to different treatment strategies guided by the thrombus grade (TG). 65 Patients with large thrombus burden (LTB) TIMI thrombus grade ( $\geq 4$ ) were assigned to manual thrombus aspiration + PCI  $\pm$  glycoprotein (Gp) IIb/IIIa inhibitors and 67 small thrombus burden patients (TG  $\leq 3$ ) to PCI alone  $\pm$  Gp IIb/III inhibitors. Baseline demographic, Clinical and laboratory characteristics as well procedural data of the patients were recorded.

### RESULTS

Regarding baseline characteristics, LTB group showed significantly longer both chest pain to first medical contact ( $P=0.02$ ) and total ischemic time ( $P=0.04$ ), more anterior MI (59% vs 39%,  $P=0.024$ ) and higher white cell count ( $P=0.01$ ) as compared to STB group. Long chest pain to ER was the strongest independent predictor for LTB presentation. In terms of procedural characteristics, LTB presented significantly with higher initial TIMI 0 flow (89% vs 39%,  $P < 0.001$ ) and LAD as the culprit vessel (59% vs 39%,  $P=0.024$ ). Direct stenting was performed more frequently in TA group (63% vs 22%,  $P < 0.001$ ) with less need for predilatation (29% vs 78%,

$P < 0.001$ ). TA group demonstrated comparable success rate to PCI alone group regarding improving epicardial and myocardial reperfusion demonstrated by final TIMI III (80% vs 85%,  $P=0.58$ ) flow, myocardial blush grade (MBG)  $\geq 2$  (81.5% vs 85%,  $P=0.59$ ) and ST resolution  $\geq 70\%$  (71% vs 75%,  $P=0.62$ ).

Post PCI ejection fraction was insignificantly lower in TA group (50% vs 53.5%,  $P=0.09$ ). Composite major adverse cardiac events (MACE) including cardiac mortality, target vessel revascularisation (TVR), recurrent MI and stroke or TIA showed insignificant difference between TA and PCI alone groups at 30 days (4.6% vs 1%,  $P=0.36$ ), 6 months (4.6% vs 3%,  $P=0.68$ ) and 18 months (9.2% vs 7.5%,  $P=0.76$ ). Non-significant lower cardiac mortality (0% vs 3%,  $P=0.5$ ), lower reinfarction (3% vs 6%,  $P=0.7$ ), and similar TVR (3% both,  $P=1.00$ ) and insignificant increase in stroke or TIA (4.6% vs 1.5%,  $P=0.36$ ) were observed in TA group.

elective manual thrombus aspiration as an adjunct to PPCI in LTB achieved comparable success rate in restoration of myocardial perfusion with low incidence of complications and long term clinical outcomes to that of PPCI alone in STB despite differences in thrombus load and patient risk stratification. Also, the beneficial impact of thrombus aspiration on composite MACE in the long term follow up was counterbalanced by the increased risk of stroke. We recommend larger multicentre trials powered enough to detect benefits of selective TA on procedural and clinical outcomes.

# Trans Radial Percutaneous Coronary Intervention in Very Elderly Patients (Age 80 years or above) with Acute Coronary Syndrome: Immediate and Short term Outcome, Single Centre Experience.

Ahmed Deiab MD, VIPIN THOMACHAN DM

## ABSTRACT

### BACKGROUND

There are very few data about Percutaneous Coronary Intervention (PCI) in very elderly patients (VEP), especially through the Trans Radial (TR) approach.

### OBJECTIVE

This retrospective cohort study was aimed at assessing the demographic & clinical characteristics, immediate and short-term outcome of VEP undergoing PCI.

### METHODS

Retrospective analysis of Electronic Medical Records (CERNER) of patients admitted in our hospital between 2014 and 2016, who underwent PCI. The primary outcome was all cause mortality at 30 days and 6 months.

### RESULTS

60 VEP (mean age  $85.53 \pm 4.6$  year) underwent PCI at our institute (male 46.7 %; female 53.3 %), between 2014 and 2016. Of these, 41 patients (68.3%) had PCI for NSTEMI-ACS and 16 patients (26.7%) for STEMI. 27 patients (65.9%) with NSTEMI-ACS and 14 patients (87.5%) with STEMI underwent PCI through TR route. Cross over to TF (trans-femoral) required in 2 patients (4.4%).

Total one month and 6 months mortality rates were 10% and 15% respectively. One month mortality rate in TR and TF groups were 7.3% and 18.8% respectively. Mortality rate at 6 months were 7.3% (3 out of 41 patients) in TR group and 37.5% (6 of 16 patients) in TF group ( $p=0.00496$ ).

6 months mortality of STEMI patients in TR and TF

groups were 21.4% (3 out of 14 patients) and 100% (2 out of 2) respectively ( $p=0.0251$ ). Mortality of NSTEMI patients in TR and TF groups were 0% (none of 27 patients) and 28.6% (4 out of 14 patients) respectively ( $p=0.0035$ ).

Co-morbidities and multi-vessel disease (MVD) were more prevalent in TF group compared to TR group, but these were not statically significant except past history of revascularization (past revascularization 31.2% in TF and 14.3% in TR group,  $p=0.0455$ ; DM 62.5% and 58.5%  $p=0.078716$ ; CVD 68.7% and 51.2%  $p=0.23014$ ; CKD 37.5% and 36.5%  $p=0.95216$ ; AKI 43.7% and 21.9%  $p=0.09894$ ; MVD 56.3% and 39%  $p=0.238$ ).

6 patients presented in cardiogenic shock; of these 4 had PCI through TF route. Hospital mortality in shock patients were 50% (1 out of 2 patients) in TR and 50% (2 out of 4) in TF groups respectively.

The present study has several limitations. This study was based on a single centre experience and the number of study patients were small, especially STEMI patients who had trans-femoral PCI. More unstable patients had trans-femoral PCI and study follow up was for short duration.

### CONCLUSION

This study shows that common presentation of ACS in very elderly patient is NSTEMI-ACS and majority of patients are women.

Mortality is very high in VEP compared with younger patients. In both STEMI and NSTEMI-ACS, advanced age is independently associated with high mortality.

PCI is a safe treatment option for ACS in VEP and Trans Radial PCI appears to be a safer treatment option compared with trans-femoral PCI.

# Transradial cardiac interventions in Yemeni patients , A local Experience from Hadhramout

T. Bafadhel\* , M. Alfalag , O. Ben-zihdan , A,Alzubidi , M. Ba-moamen & A-N Munibari

## ABSTRACT

### INTRODUCTION

Accessing the coronary arteries from the upper limbs is not a recent concept. The first cardiac angiography was performed utilizing the brachial vein in 1929.

Although the first transradial coronary stenting was 1993. Nowadays this route is gaining popularity in the field of interventional cardiology.

Coronary Catheterization in Yemen is performed mostly via transfemoral approach. Nabdh Al-hayat cardiac centre located in Hadhramout , Yemen was the first cardiac charity centre in the country and mostly using the transradial approach (TR) for percutaneous coronary intervention (PCI)

### METHODS

Assess the cases done during period between half of April

2018 till end of November 2017 referred for cardiac catheterization

### RESULTS:

A total of 1270 cardiac catheterization cases were done , 932 of them was diagnostic procedure and 338 was PCI . A some of 1149 done via TR (90.5%) and 121 cases done via femoral approach (9.5%). 851 cases done via radial approach were diagnostic cardiac catheterization and 289 cases was coronary intervention as shown in tables below. Mean age were 57.9 Years (SD  $\pm$ 11.1086) , Males were predominant (78.4% ) while patient aged 50 years and younger represents 27.2% of all the cases while patients aged 70 years and older were 12.6% .

### Hematomas

| Month                   | Total cases | Diagnostic | Coronary interventional |
|-------------------------|-------------|------------|-------------------------|
| <a href="#">4/2017</a>  | 72          | 68         | 4                       |
| <a href="#">5/2017</a>  | 141         | 118        | 23                      |
| <a href="#">6/2017</a>  | 92          | 55         | 37                      |
| <a href="#">7/2017</a>  | 230         | 180        | 50                      |
| <a href="#">8/2017</a>  | 162         | 120        | 42                      |
| <a href="#">9/2017</a>  | 166         | 110        | 56                      |
| <a href="#">10/2017</a> | 207         | 149        | 58                      |
| <a href="#">11/2017</a> | 200         | 132        | 68                      |
| <b>TOTAL</b>            | <b>1270</b> | <b>932</b> | <b>338</b>              |

| Month                   | Total cases | Radial approach    | Femoral approach |
|-------------------------|-------------|--------------------|------------------|
| <a href="#">4/2017</a>  | 72          | 68 (94.4%)         | 4 (5.6%)         |
| <a href="#">5/2017</a>  | 141         | 134 (95%)          | 7 (5%)           |
| <a href="#">6/2017</a>  | 92          | 83 (90.2%)         | 9 (9.8%)         |
| <a href="#">7/2017</a>  | 230         | 220 (95.6%)        | 10 (4.4%)        |
| <a href="#">8/2017</a>  | 162         | 151 (93.2%)        | 11 (6.8%)        |
| <a href="#">9/2017</a>  | 166         | 141(84.9%)         | 25 (15.1%)       |
| <a href="#">10/2017</a> | 207         | 179 (86.5%)        | 28 (13.5%)       |
| <a href="#">11/2017</a> | 200         | 173 (86.5%)        | 27 (13.5%)       |
| <b>TOTAL</b>            | <b>1270</b> | <b>1149(90.5%)</b> | <b>121(9.5%)</b> |

### KEYWORDS

Transradial, hadramout, nabdhal hayat

# value of global longitudinal peak systolic strain derived by 2-d speckle tracking in detection of obstructive coronary artery disease

Mohamed F. Areed *MBBCH*, Mahmoud M. Youssef *MD*, Moheb M. Wadie *MD*

## ABSTRACT

### BACKGROUND

Non-invasive identification of patients with coronary artery disease (CAD) remains a clinical challenge despite the widespread use of imaging and provocative tests and Speckle tracking echocardiography has been validated for assessment of global and regional left ventricular myocardial function which is affected in patients with obstructive CAD

### OBJECTIVE

Early detection of obstructive coronary artery disease using average global longitudinal Peak Systolic strain (GLPS-Avg) derived by 2-D Speckle Tracking.

### PATIENTS AND METHODS

75 patients with chronic stable angina were enrolled in this prospective case control study, (Mean age was  $56.69 \pm 6.96$  y, 35 were males), 42.7 % were diabetic and all patients were assessed by thorough history taking, clinical examination, 12 lead surface ECG, conventional, speckle Echocardiography and coronary angiography in Mansoura specialized medical hospital over a period of 7 months from march 2017 to October 2017

### RESULTS

Statistically significant decrease was found in GLPS-Avg values in patients with obstructive CAD when

compared to patients with normal coronary angiography ( $p < 0.001$ ) and in patients with 3 or more risk factors when compared to patients with one or two risk factors ( $p = 0.014$ ). And when syntax score was increasing among patients with obstructive CAD a significant decrease in median GLPS-Avg values was noted ( $p < 0.001$ ), but when regional systolic strain values were compared to affected coronary arteries no significant difference was found ( $p = 0.844$ ) i.e almost identical correlation between affected segments by speckle tracking and obstructed arteries by coronary angiography.

Multivariate logistic regression analysis showed that GLPS-Avg was found as a predictor for obstructive coronary artery disease in patients with chronic stable angina ( $p = 0.028$  with odds ratio 31.4 and 95% CI (1.85-535))

ROC curves were established and cutoff value was determined for GLPS-Avg as -16 with 89.8% sensitivity and 100% specificity

### CONCLUSION

longitudinal strain derived by speckle tracking can be used as non-invasive simple test for evaluation of patients with chronic stable angina and as a predictor for presence or absence of obstructive CAD

### KEYWORDS

Speckle Tracking – Coronary artery disease – Coronary Angiography.

# Validation of a newly generated CRT-score to predict the response to cardiac resynchronization therapy

Mostafa Nawar, Gehan Magdy, Aly Abo Elhoda, sarah sultan

## ABSTRACT

### BACKGROUND

Cardiac resynchronization therapy (CRT) is an indispensable mode of treatment for the increasing number of patients with severe systolic heart failure. (1) A new CRT-score was recently generated in Alexandria University to predict responders to CRT. (2) The CRT score includes QRS duration  $\geq 150$  ms, LBBB morphology, non-ischemic cardiomyopathy (ICM), sinus rhythm, preserved RV function with TAPSE  $\geq 15$  mm, female gender, the absence of history of renal disease and significant chronic obstructive pulmonary disease (COPD). Each parameter was assigned to a single point except QRS duration  $\geq 150$  ms was assigned to 2 points of maximum 9 points.

### METHODS

The study included 50 consecutive heart failure (HF) patients eligible for CRT implantation with New York Heart Association (NYHA) functional class II or III and LVEF  $\leq 35\%$ . Routine device and clinical follow-up were performed at baseline and at 6 month intervals. Response was defined as combined improvement of NYHA class and reduction in left ventricular end-systolic diameter  $> 15\%$ .

### RESULTS

Fifty patients were included [76% men, mean age  $60.66 \pm 11.56$  years; 96% NYHA class III, 25 patients had ICM, 98% of patients had LBBB, 43 patients had QRS duration  $\geq 150$  msec. Baseline left ventricular ejection fraction (LVEF) was  $27.36 \pm 5.01\%$ ; left ventricular end systolic diameter was  $68.82 \pm 12.39$  mm. CRT was successfully implanted in all patients;

CRT response was achieved in 43 patients (86%), the mean LVEF improved from  $27.3 \pm 5.01$  to  $38.71 \pm 10.91$  ( $P < 0.001$ ), the CRT response rate has been markedly significant according to the CRT-score. Patients with score  $\geq 6$  had response rate of 95.3% vs 4.7% if the score  $< 6$  ( $P = 0.002$ , sensitivity = 95.35 and specificity = 71.43).

### CONCLUSION

The newly generated CRT score is a good predictor to improve the appropriate use of CRT and to increase the CRT response rate. PCI is a safe treatment option for ACS in VEP and Trans Radial PCI appears to be a safer treatment option compared with trans-femoral PCI.



CVREP



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SECTION 2: RESUMES,  
ARTICLES AND TOPICS  
PRESENTED @ CARDIOALEX.18

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CVREP

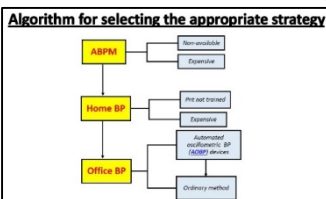
# Appropriate BP measurement for proper management

Ahmed Bendary, MD, Cardiology department, Benha faculty of Medicine



•Blood pressure (BP) can be measured using one of the following three acceptable strategies: Ambulatory blood pressure monitoring (ABPM), home BP monitoring or office-based BP measurements, which may be automated or manual.

•Screening for hypertension is typically performed in the clinician's office. Although these office measurements are recommended to identify patients who might have hypertension, many such individuals will not have hypertension upon further testing (ie, they have white coat hypertension). Our approach to measuring BP for the purposes of diagnosing and confirming hypertension depends in part upon the feasibility of performing ABPM, home BP monitoring, and, if neither ABPM nor home BP monitoring are feasible, whether an automated oscillometric BP (AOBP) device is used in the clinician's office



•We perform ABPM if it is feasible to establish the diagnosis.

•Sometimes, ABPM is not feasible (ie, due to lack of access or expense) in such cases, we perform home BP monitoring if it is feasible.

•If home BP monitoring is not feasible (patient cannot afford a cuff or find a suitably sized cuff), then BP must be measured in the office. However, if office BP is used to confirm the diagnosis of hypertension, multiple measurements on different days are required

-If the office has an AOBP device that can automatically take and average multiple measurements with the patient **alone** in a room, then we use this technique to measure BP.

-Conversely, if no such AOBP device is available, we use routine office BP measurements.

•Patients being managed for previously diagnosed hypertension should monitor their BP at home, if possible. If home BP cannot be monitored, management of the patient can be informed by office measurements (performed using an AOBP device if available).

All home monitors should be checked for accuracy, initially and then at least annually, in the clinician's office, and patients or caregivers should be able to demonstrate the correct technique of BP measurement. When using home monitoring in obese patients, appropriately sized arm cuffs may be unavailable; in these situations, wrist cuffs may be used.

•In general, measurements obtained by ABPM and home BP monitoring are lower than those obtained by routine office measurement by approximately 5 to 10 mmHg. In addition, office readings obtained using an AOBP device

more closely approximate ABPM and home BP readings than standard office measurement.

•If manual office readings are used to diagnose and monitor BP, proper measurement requires attention to all the following: Time of measurement, type of measurement device, cuff size, patient position, cuff placement, technique of measurement, number of measurements.

# Bioabsorbable Scaffolds Fourth Revolution or Failed Revolution: Are we looking at the wrong targets?

Sundeep Mishra



•The prospect of leaving a metallic prosthesis in the body, especially when it is no longer required has always been a matter of concern to both physicians and patients alike. In case of metallic stents for coronary or peripheral interventions this is of particular worry because they don't remain innocuous, rather interfere with vascular remodeling and flow and serve as a nidus for accumulation of platelets (stent thrombosis) as also interfere with future interventions in the area. Bioresorbable scaffolds (BRS) were developed with a view to address some of these philosophical and practical issues particularly that of late stent thrombosis with metallic drug eluting stents (DES) and were purported to represent "Fourth Revolution" in stent technology. The trick was to match physical performance of the metallic stent but at the same time making the scaffold disappear at a variable period of 6 months to 3 years after implantation. The initial results with this technology, in simple lesions with a careful application of technique, seemed equivalent to any metallic stent with the advantage of melting away in due course of time and possible favorable remodeling of artery and a better flow. However, soon problems of late scaffold thrombosis and post-procedural myocardial infarctions started cropping up, the very reasons BRS was developed in the first instance. Thus suddenly medical opinion moved from "Fourth Revolution" to possible "Failed Revolution." This whole fiasco demands explanation and possible learning for future.

•Bioresorbable scaffold (BRS) technology has currently fallen into disrepute because of inordinately high risk of scaffold thrombosis and post-procedure myocardial infarction. Low tensile and radial strengths of polymeric BRS contributing to improper strut embedment have been identified as major correlates of poor outcomes following BRS implantation. Magnesium has a better tensile/radial strength compared with polymeric BRS but it is still far lower than cobalt-chromium. Newer innovations

utilizing alteration in polymer composition and orientation or even newer polymers have focused on attempts to reduce strut thickness but may have little effect on tensile/radial strength of finished product and therefore may not impact the BRS outcome on long run. Currently, newer generation BRS usage may be restricted to suitable low risk younger patients with proper vessel preparation and application of technique.

•If home BP cannot be monitored, management of the patient can be informed by office measurements (performed using an AOBP device if available).

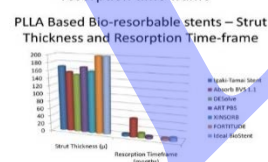
•All home monitors should be checked for accuracy, initially and then at least annually, in the clinician's office, and patients or caregivers should be able to demonstrate the correct technique of BP measurement. When using home monitoring in obese patients, appropriately sized arm cuffs may be unavailable; in these situations, wrist cuffs may be used.

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more loosely approximate ABPM and home BP readings than standard office measurement.

•If annual office readings are used to diagnose and monitor BP, proper measurement requires attention to all the following: Time of measurement, type of measurement device, cuff size, patient position, cuff placement, technique of measurement, number of measurements.

PLLA based BRS – Strut thickness and resorption time-frame



**Bioabsorbable Scaffolds Fourth Revolution or Failed Revolution: Are we looking at the wrong targets?**

Sundeep Mishra  
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India

# Cell based therapies for IHD and heart failure: problems, promises, perspectives and pitfalls

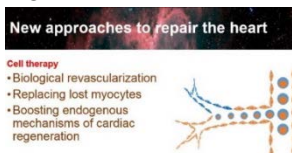
Rosalinda Madonna, MD PhD

“G. D’Annunzio” University of Chieti, Center of Aging and Translational Medicine (CESI-MET)



●Despite improvements in modern cardiovascular therapy, the morbidity and mortality of ischemic heart disease (IHD) and heart failure (HF) remain significant in Europe and worldwide.

Patients with IHD may benefit from therapies that would accelerate natural processes of postnatal collateral vessel formation and/or muscle regeneration. In this seminar, we discuss the use of



cells in the context of heart repair, and the most relevant results and current limitations from clinical trials using cell-based

therapies to treat IHD and HF.

●The lecture will undertake a critical appraisal of where the stem cell field stands and where it appears to be headed, by critically reviewing the current

approaches using stem cell or cell-based therapies to treat IHD and HF.

●We identify and discuss promising potential new therapeutic strategies that include the use of biomaterials and cell-free therapies aimed at increasing the success rates of therapy for IHD and HF.

●The lecture will also discuss promising new strategies for stem cell therapy enhancement that include ex vivo cell-mediated gene therapy, with the aim of increasing the success rates of therapy for IHD and HF.

●The lecture will also discuss promising new strategies for stem cell therapy enhancement that include ex vivo cell-mediated gene therapy, with the aim of increasing the efficacy and outcome of stem cell therapies in the future.

## Coronary artery disease in the young, increasing laboratory testing menu and controversial significance.

Amina Hassab, Clinical Pathology Dept.  
Alexandria Faculty of Medicine

●Coronary artery disease (CAD) is a devastating disease not only affecting the patient physically and emotionally, but it also constitutes a huge burden on the society and economy. It has long been correlated with advanced age, nevertheless it is seen in young adults but in a much less frequent rate. Several factors contribute to the development of the disease, besides the well known culprits (hyperlipidemia, diabetes, smoking and hypertension) genetics play a profound role in the development of CAD in the young.

●Multiple biochemical processes take role in the

formation of coronary artery disease including and not limited to inflammatory response, endothelial function, platelet function, thrombosis, lipid metabolism and homocysteine metabolism. These biochemical events are driven by the genetic makeup of individuals.

●Knowing the derivative genetic variation behind these disorders shall provide deep insight of the pathogenesis of the disease and opens a new avenue for future therapy. Nowadays these genetic tests are quite available and widely used, however, proper selection of patients that would benefit from such

testing is still controversial.

Moreover, mimicking traditional models adopted by guidelines to predict risk of CAD including the aforementioned risk factors and family history, genetic risk for developing CAD is recently introduced.

•Genetic risk scoring tests has been emerging recently with promising results that could be of help particularly in assessing young patients for the risk of

developing CAD. Added to the complexity of coronary artery disease is the epigenetic role for disease pathogenesis which was recently addressed in a large study. Proper laboratory test utilization is mandatory for optimum patients' care and is the most cost effective way of their management. Genetic testing role awaits future incorporation in routine testing on a wider scale.

## Coronary arteriovenous fistula.

### Case presentation

Sherif Arafa, MD, Lecturer of cardiology, Mansoura University



•A 30 years old man complaining of exertional dyspnea (NYHA II) and chest pain with no relevant medical history. Previous Echocardiography was diagnosed as posterior pericardial effusion and mild mitral regurgitation for medical treatment with no improvement. On examination there was continuous murmur audible on parasternal area. Repeating Echocardiography revealed large Coronary AV fistula communicating between left coronary artery and coronary sinus. MSCT was done and confirmed the presence of large fistula communicating between aneurysmally dilated circumflex and dilated coronary sinus. Patient was referred for surgery with repair of the fistula, coronary arteries and coronary sinus. Patient was discharged with marked improvement of symptoms on follow up.

•Coronary artery abnormalities may involve abnormalities in origin, termination, structure or course. Coronary artery fistulae are abnormalities of the termination of coronary artery which bypass the capillary bed and enter in a cardiac chamber

(coronary-cameral fistula) or pulmonary or systemic circulation (coronary AV fistula).1st described by Krause in 1865. They are present in about 0.002% of the general population. Most are congenital but may be acquired. Usually single but may be multiple.

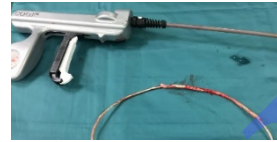
•Small fistulas usually do not cause any hemodynamic compromise while larger fistulae can cause coronary artery steal phenomenon, which leads to ischemia of the segment of the myocardium perfused by the coronary artery and may lead to heart failure. The mechanism is related to the runoff from the high-pressure coronary vasculature to a low-resistance receiving cavity due to a diastolic pressure gradient. Diagnosis is usually done by echocardiography, coronary multislice CT, cardiac MRI or coronary angiography. Treatment includes Medical treatment for heart failure, Antiplatelet therapy and prophylactic precautions against bacterial endocarditis. Transcatheter closure by embolization using coils or other devices and the surgical obliteration of the fistula by epicardial and endocardial ligations which is the cornerstone of 1 treatment and remains until now the most effective treatment.

## Device related Infection; prevention and management

Amr Nawar, MD. Lecturer critical care department, faculty of medicine Cairo University



●Roughly 40 years have passed since permanent pacemakers (PMs) became available in clinical medicine. More recently, implantable cardioverter-defibrillators (ICDs) and cardiac resynchronization therapy (CRT) have been introduced. The rate of device implantation is increasing with the aging of the general population and the indications are expanding. ●Similar to other prosthetic materials, infections complicate a small proportion of patients with these devices. With the increase in device implantation, the incidence of device infections has also been growing at a faster rate. Infection is one of the most feared complications of cardiac implantable electronic devices (CIEDs).



While relatively uncommon, cardiac device infection (CDI) has been reported to be increasing in frequency. ●A CDI can present with a pulse-generator pocket infection or bloodstream infection with or without device-related endocarditis. A CDI is associated with increased morbidity, mortality, and financial cost. Recent guidelines advocate complete system removal in the event of CDI in both systemic and pocket infections. Transvenous lead extraction (TLE) is the preferred approach if feasible. In this lecture the risk factors, preventive measures and well as therapeutic options will be discussed

## Designing MTM plan based on PK/PD of Statins

Noha A. Hamdy, PharmD, PhD

Department of Clinical Pharmacy & Pharmacy Practice, Faculty of Pharmacy, Pharos University in Alexandria



●Cardiovascular Disease (CVD) remains the leading cause of morbidity & mortality. In addition, the prevalence of some risk factors, notably diabetes & obesity, is increasing. CVD prevention should be delivered for the general population by promoting healthy lifestyle behaviour and for moderate to extremely high-risk CVD or patients with established CVD. The importance of CVD prevention proved to be cost effective in several studies. ●Statins reduce CV morbidity and mortality in both primary & secondary prevention of coronary heart disease, in addition to reduction of the risk of stroke. The degree of LDL reduction is dose dependent and varies among statins depending on their differences in lipophilicity/hydrophilicity, pharmacokinetic and pharmacodynamic properties. Patients are classified based on their risk factors, extreme risk of CVD has a new LDL goal to below 55mg/dl, with this strong decline in LDL target,

statins will find extended use.

- Medication Therapy Management (MTM) services provide pharmacists with new opportunities for direct patient care. The goals of MTM services are improved medication understanding, adherence and detection of medication-related problems, including adverse drug reactions in addition to monitoring drug response. The integration of pharmacokinetic (PK), pharmacodynamic (PD) and clinical pharmacokinetic sciences should be translated into MTM counselling sessions in order to provide better patient care and improve therapeutic outcomes.
- Some pharmacokinetic properties like elimination half-life correlates to the optimal time for statin administration which differ from statin to the other. Food might influence some statin bioavailability. The concomitant administration of P-glycoprotein inhibitors, bile acid sequestrants, and drugs altering gastric pH were discussed regarding their effects on statins hypocholesterolemic action.
- Another PK property is binding to plasma proteins,

and whether displacement from protein binding sites alter statin effects or not was also elaborated, as statins are highly extraction ratio drugs. The diversity in hepatic enzymes metabolism, by cytochrome P450 (CYP-450) isoforms, among statins highlighted the concomitant administration of drugs that might increase statin intolerance. In addition, statins exhibit different elimination pathway which should be considered on individual basis.

- Pharmacodynamic properties, including therapeutic and adverse responses, raise the importance of polypharmacy consideration and tools for minimizing statins intolerance.



- MTM sessions should be carefully designed by experienced clinical pharmacists, using pharmacokinetic/ pharmacodynamics knowledge and integrating pharmacists' communication skills to improve patient adherence, clinical outcomes and promote health.

## DES Slightly Edge Out DCBs in Treatment of In-Stent Restenosis: Meta-analysis

Samih lawand



- There were signs that DCBs might be superior in some subgroups, with one expert suggesting their advantage would grow over time.
- PARIS, France—Drug-eluting stents appear to be better than drug-coated balloons (DCBs) at treating in-stent restenosis, at least when it comes to preventing TLR, but the difference isn't particularly large and results may vary among clinical subgroups, according to a recent meta-analysis.
- "In treating patients with restenosis, the interventional cardiologist must carefully weigh whether the extent of this advantage outweighs the potential longer-term risks of implanting a permanent additional stent layer," lead investigator Daniele Giacoppo, MD (Deutsches Herzzentrum München, Germany), said in his presentation last week at EuroPCR 2018.
- Even with modern DES and medical therapy, the rate of coronary in-stent restenosis reaches as high as 10% to 15%, Giacoppo noted. "Although generally less dramatic compared with stent thrombosis, it can be associated with worse outcomes, too."
- In 2015, Giacoppo and colleagues published a hierarchical Bayesian network meta-analysis of 24 trials and 4,880 patients showing that, among the available options for treating in-stent restenosis, DCBs and DES each held the lead over BMS, brachytherapy, rotational atherectomy, and cutting balloons when compared to plain balloon angioplasty. "Importantly, all of the existing trials

have no power for clinical endpoints and over time provided mixed results," he said.

For the newer study, the researchers wanted to directly compare the two top contenders: DCBs and DES.

- DES Slightly Ahead, but Not Always

The meta-analysis, known as DAEDALUS, compared paclitaxel-coated balloons and drug-eluting stents for the treatment of coronary in-stent restenosis, with individual patient-level data from 10 randomized trials whose primary investigators had agreed to participate in the study. Among them were PEPCAD II, ISAR-DESIRE 3, PEPCAD China ISR, RIBS V, SEDUCE, RIBS IV, TIS, DARE, RESTORE, and BIOLUX-RCT, which involved a total of 1,084 patients treated with DCBs and 996 who received DES.

- One-third of the restenosis was seen in BMS, while two-thirds occurred in patients being treated with DES. Baseline characteristics between the DCB and DES groups were well balanced, apart from a higher percentage of prior MI in the balloon-treated patients (50.1% vs 45.5%;  $P = 0.041$ ). Minimum lumen diameter was significantly longer with DCB than with DES, while target lesion length was shorter and percent diameter stenosis was lower. "But in each case, the imbalance was not clinically relevant," Giacoppo noted.

- At 3-year follow-up, the overall risk of TLR was higher with DCBs compared with DES (16.0% vs 12.1%; HR 1.32; 95% CI 1.02-1.70), as was ischemia-driven TLR (14.4% vs 10.4%; HR 1.37;



95% CI 1.04-1.81). Landmark analysis showed that outcomes were consistent before and after the cutoff of 1 year.

Yet due to a “moderate degree of heterogeneity” among the trials, further analyses suggested there is either borderline or no significant difference in TLR between the two treatments, Giacoppo reported.

● Looking at clinically relevant subgroups, the researchers found that DES were superior to DCBs in men, patients without diabetes, those receiving second-generation DES, and those with lesion lengths of at least 20 mm. However, the P-values for interaction did not reach significance. There was one exception, Giacoppo pointed out in his presentation: “Interestingly, we found that in bare-metal stent restenosis, the two treatments were comparable, while in drug-eluting stent restenosis, [use of a] drug-eluting stent was associated a better outcome compared with drug-coated balloon.”

For the safety composite endpoint of all-cause death, MI, or target-lesion thrombosis, the DCB and DES groups had similar results.

● ‘Leaving Nothing Behind’

Bruno Scheller, MD (Universität des Saarlandes, Homburg, Germany), commenting on the findings for TCTMD, said what’s interesting about the new study is its exploration of what might drive differences in TLR among patients treated for in-stent restenosis. Also, he added, “they looked at hard clinical endpoints: death, myocardial infarction, vessel thrombosis.”

Scheller drew parallels between drug-coated balloons and bioresorbable scaffolds (BRS). With both, the underlying principle is “leaving nothing behind” over the long term. With BRS, there may be a short-term penalty of more myocardial infarction and device thrombosis, he said, but with DCB, “we do not have to pay this price.”

Citing the safety endpoint, which occurred at a rate of 10.9% with DES and 9.3% with DCB (P= 0.101), Scheller said the gap may eventually begin to favor drug-coated balloons. “You can expect the absence of a second layer of metal may over time be beneficial in hard clinical endpoints,” he suggested, adding, “The real benefit . . . will be seen after 3, 5, or even 10 years.”

Still, much like with BRS, lesion preparation is key with DCBs, said Scheller, who served as a panelist during the late-breaking session where others also emphasized this point. Operators familiar with the PSP protocol used with BRS—preparing the vessel, adequate sizing, and postdilatation—should be able to easily apply it to DCBs, he observed.

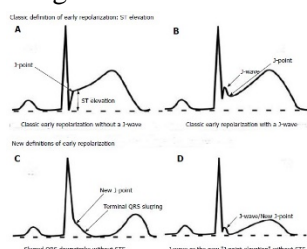
## Early repolarization syndrome. How to manage?

Samir Rafla



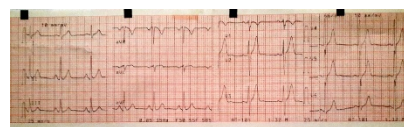
● Early repolarization = A package of deal: E.R. = J point + Raised ST

Early repolarization (ER), also recognized as “J-waves” or “J-point elevation” is an electrocardiographic abnormality consistent with elevation of the junction between the end of the QRS complex and the beginning of the ST segment in 2 contiguous leads.



● Early repolarization syndrome (ERS), demonstrated as J-point elevation on an electrocardiograph, was formerly thought to be a benign entity. Recent

studies have demonstrated that it can be linked to a higher risk of ventricular arrhythmias and sudden cardiac death (1-5).



● The prevalence of ERS varies between 3% and 24%, depending on age, sex and

J-point elevation (0.05 mV vs 0.1 mV) being the main determinants. ERS patients are sporadic and they are at a higher risk of having recurrent cardiac events. Isoproterenol are the suggested therapies in this set of patients. On the other hand, asymptomatic patients with ERS are common and have a better prognosis (4).

● The clinical presentation of patients with ERS can

be subdivided into two main groups. The first includes those that manifest recognized symptoms of ERS, i.e., high risk patients with syncope and survivors of cardiac arrest. A study by Abe et al[6] demonstrated that the ER was noticed in 18.5% in patients with syncope compared to 2% in healthy controls, this equates to almost 10 - fold increase risk of syncope in patients with ERS.

## CONCLUSIONS:

It is also not possible to identify asymptomatic individuals with a primary arrhythmogenic disorder attributable to ER. All patients with ER should continue to have follow up and risk assessment.

## References

# How to use hardware for CTO PCI

Sundeep Mishra

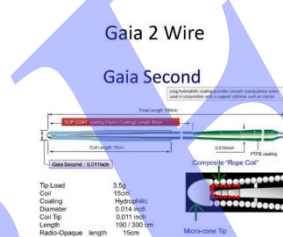


- Interventions in chronic total occlusion (CTO) represent a niche area of percutaneous coronary interventions (PCI).

- The essential difference lies in the character of the lumen which is occluded in CTO PCI (versus patent in a garden variety of PCI).
- This difference culminates into not only increased complexity and difficulty of the procedure but also makes it more prone to complications. Clearly the niche area requires an optimal utilization of a broader range of hardware. Thus for a regular PCI only few hardware and their use need to be known. On the other hand if CTO PCI is to be undertaken, Knowledge of a whole gamut of accouterment need to be acquired (both their characteristics and utilization) and their use mastered. However, the multiplicity of CTO hardware and their physical character and the terminology used by experts create confusion in the mind of an average interventional cardiologist, particularly a beginner in this field. This knowledge is available but is scattered. In general guidewires are the key to success of any CTO procedure but additionally knowledge and handling of several other devices needs to be perfected.

- The essential difference lies in the fact that in CTO PCI

- the disease lumen is occluded (versus patent in a garden variety of PCI). This difference culminates



into not only increased complexity and difficulty but also makes it more prone to complications. This situation has led to an evolution of whole new field of interventional cardiology with specialists dedicated to this procedure particularly adept in retrograde techniques. Furthermore, this has led to development of a new jargon of technical words, “reverse CART,” “septal surfing,” “externalization,” etc, a complete new language associated with CTO intervention which has on one hand added to the mystique of the procedure but on the other hand created confusion in the mind of regular interventionists and taken procedure out of their realm. This presentation is an attempt to clarify and simplify some of the concepts and techniques so that it is easily understandable by regular interventional cardiologists with the overall aim of increasing the popularity and acceptability of these procedures.

## Right Minithoracotomy – An Alternative Approach

Mohamed El Ghanam, MD, FRCS C-TH, Assistant Prof of Cardiothoracic surgery,  
Ain Shams University



●Minimal invasive heart surgery has been widely applied worldwide over the last two decades for their proposed benefits, offering patients a faster recovery, less pain, better cosmesis and more patient satisfaction. However, for surgeons, it represents a challenge, trying to achieve the same quality of surgery, which was classically performed through a midline 12 to 15 cm sternotomy, through smaller incisions sparing the split of the breast bone and preserving the integrity of the thoracic cage.

●Minimal invasive Mitral valve surgery



programme was initiated at cardiothoracic surgery department - AIN SHAMS UNIVERSITY 2 years ago. In this presentation, we present how we started this programme and our experience in right minithoracotomy approach for performing Mitral valve surgeries. We also expanded the use of such approach to perform surgery for ASD closure and resection of left atrial Myxoma. Join our presentation for more details and all the bits and tricks about this approach.

## STATIN RESISTANCE

Atef El-Bahry



●Statin resistance is different from statin intolerance and is present in patients who adhere to but do not achieve expected or adequate lipid lowering with tolerated and maximum doses of statins, thus failure to attain goals and targets of international lipid guidelines, putting patients at very high risk for having cardiovascular events. There is a paradoxical relationship between statin-mediated pcsk9 increase and ldl-c. Low intracellular cholesterol activates sterol regulatory element-binding protein-2 (srebp-2) which is a transcription factor that activates both ldl-receptors and pcsk9 genes. This results in increased expression and secretion of pcsk9 protein, which binds the ldl-receptors and targets it for lysosomal degradation. It is known that statins increase ldl-receptor expression and density on cell surface in addition to lowering cholesterol.

●Upregulation of pcsk9 protein by statin therapy may attenuate the ldl-c reduction by statins. Pcsk9 levels increase as a feedback response to statin treatment rising by 10%-50% in many clinical studies. Given these interrelationships open the way towards understanding the question of why high intensity statins given to subjects to the maximal tolerated doses fail to achieve goals and targets, and explain statin resistance. In the jupiter study using rosuvastatin at 20mg dosage increases plasma concentrations of pcsk9 by 28% and 34% in men and women, respectively. A strategy based on the measurement of ldl-c response and pcsk9 concentrations may help identify those statin resistance subjects with increased pcsk9 concentration whom may benefit from pcsk9 modulation and adding pcsk9-inhibitors to their therapy.

# Stent for Life” Portugal: how to implement a STEMI Network.

Helder Pereira



●The Stent for Life Initiative (SFL) began in 2009 and was designed to reduce ST-segment elevation (STEMI) mortality in Europe. In May 2017, the initiative became global, also comprising the regions

of South America, Africa and Asia and was renamed Stent Save a Life (SSL). Globalization has shown the success of the SFL, but it represents a major challenge, since it brings together very different reality, from countries where most patients are not reperfused, others where only streptokinase is used, to countries where the rate of revascularization by Primary Angioplasty (P-PCI) is greater than 90%.

●We have no doubt that the experience of countries such as Portugal, which are already at a more advanced stage of this process, will be of great use to those who aspire to improve the treatment of STEMI. Portugal joined the Stent for Life Initiative (SFL) in 2011 with the aim of improving performance in P-ICP. Now that one cycle of the process is closed and another one opens, it is important to look to the advances verified in this period.

In the middle of the last decade, little more than a hundred P-PCIs per year and per million inhabitants were carried out in Portugal and only 23% of the patients asked for help through 112.

The following abstract summarizes the evolution of this initiative over the last five years:

●A National surveys were carried out annually, for one-month periods, designated by Moments between 2011 (Moment Zero) and 2016 (Moment Five). A total of 1340 consecutive patients with suspected

acute myocardial infarction with ST elevation (STEMI) undergoing catheterization admitted at 18 national interventional cardiology centres where P-PCI is carried out 24/7 were enrolled in this study.

●There was a significant reduction in patients who used primary healthcare as a first request for assistance (20.3% vs 4.8%,  $p < 0.001$ ) and in patients who attended a centre without P-PCI capability (54.5% vs 42.5%,  $p = 0.013$ ). On the other hand, the number of patients who called 112-emergency medical services (EMS) increased (35.2% vs 46.6%,  $p=0.022$ ) and patients' transportation through the national emergency medical system (EMS) to a centre with P-PCI (13.1% vs 30.5%,  $p<0.001$ ). The main improvement observed at time intervals for revascularization was a trend towards reduction of "patient delay" (114 minutes in 2011 vs 100 minutes in 2016,  $p=0.050$ ). "System-delay" and "door-to-balloon" (D2B) times remained constant, registering a median of 134 and 57 minutes in 2016, respectively.

●During the lifetime of the SFL initiative in Portugal, there was a positive evolution of "patient delay" indicators, namely the reduction of the percentage of patients who attended to primary healthcare centres and local hospitals without intervention cardiology, along with an increase of those that called EMS. "System delay" did not significantly change over this period. These results should be taken into account in the future strategy of the Stent Save a Life (SSL) initiative, namely in the reinforcement of current educational programs towards the improvement of system delay.

# The role of intraoperative Transesophageal Echo (TEE) to guide mitral valve repair

Mohamed Adel Mostafa, Consultant cardiology, Saudi Arabia



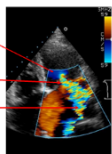
●In suitable patients mitral valve repair is an excellent treatment option with low mortality (1, 4% for valve repair compared to 3.8% for valve replacement) and also it has high durability. TEE is an excellent tool to guide the surgical technique and predicts which valve is likely to be repaired and which valve should be replaced.

Why some cases repaired successfully and why other surgeries could not be repaired successfully and ended up with replacing the mitral valve.

●Knowing the anatomy of the mitral valve apparatus and key differences between degenerative and functional mitral regurgitation is of paramount importance

Quantitative Assessment of Mitral Regurgitation  
The Three Components of the Jet

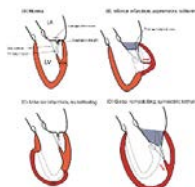
- Flow convergence zone (PISA)
- Vena contracta region
- Jet turbulence in receiving chamber = downstream expansion of the jet (Regurgitant volume and fraction)



Also it is the role of TEE to elucidate what is the mechanism of mitral valve regurgitation and hence to suggest which repair technique should be offered.

●Intraoperative TEE provides very important measures that the surgeon depends on to choose the size of the ring.

●The Differences in the surgical approaches offered degenerative mitral regurgitation compared to the functional mitral regurgitations, Also the assessment of the regurgitation severity and the



long term outcome is completely different, The assessment of the degree of tenting and tethering and whether it is symmetrical or asymmetrical is of paramount importance to understand the mechanism of MR.

●Intraoperative TEE measurements before bypass the mitral regurgitation severity, vena contracta (VC) and flow convergence, Effective regurgitate orifice, Tenting and the tethering of the mitral valve

It is well known that the dependence on the color jet area is deceiving especially intraoperative as the change the blood pressure during the cardiac surgery affects the estimation of the mitral valve severity, So the recommended intra-operative diameters are the vena contracta, the regurgitant orifice area.

●Measurement of VCA with quantitative 3D imaging. The 3D data set is displayed in three simultaneous, adjustable, orthogonal planes ●TEE has an essential role in predicting and detecting the possible complications like systolic anterior motion (SAM) and mitral stenosis, left ventricular outflow obstruction that can lead to residual mitral regurgitation. Should the patient send back to bypass or not? This should be answered by the TEE. To conclude intraoperative TEE is your safety net that facilitates the surgical approach and improves the patient's outcomes.

# Would "High intensity cholesterol lowering strategy" replace "High intensity statin strategy"?

Yasser Huzayen, MD, FESC Ain shams Medical School

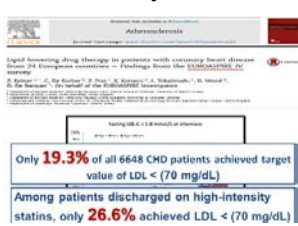


●Regression of LDL-c levels is considered the cornerstone in Dyslipidemia management Current guidelines & general consensus recommend High intensity statin treatment as the preferred strategy for LDL-c management.

●The application of the ACC/AHA guidelines may be associated with under-treatment of high risk patients due to suboptimal LDL-C response to high-intensity statins in clinical practice.

●Achieving a precise goal with this strategy is not reached in some clinical scenarios thus mandates other treatment strategies to be put in mind.

●A new risk category was added recently and is addressed by the American Association of Clinical



Endocrinologists "AAACE" & American College of Endocrinology "ACE"

●This category has been endorsed recently in 2018 which is the "Extreme Risk" category These two

clinical societies put a cutoff point of 55 mg/dl for LDL-c for this category which made it too hard for

statins alone to reach Other recent modalities: "high intensity cholesterol lowering strategies" paved the road for more control of cholesterol levels and more cardiovascular protection in some clinical situations e.g. DM, ACS

●Using PCSK9 Inhibitors or combined therapy "statin/ezetimibe" are supported by land mark clinical trials "FOURIER and IMPROVE-IT" that showed a tremendous numeric control with proven protection in cardiovascular outcome.

●For PCSK9 Inhibitors; FOURIER Study showed a decrease of LDL-C by 59% and an improvement of CV outcomes in patients already on statin therapy with Safe and well-tolerated course

●For Statin/Ezetimibe; IMPROVE-IT Study In terms of efficacy showed an up to 60% reduction in LDL-c. In terms of C.V. outcomes, this strategy showed proven CV benefit in post ACS patients and in diabetics with astonishing NNT results

●I do have the honor and pleasure to give a lecture in CardioAlex 2018 trying to clarify these new strategies of management and to figure out if they would replace the established current strategy of using "high intensity statin" in Cholesterol management.

CVREP



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CASE REPORTS  
PRESENTED @ CARDIOALEX.18

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CVREP



# Have you seen a case like this ?

Alaa Khalil



•A tall statured 17 Y old previously healthy boy was transferred to our hospital from another facility on ventilator with diagnosis of Septic shock , ARDS and presumed infective endocarditis. bed side echo there, revealed a mass attached to TV and MVP with severe MR.

- His family denied history of any high-risk behavior for sexually transmitted diseases, alcohol abuse, intravenous drug abuse, recent dental procedures , persisting skin infections, congenital heart disease , or rheumatic fever.
- At our institution, the physical exam was remarkable for pan-systolic murmur over the apex, bilateral basal to mid-zone lung crackles. His physique was remarkable for disproportionate ration of the lower extremities to torso and very large upper extremities span, he has a high arched palate and the thumb wrist test was positive all suggested marfanoid habitus. His initial laboratory data showed significant leukocytosis and elevated inflammatory markers and microscopic hematuria. Blood, respiratory and urine cultures were negative. Chest imaging showed pulmonary edema like picture/ARDS. TTE and TEE revealed large sessile cauliflower like mass attached to ventricular side of TV annulus and septal leaflet with highly mobile sphere like mass attached to its tip without hemodynamic compromise, Flail anterior MV leaflets with ruptured chordi at A2,A3 scallops and severe MR, Aortic valve showed retraction of RCC with triangular gape causing severe AR
- The consensus was for surgery to remove the mass and send for C/S and histopathology ,repair/replacement of valvular lesions.

•Vegetations were removed and sent for culture and histopathology. All culture specimens were negative,Aortic valve specimen revealed No evidence of IE ,only myxoid changes ( C/W connective tissue diseases).Both aortic and mitral valves were replaced by mechanical valves.

We did a literature review about native TV Endocarditis with atypical vegetation at ventricular side and if there any relation to connective tissue disorder like Marfan syndrome ,•We found that, Isolated tricuspid (TV) endocarditis accounts for 5%-10% of cases of infective endocarditis (IE)and is uncommon in an immunocompetent adult in absence of risk factors or CHD. Persistent fever associated with pulmonary events, anemia, and microscopic hematuria is known as ‘tricuspid syndrome’, and should alert for TVE, Early Echo is recommended in such patients. Sometimes atypical presentation of vegetations at ventricular side of TV may occur in some Patient with VSD and L-> R shunt which Encroach on the Papillary Muscle and Right Ventricular Cavity. Echocardiography is the mainstay of assessment of Marfan's syndrome which may include aortic valve with Annuloaortic ectasia, especially with dilatation of aortic root, is found in 60% to 80% of adult cases which can cause severe AR or may progress to aortic root dissection. Also Mitral valve may suffer from MVP which is less benign than the common type of MVP identified in the general population. Flail leaflet is an independent predictor of progression of MR and MV-related clinical events.

Back to our case, we found no single case report in the literature with combination of those rare findings.

# The Silent Creeper

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Alexandria University



Cardiac masses have been considered a diagnostic and therapeutic challenge being most commonly discovered accidentally and late. The incidence of secondary cardiac tumor is about

7.1% in cancer patients with about 2.3% among general population.

Hepato-cellular carcinoma (HCC) is the third-leading cause of cancer-related mortality worldwide. HCC rarely causes invasion of the inferior vena cava or the heart.

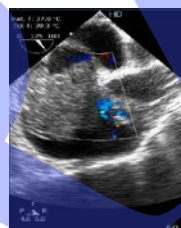
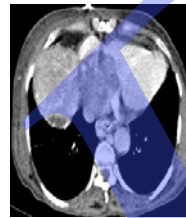
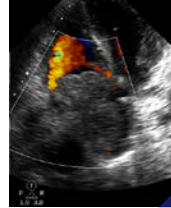
We, however, present a case of HCC with secondary cardiac invasion who remained undiagnosed with HCC until being examined by echocardiography.

Case report:

●A 64 year old female patient without any past medical history presented to our out-patient clinic complaining of abdominal distension since 3 weeks.

On examination, a mid-diastolic murmur, increasing in intensity with inspiration, was heard at the lower one third of the sternum. Abdominal examination revealed diffuse distension of the abdomen with the presence of mild - moderate ascites.

Trans-thoracic echocardiography was done revealing a huge right atrial mass with partial obstruction to the tricuspid valve.



●Trans-esophageal echocardiography was done at the same session revealing a huge mass entering the right atrium from the inferior vena cava. Tri-phasic Multi-slice Computed Tomography was done revealing diffuse cirrhosis of the liver with a bulky HCC originating from the left hepatic lobe with invasion of the inferior vena cava and direct extension to the right atrium and with an intra-luminal thrombus.

The patient suffered from atrial flutter with unstable hemodynamics and received a DC shock.

Unfortunately, few hours later, the patient suffered from atrial flutter with unstable hemodynamics followed by asystole.

## Conclusion:

Bedsie echocardiography remains the mainstay for the diagnosis of cardiac masses.

Patients with HCC and inferior vena cava infiltration should always have a follow up echocardiography for early detection of right atrial extension and further showers of pulmonary embolism.