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Traumatic Aortic Injury: Clinical Results of Endovascular Repair, 5-Year Experiences in a Single Regional Trauma Center

Chang Ho Jeon, Jin Hyeok Kim[1], Chang Won Kim, Hoon Kwon

Pusan National University Hospital, Busan, [1]Pusan National University Yangsan Hospital, Yangsan, South Korea.
E-mail: changho.jeon@gmail.com

Objectives: Traumatic aortic injury (TAI) is rare but is highly fatal. In determining how to treat TAI, there are many factors to consider, due to the complexity of concomitant traumatic injuries. The European Society of Cardiology recommends that thoracic endovascular aortic repair (TEVAR) should be preferred to open surgical repair in cases of TAI with suitable anatomy. We evaluated the clinical efficacy and safety of TEVAR for the treatment of TAI in a regional trauma center. **Methods:** A retrospective electronic medical record review of all patients undergoing TEVAR for TAI between November 2014 and September 2019 at a Korean Regional Trauma Care Center was performed. Reviewed results included patient demographics, initial and follow-up computed tomographic scan results, angiographic findings, TAI type and sites, time from injury to repair, injury severity score, and clinical outcomes including survival duration and procedure-related complications. **Results:** Twenty-three trauma patients from a single trauma care center underwent TEVAR. The mean age was 54 years and 18 patients were male. The proximal landing zone involved was aortic arch zone 2 in 43.4% and zones 3 and 4 in 56.6% of procedures. Technical success was achieved in all cases. No patient developed procedure-related paraplegia or required conversion to open surgery. Follow-up imaging demonstrated complete exclusion of the traumatic tear and regression of the false aneurysms without endoleak or stent-graft-induced new entry or symptom of steal syndrome during follow-up duration 332.0 ± 285.0 (15–03 days). Thirty-day mortality was 8.7% (n = 2). **Conclusion:** TEVAR is a reliable, safe, convenient with less complications for TAI, especially given the consideration in cases with suitable aortic anatomy and appropriate hemodynamic status.

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Advantages of Vascular Plugs in Embolization of High-Flow Vascular Lesion

Akshay Abhay Gursale, Vivek Ukirde, Sagar Satpute

Lokmanya Tilak Municipal General Hospital and Medical College, Mumbai, Maharashtra, India.
E-mail: akshaygursale8898@gmail.com

Objectives: To study the applications of vascular plugs in embolization of high-flow vascular lesions. **Methods:** Imaging-proven cases of high-flow vascular malformation were selected after written and informed consent. All patients were treated successfully with vascular plug after angiographic evaluation. **Results:** Ten embolizations were performed of which 7 (70%) were elective and 3 (30%) were done on emergency basis. Of these seven cases, three cases (42%) needed vascular plug and augmented with other embolic agents that include coils in 1 case (16.6%) and sterol in 2 cases (33.3%). Of the emergency 3 cases, 2 (66.6%) needed plug with and adjunct embolic agent like gel foam in one case and coil in other. **Conclusion:** Successful embolization was performed in all cases. This includes pulmonary arteriovenous malformation, dialysis fistula closure, Abernethy syndrome, and portal hypertension. The vascular plug is a very useful embolization agent that allows the operator to treat a variety of high-flow conditions including very challenging vascular lesions, such as high-flows arteriovenous fistula and vessels with short-landing zones. There is good control on the device with minimal risk of distal embolization or migration. Becoming familiar with the different versions of the device within the Amplatzer vascular plugs family and the utility of combining the AVP with other embolization therapies is very important.

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The Role of Ablative Techniques in Treatment of Lung Metastasis: Our Interventional Radiology Experience

Faiella Eliodoro, Pacella Giuseppina, Bernetti Caterina, Altomare Carlo, Andresciani Flavio, Zobel Beomonte Bruno, Grasso Rosario Francesco

Department of Diagnostic and Interventional Radiology, University of Rome "Campus Bio-Medico," Rome, Italy.
E-mail: e.faiella@unicampus.it

Objectives: To evaluate retrospectively efficacy and safety of two percutaneous thermal ablation techniques, radiofrequency ablation (RFA) and microwave ablation (MWA), in unresectable lung malignancies, focusing on local tumor progression and survival outcomes. **Methods:** Data regarding patients with lung metastasis and factors precluding resection who underwent RFA or MWA from July 2008 to December 2019 were reviewed retrospectively. The follow-up computed tomographic scans were performed immediately after procedure and at 1, 3, 6, and 12 months. The primary study objectives such as technical success, primary and secondary technique efficacy rates, local tumor progression (LTP) rate, LPT-free survival (LTPFS), cancer-specific survival (CSS), and overall survival (OS) were assessed. The secondary study objectives included assessment of side effects and complication rate. Predictive factors of LTPFS and OS were analyzed using Mann–Whitney U-test. **Results:** A total of 118 patients, with an average age of 73 years, underwent 74 RFA (46%) and 85 MWA (53%) for a total of 159 ablations. The histological survey revealed a prevalence of colon and rectum cancer origin, with an average diameter of 17 mm (5–76 mm). Technical success rate was 157/159 (98.7%). Primary and secondary technique efficacy rates were 151/159 (95%) and 150/159 (94%), respectively. During the entire study follow-up, 26 cases experienced disease progression (16%) of which 15 underwent repeat ablation (9%). Residual unablated tumor happened in eight cases (5%), while LTP occurred in 18 cases (11%) after 2–37 months after initial treatment. One-, 3-, and 5-year LTPFS was, respectively, 91%, 89%, and 89%. One-, 3-, and 5-year OS and CSS were 94%, 89%, and 86% and 99%, 98%, and 96%, respectively. Minor and major complications' rate was 51/159 (39%) and 23/159 (14%), respectively. In bivariate analysis, the only factors associated with higher recurrence rate and then with poorer LTPFS were lesion dimensions (P = 0.031) and the technique (P = 0.003), with a higher recurrence percentage in MWA. The technique influenced

only LTP and not the survival. In univariate analysis, COPD comorbidity was the only factor associated with poorer OS, but the association did not reach statistical significance (P = 0.094). **Conclusion:** The findings of this study confirm the appropriateness of percutaneous RFA and MWA for lung metastasis treatment, in terms of good tolerability, safety, and efficacy at follow-up.

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Real-World Experience with the Viabahn-Covered Stent in the Cephalic Arch Vein of the Native Arteriovenous Fistula

Shannon Thomas, Harry Narroway

Prince of Wales Hospital, Sydney, Australia.
E-mail: harry.narroway@health.nsw.gov.au

Objectives: To investigate the real-world outcomes of the Viabahn-covered stent for the treatment of cephalic arch vein stenosis in arteriovenous fistula. The current therapeutic options for cephalic arch vein stenoses lack durability, leading to frequent re-intervention or loss of the vascular access. **Methods:** Cephalic vein arch angioplasty and placement of the Viabahn-covered stent (Gore, Flagstaff, Arizona, USA) at multiple centers. Patients were followed up at 1, 3, and 6 months to detect fistula dysfunction, to evaluate safety, and to evaluate restenosis rate. **Results:** Ten patients were treated for fistula dysfunction which included high venous pressures, low dialysis blood flows, and prolonged bleeding after de-cannulation. Ten stents were used in total, with a median stent diameter of 10 mm and length of 10 cm. Immediate technical success was 100%. Immediate restoration of normal access function was restored in 100% of patients. During a mean follow-up of 6 months, one patient had died from unrelated causes; all other patients were available for review. Two patients required re-angioplasty of the Viabahn stent postinitial intervention for high venous pressures and low dialysis pump flows, respectively. Two other patients required angioplasty of the fistula but not the covered stent segment postinitial procedure. All other patients were dialyzing effectively. No stent infections were seen during the follow-up period. **Conclusion:** Six-month follow-up demonstrates excellent safety and preservation of dialysis function using the Viabahn-covered stent to treat cephalic arch vein stenosis.

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Long-Term Follow-Up of Giant Symptomatic Hepatic Hemangiomas Treated with Direct Sclerotherapy: Introducing a New Approach

Hadi Rokni Yazdi, Niloofar Ayoobi Yazdi, Mohammad-Mehdi Mehrabinejad, Habibollah Dashti[1], Morteza Ghassed, Bahman Rasooli, Madjid Shakiba

Advanced Diagnostic and Interventional Radiology Research Center, Medical Imaging Center, Tehran University of Medical Sciences,
[1]Department of General Surgery, Tehran University of Medical Sciences, Tehran, Iran.
E-mail: rokniyaz@tums.ac.ir

Objectives: To investigate the feasibility, safety, and efficacy of percutaneous sclerotherapy using intralesional bleomycin injection in reducing the symptoms and volume of the Giant Liver Hemangiomas. **Methods:** This prospective study was conducted from April 2016 to June 2019. Patients with persistent abdominal pain or discomfort directly caused by hemangioma (confirmed by computed tomographic scan) who refused surgical option were included. Patients with any coagulopathy states (platelet count <100,000 or international normalized ratio >1.5) were excluded. All demographic variables and laboratory tests as well as patients' symptoms and complaints during this period were recorded. All procedures were performed in an outpatient setting under local anesthesia. Patients underwent percutaneous intralesional sclerotherapy using bleomycin-lipiodol mixture under fluoroscopic guidance. All early and late complications, if any, were recorded. GLH volume and three-dimensional diameters as well as pain severity (according to visual analog scale [VAS]) were documented before and 36 months after the procedure. **Results:** Five patients (4 [80%] females, mean age: 43.8 years, range 33–51) were recruited for the current survey. Mean GLH volume was 378.60 ± 229.80 cc before the sclerotherapy, which was dropped to 143.20 ± 165.54 cc (71.3% ± 19.9%) on the 36-month follow-up (P < 0.001). Mean GLH's longest diameter before the procedure was 108.60 ± 18.76 mm, which was declined to 64.60 ± 33.71 mm (42.6% ± 20.5%) (P = 0.035). Patients' VAS score before the procedure was 8.60 ± 0.89, which was decreased to 4.40 ± 1.14 on the follow-up (P = 0.002). Liver function tests revealed no abnormalities before the procedure, 1 day after the treatment, and on the 36-month follow-up. No allergic reaction was observed. One of our patients had self-limiting intraperitoneal hemorrhage which led to a 3-day hospital stay and then was discharged with stable condition. No other early or late complication was detected. **Conclusion:** Percutaneous sclerotherapy is a relatively safe and effective method in GLH treatment. Further investigations in larger samples and in comparison with control group (in clinical trial setting) are required to confirm the current findings.

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Our Attempt for Diabetic Foot Management With Infrapopliteal Artery Angiosome Revascularization

Hupalo Yurii, Hupalo Yurii, Shapovalov Danylo, Shved Olena

State Institution of Science, State Administrative Department, Kyiv, Ukraine.
E-mail: uriy_gupalo@ukr.net

Objectives: 15%–25% of DM patients develop diabetic foot. **Methods:** Diabetic patients Wifi 3–4 with CLTI (n = 35): Men 25 (71.4%), women 10 (28.6%); average age – 68 years, selected with adequate inflow to the popliteal artery, as defined by presence of one of the following:

- Palpable ipsilateral popliteal artery pulse
- Biphasic or triphasic Doppler waveform in the ipsilateral popliteal artery
- Normal radiographic appearance of ipsilateral common femoral and arteria profunda femoris or all detected lesions are <50% severity stenosis.

Results: In Group I (angiosomal revascularization) of 16 patients in 2 (12.5%) repeated interventions were performed. Of these, 1 (6.25%) eventually had a high amputation. In Group II (nondirect