

## Norplant Neuropathy: Peripheral Neurologic Symptoms Associated with Subdermal Contraceptive Implants

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Seventy to 80% of women using subdermal contraceptive implants (Norplant) have reported side effects, such as uterine bleeding, headache, mastalgia, and local pain at the site of insertion. This is a report of two patients who presented with peripheral neuropathy associated with the implants. One patient responded to removal of the device. The second patient, whose symptoms were

thought to be related to trauma, was successfully treated with nonsteroidal anti-inflammatory agents.

*Key words.* Levonorgestrel; Norplant; contraceptive devices, female; nerve compression syndromes.  
(*J Fam Pract* 1995; 40:184-186)

Subdermal contraceptive implants releasing progestational agents have become a popular contraceptive method since their introduction in the United States in 1991. The implant system has been found to be a safe and effective method of preventing pregnancy.<sup>1,2</sup> While generally well accepted by women,<sup>3</sup> 70% to 80% of women using the subdermal implants experience some side effects, including abnormal uterine bleeding, headache, mastalgia, and local pain at the site of insertion.<sup>4-7</sup> This paper reports two cases of peripheral neuropathy associated with subdermal contraceptive implants.

### Case Reports

#### Case 1

A 22-year-old woman who had received a subdermal contraceptive 11 months earlier presented with left-arm paresthesia. Whenever she internally rotated her arms, she experienced an electric shock type of pain shooting down the anterolateral aspect of her left arm to her fingers with paresthesia and numbness. This pain lasted approximately

2 to 3 minutes and then subsided. The pain could be reproduced by pressing over the superior portion of the axillary subdermal capsules.

Physical examination revealed a slender, short woman. Her height was 60 in. and weight 110 lb. Examination of the left arm revealed a subdermal implant extending from the mid-upper arm nearly to the axilla. No erythema, tenderness, or induration was noted over any of the capsule paths. However, compression of the proximal portion of the most lateral subdermal capsule reproduced the symptoms.

The patient had decided she wanted to try another contraceptive method and returned for removal of the subdermal implant. Following removal, her pain and paresthesias completely resolved.

#### Case 2

A 26-year-old woman who had a subdermal contraceptive implant placed 1 year earlier presented with a history of trauma to her left arm that had occurred 3 days previously. She stated that someone had grabbed her upper arm, causing immediate acute pain in the upper arm followed the next day by paresthesia and numbness radiating down the lateral aspect of her left arm to her left hand. The paresthesia and numbness were transient and unrelated to movement of her arm. If she compressed her arm over the site of trauma, she could reproduce the symptoms.

Submitted September 30, 1994.

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Physical examination showed that the patient weighed 194 lb and was 62 in. tall. Examination of her upper arm did not reveal any ecchymosis, erythema, or tenderness. Subdermal implants were noted to be located in the mid-upper arm and radiating toward the axilla. Palpation of the implants did not produce any localized pain. However, palpation of the proximal tip of the capsule situated closest to the biceps muscle reproduced the symptoms.

The patient was pleased with her subdermal contraceptive implant system and did not want to have it removed. She was given a nonsteroidal anti-inflammatory agent for 2 weeks, and at follow-up, she had no residual symptoms.

## Discussion

These two cases represent the first reports we are aware of concerning peripheral neuropathy related to subdermal contraceptive implants. The first case involved a small, slender woman whose medial capsule rested nearly in the axilla. This patient responded to removal of the capsule. The second patient had traumatic neuropathy, probably related to acute nerve compression from a capsule and edema from soft tissue trauma. With time, this nerve compression abated and the patient's symptoms resolved. Her subdermal implants have remained in place, and she has been symptom-free for the last 3 months.

Although pain at the insertion site is a relatively common complication of this contraceptive method, occurring in slightly more than 2% of all women, it generally resolves by the third month of use.<sup>8</sup> Reports of spontaneous arm pain, described as "shooting," "radiating," or "electric," after this time have been received by the manufacturer (written communication, C.A. May, Wyeth-Ayerst Laboratories, Philadelphia, Pa), but these reports have been sporadic and no clear mechanism for the pain has been identified. Based on the location and character of the symptoms experienced by the patients in this report, we suggest that this pain represents compression of the musculocutaneous nerve by the subdermal capsule resulting in a "Norplant neuropathy."

The musculocutaneous nerve branches from the lateral cord of the brachial plexus just distal to the axilla where it courses behind the coracobrachial muscle, penetrates the coracobrachialis and extends to the anterior aspect of the arm (Figure 1). Compression of the musculocutaneous nerve produces symptoms along the anterolateral aspect of the lower arm to the hand (Figure 2). This distribution is compatible with the symptoms described by our two patients. It is possible that in women, such as

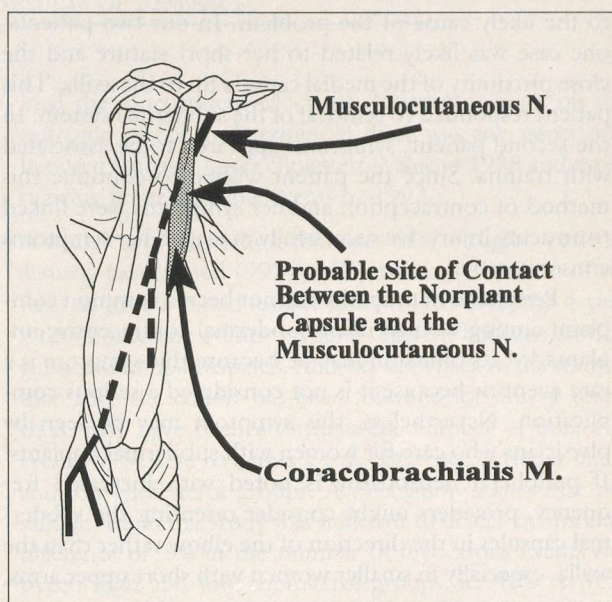


Figure 1. The anatomy of the upper arm and probable point of contact between the Norplant capsule and the musculocutaneous nerve.

the patient in our first case, who have short arms or in whom the subdermal capsule has been placed too proximally, the tip of the capsule may produce pressure on the musculocutaneous nerve where it penetrates the coracobrachial muscle.

The approach to the patient with peripheral neuropathy associated with subdermal implants should be linked

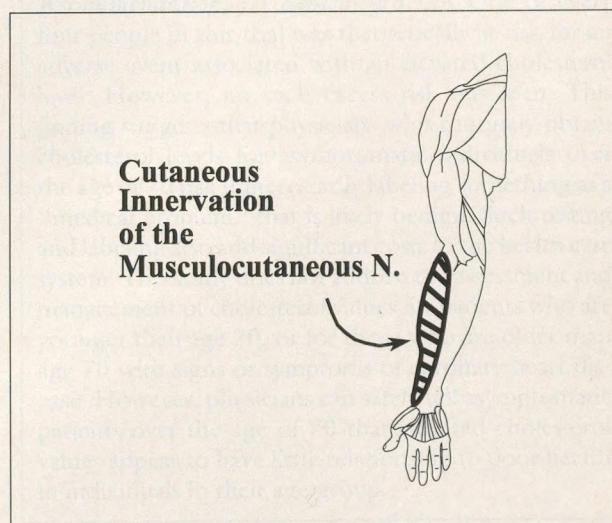


Figure 2. The distribution of sensory function associated with the musculocutaneous nerve.

to the likely cause of the problem. In our two patients, one case was likely related to her short stature and the close proximity of the medial capsule tip to the axilla. This patient responded to removal of the subdermal system. In the second patient, symptoms appeared to be associated with trauma. Since the patient wished to continue this method of contraception and her symptoms were linked to an acute injury, we successfully managed her symptoms conservatively.

Peripheral neuropathy has not been a common complaint among women using subdermal contraceptive implants.<sup>4-6</sup> Its omission may be because this symptom is a rare event or because it is not considered a serious complication. Nevertheless, this symptom may be seen by physicians who care for women with subdermal implants. If peripheral neuropathy is noted with increased frequency, providers might consider orienting the subdermal capsules in the direction of the elbow rather than the axilla, especially in smaller women with short upper arms.

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