

# Migration of Implanon®

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## Abstract

**Objective** To determine whether or not migration of the Implanon® rod does occur if correctly positioned and, if indeed migration does occur, to measure the degree of such migration.

**Methods** A prospective study of 100 women who requested and had Implanon rods inserted by one fully trained health care professional holding the Faculty of Family Planning and Reproductive Health Care Letter of Competence in Subdermal Contraceptive Implant Techniques. Measurements were made from the insertion site to the distal end of the rods at 3 and 12 months post-insertion.

**Results** Of the 100 women studied, 95 were seen for follow-up at 3 months. There was no migration of Implanon in 58 (61%) patients. Of the remaining 37 (39%) patients where migration had occurred, 34 showed migration caudally and only three demonstrated cranial migration. With regard to the degree of migration, all but one case showed this to be less than 2 cm either cranially or caudally. At 1-year follow-up 87 patients were seen. No migration was noted in 39 (45%) patients. In the remaining 48 (55%) patients where migration had occurred, 44 showed migration caudally and only four demonstrated cranial migration, which in one case was over 2 cm. With regard to the degree of migration, all but one case showed this to be less than 2 cm either cranially or caudally. The measurement in the single case showing migration over 2 cm at 3 months remained the same at the 1-year follow-up.

**Conclusions** These results show that up to 1 year after insertion of Implanon significant migration of the rod does not occur. The degree of migration noted in all cases except one was less than 2 cm. Where migration was noted, in the majority of cases this occurred caudally towards the insertion site. There were no cases of deep migration.

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## Key message points

- Significant migration of the Implanon® rod does not occur if correctly inserted.
- If migration does occur, in the majority of cases this was found to be in a caudal direction towards the insertion site.
- In all but one case where migration was noted this was less than 2 cm.

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## Introduction

Although migration of subdermal contraceptive implants has been reported previously in relation to Norplant®, the six-rod contraceptive system, a MEDLINE search up to 2004 regarding migration of Implanon® found no reports. More recently, however, there has been a report suggesting similar movement of Implanon but in patients who had the rod inserted immediately after removal of Norplant and at the same site. Buckshee *et al.*<sup>1</sup> reported a 5.8% incidence of migration in a study of 1466 women using Norplant II® over a 5-year period. In that study the implants had migrated to the elbow crease in two subjects. Oloto and Bromham<sup>2</sup> stated that migration of more than 2 cm for Norplant capsules had never been reported. Cozens<sup>3</sup> then published a case in which migration of Norplant capsules had occurred. Two capsules were found to be in a satisfactory position but the third, fourth and fifth capsules had migrated cranially by roughly 15, 40 and 40 mm, respectively, and the sixth capsule had migrated over 50 mm caudally. With regard to movement of Implanon, Evans *et al.*<sup>4</sup> reported two cases in which the distal ends of Implanon rods were found to be 11 and 7.3 cm from the insertion site. In both cases the Implanon rod had been inserted immediately following removal of Norplant using the same removal incision for entry. The assumption was made that this was a contributory factor in the migration of the implants. The present study was a prospective review of patients who had Implanon inserted to determine the degree of migration that might be encountered in the general population of Implanon users. In none of these cases was Implanon inserted following removal of Norplant.

## Implanon and its method of insertion

Implanon is a long-acting contraceptive method that to date has been used in 36 countries. It is a single-rod, progestogen-only implant measuring 4 cm in length and 2 mm in diameter. It is not biodegradable and contains 68 mg etonogestrel within a flexible ethylene vinylacetate copolymer. It was launched in the UK in September 1999, following one of the most extensive trial programmes ever performed for a contraceptive product. During more than 70 000 cycles of treatment in over 2300 women no pregnancies occurred. The Pearl index derived from these studies has been reported to be zero; however, the confidence interval of 0.00 to 0.07 indicates that in clinical practice failures may occur.<sup>5</sup>

Instructions for insertion state that Implanon should be placed subdermally at the inner side of the upper non-dominant arm about 7 cm above the elbow crease in the groove between the biceps and the triceps. The procedure is carried out using an aseptic technique under local anaesthesia. The needle of the Implanon inserter is introduced in the above-mentioned space, directly under the skin. By tenting the skin with the tip of the needle, the needle should be inserted in a cranial direction to its full length.<sup>6</sup> The obturator is rotated 90° before being firmly secured in place, and the needle is slowly withdrawn, releasing the implant into the correct plane and position in the arm. The inserter needle is 1 cm longer than the obturator so that following insertion the distance between the implant and the entry wound should be 1 cm.

## ARTICLE

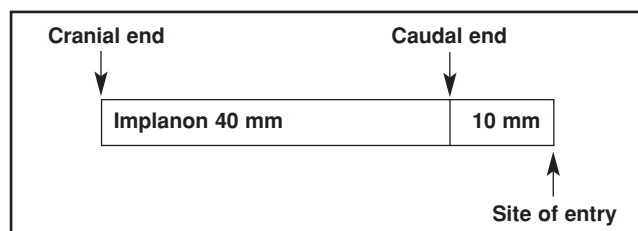


Figure 1 Method of measuring implant migration

### Methods

This was a prospective survey of 100 consecutively attending women, aged between 16 and 39 years, requesting Implanon in a city contraception and sexual health service. A family planning doctor who had undertaken the approved training course and who holds the Faculty of Family Planning and Reproductive Health Care Letter of Competence in Subdermal Contraceptive Implant Techniques inserted all the implants. Following Implanon insertion, the distance between the skin wound and the caudal end of the implant was measured. In an ideal situation this should measure 1 cm as illustrated in Figure 1. The migration, either cranially or caudally, was then measured in millimetres in relation to this standard at subsequent clinic visits.

### Results

In all 100 women the distance from the skin wound to the caudal end of the implant was recorded immediately and all measured 1 cm. The implants were all palpable subdermally following insertion and on subsequent clinic visits. After Implanon insertion each woman was requested to return for follow-up examination at 3 and 12 months unless they experienced problems in the interim period. Five women failed to return to the clinic following insertion. A total of six women had their Implanon removed in the interval after 3 months but before 1 year, citing bleeding problems as their reason for discontinuation. In the same time interval, a further two Implanon rods were removed as the two women concerned wanted to conceive. In these eight cases no movement of Implanon was found at the time of removal. Between the 3- and 12-month appointment times little movement of the implant was demonstrated.

Figure 2 illustrates the degree of migration of Implanon in the 95 patients seen for follow-up at 3 months. In 58 (61%) patients no migration was noted. In the remaining 37 (39%) patients where migration had occurred, 34 showed migration caudally and only three demonstrated cranial migration, which in one case was over 2 cm.

Figure 3 illustrates the degree of migration in the 87 patients seen for follow-up at 12 months. In 39 (45%) patients there was no migration. In the remaining 48 (55%) patients where migration had occurred, 44 showed

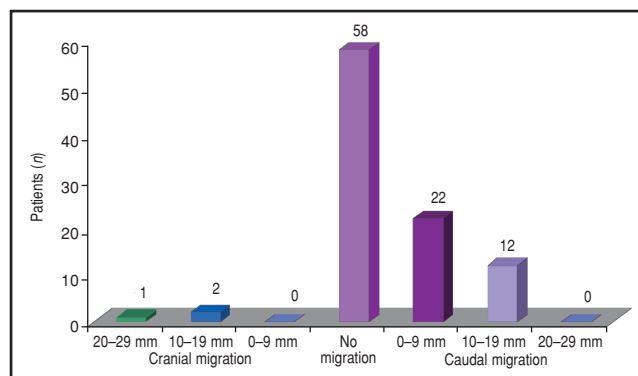


Figure 2 Migration of Implanon® 3 months after insertion

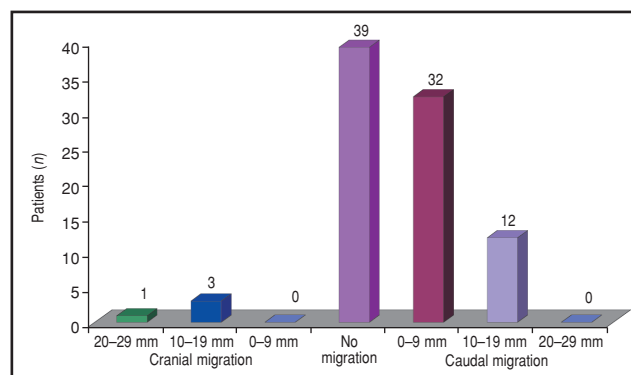


Figure 3 Migration of Implanon® 12 months after insertion

migration caudally and only four demonstrated cranial migration, which in one case was over 2 cm. The single case showing migration over 2 cm at 1 year was the same case that showed migration over 2 cm at 3 months.

### Discussion

This survey was undertaken to determine the degree of migration, if any, of Implanon implants subsequent to their insertion. Taking as a measurable standard the distance between the caudal end of the implant and the entry wound, the results show that there was migration of the rod caudally in some cases and cranially in others. Although no migration was demonstrated in 45% of cases, some degree of migration was noted in 55% of cases. In 44/87 cases migration had occurred caudally, with just four cases occurring cranially. In relation to when migration occurs, the results of the present study demonstrate that most movement occurs within the first 3 months post-insertion. However, further movement can occur in about 11% of cases up to 12 months following commencement of this method.

With regard to the degree of migration, in the majority of cases where migration does occur this is 19 mm or less. In only one patient was movement of more than 19 mm recorded. Although the present study investigating Implanon migration is, on the whole, in agreement with the previous Norplant study reported by Oloto and Bromham,<sup>2</sup> we have identified one case where movement had occurred beyond 2 cm. Poor insertion technique may account for those cases where implant migration over 2 cm is documented. It is vital that the obturator is fixed by the health professional before removal of the needle, as pushing the obturator against the implant on insertion will lead to cranial displacement. Failure to fix the obturator adequately at insertion will result in the implant being placed too near the insertion site, resulting in caudal displacement and even possible expulsion of the implant within the first few days following insertion.

It is stated that correct placement of the implant in the sulcus (the groove between the biceps and the triceps) limits implant migration;<sup>6</sup> however, it is our practice to insert Implanon over the anterior body of the biceps muscle. This has not resulted in excess movement and reduces the risk of damage to the neurovascular bundle at removal if deep insertion is inadvertently performed by a trainee or poorly trained provider.

Of all the cases studied it should be noted that none demonstrated migration deep into subcutaneous tissues or muscle. Theoretically, if the implant is inserted into the biceps muscle, significant migration may result. We therefore conclude that movement over 2 cm should not occur if the correct subdermal insertion procedure is followed and carried out by a properly trained individual.

**Statements on funding and competing interests**

*Funding.* None identified.

*Competing interests.* Diana Mansour has received lecture fees, financial support for attending conferences and consultancy fees from a number of pharmaceutical companies.

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