Rupture of silicone breast implants is usually iatrogenic or due to trauma.[2] A patient with breast implants who has sustained blunt chest injury can present a diagnostic and therapeutic challenge.

Intrathoracic migration of breast implants is a documented complication of augmentation mammoplasty.[3] The prosthesis may migrate intact into the pleural cavity, usually through a defect in the chest wall caused by previous surgery.[3,4] Rupture of the prosthesis also may occur without any immediate sign. Over time, the patient may notice a change in the size or shape of the breast.[2]

In our patient, the implant ruptured at the time of the automobile accident. Once the implant envelope had been violated, the silicone gel escaped into the local tissues, and it probably was squeezed into the pleural space at the site of entry of the pleural drain placed at the time of thoracic trauma, favored by the negative pressure of the pleural cavity.

References

1. Muñiz González F, Hermoso Alarza F, Cano Aguirre MDP. Lung siliconoma, a rare complication of breast prosthesis rupture. Arch Bronconeumol. 2018, http://dx.doi.org/10.1016/j.arbres.2018.02.019.
2. Rice DC, Agasthian T, Clay RP, Deschamps C. Silicone thorax: a complication of tube thoracostomy in the presence of mammary implants. Ann Thorac Surg. 1995;60:1417–9.
3. Sykes JB, Rosella PA. Intrathoracic migration of a silicone breast implant 5 months after video-assisted thoracoscopic surgery. J Comput Assist Tomogr. 2012;36:306–7.
4. Fong TC, Hoffmann B. Disappearance of a breast prosthesis during pilates. N Engl J Med. 2011;365:2305.

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Vena Cava Filter Complications

Complicaciones del uso de filtros de la vena cava

Dear Editor:

We read with great interest the original article by de Gregorio et al.,[1] who analyzed success in vena cava filter (VCF) retrieval and factors associated with retrieval failure. They also commented on complications associated with VCF placement and removal, especially those of a local nature (tilting of the inferior vena cava axis, venous wall penetration, migration, and local thrombosis). We would like to highlight another important complication related to VCF use that is of interest to pulmonologists: filter embolization.

A 47-year-old woman presented to the emergency department with acute shortness of breath and chest pain. She had a past history of recurrent deep venous thrombosis, despite anticoagulation therapy. A VCF had been inserted in the infrarenal inferior vena cava 9 months previously. Computed tomography of the chest identified a thrombus in the left pulmonary artery with pulmonary opacities in the left lower lobe, and multiple metallic fragments at the level of the right pulmonary artery and right atrium (Fig. 1). The diagnosis of pulmonary infarction and embolization of a broken VCF was made. Given the patient's relatively young age and the possibility of future complications, the patient decided to have the fragments surgically removed. The patient recovered well and was discharged 2 weeks after surgery.

VCF complications can occur early, during placement, or later, after positioning. Immediate complications of VCF placement include puncture site complications and mechanical failures, such as delivery system malfunction, incomplete or asymmetric deployment (opening), malpositioning, and tilting. Fatalities caused by these complications are rare.[2,3]

Late complications of VCF use may be of local origin, including inferior vena cava thrombosis, penetration of the vessel wall and injury to nearby organs, or distant, including structural failure with migration of all or part of the VCF to the right side of the heart and/or pulmonary arteries, recurrence of thrombosis and pulmonary embolism.[2,3] Distant complications are of special interest to pulmonologists.

Filter fracture occurs when the filter structure fails, leading to fragmentation and potential embolization of the fragment. Filter embolization is defined as movement of the filter after deployment to a distant anatomic site completely out of the target zone. The most common site of embolization is the right atrium, where the fragment can cause complications such as perforation of the right atrial wall, cardiac tamponade, and myocardial infarction. Another common site is the pulmonary vasculature.[3,4]

The proper management of patients with intracardiac or intrapulmonary VCF migration remains speculative. Serious consideration should be given to filter removal whenever possible, regardless of the presence or absence of symptoms. Surgery should be the first option considered. Open thoracotomy has the advantage of allowing the operator to directly visualize the filter and have

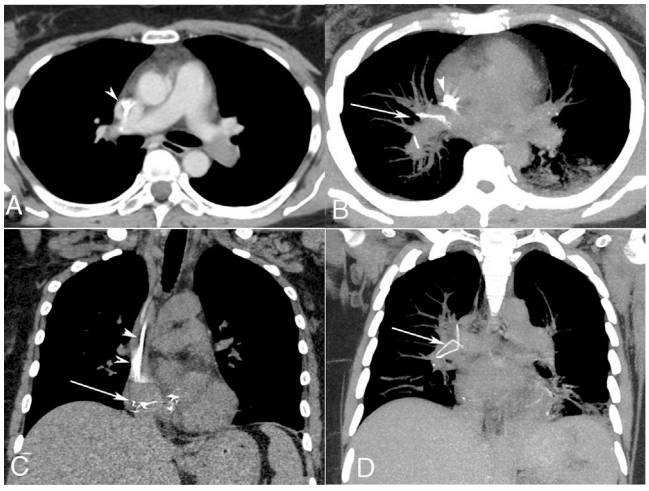

Fig. 1. Axial (A) contrast-enhanced chest computed tomography image showing a filling defect (thrombus) on the left pulmonary artery. Axial (B) and coronal (C and D) reformatted images with maximum intensity projection show multiple metallic fragments (from the fractured filter) at the level of the right cardiac cavities and right pulmonary artery (arrows). Note also non-homogeneous opacities in the left lower lobe (pulmonary infarction) and a deep venous catheter in the superior vena cava (arrowheads).

better control during retrieval. It also allows direct inspection of the cardiac chambers and immediate repair of any damage that has occurred. Whenever surgery is contraindicated, endovascular retrieval should be performed by an experienced endovascular team.[4,5]

References

1. De Gregorio MA, Guirola JA, Serrano C, Figueredo A, Kuo WT, Quezada CA, et al. Success in optional vena cava filter retrieval. An analysis of 246 patients. Arch Bronconeumol. 2018;54:371–7.
2. Hill DA, Goldstein N, Kuo EY. Vena cava filter fracture with migration to the pulmonary artery. Ann Thorac Surg. 2013;95:342–5.
3. Rao B, Duran C, Steigner ML, Rybicki FJ. Inferior vena cava filter-associated abnormalities: MDCT findings. AJR Am J Roentgenol. 2012;198. W605–10.
4. Grewal S, Chamarthy MR, Kalva SP. Complications of inferior vena cava filters. Cardiovasc Diagn Ther. 2016;6:632–41.
5. Owens CA, Bui JT, Knuttinen MG, Gaba RC, Carrillo TC, Hoefling N, et al. Intracardiac migration of inferior vena cava filters: review of published data. Chest. 2009;136:877–87.

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Tracheobronchial Foreign Body in Small Children: The Combination of Flexible Bronchoscopy and the Urology Stone Retrieval Basket

Cuerpo extraño traqueobronquial en niños pequeños: la combinación de la broncoscopia flexible y la cesta endoscópica para extracción de cáculos renales

Dear Editor:

Foreign body (FB) aspiration occurs in children less than 3 years old in 75.4% of the total cases of aspirations and bronchoscopic removal presents high potential risk for complications that can lead the patient to death.[1]

Rigid bronchoscopy has always been advocated as the main choice for tracheobronchial FB's removal[2] considering the possibility to provide adequate ventilation during the procedure and the variety of available instruments that can be inserted into the scope. However, in case of migration of the object, the flexible bronchoscopy easily allows exploration of the distal bronchi. For repeated procedures, rigid bronchoscopy might also cause swelling of the vocal cords and laryngeal edema and also for these reasons flexible bronchoscopy raised his popularity in the last years.[2–4]

In several cases it is difficult to remove FBs in toddlers with flexible bronchoscopy, due to the limited selections of grasping tools capable of passing through the 1.2 mm instrument channel of the ultrathin bronchoscope.[4,5] Most of the inhaled FBs in children are organic. Their fragility and shape, associated with the presence of inflammatory reaction, makes the use of grasping forceps difficult.[5]

The wire basket forceps has mainly been used in the urinary duct and biliary tract,[4] but we have found this device very useful for foreign body retrieval, in combination with flexible bronchoscopy, in small children aged ≤2 years (12 cases).

We performed the procedure in the operative room, under general anesthesia with an ultrathin flexible bronchoscope (Pentax FB8V 2.8 mm) that was introduced through the single-lumen tube. The retrieval basket (Zero Tip Nitinol Stone Retrieval Basket, Boston Scientific 1.9 Fr, 0.63 mm × 120 cm) was inserted through the 1.2 mm channel of the scope securely grasping the FB from beside. The basket was then retracted toward the tip of the bronchoscope extracting both through the endotracheal tube.

This tip-less basket allows close FB approximation in the tracheobronchial tree. The flat distal surface eliminates tissue-to-tip interface giving an atraumatic manipulation and the knotted wires give stability to the basket to hold firmly the FB during the extraction. However it is important not to push the device too distally in order to prevent perforation of the bronchi that might easily occur in infants.

Characteristics of our patients are reported in Table 1. The elapsed time between the aspiration and the endoscopic procedure varied from one to 48 days (mean 11.6 ± 12.8 days). All patients underwent bronchoscopy within few hours from the arrival at the Emergency Room.

Three patients underwent two bronchoscopies in seven days due to the strong inflammatory reaction around the FB that jeopardized its removal on a first attempt (patients 3, 6 and 11). Mean operative time was 45.3 ± 27.5 min (range 20–120 min). Patients undergoing a second procedure required a longer operative time, due also to different attempts of FB's removal with different grasping forceps, before being able to finally retrieve the objects by mean of the urologic basket. Number of attempts during the procedure varied from 1 to 8 (mean 2.5 ± 1.8). In one patient (patient 11) switch to rigid bronchoscope has been necessary due to the small dimension of the toy's piece of plastic that would slipper away from the urologic basket.

O_2 saturation was stable in all procedures (mean 93.2% ± 3.7 mmHg) and it fell below 90% in patient 1,2, 3 and 11, the last two requiring to be re-intubated during the FB's removal

Complications occurred in patient 3 and consisted of post-extubating bronchospasm controlled with medical therapy. The longest interval between FB's aspiration and its removal was correlated with the onset of postoperative complication in patient 3 and 11.

Although some authors prefer the association of rigid and flexible bronchoscopy,[2] our preferred choice is the flexible bronchoscopy through endobronchial tube, when FB aspiration is likely to have occurred more than 48 h before. This is due to the fact that a strong inflammatory reaction in the bronchi might lead to the necessity of repeated procedures and though repeated intubations. Nevertheless, rigid bronchoscopy should be always available in the operative room (as in patient 11) and the surgical team should be qualified and ready also to switch to any surgical option.

We advocate this procedure in small children because the use of an ultrathin bronchoscope through the endotracheal tube allows more space ventilation and the combination with the tip-less