



## Migration of a contraceptive subcutaneous device into the pulmonary artery. Report of a case☆☆☆☆



Pierre-Marie Heudes<sup>a</sup>, Valerie Laigle Querat<sup>a,\*</sup>, Eric Darnis<sup>b</sup>, Claire Defrance<sup>a</sup>, Frederic Douane<sup>a</sup>, Eric Frampas<sup>a</sup>

<sup>a</sup> Department of Radiology, University Hospital, 1 place Alexis Ricordeau 44000 Nantes, France

<sup>b</sup> Department of Obstetrics Gynaecology, Mother and Child Hospital, 38, boulevard Jean-Monnet, 44093 Nantes, France

### ARTICLE INFO

#### Article history:

Received 22 March 2015

Received in revised form 16 September 2015

Accepted 16 September 2015

Available online 24 September 2015

#### Keywords:

Migration of contraceptive implant

Foreign body

### ABSTRACT

The case is about an 18 year-old woman who benefited of a radiopaque contraceptive implant (Nexplanon) inserted in the left arm. When she wanted to remove it, it couldn't be found by palpation, US, CT and MRI. A CXR and a thoracic CT scan were necessary to locate the implant, and the implant was removed by endovascular procedures.

Significant migration of a contraceptive implant is uncommon, and only one case of migration far from the insertion limb has been reported. Using radiopaque contraceptive implants like Nexplanon could locate them easier if a migration occurs.

© 2015 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

### 1. Introduction

An 18 year-old woman, without medical history, requested a contraceptive implant. The insertion of a Nexplanon device in the left upper limb was immediately followed by an important local hematoma.

Five months later, as the patient was complaining about local pain, a removal was proposed. The implant could not be located neither clinically nor following ultrasonography. Hormone assays were positive, confirming that the implant was present in the patient's body.

Complementary radiography, CT and MRI were performed but failed in locating the implant, despite a scanning covering all left upper limb.

At last, a chest radiograph was performed looking for a possible migration. It showed a linear opaque structure in the pulmonary hemi-right field, whose size and shape were compatible with the Nexplanon (Figs. 1–2). A contrast-enhanced thoracic CT scan confirmed the migration and specified its location in the upper right lobar artery, extending into the apical segmental artery, with

associated arterial stenosis (Fig. 3). Retrieval of the embolized device was decided.

The implant was removed by percutaneous interventional technique through a right femoral vein access. The device was captured with a loop snare after mobilization without complication (Figs. 4–5).

### 2. Discussion

The Nexplanon is a long-active progestogen-only contraceptive method that contains 68 mg etonogestrel. It is a very efficient contraceptive method (Pearl Index 0) [1], with irregular periods as main side effect. The subcutaneous implant is radiopaque, contrary to the Implanon device.

Significant migrations (>2 cm) are uncommon, and primarily occur caudally looking to the insertion site [2]. Other previously described side effects at the time of the removal are deep insertion, fibrous adhesions and broken implant. Their prevalence is about 1% [3].

In our case, we think that an inadvertent placement of the Nexplanon into the basilic vein occurred during the initial procedure, explaining the important hematoma after insertion. The Nexplanon probably got through the upper limb veins, the right heart chambers before stopping in the pulmonary artery (Fig. 6).

Instructions for insertion state that Nexplanon should be placed subdermally at the inner side of the upper nondominant arm about 7 cm above the elbow crease in the groove between the biceps and

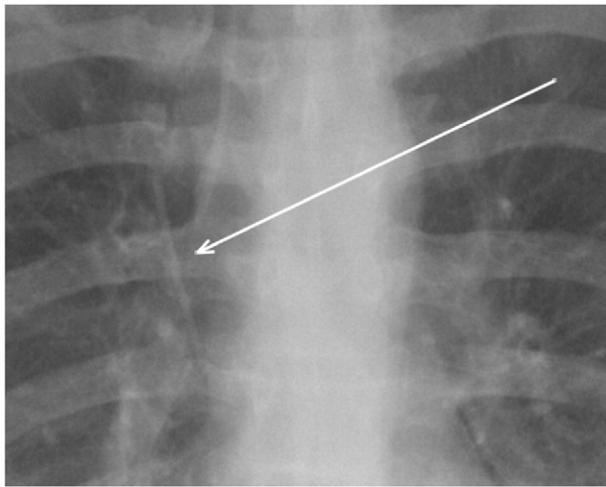
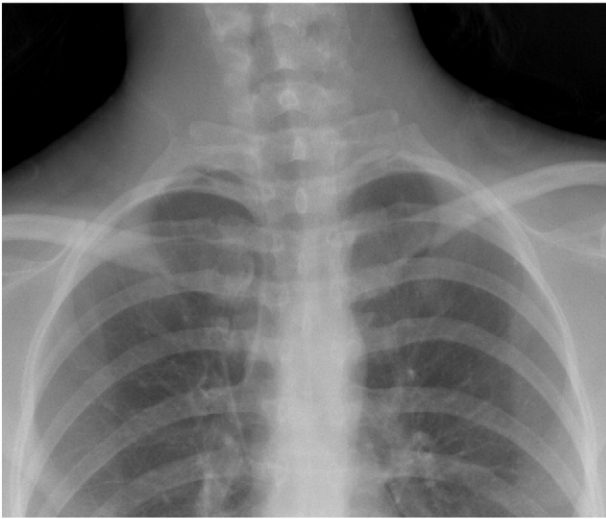
☆ No fundings for the study.

☆☆ No conflicts of interest.

★ No presentations in meetings.

\* Corresponding author.

E-mail addresses: [pm.heudes@gmail.com](mailto:pm.heudes@gmail.com) (P.-M. Heudes), [valerie.laigle@chu-nantes.fr](mailto:valerie.laigle@chu-nantes.fr) (V. Laigle Querat).



**Figs. 1-2.** CXR showing a linear opaque structure in pulmonary hemi-right field.

the triceps. It is stated that correct placement of the implant in the arm limits implant migration [6]. By tenting the skin, the operator should avoid a deep insertion and complications like endovascular insertion.



**Fig. 3.** Coronal thoracic CT scan with injection showing the Nexplanon in the upper right lobar artery.



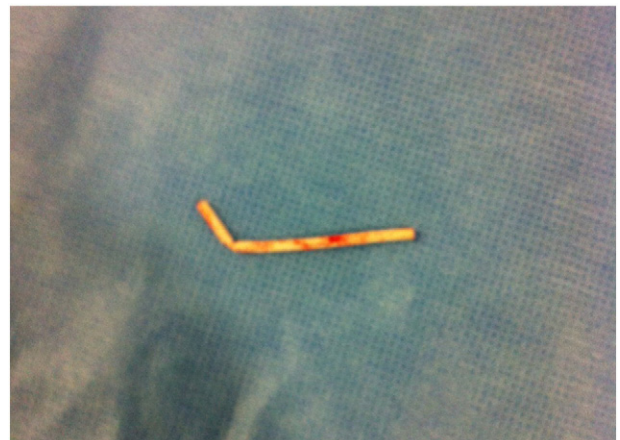
**Fig. 4.** Interventional technique: capture with a loop snare.

In cases of troubles to locate a non-palpable implant before removal, ultrasound guidance is recommended by first intention with a nearly 100% efficiency [4]. It appears as a hyperechoic line with a posterior shadow cone. Hormonal assay also confirms or denies the presence of the device. In case of a positive assay, the strategy was previously based on MRI. Today, the use of Nexplanon, which is radiopaque, allows the use of plain radiographies.

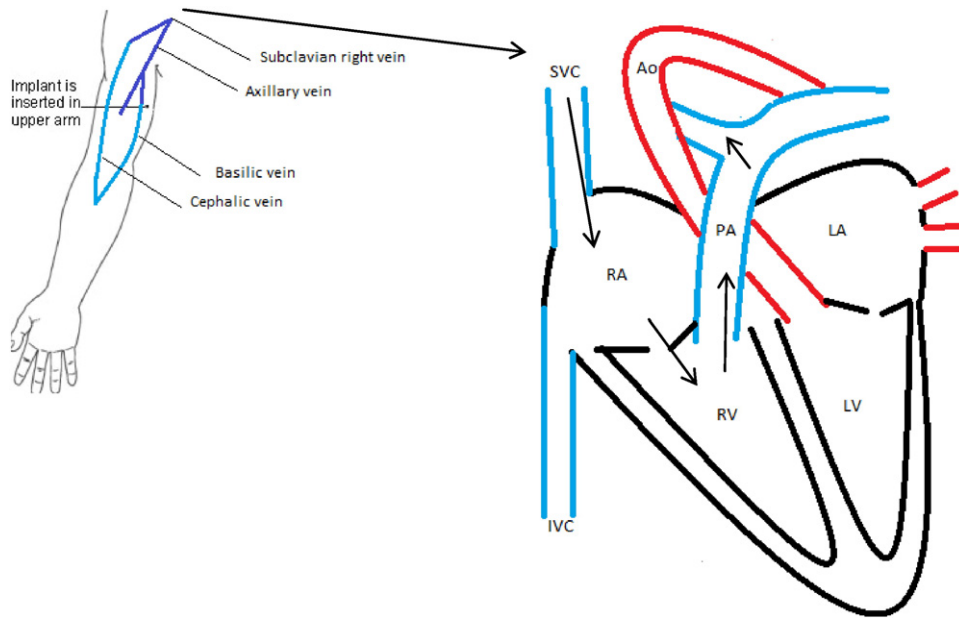
When radiography or CT scan of the upper limb fail, a more distant migration has to be considered and chest radiograph should be performed.

To our knowledge, only one case of distant pulmonary artery migration far from the insertion site has been reported, also diagnosed by chest radiograph after an episode of chest pain [5]. In this case, no information was reported about difficulties with insertion of the implant. The device was lodged in a subsegmental branch of the left lower lobe pulmonary artery. Options of retrieval were discussed, but the patient opted against intervention. Endovascular removal of a contraceptive implant in pulmonary artery has not been reported before our case.

Cardiopulmonary complications after a contraceptive implant migration in pulmonary artery may be serious including infection and thrombosis. Exact location is crucial as endovascular procedures are now considered as the best way to retrieve endovascular foreign bodies with high success rate and low morbidity.



**Fig. 5.** Nexplanon after removal.



**Fig. 6.** Ride of the Nexplanon.

## References

- [1] Croxatto HB, Mäkäräinen L. The pharmacodynamics and efficacy of Implanon. An overview of the data. *Contraception* déc 1998;58(6 Suppl):91S–7S.
- [2] Ismail H, Mansour D, Singh M. Migration of Implanon®. *J Fam Plann Reprod Health Care* 7 Janv 2006;32(3):157–159.
- [3] Edwards JE, Moore A. Implanon. A review of clinical studies. *Br J Fam Plann* Janv 1999; 24(4 Suppl):3–16.
- [4] Persaud T, Walling M, Geoghegan T, Buckley O, Stunell H, Torreggiani WC. Ultrasound-guided removal of Implanon devices. *Eur Radiol* Nov 2008;18(11): 2582–5.
- [5] Patel A, Shetty D, Hollings N, Dodds N. Contraceptive implant embolism into the pulmonary artery. *Ann Thorac Surg* Apr 2014;97(4):1452.
- [6] Organon Laboratories Ltd. Implanon: Summary of Product Characteristics; December 2003 <http://www.medicines.org.uk>.