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Intrauterine contraception in nulliparous women: why ever not?

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Introduction

The levonorgestrel-releasing intrauterine system (LNG-IUS; Mirena®) is one of the most effective contraceptive methods, with a Pearl index of 0.2 at 1 year and a cumulative failure rate of 0.7 at 5 years [1]. It was first approved in 1990 and has been on the market since the mid-1990s in most European countries and since 2001 in the United States. The licensed duration of LNG-IUS use is 5 years. Besides its contraceptive efficacy (which is similar to that achieved with female sterilization), the LNG-IUS confers additional health benefits, such as reduced menstrual bleeding and dysmenorrhoea. These bene-

fits may be particularly useful in young nulliparous women. Due to its high efficacy, safety, long duration of action and typical bleeding pattern, the LNG-IUS is the prototype of a menstruation-free contraceptive. Reduced bleeding and amenorrhoea are reported to be highly acceptable among LNG-IUS users [2].

Despite worldwide annual increases in the prevalence of contraceptive use [3], and advances in available contraceptive options, millions of women who want to delay childbearing are not using, or do not have access to, contraception [4–7]. The age at which women first give birth is increasing and now averages 29 years of age in Western Europe (Figure 1).

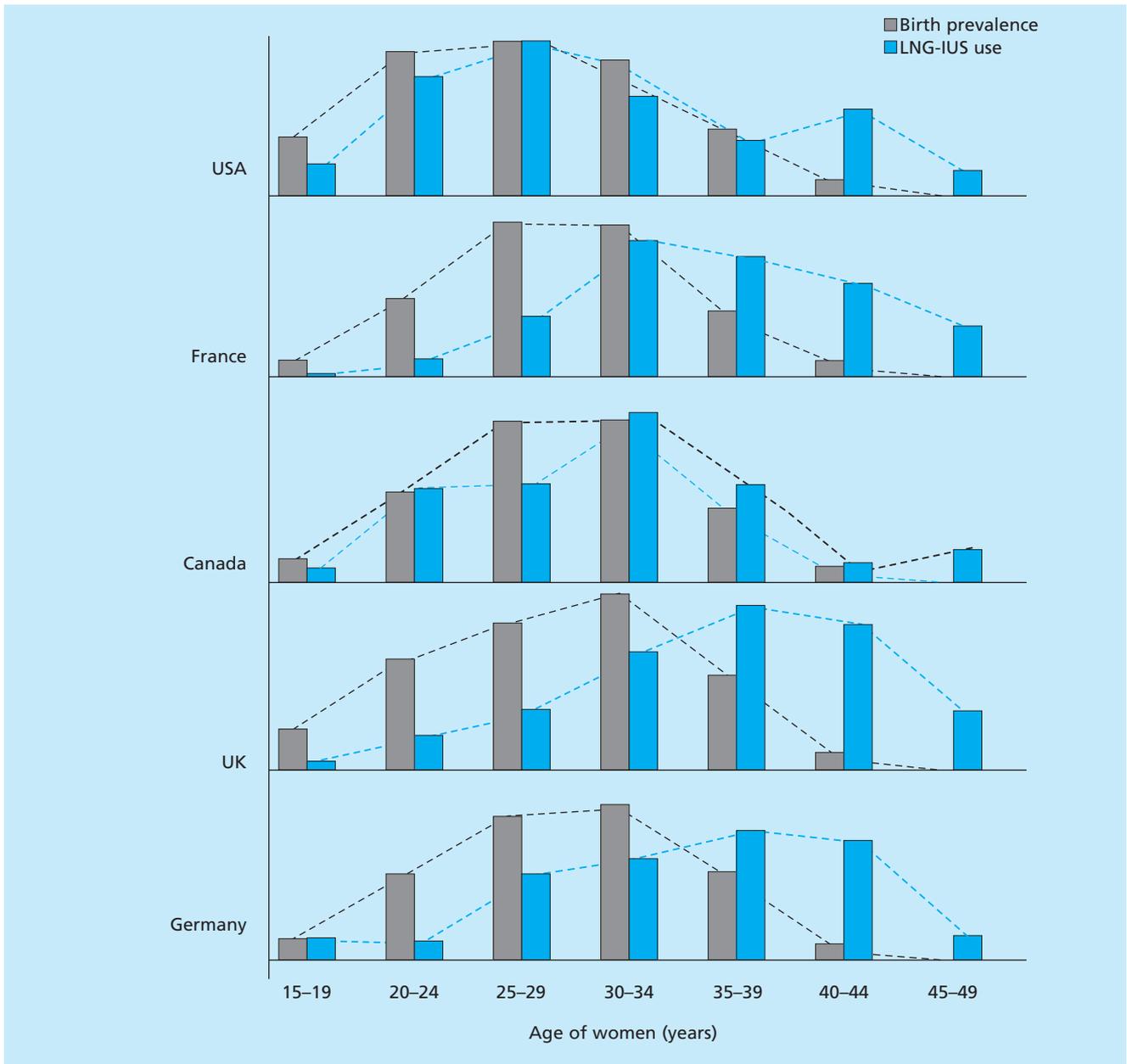


Figure 1: Distribution of births by age of mother compared with age distribution of LNG-IUS users.

Furthermore, an increasing proportion of women worldwide are delivered by caesarean section. Thus an increasing number of nulliparous women or women with no previous vaginal delivery are in need of a safe and effective contraceptive method to avoid unwanted pregnancy (Table I).

A Swedish study found that teenagers made up 50% of women seeking an abortion who had not used any contraceptive method [8]. However, a substantial proportion of unplanned pregnancies occur in women who are using a contraceptive method that has failed [9–11]. Methods that are heavily dependent on user

Table I: The number of nulliparous women is increasing significantly.

Fertility rate	↓
Age at first delivery	↑
Percentage of caesarean sections	↑
Childless women not intending to have a child	↑

adherence to a specific routine (i.e. that require daily or precoital administration), such as oral contraceptive pills and barrier methods, are associated with notably higher typical-use failure rates than perfect-use failure

rates. This is particularly the case in young women [12]. Among teenage girls the Pearl index for oral contraceptive pills has been reported to exceed 13.0 [13, 14]. By contrast, methods not requiring daily or precoital adherence, such as intrauterine devices (IUDs), the LNG-IUS, injections and implants, are generally as effective with typical use as they are with perfect use.

“Besides its contraceptive efficacy (which is similar to that achieved with female sterilization), the LNG-IUS confers additional health benefits, such as reduced menstrual bleeding and dysmenorrhoea. These benefits may be particularly useful in young nulliparous women.”

Among European women of reproductive age, approximately 10% use a long-acting reversible contraceptive method, and the LNG-IUS and copper IUD are the most popular contraceptives in this class [15].

Importantly, a smaller uterus does not reduce the efficacy of intrauterine contraception. The high efficacy of the LNG-IUS reported in parous women has been found to be of a similar level in young nulliparous women [16–22]. Today, due to its efficacy and additional benefits, use of the LNG-IUS among young nulliparous women is expanding rapidly in some countries, though it is little used among this group in other countries.

Resistance to LNG-IUS use among young nulliparous women

Despite the fact that the World Health Organization stated back in 1987 that intrauterine contraception is a safe option for nulliparous women, use of the LNG-IUS in young nulliparous women is still relatively low.

“One reason for the low usage rate is the misconception among many clinicians that intrauterine contraception cannot be used by women who have never been pregnant.”

One reason for the low usage rate is the misconception among many clinicians that intrauterine contraception cannot be used by women who have never been pregnant. In a survey of American gynaecologists, 68% reported that parity status had a strong impact on their selection of candidates for intrauterine

contraception [23]. In the UK, less than 2% of gynaecologists said they would recommend intrauterine contraception to a young nulliparous woman [24]. Most concerns relate to the presumed risks of pelvic inflammatory disease (PID) and infertility, or to a supposed increased risk of complications or difficulty of insertion.

Insertion

Failed insertion, complications and side effects are significantly more common among women who have had no previous vaginal delivery [25]. Nulliparous women have an increased risk of cervical problems and bradycardia. Complications include partial or total expulsion and following unintended pregnancy, pain, abnormal or heavy bleeding. Sometimes insertion has to be performed under general anaesthesia. The fear of painful insertion may also make women hesitate to use intrauterine contraception. Higher insertion pain scores have been reported among nulliparous compared with parous women [26]. However, it should be stressed that pain ratings in both groups are low. In line with this, we also found that insertion of an IUD in nulliparous women was generally less technically complicated than expected [27].

Misoprostol is a widely available prostaglandin E₁ analogue. It is used for cervical dilatation prior to surgical abortion in order to avoid damage to the cervix and uterus due to a rigid cervix [28]. It has also been shown to be effective for cervical dilatation in non-pregnant women [29]. A facilitating effect of misoprostol on IUD insertion was the significantly reduced resistance of the internal cervical os and following technically less difficult insertions compared with untreated controls. However, there was no difference in reported pain scores [30].

Fear of painful or difficult insertion may make women and providers reluctant to choose intrauterine contraception. Therefore further studies exploring facilitating methods such as cervical priming are needed in women at increased risk of difficult insertion, such as nulliparous women.

Safety

In a study of IUD use in nulliparous women, no perforations, postinsertion infections or expulsions occurred in the month of follow-up [27]. Previous studies have found no differences in the rate of perforations or expulsions (provided that the device had been properly inserted) between parous and nulliparous women using modern copper IUDs or the LNG-IUS [17, 30].

A large World Health Organization study demonstrated that modern copper IUDs with monofilament strings do not increase the user's risk of PID compared with non-users beyond that associated with insertion of the device [31]. Furthermore, previous use of a copper IUD did not increase the risk of tubal infertility [32]. An advantage of the LNG-IUS with regard to infections is the effect on the cervical mucus that renders it less permeable to both sperm and pathogens. The LNG-IUS had a lower reported rate of infections in nulliparas as well as fewer removals due to PID [33, 34]. The observed protection against PID conferred by the LNG-IUS was most pronounced among younger women.

Return to fertility

The return to fertility after LNG-IUS removal is rapid. Typical 1-year pregnancy rates after the cessation of oral contraceptives or the LNG-IUS ranged from 80% to 95%, and those for copper IUDs were almost as high, ranging from about 70% to 90% (increasing to 79.7–93% at 2 years), as reported in a systematic review [35]. These figures are similar to those reported following the use of barrier methods or no contraceptive method.

Acceptability

IUD continuation rates in nulliparous women do not seem to be lower than those in parous women [36]. An important advantage of the LNG-IUS compared with combined oral contraceptives in nulliparous women is a higher continuation rate [16].

A concern for many (young) women is possible weight gain related to the use of hormonal contraception. In the above study [16], there was no recorded weight gain among LNG-IUS users. In another study comparing the LNG-IUS with the copper IUD, there was no difference in weight gain between the groups [33].

Hormone-related side effects were reported significantly more often in the LNG-IUS group than in the combined oral contraceptive group [16]. However, importantly, this did not lead to termination of LNG-IUS use. Hormonal side effects such as acne are also likely to be more pronounced at initiation of LNG-IUS use. In a European randomized controlled trial [33], the subjective reporting of acne was initially higher in the LNG-IUS group, but it did not differ between groups at 5 years.

Due to its pronounced effects on the endometrium, the LNG-IUS reduces menstrual bleeding. The bleeding pattern typically associated with use of the LNG-IUS includes an initial period of irregular bleed-

ing/spotting during the first months of use. Thereafter the number of bleeding and spotting days diminishes and the rate of amenorrhoea increases, reaching approximately 20% after 1 year of use [33]. As expected, amenorrhoea was found to be more common in the LNG-IUS group than in the oral contraceptive group [16]. The 1-year discontinuation rate due to bleeding problems in nulliparous women was lower (2.5%) than has been reported during the first year in parous women. Bleeding problems become rarer with increasing length of use in both parous and nulliparous women [2, 33]. Satisfaction with the LNG-IUS at 12 months was better than with oral contraceptives, and 88% of subjects were willing to continue using it after the study period had ended.

“An important advantage of the LNG-IUS compared with combined oral contraceptives in nulliparous women is a higher continuation rate.”

Heikinheimo et al. [37] showed that reduced bleeding with the LNG-IUS is associated with high user satisfaction. Most satisfied were women reporting amenorrhoea, whose satisfaction rate reached 100%. Menstrual disturbances have a huge impact on the quality of life of many women. Today, the view of women on monthly bleeding as natural and healthy is rapidly changing. Reduced menstrual bleeding, or relief from bleeding altogether, is becoming more and more popular not only for those suffering from heavy menstrual bleeding but for all women of reproductive age. The medical management of heavy menstrual bleeding allowing preservation of fertility is increasingly needed as more women postpone childbirth until later in life. The benefits of amenorrhoea also include freedom from other cycle-related problems such as dysmenorrhoea and premenstrual symptoms. Dysmenorrhoea is relatively more common among nulliparous women. This age group might thus benefit from and appreciate the reduction in bleeding and relief of menstrual pain achieved with the LNG-IUS [22].

Conclusions and recommendations

The LNG-IUS is an effective and safe contraceptive method for young and nulliparous women. It has a higher continuation rate than is seen with combined oral contraceptives. Additional health benefits include reduced rates of PID and reduced bleeding and menstrual pain. Local guidelines should be

updated to encourage use of the LNG-IUS in young nulliparous women. Although insertion is usually easier and less painful than expected, misoprostol can be helpful to reduce technical problems in selected cases. Further studies on pain control and methods of facilitating insertion are welcome.

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