

Automatic rupture of unused intraport catheter.

Case report



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Automatic rupture of unused intraport catheter. A case report

Totally Implantable Central Venous Access Devices (Intraports) are commonly used in cancer patients to administer chemotherapy or parenteral nutrition. These devices are placed by Seldinger technique.

We report an unusual case of intraport catheter rupture before the use of the device. The ruptured part of the catheter migrated into the left pulmonary vein via right ventricle. The ruptured part was removed by means of interventional radiology before causing any problems to the patient.

All the reported ruptures of port catheters refer to port devices that had been used to administer chemotherapy, fluids, or parenteral nutrition. The unique feature of this case is that the catheter had not been used at all. It is of great interest also the removal of the broken part from the pulmonary vein.

KEY WORDS: Right ventricle, Pulmonary vein, Seldinger technique, Totally Implantable Central Venous Access Devices.

Background

Totally Implantable Central Venous Access Devices, which are commonly referred as Intraports, are used especially in cancer patients to administer chemotherapy, blood products, antibiotics, parenteral nutrition and to obtain blood specimens for laboratory analysis. The Seldinger technique is used for the catheter's insertion into the subclavian vein. The procedure is performed under local anesthesia, but serious complications, as hemothorax, pneumothorax, pocket infection, the tunnel or the port; bleeding, hematoma and thrombosis of the catheter or of the vein have been reported. The authors have reported a series of port catheter rupture after extensive use of the catheter inside the subclavian vein ¹.

There is a lasting debate in the literature regarding complications such as infection, thrombosis, pneumothorax, malfunction and rupture in relation to factors such as type of port used, site of placement, type of chemotherapy, duration of catheter use etc. ^{2,3}. We report a unique case of intraport catheter rupture before the use of the device for chemotherapy. We searched the relative literature but no similar cases have been reported.

Patients and method

A 54 years old female patient, suffering from colon cancer had a totally implantable central access venous catheter (intraport) inserted in order to receive postoperative chemotherapy. The intraport was inserted by percutaneous access to the subclavian (Seldinger technique). The tip of the catheter was positioned into the superior vena cava and the portcath placed within a subcutaneous pocket created on the anterior chest wall. The acceptable position was documented by immediate intraoperative chest roentgenogram postoperatively.

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The patient was referred for chemotherapy in an oncological department. Before the first use of the port a plain chest x-ray was performed to ensure the correct position of the catheter. (Fig. 1) The x-ray showed that the terminal part of the catheter had broken and the ruptured part had migrated into the left pulmonary vein via the right ventricle of the heart. The patient had not presented any symptoms.

Two days later the broken part of the catheter was brought out of the left pulmonary vein by means of the following technique. Through the left femoral vein catheterization, using a vessel catheter, and through the inferior vena cava, we drove the catheter up to the left pulmonary vein fluoroscopically.

Then with the use of a specific vessel forceps (loop forceps), we caught the broken part of the catheter and removed it through femoral vein. (Fig. 2, 3, 4).

No complications were observed during the intra- and postoperative period. The technique we used, is referred to similar cases ⁵.

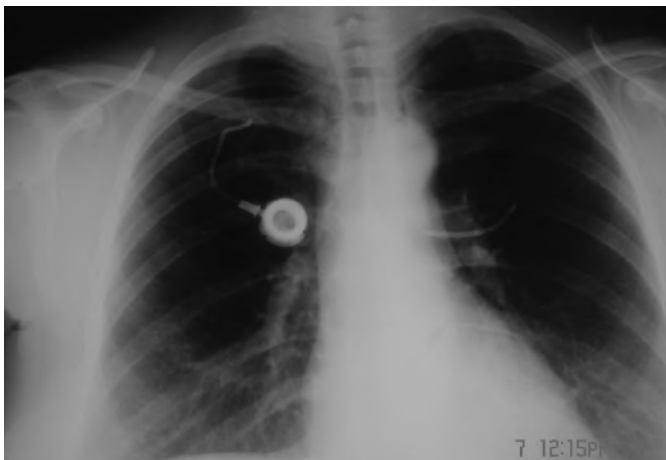


Fig. 1: Chest x-ray. The port device is in the right position but the terminal part of the catheter is broken and had migrated into the left pulmonary vein.

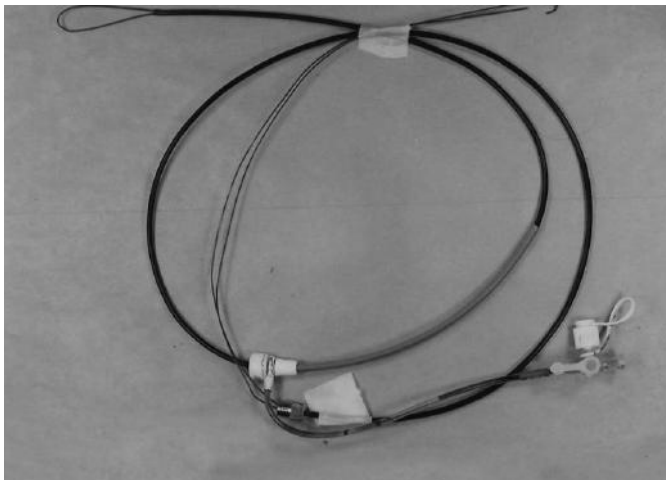


Fig. 2: The special endo-vessel loop-grasper we used for the removal of the catheter.

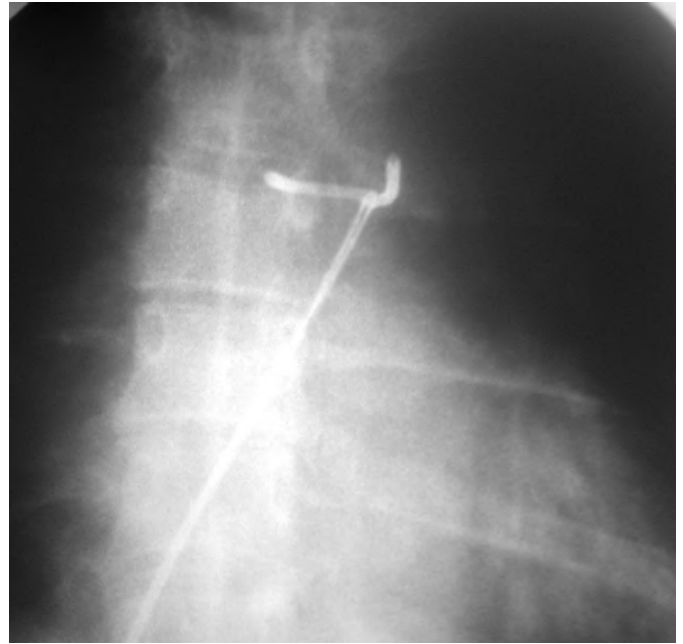


Fig. 3: The endo-loop vessels arrests the edge of the broken part of the catheter under fluoroscopically control.

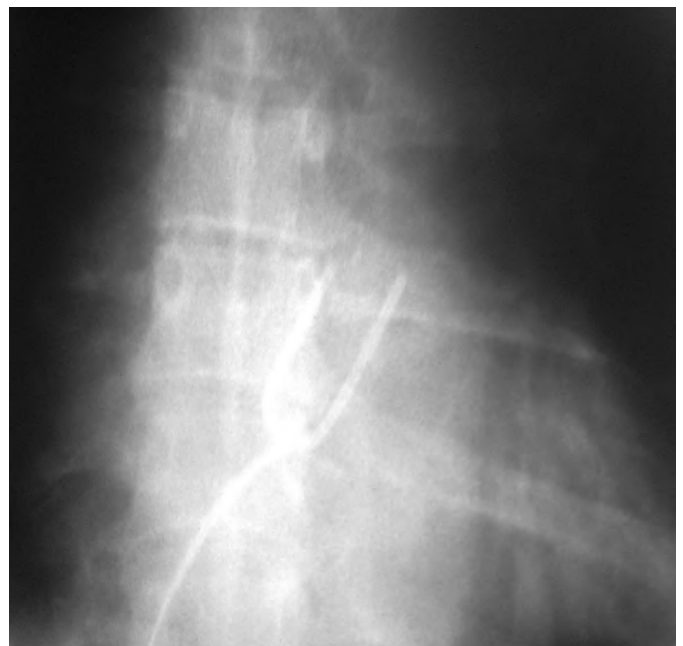


Fig. 4: The ruptured part of the port catheter is pulled slowly till the femoral vein, and then is removed.

Discussion

Spontaneous rupture of port catheters appears to be a very rare event yet an undesirable complication. Biffi et al in 1997 reported three cases of port catheter rupture out of 333 cases ¹². The incidence estimated to 1.68% (0.093/1000 days of port use). The rupture occurred, about 66 days after the placement, during a pause between subsequent chemotherapy cycles. The unique

feature of our case is that the catheter had not been used since its implantation. We suppose that this rare complication may be due to extensive pressure of the clavicle to the catheter at its entrance into the subclavian vein. We have previously reported four cases of spontaneous rupture of the catheter port but these catheters had been used for chemotherapy administration¹. Another hypothesis is that of material failure after chemotherapy influence but no correlation between changes of mechanical properties of the material and specific chemotherapy administered through the port has been, at the moment, established^{7,8}.

The catheter migrated into the left pulmonary vein because the negative intra-thoracic pressure during the inhalation⁹.

Ballarini et al suggest that catheter embolization mainly occurs due to incorrect fixation of the locking steel ring to the port than to catheter rupture.

The estimated incidence of port catheter rupture and embolization varies from 0.9 to 1.7% of the cases¹⁰⁻¹². Foreign bodies inserted in the systematic circulation must be removed fluoroscopically with specific vessel catheters and snare loops. Removal of intravascular material by means of minimally invasive techniques presents excellent results, while at the same time minimizing intra and post-operative morbidity and mortality^{13,14}. In the majority of the referred cases the broken part of the catheter are usually located into the right atrium or ventricle of the heart but in our case the ruptured catheter had migrated into the left pulmonary vein. For that reason the removal although successful was technically difficult^{13,14}.

Conclusions

Intravascular rupture of subcutaneous port catheters placed for chemotherapy is a rare complication. Etiology still remains unclear in a lot of cases, although some authors suggest that wrong placement is responsible. We report a rare case of an unused catheter rupture identified before the first use of the port device. Ruptured catheters should be removed fluoroscopically by means of minimally invasive radiological techniques.

Riassunto

I Dispositivi di Accesso Venoso Centrale Totalmente Impiantabili (Intraport) sono comunemente usati in pazienti affetti da cancro allo scopo di somministrare la chemioterapia oppure la nutrizione parenterale adatta alle loro necessità. Tali dispositivi vanno introdotti e fissati nel tratto venoso prescelto usando la tecnica descritta da Seldinger.

Descriviamo un raro ed inusuale caso di rottura di un catetere (port-cath) ancor prima che venisse messo in funzione. La porzione rotta del suddetto catetere migrò nel-

la vena polmonare sinistra attraverso il ventricolo destro. La rimozione della porzione distaccata è stata effettuata ricorrendo a metodiche di radiologia interventistica prima che avesse modo di provocare danni al paziente. Tutte le rotture di cateteri portali riportate in bibliografia si riferiscono a dispositivi portali usati per somministrare ai pazienti la prescritta chemioterapia, infondere liquidi oppure somministrare la nutrizione parenterale adatta al loro caso. La particolarità del caso da noi esposto consiste nel fatto che il catetere rotto non era stato ancora utilizzato. Di grande interesse appare anche la tecnica di intervento adottata per la sua rimozione dalla vena polmonare.

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