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A Challenging Case Report of Transcatheter Aortic Valve Replacement in Bicuspid Aortic Valve in High-Surgical-Risk Patient

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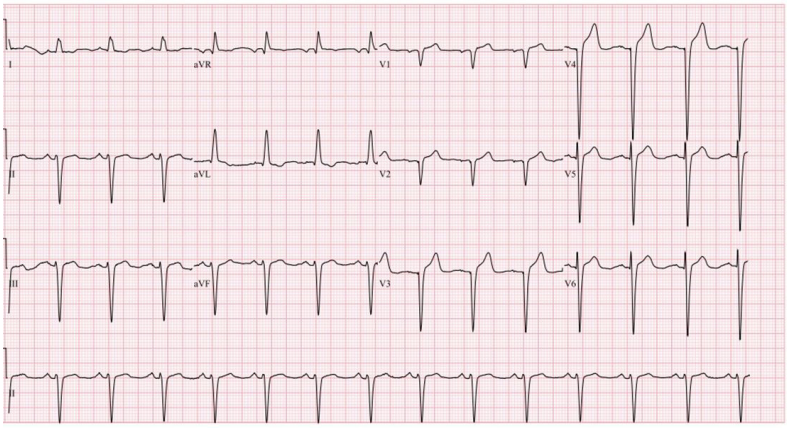
Clinical Information

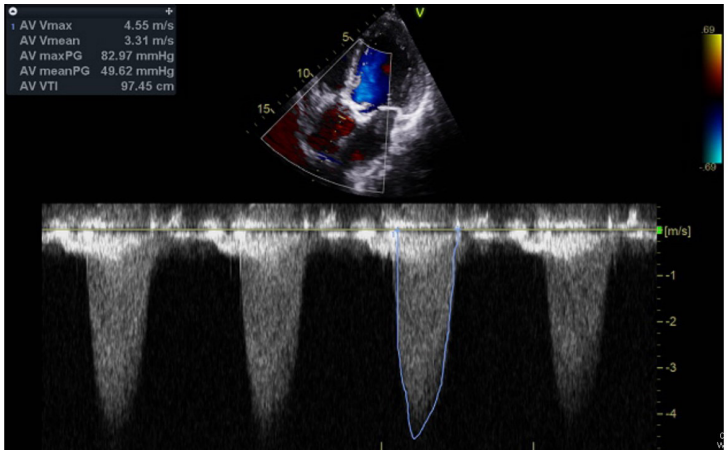
Relevant Clinical History and Physical Exam

We present the challenging case of a 76-year-old man patient suffering from of dyspnea. He was diagnosed with severe aortic valve regurgitation 20 years ago and was recommended for surgical aortic valve replacement. He had a history of chronic obstructive pulmonary disease requiring home oxygen therapy and was follow-up by medical treatment due to high surgical risk. A systolic heart murmur is auscultated at the right upper sternal border. Electrocardiogram showed a left ventricle hypertrophy.



Relevant Test Results Prior to Catheterization

Echocardiography showed findings consistent with severe aortic stenosis (aortic valve Vmax 4.59 m/sec, mean pressure gradient 48 mmHg, and aortic valve area 0.74 cm2). The aortic valve was a fused bicuspid valve with calcified leaflets. Left ventricle ejection fraction was 28%. Computed tomography showed ascending aorta aneurysm (4.8 mm)

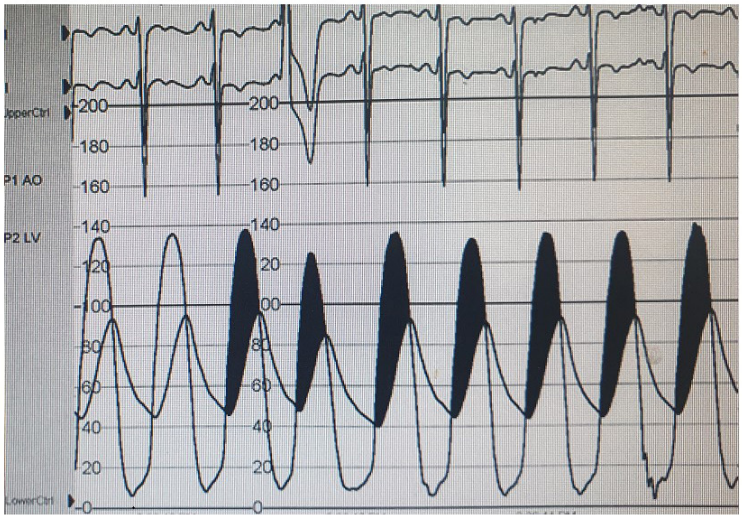


and bicuspid aortic valve (calcified raphe, Sievers type I). Extended calcification was observed toward the left coronary cusp of the left ventricle out tract.

Relevant Catheterization Findings

Heart team decided to perform transcatheter aortic valve replacement due to the high risk of surgery (STS score 9.7%, EuroSCORE II 3.62%). Under general anesthesia, vascular access was through the femoral artery. Fluoroscopy showed deep calcification in the direction of the left coronary cusp. No evidence of significant coronary artery stenosis was observed. Simultaneous recording of left ventricular and aortic pressure tracings demonstrated a 45-mmHg mean systolic gradient (shaded area).

TAVR_1.mp4

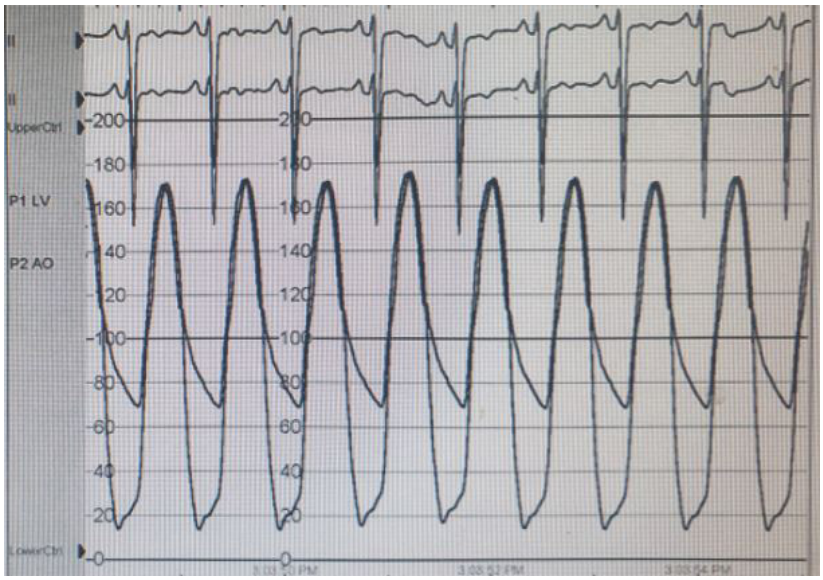


Interventional Management

Procedural Step

Area derived diameter was 29.7 mm (annulus area 693.5 mm2) and operator chose a balloon expandable valve (SAPIEN 3 ULTRA 29 mm, Edwards). Balloon valvuloplasty was performed first to overcome the annulus calcification, and a strategy of high implantation with slow inflation was planned for a safer procedure due to extended calcification in the left ventricle out tract. There were no acute complications, including newly appeared aortic regurgitation, after balloon valvuloplasty on transesophageal echocardiography. Under pacing of 180 bpm, prosthetic valve was well positioned even though deep calcification limited full inflation in the left coronary cusp. After prosthetic valve implantation, the patient's vital signs were stable and no significant changes were observed on the electrocardiogram. Transesophageal echocardiography showed little paravalvular leak, and there were no acute complications related to the procedure. Angiography showed no aortic or coronary complications. Simultaneous recording of left ventricular and aortic pressure tracings showed a significant reduction in mean systolic gradient (8-mmHg).

TAVR_2.mp4
TAVR_3.mp4



Conclusions

Our heart team reports a case of transcatheter aortic valve replacement for a bicuspid aortic valve in a patient with high-surgical-risk. This case has a clinical significance in that successful use of balloon expandable valve to treat a patient with high-structural-risk, including bicuspid valve with extended calcification in the left ventricle out tract, and ascending aortic aneurysm, in addition to the patient's clinical risk factors.

SAPIEN 3 Ultra Resilia in SAPIEN 3

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Clinical Information

Relevant Clinical History and Physical Exam

A 68-year-old woman who had symptomatic severe bicuspid aortic stenosis underwent transcatheter aortic valve (TAV) replacement with a 29-mm Edwards Lifesciences SAPIEN 3. The patient was on hemodialysis and diagnosed with multiple myeloma treated with immunomodulatory agent lenalidomide (estimated life longevity < 7 years).

110(5-35).mp4
2.mp4
3.mp4

Relevant Test Results Prior to Catheterization

At 19 months, transthoracic echocardiography (TTE) revealed aortic stenosis (mean aortic valve pressure gradient [AVPG]: 91 mmHg). Considering the possible valve thrombosis, warfarin was initiated in addition to aspirin. However, TTE showed the valve dysfunction remained the same. Furthermore, computed tomography (CT) showed high-density areas of the valve leaflets suggesting severe calcification.

4.mp4
5.mp4

Relevant Catheterization Findings

Therefore, our discipline team decided to perform TAV in TAV with a newer-generation 29-mm SAPIEN 3 Ultra Resilia. The procedure was successfully performed transfemorally under local anesthesia. TTE showed excellent results (mean AVPG: 6 mmHg). However, 1 month later, TTE showed severe stenosis (mean AVPG: 61 mmHg) and moderate transvalvular leakage. Also, CT showed hypo-attenuated leaflet thickening of the SAPIEN 3 Ultra Resilia. The valve function improved after re-initiating warfarin.

6.mp4
7.mp4
8.mp4

Interventional Management

Procedural Step

CT showed type-1 bicuspid aortic stenosis (annulus area: 662.6 mm2). A 29-mm SAPIEN 3 was implanted with 2cc overfilling contrast. TAV in TAV was performed transfemorally under local anesthesia. A newer-generation 29-mm

SAPIEN 3 Ultra Resilia with 4cc underfilling contrast was implanted in the deteriorated 29-mm SAPIEN 3 followed by post-dilation with a 25-mm balloon. 1 month later, TTE showed severe stenosis (mean AVPG: 61 mmHg) and moderate transvalvular leakage. Also, CT showed hypo-attenuated leaflet thickening of the SAPIEN 3 Ultra Resilia. The valve function improved after re-initiating warfarin.

6.mp4
8.mp4
9.mp4

Conclusions

We reported a successful TAV in TAV case treated with a newer generation SAPIEN 3 Ultra Resilia in a deteriorated SAPIEN 3. This patient would be potentially at high risk of thrombosis due to chronic renal failure on hemodialysis and multiple myeloma treated with Lenalidomide, which was reported to promote thrombosis formation. These factors might be associated with early deterioration of the SAPIEN 3 and subsequent leaflet thrombosis of the SAPIEN 3 Ultra Resilia. We expect the anti-calcification effect of Resilia technology would contribute to acceptable valve function during follow-up.

A Case of Post Surgical Aortic Valve Replacement Paravalvular Leakage; Valve-in-Valve Transcatheter Aortic Valve Replacement with Bioprosthetic Valve Fracture

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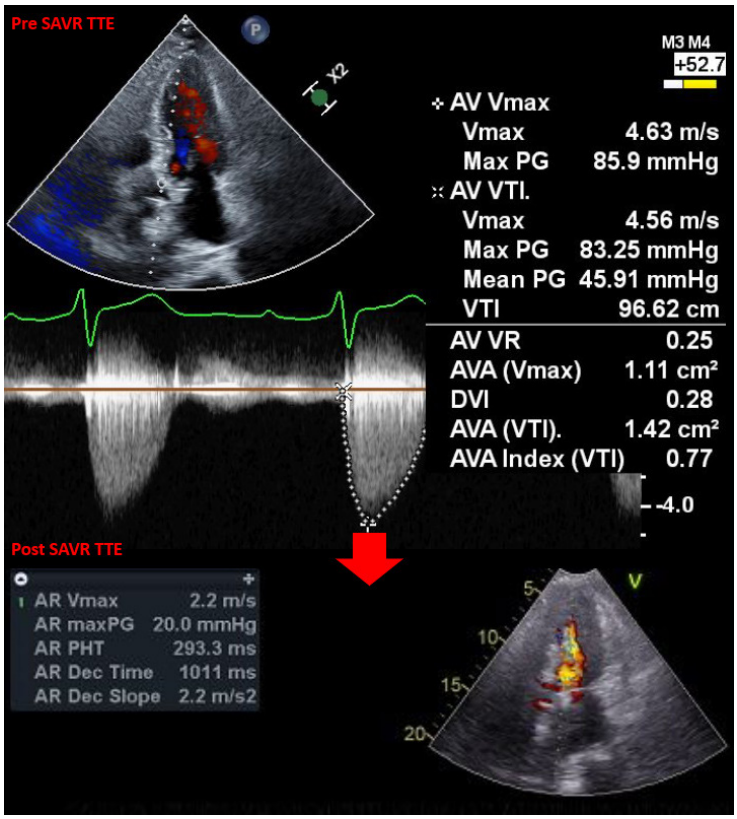
Clinical Information

Relevant Clinical History and Physical Exam

An 80-year-old male patient with a history of diabetes, hypertension, and hyperlipidemia initially presented to the cardiology clinic two years ago with chest pain and dyspnea. He was diagnosed with severe aortic stenosis (AS) and subsequently underwent surgical aortic valve replacement (SAVR). Although he recovered well postoperatively, a paravalvular leak (PVL) remained (Pressure Half Time (PHT) = 293.3 ms).

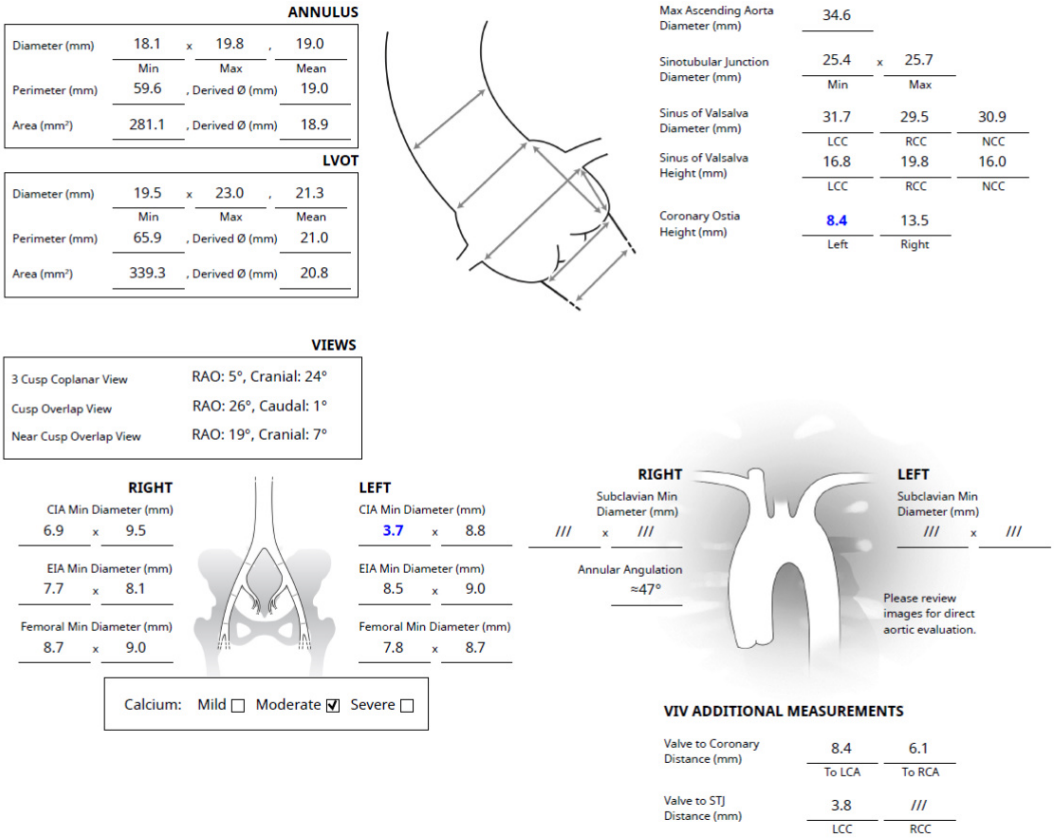
1A_preop_TTE.mp4
1B_postop_TTE.mp4

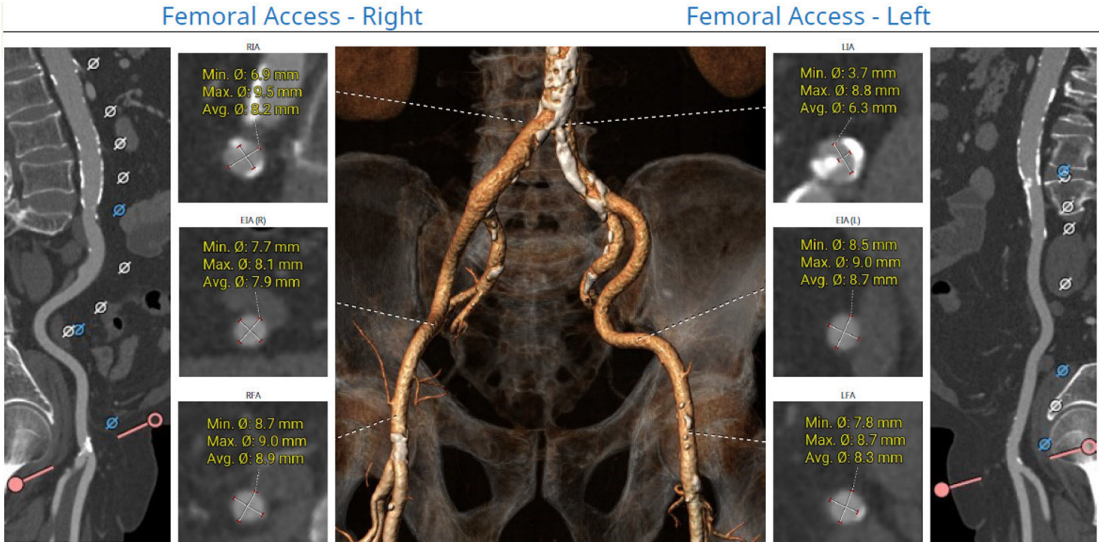


Relevant Test Results Prior to Catheterization

The patient gradually deteriorated over the following year and follow up tests revealed worsening PVL. We recommended performing valve in valve transcatheter aortic valve replacement (TAVR) instead of reoperation. The inner diameter of the 21 mm valve used in the patient was 19 mm, so we selected an 23 mm self-expandable valve with 21% oversizing. The right femoral artery was appropriate as the main approach site, and since the left coronary ostial height was 8.4 mm, we planned for protection.

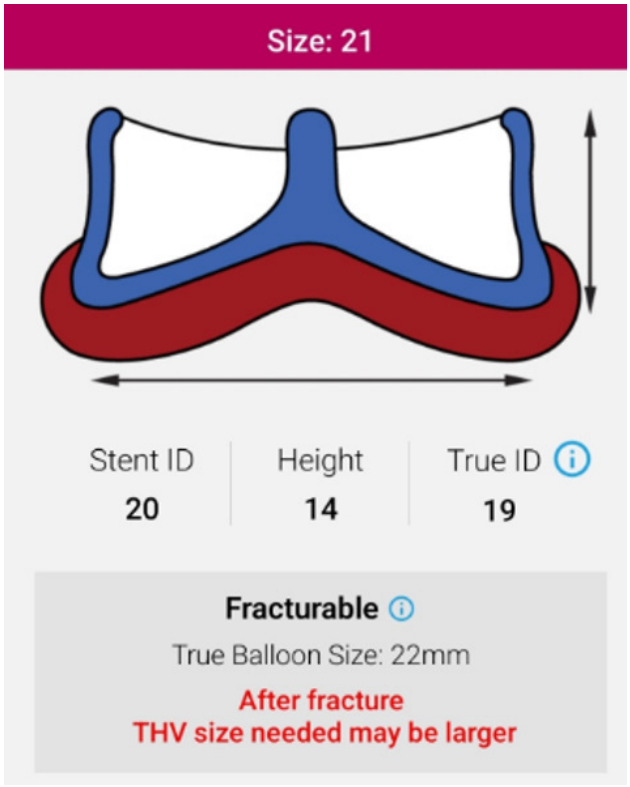
2A_preTAVR_TEE.mp4

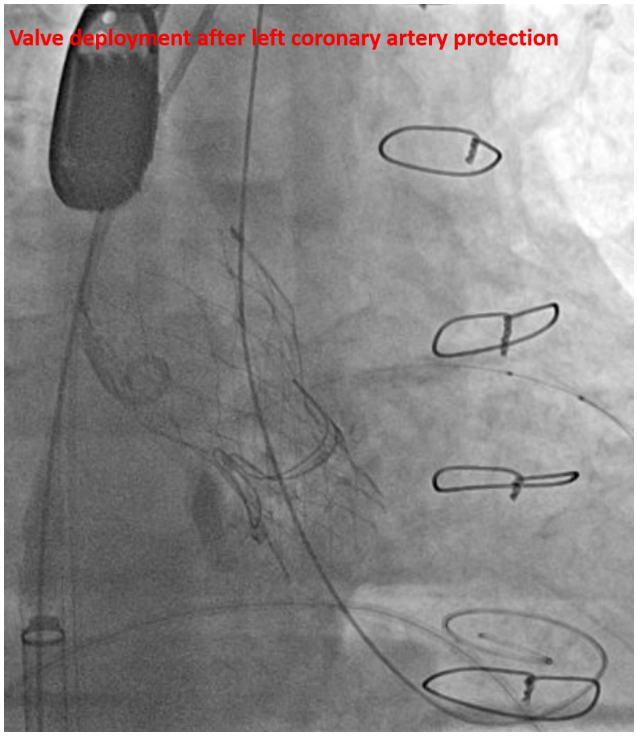


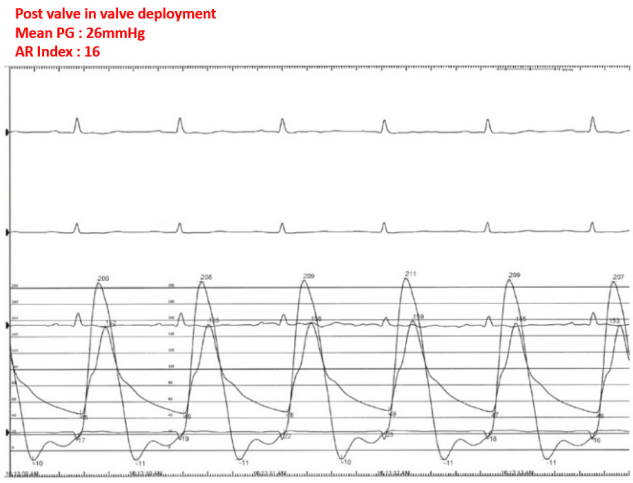


Relevant Catheterization Findings

We planned for a target mean pressure gradient (PG) under 20 mmHg with post-TAVR non-compliant (NC) 20 mm ballooning. An NC 22 mm balloon was prepared for potential valve fracture if intra-TAVR transesophageal echocardiography (TEE) showed residual PVL. For left coronary artery protection, a stent was placed before TAVR. TAVR started about 4 mm below the surgical valve stent and was performed smoothly, resulting in an improved mean PG of 26 mmHg and an aortic regurgitation index (ARI) of 16.





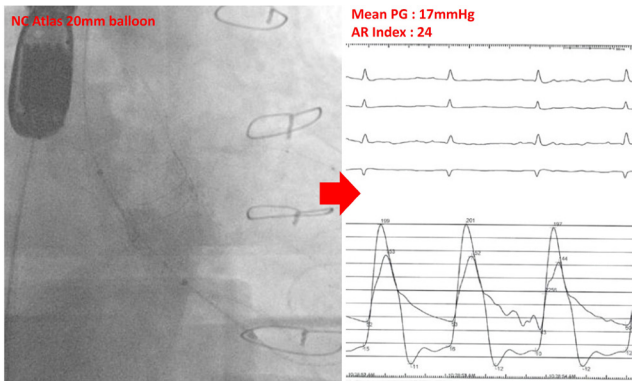


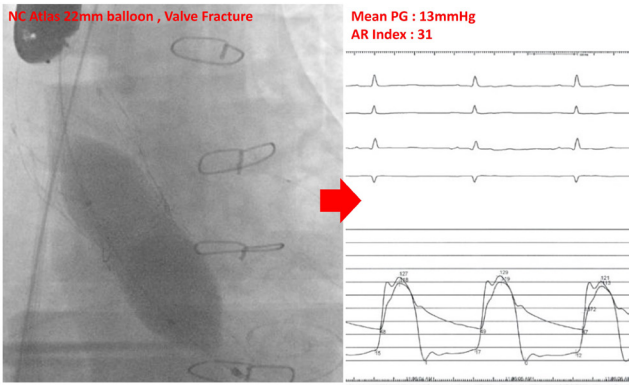
Interventional Management

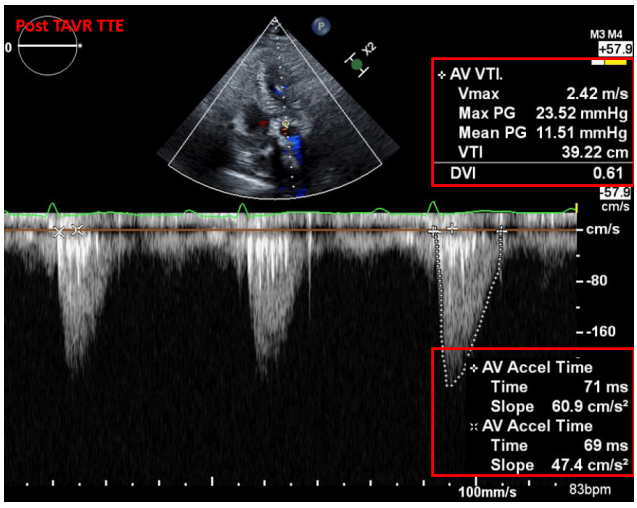
Procedural Step

After TAVR deployment, post-TAVR NC 20 mm ballooning was performed with rated burst pressure (16

atmospheres (ATM)), resulting in a mean PG of 17 mmHg and an ARI of 24. Although we considered ending the procedure upon achieving these target values, we decided on additional 22 mm NC ballooning with valve fracture for further correction of PVL. NC 22 mm ballooning with high pressure (18 ATM) was performed, confirming valve fracture via fluoroscopy. This improved the mean PG to 13 mmHg and the ARI to 31. After confirming PVL reduction, we concluded the procedure. Post-TAVR transthoracic echocardiography (TTE) showed no PVL, with favorable results in mean PG and other parameters. The patient was discharged on the second day after the procedure without any notable complications.







Conclusions

We achieved symptomatic and echocardiographic improvement with valve-in-valve TAVR and post-TAVR NC ballooning in a post-SAVR PVL patient. Furthermore, for additional PVL correction, we performed valve fracture and additional ballooning. In cases of the existing surgical valve dysfunction with accompanied PVL, valve in valve TAVR with valve fracture might be a better treatment option. Additionally, further study on the rupture risk estimation or rupture prevention associated with high-pressure ballooning is necessary.

Where There's a Will, There's a Way

Hansu Park*

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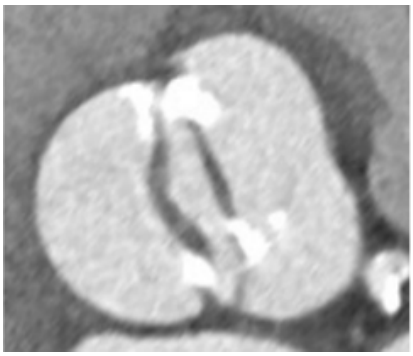
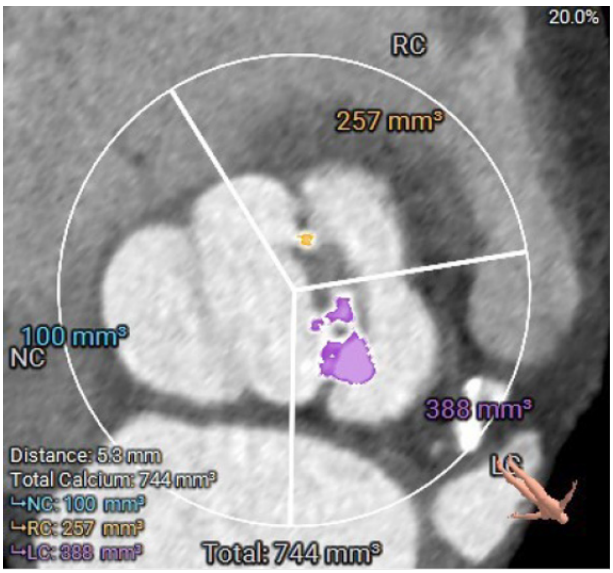
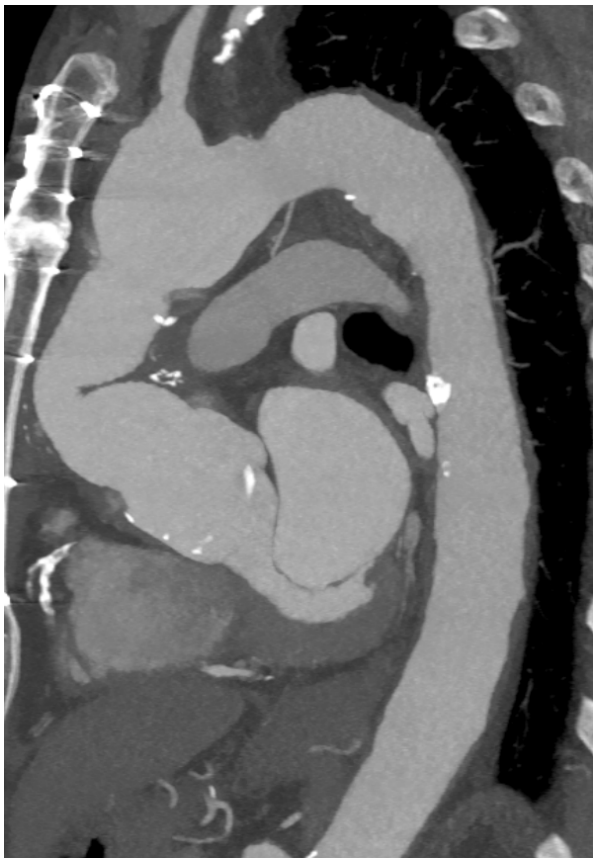
Clinical Information

Relevant Clinical History and Physical Exam

A 75-year-old male presented with recurrent syncope and dyspnea on exertion. He underwent coronary artery bypass grafting and ascending aorta replacement 9 years ago.







Relevant Test Results Prior to Catheterization

Echocardiography showed a bicuspid valve with severe aortic stenosis and mildly reduced LV function (EF 48%). The STS score was 4.5%. the area of the annulus was measured in 575 mm² with a type I bicuspid valve. The calcium score and coronary heights to the RCA was 20.7 mm and to LCA was 7.9 mm. Vascular access to both femoral arteries was sufficient, but the ascending aorta was banded at about 80 degrees, and a horizontal aorta was observed.

Interventional Management

Procedural Step

During the TAVR procedure, we failed to cross the stenotic aortic valve despite using various wires, as the orifice area was too small. We decided on retrograde wiring via septal puncture. The septal puncture was performed under fluoroscopy guidance, and we attempted retrograde wiring with a Terumo wire (0.035 inches, 260 cm) and a 6Fr wedge balloon catheter. We successfully crossed the aortic valve with the retrograde wire using floating balloon. After retrograde wiring, we tried anterograde wiring using the buddy wire technique but failed. We placed the retrograde wire in the descending aorta. We used a EN snare wire via the femoral sheath to capture the retrograde wire and externalize it. An AL1 catheter was introduced over the retrograde wire and into the left ventricle. We then used an Safari wire and advanced it into the LV cavity via the AL1 catheter.

Pre-ballooning was done with a 20-mm Z-med balloon, and a 26-mm Sapien S3 ultra valve was positioned. After implantation, acute AR occurred followed by cardiac arrest. CPR was performed for one cycle, and we attempted post-ballooning with the valve balloon. After post-ballooning, the patient recovered. The final aortogram showed a well-apposed prosthetic valve with no significant aortic regurgitation.

Han Su Park - 5-1.mp4
Han Su Park - 5-2.mp4
Han Su Park - 5-3.mp4

Conclusions

Balloon expandable valve is the better option for horizontal aorta. In difficult AV wiring case, we can consider the retrograde approach. We should do the preparation with pre-ballooning enough in Heavy calcified Aortic valve.

Exploring Abnormalities Along the Path, Capturing the Flying Calcium

Ho On Alston Conrad Chiu*, Cheung Chi Simon Lam, Tai-Leung Daniel Chan, Eric Kwong Yue Chan

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Clinical Information

Relevant Clinical History and Physical Exam

Our patient is an 80-year-old man with history of lympohma, previously received chemotherapy and radiotherapy. He presented with dyspnea on exertion and recurrent syncope. Ejection systolic murmur was noted at the right upper sternal border with radiation to the neck. Referred for consideration of TAVR in view of echocardiographic findings of severe aortic stenosis (Aortic valve area of 0.8 cm2 and Aortic valve gradient of 75/46 mmHg).

Severe AS combined.mp4

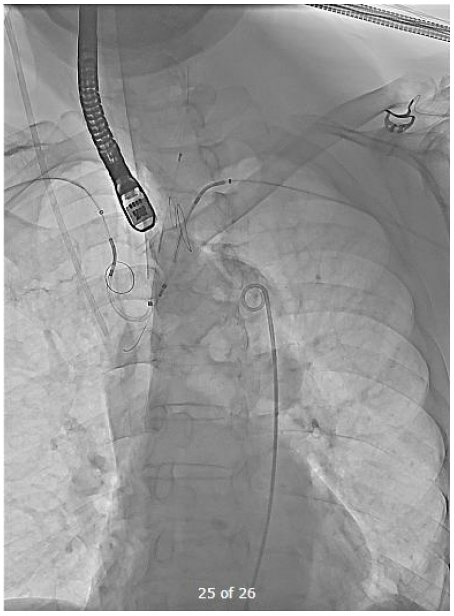
Relevant Test Results Prior to Catheterization

Subsequent CT analysis noted an abnormal sub-valvular lesion. To further evaluate the sub-valvular lesion, reassessment trans-thoracic echocardiography (TTE) and trans-esophageal echocardiography (TEE) - with 3D reconstruction - were performed. Reassessment echocardiography identified a densely calcified aortic valve with hypoattenuated signal at the left ventricular outflow tract level, with findings suggestive of a fibromusclar ridge. A highly mobile calcification was also identified on TEE.

Subvalvular Lesion Combined.mp4
Mobile Calcification Combined.mp4

Relevant Catheterization Findings

Cardiac catheterization was perfomed. Coronary angiography with JL4 and JR4 diagnostic catheters showed only minor coronary artery disease only. Aortogram via 5Fr pigtail catheter was also performed prior to our TAVR procedure for evaluation of aortic arch anatomy prior to our procedure. Best alignment angle was also determined, including 3-cusp and cusp overlap views.



coronary angiography.mp4
normal Aortogram.mov

Interventional Management

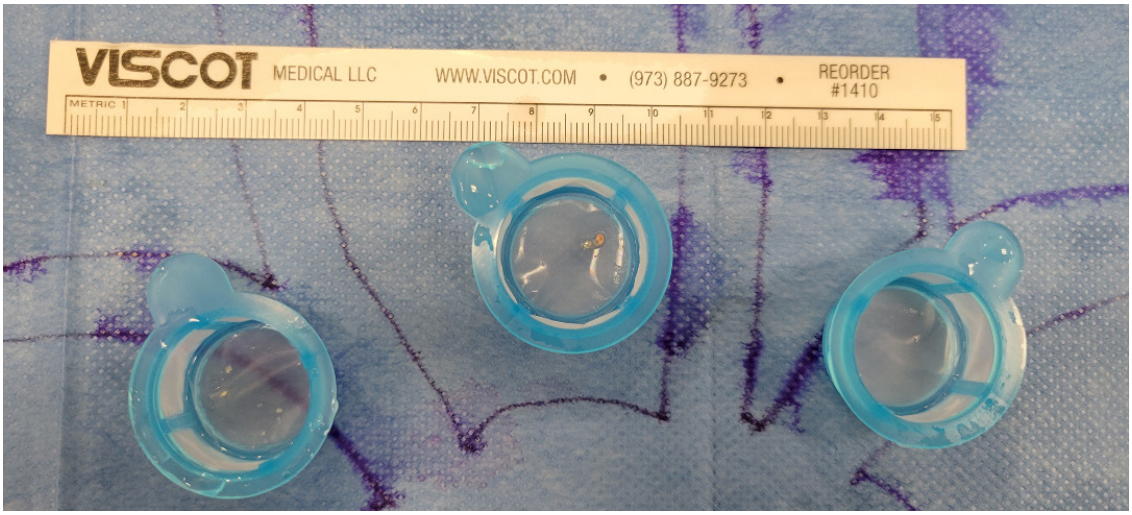
Procedural Step

Heart team decision was to proceed with transfemoral TAVR (Evolut FX 34 mm) with double Sentinel Cerebral Embolic Protection.

Vascular accesses were established in the following fashion: (a) pigtail catheter insertion via a 6Fr sheath at left femoral artery, (b) temporary pacing line insertion via a 6Fr sheath through the left femoral vein, and (c) main access via the right femoral artery with final introduction of an 18Fr Sentrant Sheath.

For our "Double Sentinel Cerebral Protection" strategy, the Sentinel devices were deployed in the following manner: (1) two filters were deployed at the brachiocephalic artery and left carotid artery via right radial access in standard fashion, (2) an additional filter was deployed at the left subclavian artery via left radial access.

The aortic valve (AV) was crossed with a Straight Tip Emerald guidewire via an AL1 catheter. After crossing the AV, we exchanged to a Safari Small guidewire, with excellent wire position achieved. Pre-dilatation with TRUE Balloon 24 mm × 4.5 cm under rapid pacing was performed, and a TEE image demonstrating embolization of the highly-mobile calcified lesion was acquired. Evolut FX 34 mm was deployed successfully. Further post-dilatation with TRUE Balloon 26 mm × 4.5 cm was done, valve frame expansion was then optimized. Final TEE and angiographic results were excellent, with the subvalvular lesion being pushed aside. Filters from the Sentinel devices also showed significant debris, particularly the distal RRA filter.



flying Calcium Combined.mp4
Post-dilatation Fluoro and TEE.mp4

Conclusions

This case demonstrated unusual but interesting findings along the path of left ventricular outflow tract, from the subvalvular to the valvular level. Pre-procedural imaging findings, from echocardiography (especially with 3D reconstruction) and computer tomography in our case, may help to identify patients who are at risks of cardioembolic events. Our "Double Sentinel Cerebral Protection" strategy may also be an adoptable strategy in preventing catastrophic cardioembolic events from taking place, particularly in patients with high-risks pre-procedural imaging findings as demonstrated in our case.

Transcatheter Aortic Valve Implantation During Asystole

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[2]*Scientific Clinical Center 2 Petrovsky National Research Center of Surgery NRCS, Russian Federation*

Clinical Information

Relevant Clinical History and Physical Exam

An 89-year-old patient with a burdened cardiovascular history, marked cognitive decline, decreased memory for current and past events. The anamnesis is collected partly from words, partly from the data provided by the medical documentation. Hypertension has been diagnosed for a long time, but it is difficult to clarify the maximum indicators, does not accept any post-treatment, if necessary uses nitrospray, herbal cardiospore.

Первичный осмотр кардиолога в отделении (дежурный врач)

Код ИБ 9985 НИКУЛКИНА РАИСА ИВАНОВНА Дата рождения 15.09.1935
Отделение: РЕНТГЕНОХИРУРГИЧЕСКИХ МЕТОДОВ ДИАГНОСТИКИ И ЛЕЧЕНИЯ С ДНЕВНЫМ СТАЦИОНАРОМ
Дата: 19.05.2024 09:23:53
Жалобы: повторяющиеся обмороки без предшествующей ауры и предвестников, периодическое головокружение, сопровождающееся дурнотой и слабостью, одышкf при повседневной физической нагрузке, эпизоды ночного удушья, эпизоды давящих болей за грудиной, проходящие после применения нитроспрея/

ANAMNESIS MORBI

Пациентка старческого возраста с отягощенным сердечно-сосудистым анамнезом, выраженным когнитивным снижением, снижением памяти на текущие и прошедшие события. Анамнез собран частично со слов, частично по данным предоставленной меддокументации. Длительное время диагностируется гипертоническая болезнь, однако уточнить показатели максимальные затрудняется, никакой постоянной терапии не принимает, по необходимости использует нитроспрей, травяной кардиосбор. При самоконтроле показатели с хорошим самочувствием АД около 140/60 мм рт ст, более высокие показатели вызывают загрудинные боли, низкие - выраженное головокружением. ОНМК,ОИМ, язвенную болезнь желудка и 12-перстной кишки , сахарный диабет в прошлом отрицает. По данным предоставленных выписок имеется пароксизмальная форма ФП, однако пациентка не ориентирована в своем заболевании, нарушений ритма не ощущает. Первые жалобы с 2020г, когда стала беспокоить одышка, появились загрудинные боли при привычном уровне физической нагрузки. Во время экстренной госпитализации отказалась от КАГ, в последующем консервативной терапии не получала, к маю 2023г самочувствие прогрессивно ухудшалось - нарастала одышка, к настоящему времени ограничивает повседневную активность, загрудинные боли, потребность в нитратах ежедневная, с осени было несколько эпизодов потери сознания, беспокоят эпизоды головокружения, приступы ночной сердечной астмы. С мая 2023г - частые госпитализации в связи с приступами загрудинных болей, приступами ночной астмы, обмороками. С 06.10.23 по 13.10.23 находилась на лечении в Подольской ОКБ, по данным КАГ от 06.10.23 - ДВ2 65%. По данным ЭХОКГ от 10.10.23 - ФВ 58%, зон гипокинезов нет, сочетанный дегенеративный аортальный стеноз с преобладанием стеноза (критический). AVA 0,4 см2, MP2, TP1-2, AP1. При очередной выписке из стационара МОНИКИ консультирована кардиохирургом, рекомендовано решение вопроса о хирургической коррекции аортального порока. Стационарное лечение в феврале 2024г. в ОРХМДиЛ. Выполнено внутрисердечное ЭФИ от 14.02.2024 г.
При выписке рекомендовано пПроведение МСКТ-панаортографии (сердце, грудная аорта, подвздошные и бедренные артерии, БЦА). ЧПЭХО в плановом порядке, консультация с результатами исследования сердечно-сосудистого хирурга для решения вопроса о проведении TAVI. Постоянный прием лекарственных препаратов ривароксабан 10 мг/сут., спиронолактон 25 мг/сут., аторвастатин 20 мг/сут., сорбифер - дурулес 320 мг/сут. Плановая госпитализация в ОРХМДиЛ НКЦ 2 РНЦХ им Б.В. Петровского по решению врачебной комиссии для подготовки и проведения TAVI.

ANAMNESIS VITAE

Эпиданамнез: благополучный, кожные покровы чистые, высыпаний нет, зев не гиперемирован, стул нормальный, контакт с инфекционными больными отрицает
Наличие зарубежных поездок за последние 14 дней:
нет
Наличие контактов с заболевшими SARS-CoV 2/ подозрительным на инфицирование SARS-CoV 2/ лицами с подтвержденным лабораторным методом исследования SARS-CoV 2 за последние 14 дней:
нет
Болели ли вы в последних 6 месяцев коронавирусной инфекцией:
да
Если да, то когда: 18.12.2023
Вакцинация против коронавирусной инфекции:
да
Если да, то когда: 01.10.2022
Наличие выполненного анализа ПЦР на SARS-CoV 2:
да
Если да, то когда: 17.05.2024
Наследственность: затрудняется уточнить
Вредные привычки: нет
Перенесенные заболевания: ЦВБ. Хроническая ишемия головного мозга. Дисциркуляторная энцефалопатия 2ст, субкомпенсация
ГЭРБ. Хронический гастрит вне обострения. Хронические запоры.
ЖКБ, хронический калькулезный холецистит вне обострения
Двусторонний гонартроз, ФН 2.
Операции/травмы: внематочная беременность 1973г

НКЦ 2 РНЦХ им Б.В. Петровского по решению врачебной комиссии для подготовки и проведения TAVI.
ANAMNESIS VITAE
Эпиданамнез: благополучный, кожные покровы чистые, высыпаний нет, зев не гиперемирован, стул нормальный, контакт с инфекционными больными отрицает
Наличие зарубежных поездок за последние 14 дней:
нет
Наличие контактов с заболевшими SARS-CoV 2/ подозрительным на инфицирование SARS-CoV 2/ лицами с подтвержденным лабораторным методом исследования SARS-CoV 2 за последние 14 дней:
нет
Болели ли вы в последних 6 месяцев коронавирусной инфекцией:
да
Если да, то когда: 18.12.2023
Вакцинация против коронавирусной инфекции:
да
Если да, то когда: 01.10.2022
Наличие выполненного анализа ПЦР на SARS-CoV 2:
да
Если да, то когда: 17.05.2024
Наследственность: затрудняется уточнить
Вредные привычки: нет
Перенесенные заболевания: ЦВБ. Хроническая ишемия головного мозга. Дисциркуляторная энцефалопатия 2ст, субкомпенсация
ГЭРБ. Хронический гастрит вне обострения. Хронические запоры.
ЖКБ, хронический калькулезный холецистит вне обострения
Двусторонний гонартроз, ФН 2.
Операции/травмы: внематочная беременность 1973г

Объективные данные

Кожные покровы: (при поступлении) Состояние относительно удовлетворительное. Температура тела: 36.7 гр. С. Кожные покровы и видимые слизистые обычной окраски, легкий цианоз губ, высыпаний нет. Зев - без признаков воспаления. Подкожно-жировой слой развит умеренно. Рост - 150 см, вес - 70 кг. Периферических отеков нет. Лимфатические узлы не увеличены, безболезненные. Щитовидная железа не увеличена, безболезненная. Форма грудной клетки: нормостеническая. Дыхание через нос свободное. Сатурация 02 - 96%. ЧДД: 17 в мин., при незначительной нагрузке - 19 в мин. Обе половины участвуют в акте дыхания равномерно. Пальпация грудной клетки безболезненная. Перкуторный звук над легочными полями с коробочным оттенком. Аускультация легких - дыхание с жестким оттенком, проводится во все отделы, хрипов нет. Верхушечный толчок определяется в 5 межреберье по l. axillaris anterior. Границы относительной тупости: правая - по правому краю грудины; левая - в 5 межреберье по l. axillaris anterior, верхняя - в 3 межреберье. Тоны сердца приглушены. Ритм правильный, грубый систолический шум во всех точках аускультации. ЧСС: 60 в мин., пульс: 60 в мин. АД: 110/70 мм рт.ст. (слева). Пульсация на тыльных артериях стоп: удовлетворительная. Органы пищеварения. Язык: влажный, чистый. Глотание по пищеводу свободное. Живот при пальпации мягкий, безболезненный. Асцита нет. Печень не увеличена, при пальпации гладкая, эластичная. Селезенка: не увеличена. Стул: нормальный. Диурези нет. Почки не пальпируются. Симптом "поколачивания": отрицательный с обеих сторон. Нервно-психический статус: Сознание ясное, сон не нарушен, оценка своего состояния адекватная. Нарушения со стороны 12 пар черепно-мозговых нервов нет. Снижение памяти.

Нервно-психический статус

Другие данные: ЭКГ: 19.05.2024 09:08:07 Синусовый ритм с ЧСС - 65 в мин. Нарушение внутрижелудочковой проводимости в системе правой ветви п.Гиса, передней левой ветви п.Гиса. Признаки ГЛЖ с выраженным изменениями передне - боковой стенки. высоких боковых отделов ЛЖ. Изменения передне - перегородочной области. При сравнениис ЭКГ от 13.02.2024г. - прежние изменения.

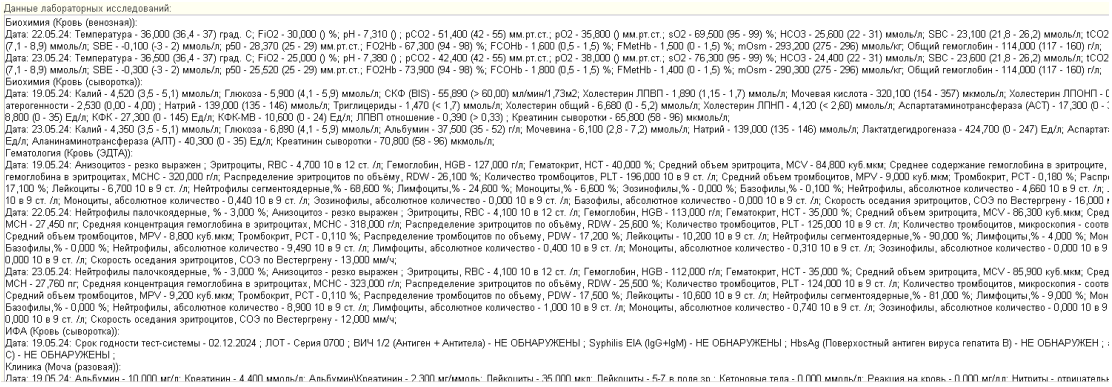
Диагноз

клинический предварительный
Основной: Дегенеративный сочетанный порок аортального клапана с преобладанием стеноза: Критический стеноз АК (Vмакс.=5,9м/с, PGмакс.=140ммHg, PGср.=88ммHg , Sак~0,54см2). Недостаточность аортального клапана I степени.

Relevant Test Results Prior to Catheterization

Biochemistry (Blood (venous)):

Date: 05/22Temperature - 36,000 (36.4 - 37) degrees. C; FiO2 - 30,000 () %; pH - 7,310 (); pCO2 - 51,400 (42-55) mmHg; pO2 - 35,800 () mmHg; SO2 – 69 500 (95 – 99) %; HCO3 - 25,600 (22 - 31) mmol/l; SBK - 23,100 (21.8 - 26.2) mmol/L; tCO2 - 24,000 (18.9 - 24.9) mmol/L; tO2 - 4800 (7.1 - 8.9) mmol/L; SBE - -0,100 (-3 - 2) mmol/l; p50 - 28,370 (25 - 29) mmHg; FO2Hb – 67 300 (94 – 98) %; FCOHb - 1.60


Данные лабораторных исследований:
Биохимия (Кровь (венозная)):
Дата: 22.05.24: Температура - 36,000 (36,4 - 37) град. С; FiO2 - 30,000 () %; pH - 7,310 () ; pCO2 - 51,400 (42 - 55) мм.рт.ст.; pO2 - 35,800 () мм.рт.ст.; sO2 - 69,500 (95 - 99) %; HCO3 - 25,600 (22 - 31) ммоль/л; SBC - 23,100 (21,8 - 26,2) ммоль/л; tCO2 (7,1 - 8,9) ммоль/л; SBE - -0,100 (-3 - 2) ммоль/л; p50 - 28,370 (25 - 29) мм.рт.ст.; FO2Hb - 67,300 (94 - 98) %; FCOHb - 1,600 (0,5 - 1,5) %; FMetHb - 1,500 (0 - 1,5) %; mOsm - 293,200 (275 - 296) ммоль/кг; Общий гемоглобин - 114,000 (117 - 160) г/л;
Дата: 23.05.24: Температура - 36,500 (36,4 - 37) град. С; FiO2 - 25,000 () %; pH - 7,380 () ; pCO2 - 42,400 (42 - 55) мм.рт.ст.; pO2 - 38,000 () мм.рт.ст.; sO2 - 76,300 (95 - 99) %; HCO3 - 24,400 (22 - 31) ммоль/л; SBC - 23,600 (21,8 - 26,2) ммоль/л; tCO2 (7,1 - 8,9) ммоль/л; SBE - -0,300 (-3 - 2) ммоль/л; p50 - 25,520 (25 - 29) мм.рт.ст.; FO2Hb - 73,900 (94 - 98) %; FCOHb - 1,800 (0,5 - 1,5) %; FMetHb - 1,400 (0 - 1,5) %; mOsm - 290,300 (275 - 296) ммоль/кг; Общий гемоглобин - 114,000 (117 - 160) г/л;
Биохимия (Кровь (сыворотка)):
Дата: 19.05.24: Калий - 4,520 (3,5 - 5,1) ммоль/л; Глюкоза - 5,900 (4,1 - 5,9) ммоль/л; СКФ (BIS) - 55,890 (> 60,00) мл/мин/1,73м2; Холестерин ЛПВП - 1,890 (1,15 - 1,7) ммоль/л; Мочевая кислота - 320,100 (154 - 357) мкмоль/л; Холестерин ЛПОНП - 0 атерогенности - 2,530 (0,00 - 4,00) ; Натрий - 139,000 (135 - 146) ммоль/л; Триглицериды - 1,470 (< 1,7) ммоль/л; Холестерин общий - 6,680 (0 - 5,2) ммоль/л; Холестерин ЛПНП - 4,120 (< 2,60) ммоль/л; Аспартатаминотрансфераза (АСТ) - 17,300 (0 - 8,800 (0 - 35) Ед/л; КФК - 27,300 (0 - 145) Ед/л; КФК-МВ - 10,600 (0 - 24) Ед/л; ЛПВП отношение - 0,390 (> 0,33) ; Креатинин сыворотки - 65,800 (58 - 96) мкмоль/л;
Дата: 23.05.24: Калий - 4,350 (3,5 - 5,1) ммоль/л; Глюкоза - 6,890 (4,1 - 5,9) ммоль/л; Альбумин - 37,500 (35 - 52) г/л; Мочевина - 6,100 (2,8 - 7,2) ммоль/л; Натрий - 139,000 (135 - 146) ммоль/л; Лактатдегидрогеназа - 424,700 (0 - 247) Ед/л; Аспартат Ед/л; Аланинаминотрансфераза (АЛТ) - 40,300 (0 - 35) Ед/л; Креатинин сыворотки - 70,800 (58 - 96) мкмоль/л;
Гематология (Кровь (ЭДТА)):
Дата: 19.05.24: Анизоцитоз - резко выражен ; Эритроциты, RBC - 4,700 10 в 12 ст. /л; Гемоглобин, HGB - 127,000 г/л; Гематокрит, HCT - 40,000 %; Средний объем эритроцита, MCV - 84,800 куб.мкм; Среднее содержание гемоглобина в эритроците, гемоглобина в эритроцитах, MCHC - 320,000 г/л; Распределение эритроцитов по объёму, RDW - 26,100 %; Количество тромбоцитов, PLT - 196,000 10 в 9 ст. /л; Средний объем тромбоцитов, MPV - 9,000 куб.мкм; Тромбокрит, PCT - 0,180 %; Распр 17,100 %; Лейкоциты - 6,700 10 в 9 ст. /л; Нейтрофилы сегментоядерные,% - 68,600 %; Лимфоциты,% - 24,600 %; Моноциты,% - 6,600 %; Эозинофилы,% - 0,000 %; Базофилы,% - 0,100 %; Нейтрофилы, абсолютное количество - 4,660 10 в 9 ст. /л; 10 в 9 ст. /л; Моноциты, абсолютное количество - 0,440 10 в 9 ст. /л; Эозинофилы, абсолютное количество - 0,000 10 в 9 ст. /л; Базофилы, абсолютное количество - 0,000 10 в 9 ст. /л; Скорость оседания эритроцитов, СОЭ по Вестергрену - 16,000 Дата: 22.05.24: Нейтрофилы палочкоядерные, % - 3,000 %; Анизоцитоз - резко выражен ; Эритроциты, RBC - 4,100 10 в 12 ст. /л; Гемоглобин, HGB - 113,000 г/л; Гематокрит, HCT - 35,000 %; Средний объем эритроцита, MCV - 86,300 куб.мкм; Сред MCH - 27,450 пг; Средняя концентрация гемоглобина в эритроцитах, MCHC - 318,000 г/л; Распределение эритроцитов по объёму, RDW - 25,600 %; Количество тромбоцитов, PLT - 125,000 10 в 9 ст. /л; Количество тромбоцитов, микроскопия - соотв Средний объем тромбоцитов, MPV - 8,800 куб.мкм; Тромбокрит, PCT - 0,110 %; Распределение тромбоцитов по объему, PDW - 17,200 %; Лейкоциты - 10,200 10 в 9 ст. /л; Нейтрофилы сегментоядерные,% - 90,000 %; Лимфоциты,% - 4,000 %; Мон Базофилы,% - 0,000 %; Нейтрофилы, абсолютное количество - 9,490 10 в 9 ст. /л; Лимфоциты, абсолютное количество - 0,400 10 в 9 ст. /л; Моноциты, абсолютное количество - 0,310 10 в 9 ст. /л; Эозинофилы, абсолютное количество - 0,000 10 в 9 0,000 10 в 9 ст. /л; Скорость оседания эритроцитов, СОЭ по Вестергрену - 13,000 мм/ч;
Дата: 23.05.24: Нейтрофилы палочкоядерные, % - 3,000 %; Анизоцитоз - резко выражен ; Эритроциты, RBC - 4,100 10 в 12 ст. /л; Гемоглобин, HGB - 112,000 г/л; Гематокрит, HCT - 35,000 %; Средний объем эритроцита, MCV - 85,900 куб.мкм; Сред MCH - 27,760 пг; Средняя концентрация гемоглобина в эритроцитах, MCHC - 323,000 г/л; Распределение эритроцитов по объёму, RDW - 25,500 %; Количество тромбоцитов, PLT - 124,000 10 в 9 ст. /л; Количество тромбоцитов, микроскопия - соотв Средний объем тромбоцитов, MPV - 9,200 куб.мкм; Тромбокрит, PCT - 0,110 %; Распределение тромбоцитов по объему, PDW - 17,500 %; Лейкоциты - 10,600 10 в 9 ст. /л; Нейтрофилы сегментоядерные,% - 81,000 %; Лимфоциты,% - 9,000 %; Мон Базофилы,% - 0,000 %; Нейтрофилы, абсолютное количество - 8,900 10 в 9 ст. /л; Лимфоциты, абсолютное количество - 1,000 10 в 9 ст. /л; Моноциты, абсолютное количество - 0,740 10 в 9 ст. /л; Эозинофилы, абсолютное количество - 0,000 10 в 9 0,000 10 в 9 ст. /л; Скорость оседания эритроцитов, СОЭ по Вестергрену - 12,000 мм/ч;
ИФА (Кровь (сыворотка)):
Дата: 19.05.24: Срок годности тест-системы - 02.12.2024 ; ЛОТ - Серия 0700 ; ВИЧ 1/2 (Антиген + Антитела) - НЕ ОБНАРУЖЕНЫ ; Syphilis EIA (IgG+IgM) - НЕ ОБНАРУЖЕНЫ ; HbsAg (Поверхостный антиген вируса гепатита В) - НЕ ОБНАРУЖЕН ; С) - НЕ ОБНАРУЖЕНЫ ;
Клиника (Моча (разовая)):
Дата: 19.05.24: Альбумин - 10,000 мг/л; Креатинин - 4,400 ммоль/л; Альбумин\Креатинин - 2,300 мг/ммоль; Лейкоциты - 35,000 мкл; Лейкоциты - 5-7 в поле зр.; Кетоновые тела - 0,000 ммоль/л; Реакция на кровь - 0,000 мг/дл; Нитриты - отрицатель

Relevant Catheterization Findings

After successive dilation of 20x40 mm and 25x40 mm cylinders, total aortic valve insufficiency occurred, followed by ventricular fibrillation and asystole; during asystole, an Abbott Portico aortic prosthesis with a diameter of 29 mm was implanted.

MOVIE-0001.mp4
MOVIE-0002.mp4
MOVIE-0003.mp4

Interventional Management

Procedural Step

The right common femoral artery was punctured and two intravascular Proglide sutures were applied. The rigid Confida conductor is located in the cavity of the left ventricle. Next, a balloon catheter 20.0×40 mm was wound up with great difficulties, valvuloplasty was performed, then valvuloplasty was performed with a balloon catheter 25.0×40 mm. after dilation, total regurgitation of the aortic valve occurred, ventricular fibrillation occurred, successful defebrillation was performed, asystole was registered on the ECG, indirect heart massage was initiated, during which the Portico 29 mm aortic valve prosthesis was positioned and implanted. After implantation of the prosthesis and indirect heart massage and vasopressor support, the sinus rhythm was restored with a heart rate of 95, and blood pressure of 140 and 70 mmHg.

MOVIE-0001.mp4
MOVIE-0002.mp4
MOVIE-0003.mp4

Conclusions

Complex patients should be operated on by experienced surgeons in a well-equipped surgery room. It is always necessary to take into account the presence of initial regurgitation on the aortic valve. Always be ready to perform the implantation of an aortic prosthesis, even during asystole.

[Invited Case] An Access Site Consideration After Failing Transfemoral Approach

Euihong Ko*

Kokura Memorial Hospital, Japan

Clinical Information

Relevant Clinical History and Physical Exam

A 94-year-old female with very severe aortic stenosis (AS) presented to our institution with worsening dyspnea over preceding week. Chest X-ray showed cardiomegaly and congestion (Figure 1). Transthoracic echocardiography demonstrated well preserved ejection fraction and very severe AS with peak velocity of 5.91 m/s, and mean PG of 85.2 mmHg. The Society of Thoracic Surgery score was 5.065%. Clinical frailty scale was 4. She had a history of hypertension, hyperlipidemia, and hypothyroidism.

Relevant Test Results Prior to Catheterization

Computed tomography showed an annulus area of 368 mm2, a perimeter of 69.9 mm, and small aortic root with Sinus of Valsalva (LCC: 237.3 mm, RCC: 26.5 mm, NCC: 28.9 mm). The aortic valve was tricuspid and demonstrated severe calcification in RCC and NCC. The bilateral iliac arteries were more than 6 mm in diameter, however there was tortuous angular portion at thoracoabdominal aorta (Figure 2).

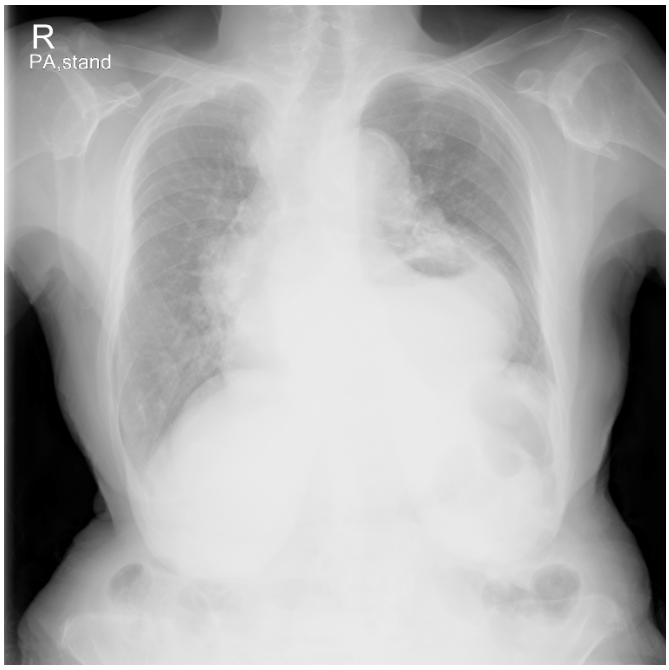


Figure 1.

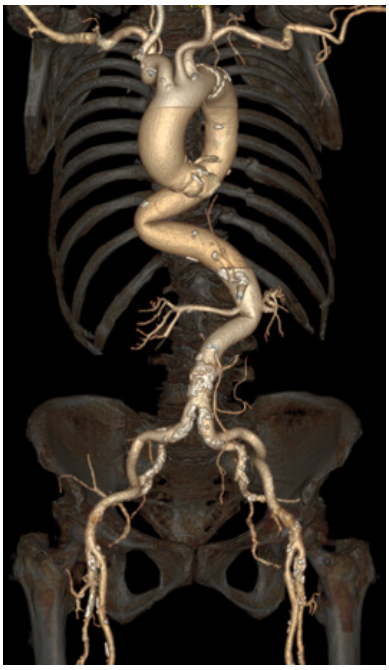


Figure 2.

Interventional Management

Procedural Step

A 23 mm Evolut FX was selected due to severe calcification. The patient received local anesthesia in combination with intravenous opioids. A 4Fr pigtail was inserted via left femoral artery. Then, we tried to advance an 18Fr GORE DrySeal Flex Introducer Sheath 65 cm via right femoral artery but couldn't cross the tortuous angular portion. We exchanged wire from Amplatz Extra-Stiff to Lunderquist Extra-stiff wire, however this didn't work. Therefore, we inserted another Lunderquist Extra-stiff wire through the pigtail of contralateral side, and finally succeeded in crossing the tortuous portion and advanced Gore DrySeal to the descending aorta (Video 1). We preformed predilation with the aortic Inoue-Balloon catheter (Toray, Tokyo, Japan) of 20 mm. Then we tried to deliver Evolut FX but it was stuck in the GORE DrySeal (Video 2). Given the better crossability, we tried with NAVITOR 23 mm but in vain. Our heart team decided to perform transcarotid TAVR owing to the presence of almost no plaque in the left common carotid artery (CCA), and brain magnetic resonance angiography revealed good communications between the anterior and posterior communicating arteries. Transcarotid TAVR was successfully done using SAPIEN 3 Ultra RESILIA 23 mm (-2cc) with the 30-min clamp time of the left CCA (Video 3).

Video 1 DrySeal delivery.mp4
Video 2 Evolut failure.mp4
Video 3 S3UR.mp4

Conclusions

Transcarotid access is a safe and feasible approach in a case requiring an alternative approach. Furthermore, brain MRA and INVOS could be useful to evaluate the communications of cerebral arteries and monitor cerebral local circulation during CCA clamping for the purpose of preventing cerebral vascular accidents.

Breaking Barriers: Transcarotid TAVR in Practice

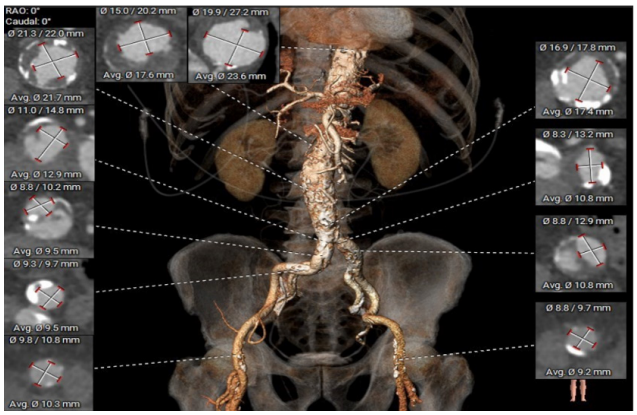
Faisal Yousef Almajid*

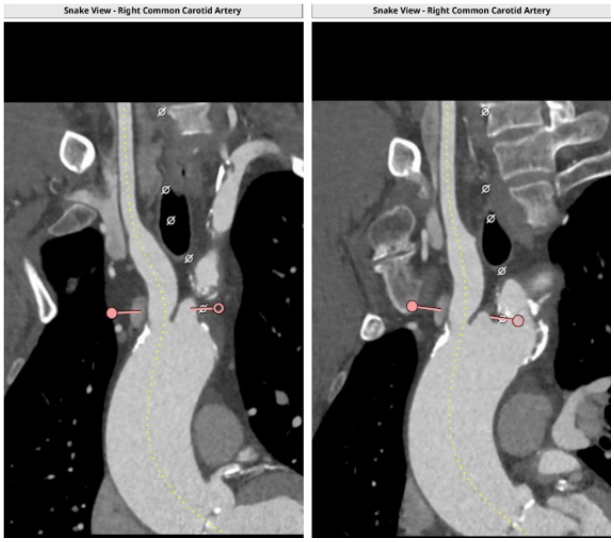
Asan Medical Center, Korea (Republic of)

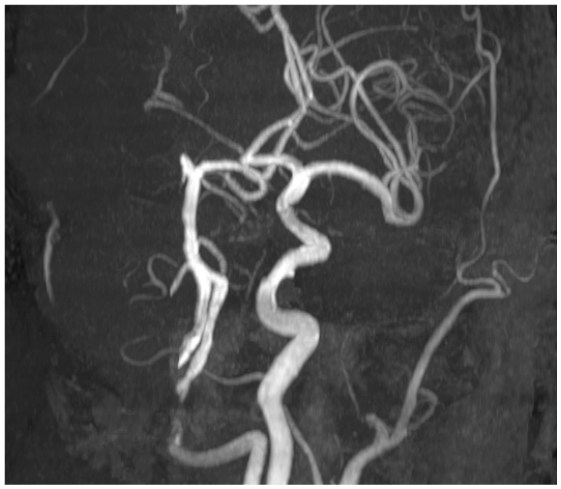
Clinical Information

Relevant Clinical History and Physical Exam

- 77M, BMI 26.3 / BSA 1.76
- Chief complaints
  - DOE (NYHA Fc II)
- Medical history
  - · Severe degenerative AS, preserved LV function
  - · LM Bifurcation PCI
  - · Rt Vertebral artery stenosis (severe)
- STS score = 2.49%, Euroscore II = 1.22%







Interventional Management

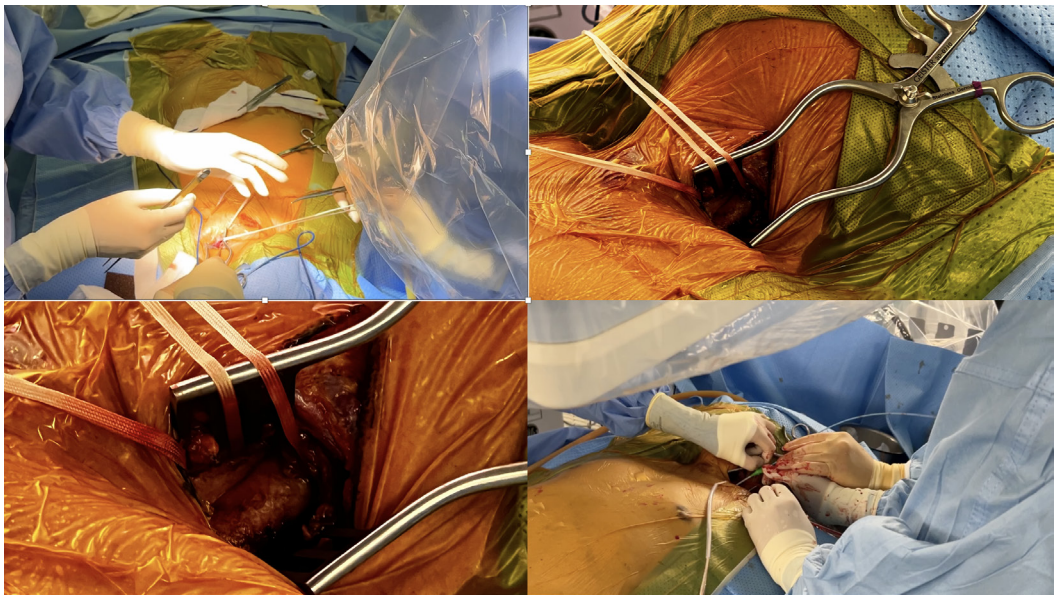
Procedural Step

Annulus area was 609 mm^2, within the size range of a 29 mm Sapien S3 valve. Area ratios for SOV, LVOT, and STJ were within acceptable limits.

Calcium score is 1,466 requiring predilation. Coronary heights were acceptable. Femoral artery Segmentation showed bilateral iliofemoral dissection, requiring an alternate route. Left subclavian analysis showed a tortuous vessel with a minimal diameter of 5.0 mm, making it not feasible. Left common carotid analysis showed a tortuous vessel with a minimum diameter of 5.8 mm. The right common carotid was chosen for having a minimum diameter of 6.1 mm and a more straightforward trajectory.

MRI showed severe stenosis of the right vertebral artery and a hypoplastic A1 segment of the anterior communicating artery, indicating more supply from the left carotid. Therefore, right carotid access was more feasible. We set up our hybrid room with operators on the right side of the patient's head to facilitate right carotid access.

Due to heavy calcification, our target oversizing for a 29 mm S3 valve was 5-10%. We predilated using a 22 mm balloon, then went nominal with a 6.6% area oversize. Our cardiac surgeon performed the cutdown. Avoiding vagal nerve injury, the proximal carotid was identified, punctured, and the e-sheath inserted. We crossed the valve using a JR catheter. Valve alignment was performed in the ascending aorta, followed by usual TAVR steps. Predilation with a 22 mm balloon was done, and the valve was deployed.



Video 1.mp4
Video 2.mp4

Conclusions

- Transcarotid TAVR at AMC is feasible with proper CT analysis, room preparation, and a multidisciplinary team.
- This technique reduces vascular complications and improves efficiency, but delivery system choice is crucial.
- Trans-Carotid access is a promising second-line option for our TAVR population and is expected to enhance outcomes as expertise grows.

Fixing Double Trouble in an Octogenarian with Acute Heart Failure

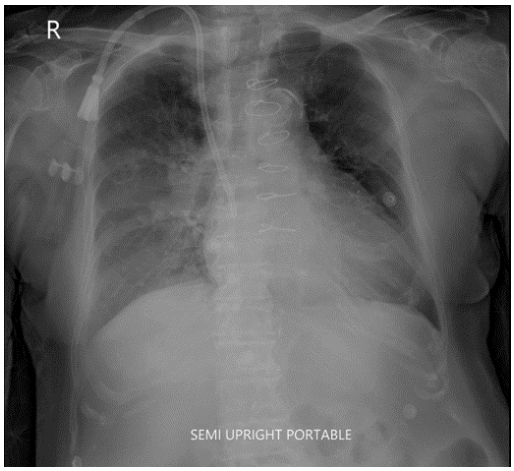
Sakolwat Montrivade*, Akara Kijnithikul, Wasant Soonfuang, Sukhum Tachasakunjaroen, Anuruck Jeamanukoolkit

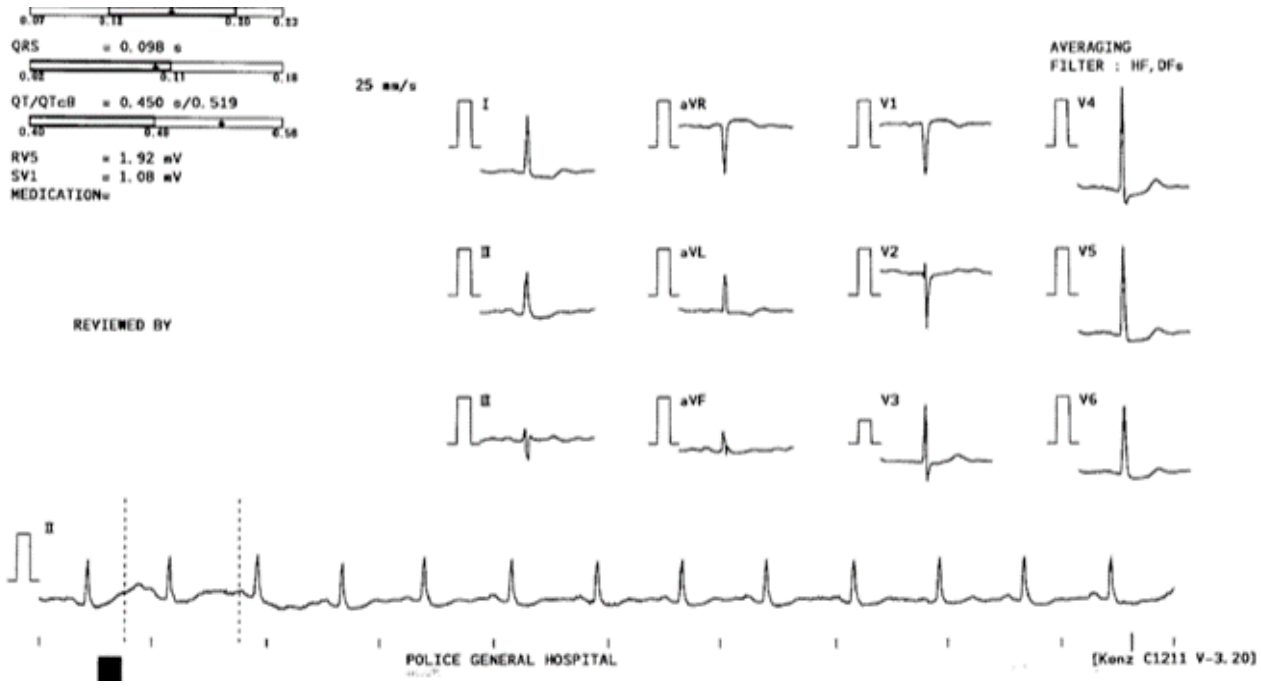
Police General Hospital, Thailand

Clinical Information

Relevant Clinical History and Physical Exam

An 80-year-old woman with PMH of CAD post CABG, T2DM, HTN, CKD on dialysis presented with acute heart failure. She was immediately intubated upon arrival. Her vitals were stabilized with BP of 160/80 mmHg, HR of 90/min and SpO2 of 92%. Cardiac examination revealed elevated JVP, normal S1S2 and PSM grade III/VI at apex together with bilateral rales. Hs-troponin T was 1,000 ng/mL and TTE showed LVEF of 50%, hypokinesis in inferior wall and severe MR. The diagnosis of NSTEMI with HF was made.





Relevant Test Results Prior to Catheterization

TEE showed mitral valve prolapse in A2-P2 segments and flail posterior mitral valve leaflet causing severe anteriorly directed jet MR. The anatomy of MR was suitable for TEER. We brought the patient to the catheterization lab and performed CAG which revealed occluded LAD and LCX, severe stenosis in mid RCA with heavy calcification and severe stenosis in PDA. LIMA to LAD was patent but SVG to OM was occluded and SVG to PDA had severe stenosis at distal anastomosis.

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WEB_1.3.12.2.1107.5.4.5.121528.30000023121300051360200000395.4.512.dcm.wmv

Relevant Catheterization Findings

We opted to PCI of RCA and PDA. Rotational atherectomy was done at proximal to mid RCA using Rota Burr 1.5 mm, 180,000 rpm for 5 runs. We then further predilated the lesion with NC balloon 3.0 mm at 18-22 atm. Distal RCA was stented with EES 3.0 x 33 mm. Mid RCA was stented with EES 3.0 x 48 mm and proximal RCA was stented with EES 3.5 x 33 mm. The stents were post-dilated using 3.5 mm and 4.0 mm NC balloon. Lastly, a paclitaxel coated balloon 2.5 x 25 mm was deployed at PDA lesion.

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WEB_1.3.12.2.1107.5.4.5.121528.30000023121300051360200000779.4.512.dcm.wmv
WEB_1.3.12.2.1107.5.4.5.121528.30000023121300051360200000780.4.512.dcm.wmv

Interventional Management

Procedural Step

We held a heart team meeting and discussed the treatment of MVP with flail posterior mitral leaflet. The patient was deemed suitable for mitral TEER given 1). high patient's risk profile with NSTEMI, HF, CKD on dialysis, and respiratory failure on mechanical ventilation 2). post sternotomy status 3). optimal MR anatomy with A2-P2 segments, good coaptation length and depth, flail gap of less than 10 mm and flail width of less than 15 mm. We planned to use single NTW MitralClip G4 to appose the leaflets given broad gap and moderate leaflet length.

We brought the patient to the lab and put the patient under general anesthesia. Right femoral venous access was obtained under ultrasound guidance and transeptal puncture at superoposterior position was obtained using electrified Conquest Pro 12 in Brockenbrough needle to avoid needle slippage from bulging LA. MitraClip steerable guide and catheter were advanced in the usual fashion. We successfully grasped A2-P2 segment and a single NTW MitraClip G4 was successfully deployed. There was 1+ residual MR and acceptable mean gradient across MV of 2.5 mmHg. We ended the procedure at this point as placing a second clip might not be of benefit. The patient was transfered to CCU for further HF treatment and discharged home in 7 days.

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1.2.840.113663.1500.1.522823475.3.8.20240112.101328.763.dcm.wmv

Conclusions

- In patients with very high risk profile, Mitral Transcatheter Edge-to-Edge Repair (TEER) is an excellent alternative to open mitral valve surgery as we demonstrate a case of NSTEMI and HF with complex coronary anatomy together with severe primary MR from flail leaflet undergoing complex high risk PCI and M-TEER.
- Anatomical consideration for M-TEER including A2-P2 position, flail gap of less than 10 mm and flail width of less than 15 mm, is very important in procedural planning and successful deployment of the clip.
- Risk and benefit of placing a second clip should be strongly considered in a fragile and high risk patient. Reducing MR from 4+ to 1+ may be enough in those cases.

How Small Can the Neo-LVOT Be in Transcatheter Mitral Valve Replacement Using the LAMPOON Procedure

Huan-Chiu Lin*, Yung-Tsai Lee, Tien Ping Tsao, Wei-Hsian Yin

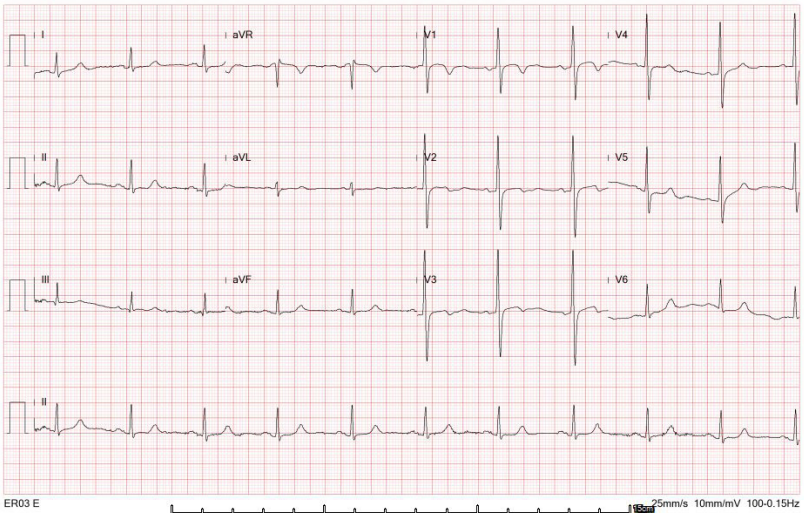
Cheng Hsin General Hospital, Taiwan

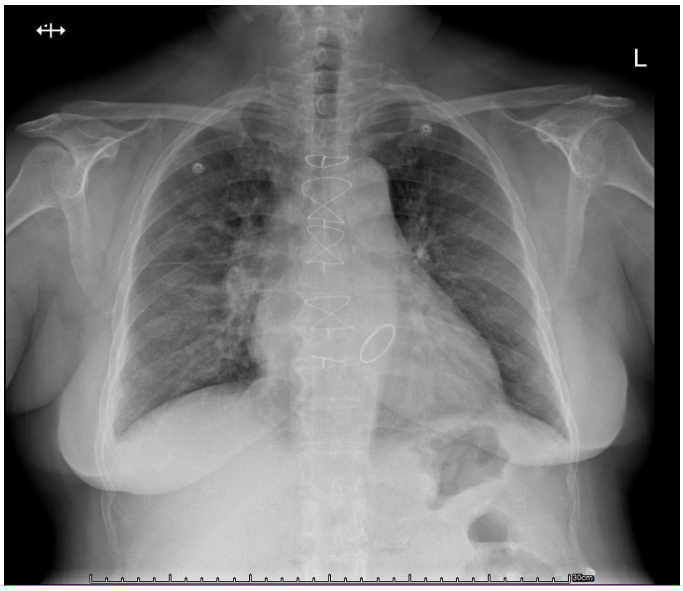
Clinical Information

Relevant Clinical History and Physical Exam

We describe a case of a 67-year-old female with underlying diseases of hypertensive cardiovascular disease, type 2 diabetes mellitus, and chronic kidney disease; ten years

before, she underwent mitral valve repair with surgical annuloplasty ring due to severe mitral regurgitation. She presented to our hospital with functional class III heart failure symptoms. Physical examination revealed grade IV/VI systolic murmur over apex, with bilateral lower limbs pitting edema.





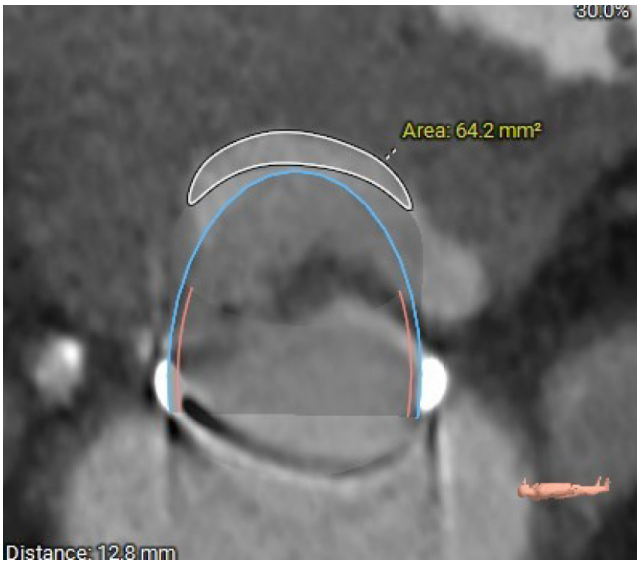
Relevant Test Results Prior to Catheterization

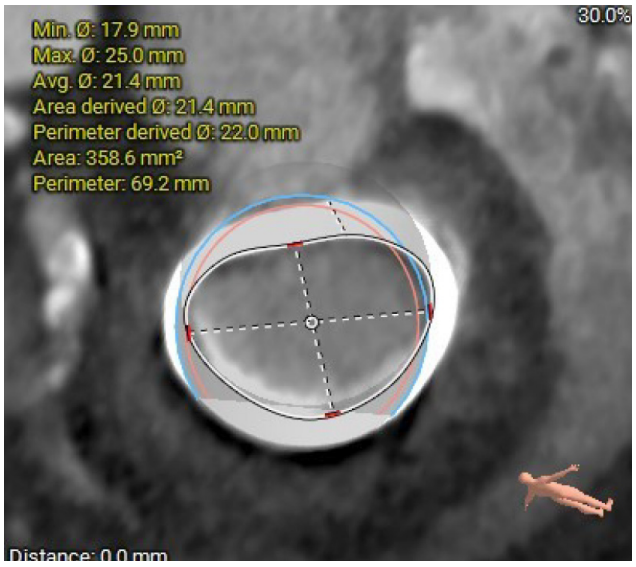
Transthoracic echocardiography revealed degenerative mitral bioprosthesis with severe regurgitation with secondary pulmonary hypertension. Multi-slice CT analysis unveiled the internal area of mitral ring is 359 mm2. The estimated neo-LVOT area is 64 mm^2. The aorto-mitral angle measures 139 degrees.

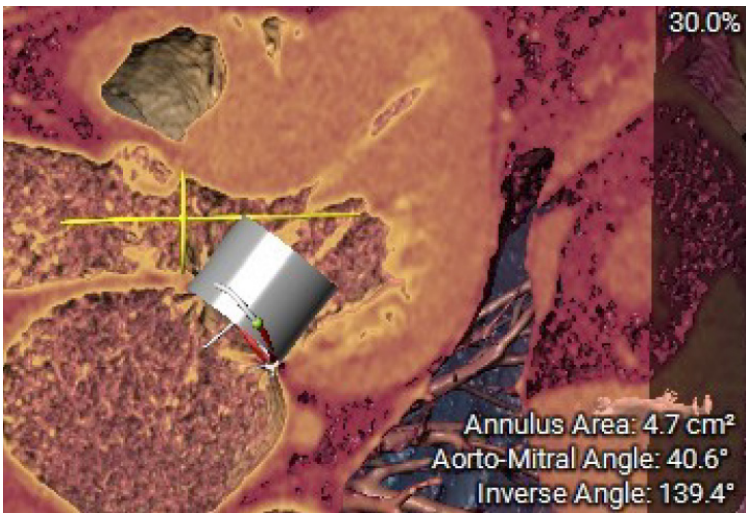
- 4C-color.mp4
- PSL-color 2.mp4
- Mitral inflow.mp4

Relevant Catheterization Findings

Coronary angiogram revealed triple vessel disease, with severe stenosis over the middle portion of the left circumflex artery, and an ostial lesion at right coronary artery. Left ventriculography showed 3+ mitral regurgitation. Right heart catheterization showed group 2 pulmonary hypertension, pulmonary artery mean pressure 42 mmHg, and pulmonary capillary wedge pressure is 26 mmHg.







Interventional Management

Procedural Step

1. Before the main procedure, a Sentinel cerebral embolic protection device was implanted via the right radial artery.
2. The transseptal puncture was performed under fluoroscopic and TEE guidance, and a posterior puncture was made.
3. Under the support of Agilis sheath, we use a MP/5F and Terumo guide wire to cross the mitral ring, and then up to the aorta. The Terumo wire was subsequently retrieved from the left femoral access with a JR4/7F guide catheter and a 6F Snare, forming a veno-arterial rail. Catheter rendezvous technique between MP and JR4 was performed.
4. Then, the Astato XS20 wire was threaded through the catheter. Once the Astato guidewire is positioned at the tip of the anterior mitral leaflet, traction is applied to both catheters, forming a ”flying U” shape in fluoroscopy.
5. Then, the guidewire was pulled toward the base of mitral ring and electrocautery the leaflet with 40W.
6. After adequate laceration, color Doppler showed splitting of regurgitant jets from the basal portion of AML, and the RT-3D TEE confirmed the laceration reached the base of the mitral annuloplasty ring.
7. Septostomy was performed with a 12 mm Mustang balloon for one minute.
8. A 26-mm SAPIEN3 was then delivered into the ring and deployed under rapid pacing. TEE revealed no paravalvular leak, with normal transvalvular mean pressure gradients of 2 mmHg. The LVOT pressure gradient is 22 mmHg.

LAMPOON.WMV
LAMPOON 2.mp4
Leaflet splitting.mp4

Conclusions

Laceration of of the Anterior Mitral Leaflet to Prevent Outflow Obstruction (LAMPOON) is a transcatheter electrosurgical technique used to split the anterior mitral valve leaflet immediately prior to transcatheter mitral valve replacement (TMVR). Our case highlights that the single-stage tip-to-base LAMPOON procedure, combined with TMVR, can be successfully performed in patients undergoing transcatheter mitral valve-in-ring (ViR) at high risk of left ventricular outflow tract obstruction (LVOTO). Incorporating the LAMPOON technique may enable us to apply TMVR to patients with a small predictive neo-LVOT area who were previously excluded based on pre-procedural evaluations.

Is There Still a Role for Heterotopic Tricuspid Valve Implantation? - A Case Report in Severe TR Secondary to Post Pacemaker Lead Extraction

Tsz Ho Chan[1*], Kar Lok Leo Lai[2], Kent, Chak Yu So[2], Ka Ho Kevin Kam[2], Ka Lung Chui[2], Yat Sun Joseph Chan[2]

[1]Pok Oi Hospital, Hong Kong, China, [2]Prince of Wales Hospital, Hong Kong, China

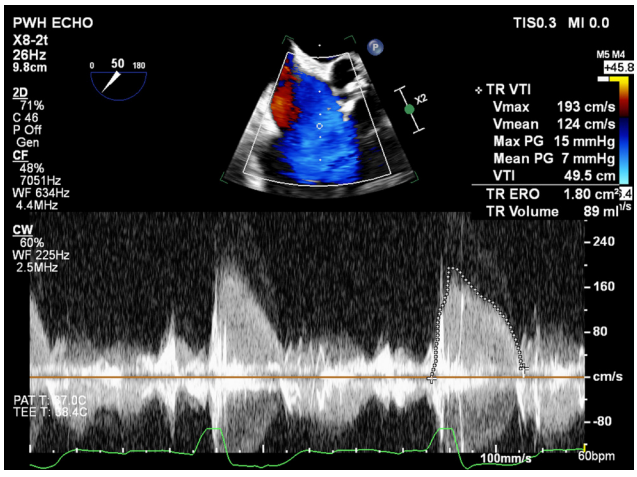
Clinical Information

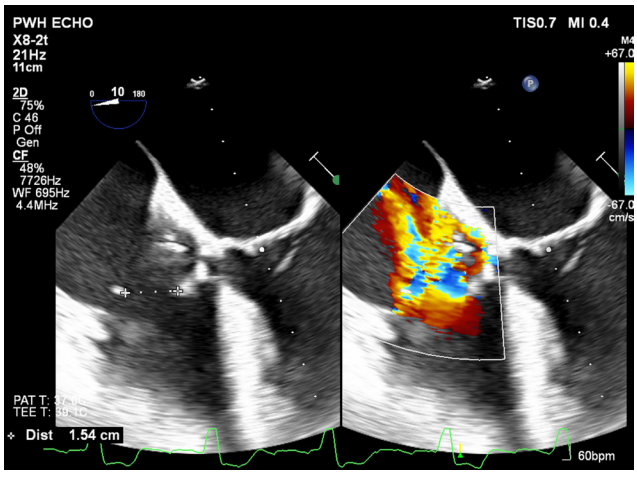
Relevant Clinical History and Physical Exam

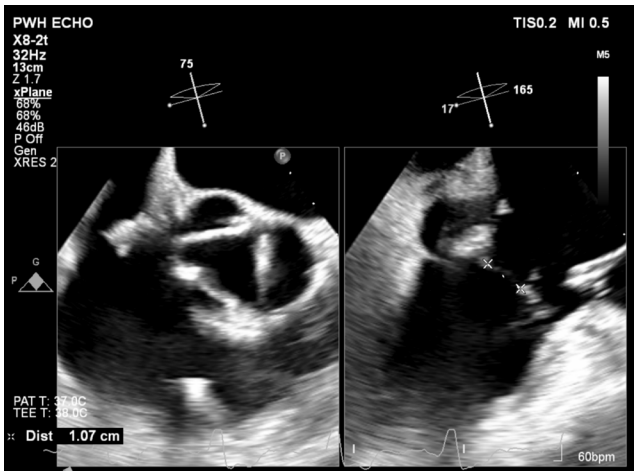
88 years old gentleman, presented with NYHA Class 4 symptoms. His past medical history included hypertension, atrial fibrillation and prostate cancer. He received permanent pacemaker since 30 years ago with interval pacemaker replacement done. Latest replacement complicated with infection which required removal of whole CIED system. Post removal complicated with cardiac tamponade and acute severe TR. Afterwards he was diuretics dependent and suffered from advanced heart failure symptoms.

Relevant Test Results Prior to Catheterization

Echocardiogram showed normal biventricular systolic function. Torrential Tricuspid regurgitation with ERO 1.8 cm2 and regurgitation volume 89 mL. Diffuse ruptured chordae are noted at three tricuspid leaflets, an adherent tissue is found attaching to tricuspid septal leaflet. Septo-posterior gap is 1.1 cm and septo-anterior gap is 1.5 cm. A mobile linear mass is noted at the right atrium which suggestive of remaining tissue mass (post extraction).

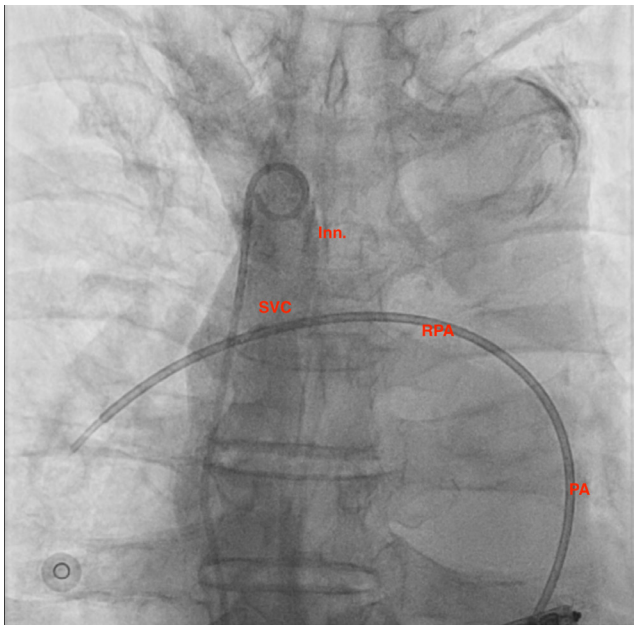


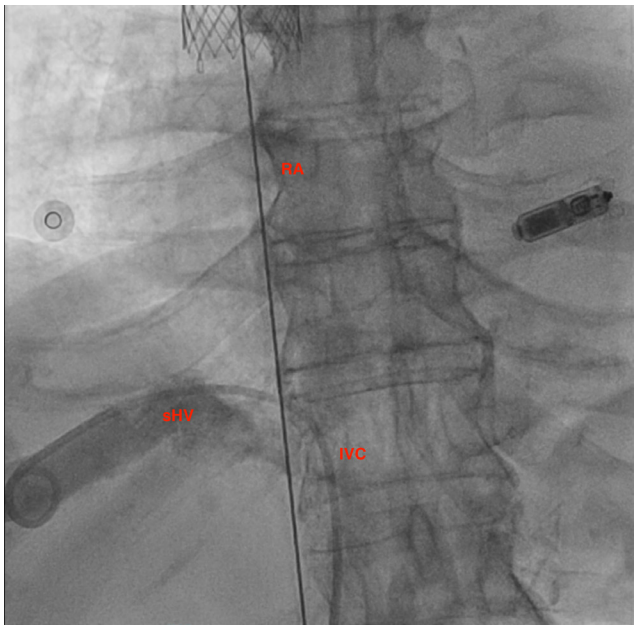




Relevant Catheterization Findings

Procedure was done under local anesthesia. Bilateral femoral venous access was obtained. Right femoral vein was subsequently dilated to 24Fr for delivery of the tricvalve system. Left femoral access was used for pigtail catheter for contrast injection as landmarks in SVC and IVC before deployment of the tricvalve.





Interventional Management

Procedural Step

SVC Valve and IVC Valve size were chosen according to pre procedural CT scan analysis.

A multipurpose catheter was advanced to the right pulmonary artery. Angiogram was performed by another pigtail catheter at SVC. SVC, Innominate vein and Right atrium were delineated. Then Pigtail was removed and SVC Valve was deployed. We aimed the crown of the SVC valve anchoring at innominate vein confluence and the belly stayed above SVC. After deployment, the nose cone should be taken out very slowly and carefully to avoid dislodge the valve when moving the system out.

Then pigtail was introduced to the suprahepatic vein and angiogram was performed. Suprahepatic vein, IVC, and Right atrium were delineated. This time the pigtail can be staying to perform the angiogram before full deployment of the IVC valve. We aimed the skirt of the IVC valve to be above the suprahepatic vein. Again, removal of nose cone should be done carefully to avoid interaction between the valve and the system.

Final angiogram in RA showed no significant leakage to SVC and IVC. Follow up echocardiogram showed disappearance of more hepatic vein reversal flow.

Moving down the Tricvalve.mp4
Angiogram Before final deployment IVC Valve.mp4
Final shot without leakage.mp4

Conclusions

The patient was able to be discharged and to cut down the use of diuretics. He suffered from right shoulder pain probably secondary to right phrenic nerve irritation. With the use of analgesics, the pain was controlled and subsided in months. His heart failure symptoms also improved to NYHA Class 1-2 and no acute heart failure admission in 9 months post implantation.

Although with more data and studies regarding TEER or Orthotopic TTVR, heterotopic TTVR (eg tricvalve) still plays a role in managing some of the patients, especially challenging TV or RV anatomy or concerns underwent general anesthesia.

[Invited Case] PPVI in Young Man S/p Repair of TOF with RVOT Aneurysm

Supaporn Roymanee[1], Thanawat Suesat[2*]

[1]*Prince of Songkla University, Thailand,* [2]*Khon Kaen Hospital, Thailand*

Clinical Information

Relevant Clinical History and Physical Exam

19 year old male, Known case TOF s/p total repair since 2007

Clinical FC I, no DOE

- V/S: BT 36.7°C, PR 66/min, BP 109/77 mmHg, RR 18/min, O2sat 100%
- Heart: no heave, no thrill, normal S1, S2, to and fro at LUPSB

CXR : Mild Cardiomegaly ECG; NSR, rate 60 bpm, -15 degree, QRSd 142 msec, CRBBB

Echo : Severe PR, PV annulus 20.7 mm, No branch PS, Good biventicular function

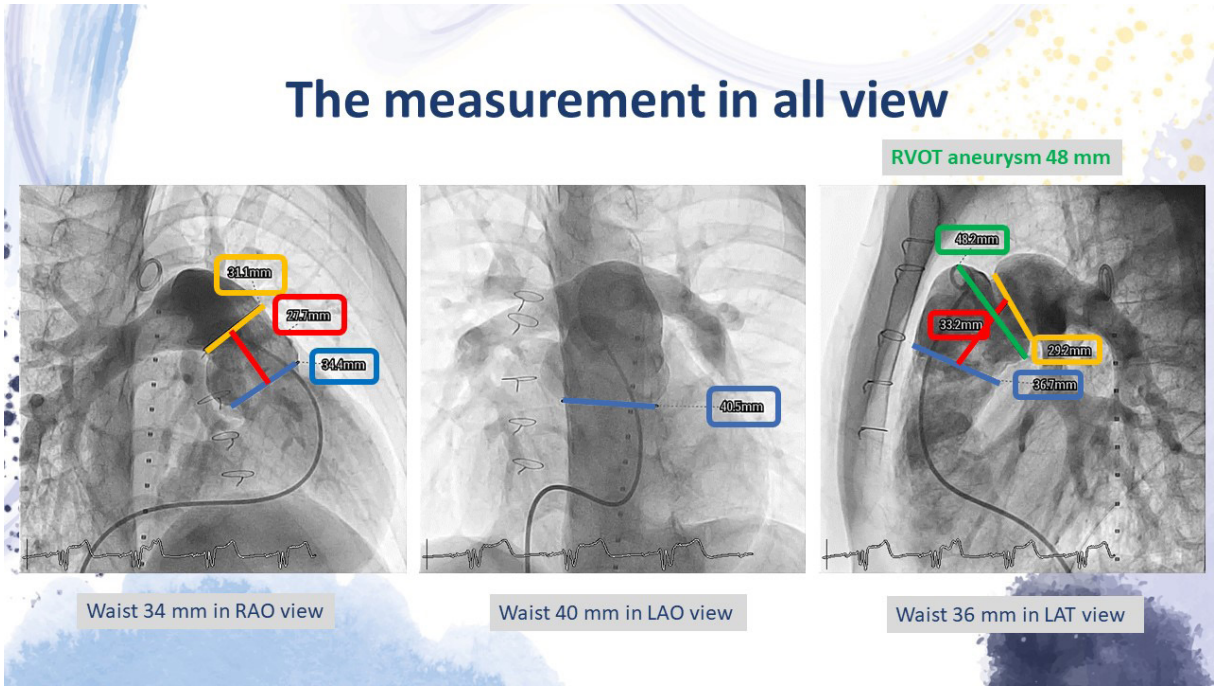
MRI : PRF 46%

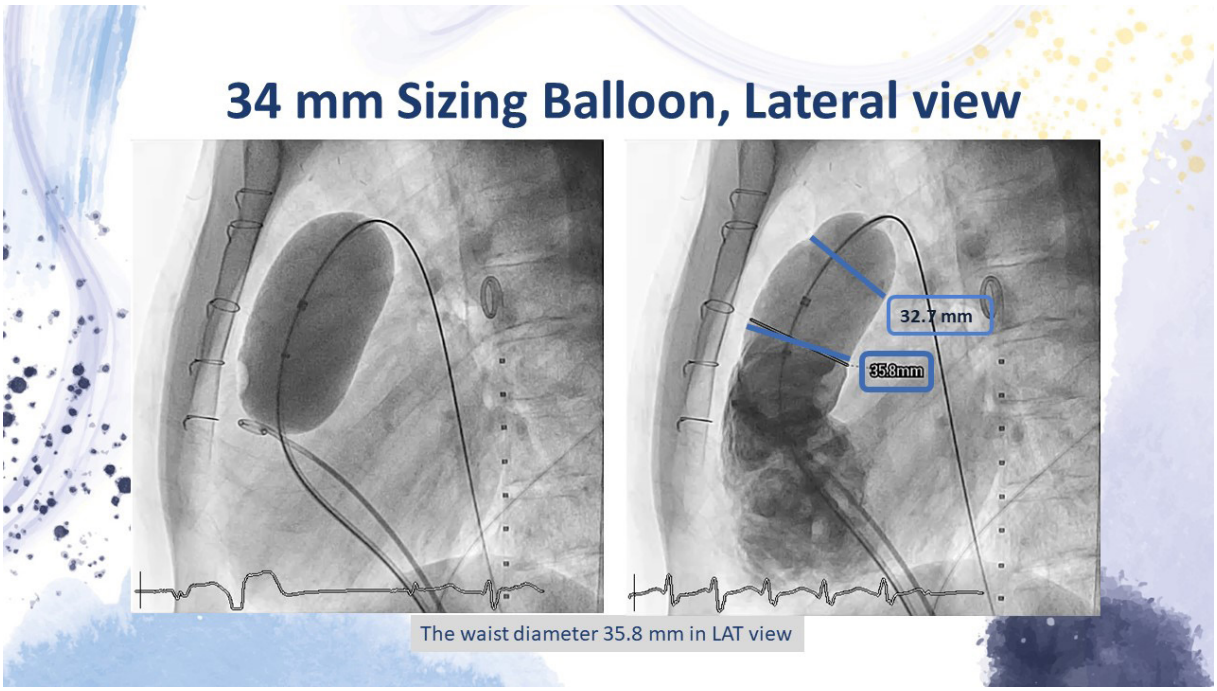
RVEDVi 184.6 ml/m2 RVESVi 94 ml/m2

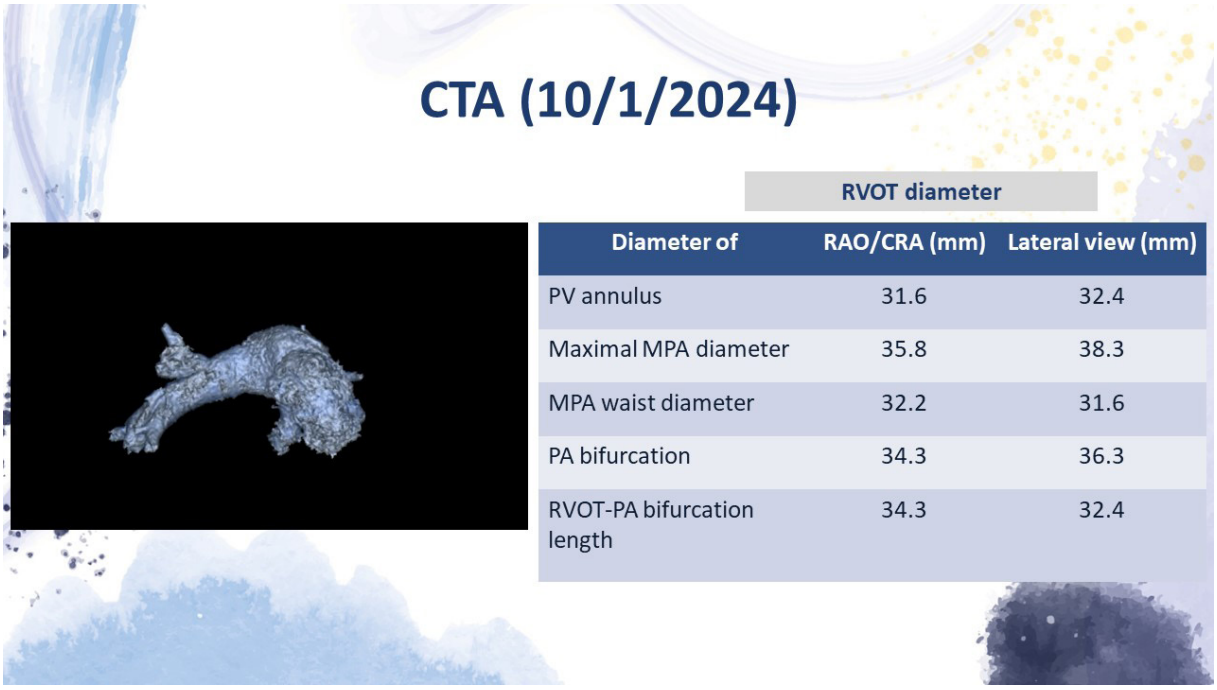
RVEDv/LVEDv 2.48

RVEF 48.2%

LVEF 48.4%







Relevant Test Results Prior to Catheterization

PA gram : Waist 34 mm in RAO view, Waist 40 mm in LAO view, Waist 36 mm in LAT view, RVOT aneurysm 48 mm

The right femoral vein is patent with a diameter of 13.5 mm

No coronary compression during balloon interrogation

summary

rTOF with free PR

Type IV RVOT (fusiform) with waist diameter 35×35 mm

PA1.mp4
PA2.mp4
PA3.mp4

Relevant Catheterization Findings

PA4.mp4
PA5.mp4

Interventional Management

Procedural Step

1. Preclosed Proglide was done before procedure
2. MPAangiogram in RAO cranial and true lateral view show pyramidal shape RVOT withwaist dimeter 36×36 mm, bifurcation 29.5×29.5 mm, length 28.5×29.4 mm
3. With 34 mm balloon sizing, waist dimeter 29×31 mm, No coronary compression duringballoon interrogation
4. 26 Frlong Gore DrySEAL was inseted to PA branch, Venus P valve 36/25 was selected to implant at RVOT
5. After procedure, RV gram and PA angiogram show good device position, No PR, Nosignificant PA-RV gradient, No obstruction at both PA branch
6. CAG show no coronary obstruction

Complication : none

8.2.mp4
13.2.mp4
16.2.mp4

Conclusions

Percutaneous pulmonic valve implantation using the newself-expandable Venus P-valve proved to be a safe and viable procedure,enabling the treatment of highly dilated right ventricular outflow tracts with aneurysmal change that are unsuitable forexisting balloon-expandable valves.

Proceedings of the CVRF Conferences

Accepted Cases of 13th AP VALVES & SH 2024

VOL.1

CVRF
CardioVascular Research Foundation

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발 행 소 재단법인 심장혈관연구재단
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