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The Decline of Laparoscopic Sterilisation

Abstract:

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Abstract
Female sterilisation is an extensively used method of contraception all over the world but there appears to be a decline in the performance of this procedure in Ireland. There also appears to be an increased uptake of safe, long-acting contraceptive alternatives. We set out to establish the extent of the decline of laparoscopic sterilisation and to explore possible explanations. Data for female sterilisation from Ireland was obtained from the Hospital In-Patient Enquiry Scheme (HIPE) section of the Economic and Social Research Institute for the years 1999 to 2004. Recent sales figures for long acting reversible contraceptives, specifically the levo-norgestrel-loaded intrauterine system (LNG-IUS) (Mirena) and the etonogestrel implant (Implanon) were also obtained. Laparoscopic tubal ligations reduced from 2,566 (1999) to 910 (2004). In the corresponding period the use of Mirena coils increased from 4,840 (1999) to 17,077 (2004).

Introduction
Female sterilisation, which is also called tubal ligation or tubal occlusion, is the most widely used contraceptive method in the world today[1-3]. From 1950 until 1982 the number of couples using voluntary sterilisation increased thirty fold. Over a hundred million women of childbearing age have been sterilized and it is estimated that more than 100 million women in the developing world alone will seek sterilisation in the next 20 years[4]. In 2001, in Great Britain, 10% of women aged 16-49 years had been sterilized[5]. A study of the General Practice Research Database[6] data suggests that in 1999 an estimated 47,268 tubal occlusions were performed in England in the National Health Service (NHS) and charitable sectors.

Sterilisation became widely available in Ireland in the early 1980s, amid considerable controversy. Its non-availability, for religious and ethical reasons, in certain institutions was a source of debate. While sterilisation at time of repeat caesarean section (usually third or more) remains a popular option with Irish patients, there has been a notable decline in the number of â intervalâ (i.e. between pregnancies) sterilisations which are usually performed laparoscopically, as a day-case procedure, most commonly with application of Filshie clips. Over the last decade a number of novel, safe, long-acting, progestogen-loaded, reversible contraceptives have also become available. We set out to establish the extent of the decline of laparoscopic sterilisation and to explore possible explanations.

Methods
Data for female sterilisation from Ireland was obtained from the Hospital In-Patient Enquiry Scheme (HIPE) section of the Economic and Social Research Institute for the years 1999 to 2004. The first year for which returns of this data was obligatory was 1999 and from 2005 the coding scheme was modified and now uses the ICD-10-A (The Australian Modification of ICD-10 incorporating the Australian Classification of Health Interventions). Recent sales figures for long acting reversible contraceptives, specifically the levonorgestrel-loaded intrauterine system (LNG-IUS) (Mirena) and the etonogestrel implant (Implanon) were obtained from their suppliers, Schering (Ireland) and Organon (Ireland) respectively.

The HIPE Scheme is a computer based health information system designed to collect medical and administrative data regarding discharges and deaths from acute hospitals. Each HIPE discharge record represents one episode of care and patients may have been admitted to more than one hospital with the same or different diagnoses.

The records therefore facilitate analyses of hospital activity rather than â incidenceâ of disease. In the current study, all laparoscopic and open sterilisation procedures, which have individual codes depending on the method of tubal occlusion or destruction, were divided into two simple groups, laparoscopic or open (which include procedures carried out at time of Caesarean section).

Results
HIPE data for female sterilisation from Ireland were obtained for the years 1999 to 2004 (Table 1). These show a marked reduction in the number of laparoscopic sterilisation procedures performed. Laparoscopic tubal ligations fell from 2,566 to 910 during the study period, a 65% decrease. The LNG-IUS (Mirena) received its first license in Ireland for contraception in October 1998. It was licensed as a treatment for idiopathic menorrhagia in October 1999. During the same period (1999-2004) the annual sales of the device increased from 4,840 to 17,077 units (a 350% rise). The etonogestrel implant, Implanon, is a long-acting reversible contraceptive. It is a sub-dermal implant and is effective for three years. Implanon was launched in Ireland in 2001 and from 2002 to the end of 2005 over 30,000 units were distributed in Ireland (Table 1).

Discussion
We are satisfied that the HIPE data provide a reasonable estimate of female sterilisation activity since the returns have been obligatory since 1999 and the totals are thought to represent 95% of national coverage by the Department of Health and Children. We have shown a dramatic decline in laparoscopic sterilisation in Ireland in recent years. This decline has coincided with the introduction of progestogen-loaded contraceptive devices, particularly the LNG-IUS, which has seen a huge increase in sales over the same period.

The swiftness of the change in medical practice probably suggests that this has been physician led, rather than patientdemand led, from the outset. It may reflect that doctors, particularly gynaecologists, were not very enthusiastic about laparoscopic sterilisation and were eager to adopt potentially safer and reversible alternatives. No remarkable decline in nonlaparoscopic sterilisation (which are almost all performed at time of Caesarean section) was observed. This suggests that there is no aversion to sterilisation per se among obstetricians or patients but rather to the method involved.

Issues likely to have been responsible for the change in medical practice include reversibility, safety and the availability of reliable alternatives. Reversibility is an important feature of contraception as regret and requests for reversal or in-vitro fertilization are not uncommon after sterilisation. In a US Collaborative Review of Female Sterilisation[7,8], among 11,232 women, the 14-year cumulative probability of expressing regret was 20.3% for women aged 30 or younger at the time of sterilisation and 5.9% for women over age 30 at sterilisation. The 14-year cumulative probability of requesting reversal information was 14.3% and the overall cumulative probability of obtaining reversal was 1.1%.

Female sterilisation is a surgical procedure and is therefore unusual in that the indication for surgery is generally patient request for social reasons and not a treatment prescribed by a doctor for medical reasons. Also, its intended permanency means the onus is on the doctor to ensure that the patient has all the information required to make an informed decision. This is important, as female sterilisation is a frequent cause of medical litigation[9-11]. Major morbidity caused by laparoscopic sterilisation is a rare event but serious complications can occur. These include major complications such as injuries to bowel, bladder or blood vessels that require laparotomy or lead to death. The risk of laparotomy as a result of a severe complication in one large prospective study[12] was 1.9/1,000 procedures with two other practice surveys[13,14] recording laparotomy rates of 1.4â 3.1/1,000 cases. The risk of death with a laparoscopy is one in 12,000[12]. Some women are at increased risk from conditions such as previous abdominal surgery or obesity. Previous abdominal or pelvic surgery, previous pelvic inflammatory disease and obesity significantly increase the relative risk of complications and need for laparotomy[15,16]. Many women in Ireland now have had at least one Caesarean section. Between 40-50% of Irish women are either overweight (BMI = 25.0-29.9) or obese (BMI 30) and the prevalence of pelvic inflammatory disease is also increasing[17].

Some of the newer long-acting contraceptive methods are as effective as tubal occlusion and yet preserve reversibility and have the huge advantage of being office procedures, requiring relatively little training, and with very small risk of procedure-related injury. The cumulative pregnancy rate for the LNG-IUS is 1.1/100 after five years of typical use[18].

In our own units, laparoscopic sterilisation has almost disappeared completely. Some consultants stopped offering the procedure once the LNG-IUS became available as an alternative. There was little resistance from patients or from referring physicians and it is apparent that the change in policy has been broadly accepted. Thus, it would seem that a procedure that was introduced in Ireland to considerable furore is becoming rapidly obsolete. Many will have no regrets about its passing.

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