

EMBOLIZATION OF IMPLANON DEVICES – LUNG SPARING VIDEOASSISTED THORACIC SURGERY

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Abstract

A 31-year-old-woman with an etonogestrel implant on her left upper arm presented with unfavorable change in her menstrual bleeding pattern and requested for its removal. The non-palpable device was perceptible in the left hemithorax by radiography. Thoracic computed-tomography showed migration to a sublobar branch of the left lower pulmonary artery. Despite the absence of thoracic symptoms and the lack of management guidelines, the device was removed by a lung sparing approach with videoassisted thoracic surgery, due to the unknown long-term effect of the embolized implant.

Keywords: contraceptive implant; implanon; lung embolization.

INTRODUCTION

Subdermal contraceptive implants are an effective option of family planning. Implanon NXT® is a single-rod long acting subdermal hormonal contraceptive implant (68 mg of etonogestrel, 4 cm in length, 2 mm in diameter).^{1,2} Migration and embolization have been described previously, and surgical retrieval is advised.^{1,2} Radiography can be of diagnostic use since the device has a radiopaque component.³ We report a case of a subdermal contraceptive device removal from a segmental pulmonary artery by videoassisted thoracic surgery (VATS) without lung resection.

CASE REPORT

A 31-year-old-woman requested the removal of her Implanon NXT® inserted on the left arm 2 years before, because of changing pattern in menstrual bleeding. Device couldn't be palpated on insertion site. Chest radiography showed a linear opaque structure on the left hemithorax. (Figure 1, panel A) Thoracic computed-tomography demonstrated a linear radiopaque object compatible with migration of the device to a segmental branch of the left pulmonary artery (Figure 1, panel B). Despite being asymptomatic, and the lack of evidenced-based studies, implant was removed by a minimally invasive approach.

VATS was performed by a left 2 port-technique with the working port in the 4th intercostal space (2,5 cm

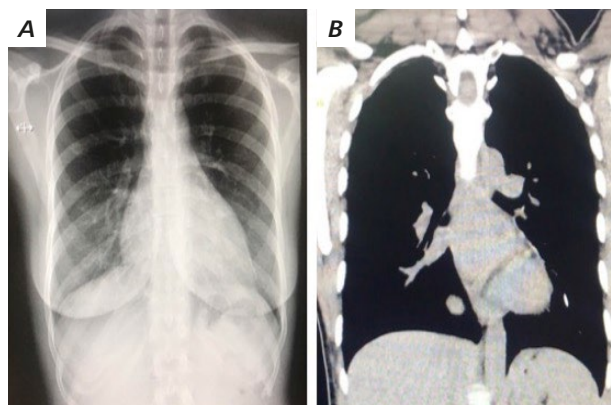
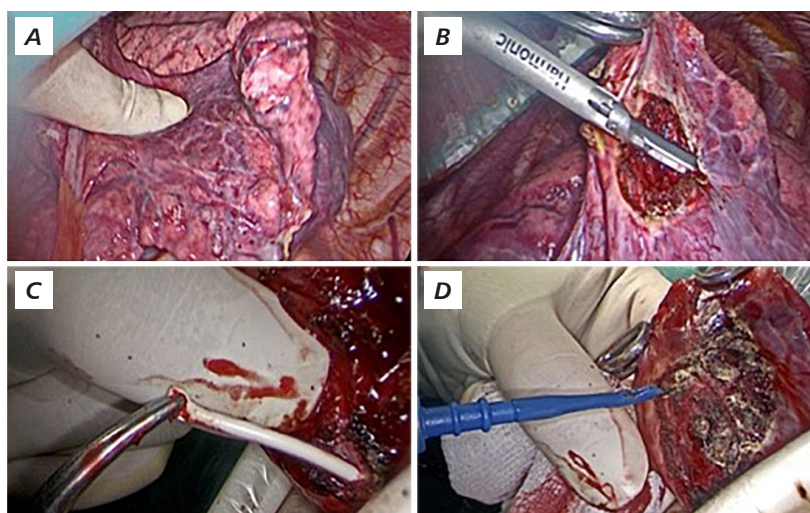


Figure 1

(A) - Chest X-Ray: radiopaque structure on the left hemithorax. (B) - Chest computed-tomography: radiopaque structure in a segmental branch of the left pulmonary artery.

between the midaxillary and anterior axillary lines, and an inferior 1 cm port in the midaxillary line. On inspection there were no adhesions. Device was palpated in the lumen of the posterior basal segmental artery of the left lower lobe. (Figure 2, panel A) Once artery was thrombosed, dissection of lung parenchyma was done with an energy device, the implant was located inside the thrombosed segmental artery and carefully removed. There was no bleeding. (Figure 2, panels B-C) Cautery and biologic glue were used to seal the exposed lung. (Figure 2, panel D) Patient was discharged on day 3 with an uneventful post-operative course.

**Figure 2**

Video assisted thoracic surgery by 2-port technique. (A) Identification of the device. (B,C) Dissection of lung parenchyma through the implant and removal of the device. (D) - Lung parenchyma being sealed with energy device.

DISCUSSION

Implanon NXT® is a subdermal device inserted in the inner side of the non-dominant upper arm. Besides regular metrorrhagia, migration has also been reported.²⁻⁵ Embolization of the implant to the pulmonary vasculature is a rare entity, usually asymptomatic, but dyspnea and chest pain have been reported.² To our knowledge, there are approximately 20 reported cases on literature of migration to pulmonary vasculature.⁶ Those cases were managed conservatively, endovascularly or by surgery.^{1,2,5,6} When surgery was performed there are reports of sublobar resections by VATS and thoracotomy.^{1,2,5} Thomas *et al.* also described a thoracoscopic retrieval by arteriotomy.⁴ Besides the published cases, Kang *et al.* outlined 9 cases of migration to the pulmonary artery submitted to the FDA Adverse Event Reporting System (FAERS) database.³

Migration of subdermal contraceptives should be checked up regularly with close supervision of first-time medical caretakers.^{2,3} Once it becomes a non-palpable device, a diagnostic work-up should take place either by X-Ray, ultrasound or CT scan, to confirm location.^{1-3,7} A non-palpable implant can be due to deep implantation, migration or embolism, which are uncommon events caused by wrong implantation technique (insertion into the biceps muscle), substantial weight loss or strenuous activity.¹⁻⁴ Embolization can also happen because of an inadvertent implantation or erosion into the basilic vein (with all the intravascular journey to the pulmonary artery).^{2-4,7} In the presented case there were no reported complications regarding the insertion of the device.

The majority of intravascular foreign bodies does not produce symptoms immediately. There are no management guidelines, and long term consequences of leaving a contraceptive device in the pulmonary vasculature are unknown. Surgical retrieval should be considered given the known risk of infection, thromboembolism, retrograde migration or undesirable infertility.^{1,4}

CONCLUSION

Removing a device from a segmental branch of the pulmonary artery is challenging and potentially risky. On the few reported cases treated surgically, lung resection was consistently performed, except for one single case.^{1,2,5,7} This case shows that it is possible, in selected cases, to perform the retrieval of hormonal devices from pulmonary vasculature by minimally invasive surgery without lung resection.

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