



IMPLANON FAILURE LEADING TO THE RUPTURED ECTOPIC PREGNANCY: AN UNUSUAL OCCURANCE

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Abstract:

Implanon is a contraceptive implant pre-loaded in a disposable applicator for the women of reproductive age. It is a single small soft, flexible plastic rod of 4.0 cm length and 2.0mm in diameter, which is placed subcutaneously under the skin of the non-dominant arm 3-4 cm below the vascular groove between the biceps and the triceps muscles and 8-10 cm above the medial epicondyle of the humerus bone. It is effective for 3.0 years and has etonogestrel 68 mg, out of which a small amount of the etonogestrel is continuously released in the blood stream. It is made up of ethylene vinyl acetate copolymer, a plastic that will not dissolve in the body. It also contains a small amount of barium sulfate which renders it visible under X-Ray. We do not have many studies available about the pregnancy with the Implanon. However the failure rate of the implanon was claimed as 1 in 1000 insertions. We report a case where the implanon was inserted for 17 months and the patient presented with the continuous bleeding and the abdominal pain, and the pregnancy was diagnosed by doing the serial BHCG levels and was found to be ectopic. She was admitted for the medical management, however, during admission, it was ruptured which was diagnosed and immediately shifted for the laparotomy. Her left salpingectomy was done, and the patient remained stable thereafter.

Key Words: Ectopic , implanon , pregnancy, bhcg, Failure, etonogestrel

Introduction:

Implanon is a contraceptive implant preloaded in a disposable applicator for the women of reproductive age. It is a single small soft, flexible plastic rod of 4.0 cm length and 2.0mm in diameter, which is placed subcutaneously under the skin of the non-dominant arm 3-4 cm below the vascular groove between the biceps and the triceps muscles and 8-10 cm above the medial epicondyle of the humerus bone. It is effective for 3.0 years and has etonogestrel 68 mg out of

which a small amount of the etonogestrel is continuously released in the blood stream (Moray, et, al., 2021). It is made up of ethylene vinyl acetate copolymer, a plastic that will not dissolve in the body. It also contains a small amount of barium sulfate which renders it visible under X-Ray (Thaxton, et, al., 2019). We do not have many studies available about the pregnancy with the implanon. In the case series done in Australia the common reasons for the failure were women being pregnant prior to the insertion, incorrect timing of the insertion, expulsion of the implanon and interaction with hepatic enzyme inducing drugs. The method failure was seen in 5.9% (n=13) of the cases out of 218 failures. (Woolrych, et, al., 2005). Hence the failure rate of the implanon was claimed as 1 in 1000 insertions. In another study the failure rate was 0.010/100 implants sold with pearl index of 0.006 (Graesslin and Korver, 2008).

Case report :

37-year-old middle eastern woman with previous 4 normal vaginal deliveries, had history of implanon from last 17 months, presented with continuous bleeding and abdominal pain for 10 days. Her BMI (body mass index) was 33.1. There was no history of any medical and surgical disorder. She was non-smoker and was not taking any medication. The bleeding was very mild, and she soaked 1-2 pads per day, which was partially soaked. It was associated with the lower abdominal pain in the left iliac region, on examination mild tenderness is positive in left iliac region on deep palpation only. Her BHCG was done and found positive it was 1241.90 mIU/ml (milli international unite per milliliters) after 48 hours it was repeated and was 1221.60 mIU/ml. On transvaginal ultrasound (TVS) empty uterus was noted, as shown in figure -!



Figure 1: TVS showing Empty Uterus

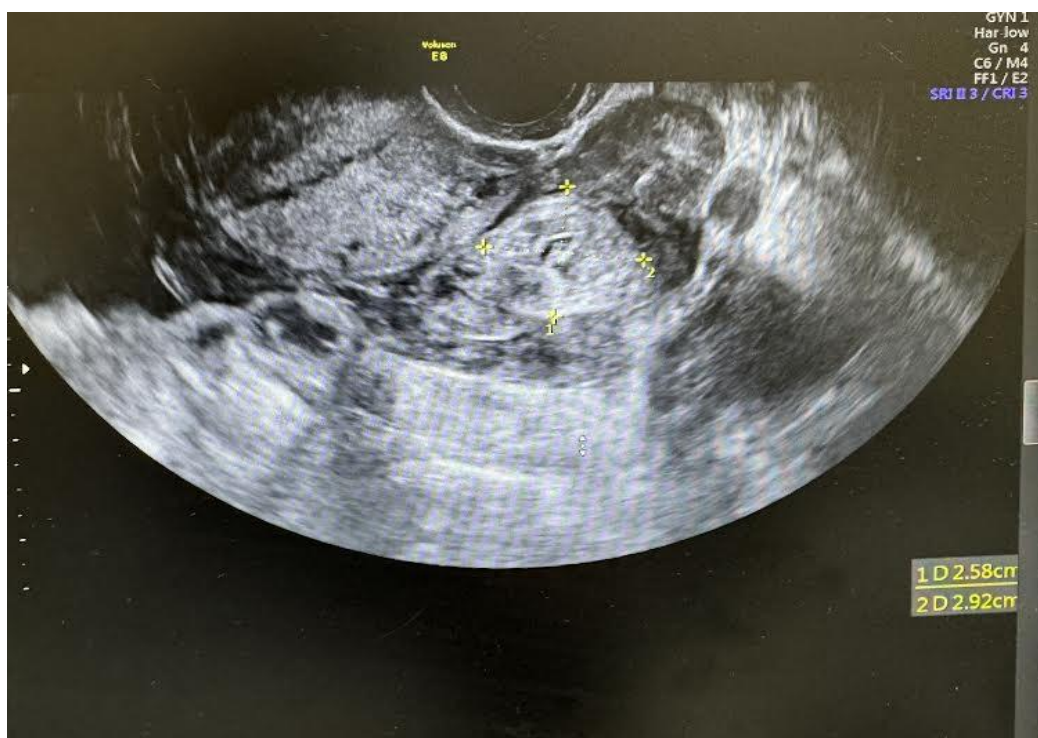


Figure 2 : left Ectopic is Shown Above

In addition to the empty uterus a left adnexal mass measuring 2.4 x 1.8 cm with cystic area and flow around was seen, ectopic gestation sac was the diagnosis. Implanon was removed after taking the consent from the patient under aseptic conditions and the patient was admitted in the ward for the methotrexate management. After 3 hours of the admission, she started developing severe pain for which USG was repeated and the mass in the left adnexa was found to be increased in size to 2.9*2.5, as shown in figure 2, with the Doppler flow and free fluid was seen in the abdominal cavity. As shown in figure 3a and 3b.



Figure 3a : Fluid is Seen in the Abdominal Cavity



Figure 3b : Fluid is Seen in the Abdominal Cavity

Her Hemoglobin(HB) also dropped from 13.0to 11.6 gm%.

The diagnosis of ruptured ectopic was made and the patient was shifted for emergency laparotomy after taking the consent.

Under general anesthesia the abdomen was opened with a small lower transverse incision . Hemoperitoneum was found. Almost 1.5 liters of blood was found in the abdominal cavity. The rupture site was identified at the left ampullary region and salpingectomy was done. After ensuring the hemostasia , peritoneal lavage was done, and drain was placed inside the abdominal cavity. Abdomen was closed in reverse order and aseptic dressing was done.

The patient was shifted to post-natal ward after recovery . Her post-natal recovery was uneventful, and the drain was removed on 3rd post operative day. She was discharged in stable condition. Her post op HB was 9.8 gm.

The patient was followed up after a week, the wound was healing well, and she was put on oral haematanics.

Discussion:

No contraceptive method is 100% effective (Lazorwitz, et, al .,2019). The implanon manufacturer claim that it had a failure rate of less than 1% if correctly inserted. Implanon mechanism of action is by three routes, firstly it inhibits ovulation, secondly it thickens the cervical mucus and makes penetration difficult for the sperms and finally it is responsible for the endometrial changes which makes the conditions unfavorable for the implantation (Callahan, et, al .,2015).

The etonogestrel (ENG) single rod dispositive has been widely employed in clinical practice, since it is a highly effective and safe contraceptive method. It is valid for 36 months (3 years) and the release rate is variable throughout the years. Bennink claims that serum etonogestrel levels are sufficient to inhibit ovulation within 8 h of insertion of the Implanon. After a peak of 813 pg./ml at 4 days, levels reach steady state (200 pg./ml) after 4-6 months and remain sufficient to prevent ovulation for 3 years. Variability is lower than with Norplant. Etonogestrel levels are 40% higher in women weighing < 50 kg. After implant removal, etonogestrel is not detectable within 1 week.

(Bennink, 2000)

At the end of the first year of use, the mean concentration of etonogestrel is 200 pg./mL (150–261 pg./mL) and by the end of the third year, it is 156 pg./mL (111–202 pg./mL). To suppress ovulation, a plasma etonogestrel level of at least 90 pg./mL is required. Implanon is considered as very effective long-term contraception as per the literature (Henderson, et, al .,2007).

In another prospective cohort study done in America on 7364 Nexplanon users, out of these 26 pregnancies were reported and only one was found to be ectopic. 22 resulted in the birth of a healthy child, two resulted in an induced abortion, one resulted in a spontaneous abortion. Six pregnancies occurred during use (n = 3) or within 7 days following implant removal (n = 3), yielding a Pearl Index of 0.04 (95% CI, 0.02-0.09). (Reed, et, al .,2023).

Clinical trial data suggest very high efficacy with no pregnancies reported. It is a highly effective and safe contraceptive method, with a Pearl Index of 0.0⁹. Rocca also has described it as a long acting highly effective reversible contraception (Rocca, et, al .,2021).

The data available regarding method failure in obese women is very little. The relationship of the Implanon efficacy with the body weight is also not well established and the results of different studies are inconsistent. In the United States the current epidemic of obesity suggests that 30% of the population is obese (Hedley, et, al .,2019).

Having the dual epidemic of the unintended pregnancy the prevention of the un wanted pregnancies in the obese population is a real public health challenge.(SFP, 2009)

The results of Hanna XU, suggested that effectiveness of the Implanon is not effected by the BMI, and as the failure rate are very low in both normal weight and obese women so Implanon should be offered to every women looking for the long acting reversible contraception irrespective of her weight (Wu, et, al .,2019).

We could only find seven reported cases in the literature of EP with the etonogestrel implant and three of them due to primary failure of the etonogestrel implant. (Edwards and Moore, 1999), (Bouquier,et, al., 2012), (Olowu,et, al., 2011)

Mansour and Bouquier described cases that the patients had no risk factor, while Olowu reported a patient with a history of EP. The other two cases the EP probably occurred due to either enzyme-inducing medication (rifampicin and sertraline).(Henderson and Gillespie, 2007), (Patni, et, al., 2006)

Oluseun et al reported a ruptured ectopic after 22 months of the insertion of the implanon (Oluseun, et, al., 2023). Like the case under discussion that patient also presented with the vaginal bleeding and abdominal pain and needed salpingectomy for the ruptured ectopic.

Rodrigues reported a ruptured ectopic after 15 months of correct insertion of the Implanon in a patient having no risk factor except smoking. (Rodrigues, et al., 2012)

In our patient the Implanon was correctly placed and felt in the left arm which was removed later after diagnosis of the ectopic pregnancy, she was nonsmoker with higher BMI only and was not taking any drug. The failure can be labelled as the pure method failure. These findings of the index pregnancy are comparable to the results of the Mansoor (Mansoor, et at., 2005).

The ectopic pregnancy rate defined in the Norplant users is about 1.47/1000 (Hedley, et, al .,1992), (Cooper, et, al .,1919).

Conclusion:

The implanon is highly effective long-acting reversible contraceptive method, with a very low failure rate. The purpose of the case report is to highlight the importance of staying vigilant to diagnose and treat ectopic pregnancy as early as possible in case of failure of the implanon to avoid life threatening haemorrhage as a result of ruptured ectopic.

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