Case Report

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The Keeper®, a Menstrual Collection Device, as a Potential Cause of Endometriosis and Adenomyosis

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Key Words
Keeper® · Menstrual collection device · Endometriosis · Adenomyosis

Abstract
Barrier contraceptive devices like the cervical cap and diaphragm and menstrual collecting devices may block menstrual flow, increase retrograde menstruation, and thus theoretically increase the likelihood of developing endometriosis or adenomyosis. We describe the case of a woman with a prior tubal ligation who after 4 years of regular use of the Keeper®, a menstrual collecting device, developed adenomyosis and endometriosis.

Introduction

In 1927, Sampson [1] proposed that retrograde menstruation causes endometriosis. More recently, others [2] have shown that menstrual endometrium can implant and grow outside the uterus within the peritoneal cavity. Thus, factors such as contraceptive method or menstrual product use that influence the amount of menses may in turn influence the development of endometriosis. Methods that cause amenorrhea or lighten menstrual flow, like Depo Provera, the levonorgestrol intrauterine device, and birth control pills, may decrease the endometriosis risk [3, 4]. Similarly, after tubal ligation, women presumably are less likely to have endometriosis because menses cannot flow into the peritoneal cavity [5]. By contrast, heavy menses may increase the risk [6]. Although studies have not reported an increased incidence of endometriosis with diaphragm or cervical cap use, it is possible that these female barrier contraceptives or new menstrual collecting devices block menstrual flow, increase retrograde menstruation, and thereby increase the likelihood of developing endometriosis.

Despite a hypothetical association, few data have been gathered concerning any association between endometriosis and vaginal products. This report concerns the Keeper® (Health Keeper, Kitchener, Canada), a small rubber cup which holds up to an ounce of menstrual fluid. The Keeper is structurally similar to the cervical cap and fits closely to the cervix. Compared to tampons and pads, the Keeper prevents leakage and is more convenient and acceptable, as it is emptied only once every 6–12 h [7]. Because the Keeper can only hold a certain amount of fluid and does not leak, when it is full, menses theoretically may either stay in the endometrial cavity or spill into the peritoneal cavity, rather than accumulate in the vagi-

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na. If a blood clot blocks the flow of menses through the cervix, retrograde menstruation may be even more likely.

We describe a 41-year-old woman who developed adenomyosis and endometriosis 4 years after regular use of the Keeper, despite previous tubal ligation.

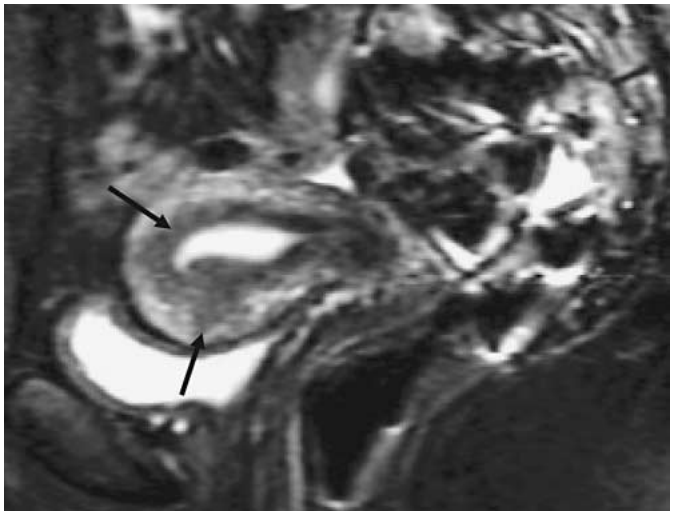

Fig. 1. T2-weighted magnetic resonance image of the uterus. The arrows point to the diffuse thickening of the endometrial-myometrial junctional zone which is consistent with adenomyosis.

Case Report

This healthy 41-year-old woman presented to the NIH as part of a study of pain caused by endometriosis. She had a tubal ligation 10 years earlier and began using the Keeper 4 years before presentation. Over the previous 2 years, she began to have dysmenorrhea and intermittent pelvic pain, symptoms suggestive of endometriosis. She denied having painful menses at any other time, including prior to the tubal ligation. On preoperative magnetic resonance imaging, diffuse thickening of the endometrial-myometrial junctional zone was considered, consistent with adenomyosis (fig. 1) [8]. At laparoscopy, the fallopian tubes were normal except for surgically absent midsegments and tubal occlusion at the previous surgical sites (fig. 2). The ovaries were normal. The uterus was enlarged and boggy, also consistent with adenomyosis. A single 0.5-mm area of endometriosis was seen about 2 cm from the occluded end of the proximal fallopian tube and was surgically excised. The rest of the pelvic anatomy was normal without evidence of adhesions. Histological evaluation of an endometrial biopsy specimen was normal, and the peritoneal biopsy specimen confirmed endometriosis. After laser laparoscopic removal of endometriosis and discontinuing use of the Keeper, the patient experienced a dramatic decrease in pelvic pain, and 2 years later, she has only mild dysmenorrhea.

Discussion

We presented the case of a woman who experienced new, severe, chronic pelvic pain while using a menstrual collection device after tubal ligation. Preoperative magnetic resonance imaging and surgical findings were con-

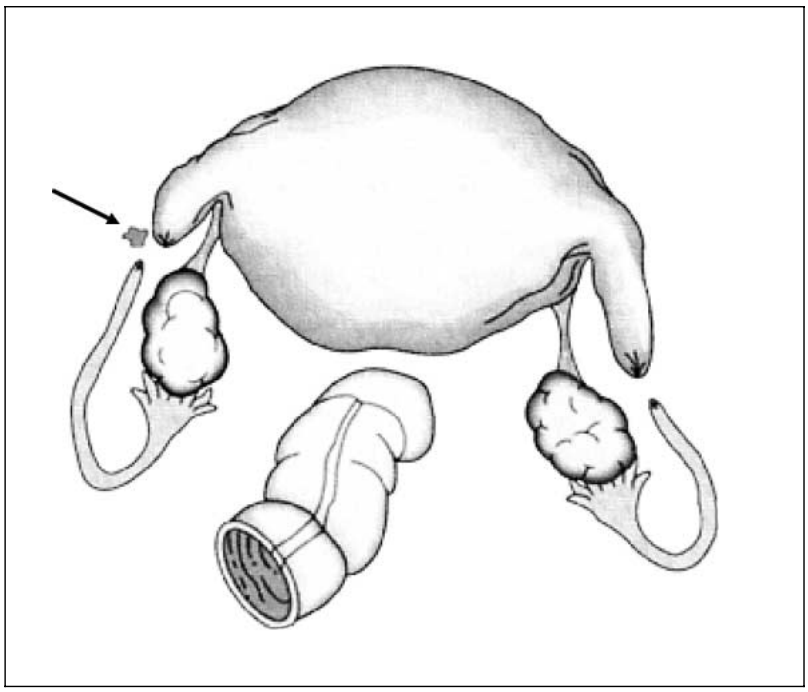

Fig. 2. Line drawing of the pelvic findings at laparoscopy. The arrow points to a small black area of endometriosis. The uterus appears boggy, consistent with the magnetic resonance imaging findings of adenomyosis.

sistent with adenomyosis and stage I endometriosis and confirmed previous tubal ligation. We speculate that the Keeper prevented menstrual flow, forcing menstrual effluent into the myometrium and through the occluded fallopian tube. This could account for the presence of endometriosis at a site where retrograde menses could have spilled from the proximal fallopian tube and for the presumed adenomyosis. This hypothesis is consistent with the unusual timing of pelvic symptoms which occurred after age 40 years and only after tubal ligation followed by years of use of the Keeper.

Clinicians have wondered whether female barrier devices or menstrual collection devices increase the risk of endometriosis or adenomyosis. Indeed, the recommendation against menstrual use of diaphragms and cervical caps may reflect a desire to prevent retrograde menstruation. However, it is not known whether these products actually increase the risk of either adenomyosis or endometriosis, because the association has not been systematically evaluated. We speculate that the Keeper may block menstrual flow while being used as recommended. As a result, retrograde menstruation may be more common for all women using the Keeper, and adenomyosis or endometriosis rates might be increased in susceptible women. Furthermore, when used in a woman after tubal ligation, we speculate that the Keeper may so successfully block menstrual flow that menses can be forced into the uterine wall. The observations in our patient suggest that it may be useful to inquire about use of these devices in women with pelvic pain or endometriosis. If the association is confirmed in others, it may be prudent to advise women using the Keeper to empty it more often than every 6–12 h, especially after tubal ligation or if menses are heavy.

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