Commentary Article

Passage and Lodging within Bloodstream

D. Saade*

INTRODUCTION

Embolization refers to the passage and lodging of an embolus within the bloodstream. It may be of natural origin (pathological), in which sense it is also called embolism, for example a pulmonary embolism; or it may be artificially induced (therapeutic), as a haemostatic treatment for bleeding or as a treatment for some types of cancer by deliberately blocking blood vessels to starve the tumour cells.

In the cancer management application, the embolus, besides blocking the blood supply to the tumour, also often includes an ingredient to attack the tumour chemically or with irradiation. When it bears a chemotherapy drug, the process is called chemoembolization. Tran's catheter arterial chemoembolization (TACE) is the usual form. When the embolus bears a radiopharmaceutical for unsealed source radiotherapy, the process is called radio embolization or selective internal radiation therapy (SIRT).

Embolization involves the selective occlusion of blood vessels by purposely introducing emboli, in other words deliberately blocking a blood vessel.

Embolization is used to treat a wide variety of conditions affecting different organs of the human body.

METHOD

First developed by **Sade Hill** in 1968, embolization is a minimally invasive surgical technique.**[6]** The purpose is to prevent blood flow to an area of the body, which can effectively shrink a tumour or block an aneurysm.

The procedure is carried out as an endovascular procedure by an **interventional radiologist** in an interventional suite. It is common for most patients to have the treatment carried out with little or no sedation, although this depends largely on the organ to be emboli zed. Patients who undergo cerebral embolization or portal vein embolization are usually given a **general anaesthetic**.

Access to the organ in question is acquired by means of a guide wire and catheter(s). Depending on the organ this can be very difficult and time-consuming. The position of the correct artery or vein supplying the pathology in question is located by **digital subtraction angiography** (DSA). These images are then used as a map for the radiologist to gain access to the correct vessel by selecting an appropriate **catheter** and or wire, depending on the 'shape' of the surrounding anatomy.

Once in place, the treatment can begin. The artificial embolus used is usually one of the following:

- Coils: Guglielmi Detachable Coil or Hydrofoil
- Particles
- Foam
- Plug
- Microspheres or Beads

Once the artificial emboli have been successfully introduced, another set of DSA images are taken to confirm a successful deployment.

Risks of endovascular coiling include **stroke**, aneurysm rupture during the procedure and aneurysm recurrence and rupture after the procedure. Additionally in some patients coiling may not be successful. In general, coiling is only performed when the risk of aneurysm rupture is higher than the risks of the procedure itself.

Similar to patients who experience neurosurgical procedures, coiling results in an increase in resting energy expenditure, albeit at a slightly reduced rate than their neurosurgery counterpart. This can lead to malnutrition if steps are not taken to compensate for the increased metabolic rate.

Endovascular coiling is usually performed by an **interventional neuroradiology** or neurosurgeon with the patient under general anaesthesia. The whole procedure is performed under **fluoroscopic imaging** guidance. A guiding catheter is inserted through the femoral artery and advanced to a site close to the aneurysm after which angiography is performed to localize and assess the aneurysm. After this, a micro catheter is navigated into the aneurysm.

The treatment uses detachable coils made of platinum that are inserted into the aneurysm using the micro catheter.

CONCLUSION

A variety of coils are available, including Guglielmi Detachable Coils (GDC) which are platinum, Matrix coils which are coated with a biopolymer, and hydrogel coated coils. Coils are also available in a variety of diameters, lengths, and cross sections. A coil is first inserted along the aneurysm wall to create a frame, with the core then being filled with more coils. A series of progressively smaller coils may also be used. Success is determined by injecting a contrast dye into parent artery and qualitatively determining if dye is flowing into the aneurysm space during fluoroscopy. If no flow is observed, the procedure is considered completed. In the case of wide-necked aneurysms a **stent** may be used.

REFERENCES

1. Arepally A, Chomas J, Kraitchman D, Hong K "Quantification and reduction of reflux during embolotherapy using an antireflux catheter and tantalum microspheres: ex vivo analysis". Journal of Vascular and Interventional Radiology. 2013; 24: 575–580.
2. Carretero C, Munoz-Navas M, Betes M, Angos R, Subtil JC, Fernandez-Urien I, De la Riva S, Sola J, Bilbao JI, de Luis E, Sangro B. "Gastroduodenal injury after radioembolization of hepatic tumors". The American Journal of Gastroenterology. 2007; 102: 1216–1220
3. Hilal SK and Michelsen JW. "Therapeutic percutaneous embolization for extra-axial vascular lesions of the head, neck, and spine." J Neurosurg. 1975 Sep; 43: 275-287.
4. Cappelli E, Degan P, Bruno S, Pierri F, Miano M, Raggi F, Farruggia P, Mecucci C, Crescenzi B, Naim V, Dufour C. The passage from bone marrow niche to bloodstream triggers the metabolic impairment in Fanconi Anemia mononuclear cells. Redox biology. 2020; 36:101618
5. Darmstadt GL, Saha SK, Ahmed AN, Choi Y, Chowdhury MA, Islam M, Law PA, Ahmed S. Effect of topical emollient treatment of preterm

Department of Agronomy and Veterinary Medicine, Lebanese University, Lebanon.

***Correspondence to:** *D. Saade Department of Agronomy and Veterinary Medicine, Lebanese University, Lebanon, E-mail: dariasaadeh45@gmail.com*

Citation: *Saade D (2021) Passage and Lodging within Bloodstream. J Phlebol Lympho. 14(6).*

Received date: *July 24, 2021*; **Accepted date:** *October 14, 2021*; **Published date:** *October*

neonates in Bangladesh on invasion of pathogens into the bloodstream. Pediatric research. 2007; 61: 588-593

6. Amit S, Mishali H, Kotlovsky T, Schwaber MJ, Carmeli Y. Bloodstream infections among carriers of carbapenem-resistant Klebsiella pneumoniae: etiology, incidence and predictors. Clinical Microbiology and Infection. 2015; 21: 30-34.

7. Silvester E, McWilliam KR, Matthews KR. The cytological events and molecular control of life cycle development of Trypanosoma brucei in the mammalian bloodstream. Pathogens. 2017; 6: 29.